pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

RECEIVED
AUG - 1 2011
FAIRVIEW TOWNSHIP

July 27, 2011

Fairview Township
599 Lewisberry Road
New Cumberland, PA 17070

Re: Act 537 Plan Update
APS ID No. 699044
DEP Code No. C2-67919-ACT
Fairview Township, York County

Ladies and Gentlemen:

We have reviewed your January, 2011 Act 537 Plan, submitted on February 14, 2011, prepared by Gannett Fleming, and entitled Act 537 Sewage Facilities Plan Update. The submission is consistent with the planning requirements given in Chapter 71 of the rules and regulations of the Department. The plan provides for sewer extensions to serve the Fairview Farms and Timber Ridge areas of the Township. The Meadowbrook Mobile Home Park is included in the Fairview Farms sewer service area and will be required to construct a pump station and force main to connect to the proposed sewer facilities. The Plan also provides for the adoption and implementation of an on-lot sewage system management ordinance.

The plan is approved with the following comments:

1. The approved project will require a Water Management Part II Permit for the construction and operation of the proposed sewage facilities. The permit application must be submitted in the name of the municipality or authority, as appropriate. Issuance of a Part II Permit will be based upon a technical evaluation of the permit application and supporting documentation. Starting construction prior to obtaining a Part II Permit is a violation of The Clean Streams Law.

2. Other Departmental permits may be required for construction if encroachment to streams or wetlands will result. Information regarding the requirements for such permits or approvals can be obtained from the Department's Permitting and Technical Services Section, Watershed Management Program at the letterhead address or telephone 717.705.4802.

3. The Plan selects an on-lot management ordinance and program to provide assurance of proper operation and maintenance of the on-lot sewage facilities within the Township. Annual reports that document the progress of the program's

implementation must be submitted to the Department's York District Office by January 31st of each year. The report, at a minimum, should include a description of the program's status and progress, the number of pumps/inspections and the number of malfunctions found and abated (with locations plotted on a map) for the previous year.

4. The Department has determined that nitrate-nitrogen levels are consistently elevated in areas underlain by the Diabase and Gettysburg geologic formations. All proposed subdivisions and land development projects utilizing on-lot sewage disposal systems within these described geologic areas will be required to complete a Component 2 Planning Module with a preliminary hydrogeologic study. For the rest of the Township, subdivisions and land development projects proposing on-lot sewage disposal systems within ¼ mile of a well that tested greater than 5 mg/L nitrate-nitrogen must also complete a Component 2 Planning Module with a preliminary hydrogeologic study. Component 1 Planning Modules and on-lot planning exemptions may not be used for subdivisions and land development projects in these areas.

5. The Department will not accept revisions (planning modules for new developments) to the Township's official plan in the North and South sewer areas as depicted on Plate 2 for proposed private community sewerage systems discharging to surface waters of the Commonwealth.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, PO Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

If you have any questions, please call David Gates at 717.705.4766.

Sincerely,

Lee A. McDonnell, P.E.
Program Manager
Water Management Program

Enclosure

cc: Gannett Fleming, Inc.
York County Planning Commission

wastewater treatment plant, The Department's review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Telephone: 717-705-4707.

Plan Location:

Borough or Township	*Borough or Township Address*	*County*
Dublin Township	1366 Cole Road Hustontown, PA 17229	Fulton County

Plan Description: The approved plan provides for the extension of sanitary sewer collection service to the Burnt Cabins area of the township to serve 3 existing homes with malfunctioning on lot sewage systems. The Department's review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

Plan Location:

Borough or Township	*Borough or Township Address*	*County*
Richmond Twp.	11 Kehl Drive Fleetwood, PA 19522	Berks County

Plan Description: The approved plan provides for a proposed one lot residential on-lot system repair to generate a total of 500 gallons of sewage per day to be served by an Orenco Advantex system that will discharge to an unnamed tributary of Maiden Creek. The proposed development is located on Seiger Rd., Richmond Township, Berks County. The plan revision DEP number is A3-06953-107-3S. The Department's review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

Plan Location:

Borough or Township	*Borough or Township Address*	*County*
Fairview Township	599 Lewisberry Road, New Cumberland, PA 17070	York

Plan Description: The approved plan provides for the adoption and implementation of an on-lot disposal system (OLDS) management ordinance to address all OLDS in the municipality. The plan also provides for sewer extensions to serve the Fairview Farms and Timber Ridge areas of the Township and includes the Meadowbrook Mobile Home Park in the Fairview Farms sewer service area. The Department's review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

Plan Location:

Borough or Township	*Borough or Township Address*	*County*
Littlestown Borough	10 South Queen St., Littlestown, PA 17340	Adams

Plan Description: The approved plan provides for the an upgrade of the existing 1.0 MGD annual average flow Littlestown Borough sewage treatment plant to meet the nutrient reduction requirements of the Chesapeake Bay Tributary Strategy. The Department's review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

LAND RECYCLING AND ENVIRONMENTAL REMEDIATION

UNDER ACT 2, 1995

PREAMBLE 2

The following plans and reports were submitted under the Land Recycling and Environmental Remediation Standards Act (35 P. S. §§ 6026.101—6026.907).

Provisions of Sections 301—308 of the Land Recycling and Environmental Remediation Standards Act (act) (35 P. S. §§ 6026.301—6026.308) require the Department to publish in the *Pennsylvania Bulletin* a notice of submission of plans and reports. A final report is submitted to document cleanup of a release of a regulated substance at a site to one of the act's remediation standards. A final report provides a description of the site investigation to characterize the nature and extent of contaminants in environmental media, the basis for selecting the environmental media of concern, documentation supporting the selection of residential or nonresidential exposure factors, a description of the remediation performed and summaries of sampling analytical results which demonstrate that remediation has attained the cleanup standard selected. Submission of plans and reports, other than the final report, will also be published in the *Pennsylvania Bulletin*. These include the remedial investigation report, risk assessment report and cleanup plan for a site-specific standard remediation. A remedial investigation report includes conclusions from the site investigation; concentration of regulated substances in environmental media; benefits of reuse of the property; and, in some circumstances, a fate and transport analysis. If required, a risk assessment report describes potential adverse effects caused by the presence of regulated substances. If required, a cleanup plan evaluates the abilities of potential remedies to achieve remedy requirements.

For further information concerning plans or reports, contact the environmental cleanup program manager in the Department regional office under which the notice of receipt of plans or reports appears. If information concerning plans or reports is required in an alternative form, contact the community relations coordinator at the appropriate regional office. TDD users may telephone the Department through the AT&T Relay Service at (800) 654-5984.

The Department has received the following plans and reports:

Northeast Region: Eric Supey, Regional Environmental Cleanup Program Manager, 2 Public Square, Wilkes-Barre, PA 18701-1915.

FAIRVIEW TOWNSHIP
York County, Pennsylvania

Act 537 Sewage Facilities Plan Update

Adopted January 31, 2011

GANNETT FLEMING
Harrisburg, Pennsylvania

FAIRVIEW TOWNSHIP
York County, Pennsylvania

Act 537
Sewage Facilities Plan Update

Adopted January 31, 2011

Prepared by Gannett Fleming, Inc.
Harrisburg, Pennsylvania

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EXECUTIVE SUMMARY

The Pennsylvania Sewage Facility Act (Act 537) requires that every municipality within the Commonwealth develop and maintain an up-to-date sewage facilities plan. The Fairview Township Board of Supervisors, York County, Pennsylvania, authorized the preparation of this report to serve as its Official Sewage Facilities Plan Update (Plan). The planning area includes all of Fairview Township (Township).

Fairview Township previously prepared and adopted a Sewage Facilities Plan Update on June 29, 2009. The Plan was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on July 23, 2009. The PADEP issued a comment letter on January 13, 2010, stating that the Plan failed to adequately provide for the resolution of existing sewage disposal problems. The comment letter is enclosed in Appendix V, along with a response letter of how each one of PADEP's comments is addressed in this revised Plan. The PADEP determined that the Township would need to revise the selected wastewater management approach, and therefore, a second round of public comment, planning agency review and another Plan adoption was necessary.

This Plan was prepared in accordance with Act 537 as described in the PADEP's "Guide for Preparing Act 537 Update Revisions," dated January 2003. Major issues addressed included projections of Township growth through 2028, resultant Township wastewater generation, evaluation of the capability of existing facilities to handle existing and projected flow, development of wastewater management alternatives to meet anticipated demands, and selection of a recommended approach to handle the anticipated needs.

This Plan is divided into eight chapters with support documentation and mapping provided in the appendices. The first four chapters establish the current and predict the future wastewater conveyance and treatment needs of the Township. The last four chapters develop and evaluate alternatives for satisfying the existing and projected wastewater needs of the Township.

Approximately 62% of the developed properties in the Township receive public sewer service. Wastewater generated from those developed properties is conveyed to and treated at one of four public Wastewater Treatment Plants (WWTPs); the Lower Allen WWTP, the North WWTP, the South WWTP, and the Lewisberry WWTP. The United States Department of Defense Distribution Depot is located in the northeastern portion of Fairview Township. Wastewater generated within the Depot is handled by a treatment facility within the Depot that is owned and operated by the United States Department of Defense and only provides service to the Depot. Fairview Township has no involvement with the Department of Defense regarding the facility. The Depot and the treatment facility serving the Depot are therefore not considered as part of this Plan.

The Township was divided into five areas for the purpose of assessing wastewater collection, conveyance and treatment needs as part of this Plan. Traveling from north to south, these five areas are: (1) the Lower Allen WWTP service area, which is generally the developed portion of the Township located north of the Pennsylvania Turnpike; (2) the North WWTP service area, which is generally the north-central portion of the Township within the Route 83 corridor between the Pennsylvania Turnpike and Reesers Summit; (3) the South WWTP service area, which is generally the south-central portion of the Township within the Route 83 corridor between Reesers Summit and the border with Newberry Township; (4) the Lewisberry WWTP Service Area, which is generally the developed southwestern portion of the Township near Silver Lake and adjacent to Lewisberry Borough; and (5) the remainder of the Township, which is generally the rural portions of the Township served by on-lot wastewater treatment and disposal systems (on-lot systems).

The Lower Allen WWTP is owned and operated by the Lower Allen Authority. The Lewisberry WWTP is owned and operated by the Lewisberry Joint Authority. Fairview Township has entered into Agreements with these two municipal authorities to address the conveyance of wastewater generated in Fairview Township to the authorities' facilities. The North WWTP and the South WWTP are both owned by the Fairview Township Authority and operated by Fairview Township staff. These two facilities only treat wastewater generated in Fairview Township.

Fairview Township is located within the Lower Susquehanna River watershed, which eventually flows into the Chesapeake Bay. All of the public wastewater facilities serving Fairview Township discharge to surface waters that eventually flow into the Susquehanna River. The Susquehanna River provides more than half of the fresh water to the Chesapeake Bay. Pennsylvania has entered into agreements with other states tributary to the Chesapeake Bay and the federal government to control the level of nitrogen and phosphorus discharged into the Bay. The PADEP developed the Pennsylvania Chesapeake Bay Tributary Strategy to establish a course of action that will enable the Commonwealth to comply with its Chesapeake Bay commitments. A key component of the Tributary Strategy is the establishment of a cap load on the annual amount of nitrogen and phosphorus discharged from WWTPs within the Chesapeake Bay watershed. These cap loads will be imposed on each WWTP's National Pollutant Discharge Elimination System (NPDES) Permit during the Permit renewal process.

Fairview Township received notification from PADEP on the Township's pending cap load in December 2006. Although the North WWTP and the South WWTP currently remove phosphorus from the wastewater, the WWTPs were not designed to consistently remove nitrogen down to the levels that will be required to meet the Township's cap load. This Plan contains an analysis of alternatives available to the Township to comply with the pending cap load limits.

Slightly over 2,560 occupied properties in the Township are currently served by on-lot systems, with the majority of these properties also relying on private, on-site wells for drinking water supply. A large amount of those on-lot systems were constructed before 1972, when Pennsylvania established permitting and design standards for on-lot systems. The planning included an evaluation of the ability of these on-lot systems to provide reliable, long-term service. Options to meet the long-term needs of these unsewered areas were also evaluated.

Major findings of this Plan include:

- Continued reliance on the Lower Allen WWTP, the North WWTP, the South WWTP, and the Lewisberry WWTP to handle wastewater from the sewered portions of their established service areas is the most cost-effective treatment solution for those areas of the Township.

- The Township has adequate capacity in the Lower Allen WWTP, the North WWTP, and the Lewisberry WWTP to meet the projected 2028 needs for the WWTP services areas in Fairview Township.

- The South WWTP has sufficient capacity to meet its current capacity commitments. There is no more capacity available at the facility to serve other needs after these current capacity commitments are met. However, a 2003 rerate evaluation determined that an additional 96,000 gallons per day (gpd) of capacity could be achieved at the South WWTP with minor process modifications.

- The North WWTP and the South WWTP do not require major upgrades over the next 15 years, other than any upgrades that may be needed to comply with nutrient cap loads and the installation of dechlorination facilities at the North WWTP to meet more stringent total residual chlorine limits. The Township may also need to rehabilitate the effluent outfall line from the facility over the next 20 years to keep this line in good working order.

- Based on the level of treatment provided at the North WWTP and the South WWTP, the Township will need to remove between 10,000 and 20,000 pounds per year of additional nitrogen from the combined North WWTP and South WWTP discharges to meet its cap load between 2010 and 2025.

- Given the amount of credits needed, nutrient trading can offer a cost-effective approach for Fairview Township to comply with its pending nitrogen cap load.

- The Lower Allen WWTP and the Lewisberry WWTP will require upgrades to comply with their nutrient cap loads.

- The wastewater needs assessment identified the Fairview Farms and Timber Ridge areas in northwestern Fairview Township as candidates for extension of public sewers to address anticipated long-term public health risks associated with improper treatment and disposal of wastewater, due to the small lots and types of soils in these areas.

- The private wastewater treatment plant serving the Meadowbrook Mobile Home Park (MHP) has not consistently met discharge limits and DEP has directed the MHP to connect its private sewer system to the Township's sewer system.

- The majority of the soils located outside the public sewer service areas, except those soils within floodplains or steep slope areas, are potentially suitable to support some type of on-lot system, as long as the systems are properly designed, installed, and operated.

- There is currently no program in place to ensure the proper operation and maintenance of on-lot wastewater treatment and disposal systems.

- Sampling conducted as part of this Plan identified areas of Fairview Township with nitrate-nitrogen levels in the groundwater above 5 milligrams per Liter (mg/L). Construction of new on-lot systems within a quarter mile of a well with nitrate-nitrogen levels above 5 mg/L requires the developer to undertake a preliminary hydrogeologic study to confirm the level of nitrate-nitrogen leaving the property will not exceed the safe drinking water limit of 10 mg/L.

The Township has selected the following approach to satisfy its existing and projected 20-year wastewater conveyance and treatment needs after an evaluation of available alternatives:

- Negotiate and execute an agreement for the long-term (15 years) purchase of nutrient credits to enable the Township to comply with its nutrient cap load. This task has been completed. The purchase of credits represents a savings of approximately 75% over the estimated cost to upgrade the North WWTP.

- Adjust sewer user rates and tapping fees to generate sufficient revenue to fund the operation and maintenance of the public sewer system and the purchase of nutrient credits. This task was completed in 2008. Sewer user rates were increased from $138 to $147 per quarter for a residential customer. An additional sewer user rate adjustment will be necessary prior to construction of the sewer system extensions from the North WWTP. The preliminary estimated rate increase is from $147 to $165 per quarter. Tapping fees should be updated at least every 3 years to keep the rates current with market conditions. The tapping fees were last updated in 2010.

- Participate with Lower Allen Authority and the Lewisberry Joint Authority to upgrade their facilities, as needed, to comply with the Chesapeake Bay Tributary Strategy.

- Develop and implement an On-Lot Management Program to assure the regular maintenance and inspection of all on-lot systems.

- Construct a sanitary sewer extension from the North WWTP to the Fairview Farms area to provide public sewer service to this area by the spring of 2016.

- Work with the Meadowbrook MHP owner to allow the private sewer system serving the MHP to connect to the sanitary sewer extension to the Fairview Farms area.

- Construct a sanitary sewer extension from the North WWTP to the Timber Ridge area to provide public sewer service to this area by the spring of 2016.

- Continue to rely on on-lot systems for properties outside the sewer service areas and the aforementioned areas to be served by sanitary sewer extensions.

- Require new developments outside the public sewer service area to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their development with either on-lot systems, a community wastewater system, or an extension to the public sewer system if the developer has financed all necessary improvements to the public conveyance and treatment facilities needed to serve his development. Developers proposing a community wastewater system or a new wastewater treatment system must provide documentation that the necessary administration, operation, and maintenance programs are fully established and funded to sustain the long-term operation of the proposed facilities.

- Promote the development of lands within the North WWTP service area where WWTP capacity is available rather than within the South WWTP service area, where all available capacity has been fully committed.

Public sewer service is proposed for the Fairview Farms and Timber Ridge areas of the Township to provide a long-term approach to wastewater treatment. The selected wastewater management alternative for Fairview Farms is Alternative 3, construction of a sanitary sewer system serving the Fairview Farms which will accept wastewater flows from the Meadowbrook MHP. The selected wastewater management alternative for Timber Ridge is Alternative 1, to construct a gravity sanitary sewer extension serving Timber Ridge area, as defined in Section 5.1 of the Plan. The remainder of the Township outside the public sewered areas will continue to rely on on-lot systems.

Total project costs for the potential sewer system extensions were developed to determine the potential impact on system user rates. The estimated total project cost for the selected approach in the Fairview Farms and Timber Ridge areas is approximately $5,035,000, in 2010 dollars. Obtaining PENNVEST funding, ideally in the form of grants, is the preferred approach for financing the two wastewater system extensions proposed as part of this Plan. If the Township is unsuccessful in obtaining PENNVEST funding, either a sewer revenue bond or municipal bank loan is the preferred backup financing plan. Although further financial analysis will be needed, it is expected that implementation of the selected approach will require increasing the Township's sewer user rates. Preliminary estimates place the needed rates at about $165/Equivalent Dwelling Unit (EDU) per quarter, prior to construction of the sewer extensions serving the Timber Ridge, Fairview Farms and Meadowbrook MHP areas.

A number of the institutional arrangements necessary for the implementation of this Plan already exist. Fairview Township has already entered a 15-year agreement for the purchase of nitrogen credits needed through 2025 for operation of both North and South WWTPs. The Township will need to undertake an evaluation of available options for continued compliance with its nitrogen cap load near the end of its 2025 nutrient credit purchase agreement in order to determine the best approach for continued compliance with its cap load. The Township will need to assign responsibility for administration of the on-lot management program to its existing administrative staff and Sewage Enforcement Officer.

The private Meadowbrook MHP sewer extension will require Township coordinate on project timing as well as the preferred connection point of the force main serving the Meadowbrook MHP. These items need to be finalized during the design phase of the sewer extension project to serve the Fairview Farms area. The owner of the Meadowbrook MHP will be required to obtain the necessary easements and permits for construction.

In accordance with the requirements of Act 537, Fairview Township provided copies of its final draft Act 537 Plan Update, dated October 2010, to the York County Planning Commission and the Fairview Township Planning Commission for review and comment. Appendix V contains the request for comments on the draft Plan from the County and the Township Planning Commissions, as well as letters received from both organizations. A response to the comments is also included in Appendix V. Fairview Township undertook a 30-day public comment period on its final proposed Plan. Appendix W contains the proof of public notice from the local newspaper that documents the proposed plan adoption, plan summary, and the establishment and uncontested conduct of a 30-day comment period. The 30-day comment period expired on November 19, 2010. No public comment was received during the 30-day comment period, as noted in Appendix W.

Fairview Township adopted the Act 537 Plan Update at its January 31, 2011 public meeting. Appendix X contains a copy of the resolution of adoption. Table 1 summarizes the actions to be taken by the Township to implement the selected approach. Table 1 also lists the anticipated schedule for implementation of each action.

Table 1
Fairview Township Act 537 Plan Update
Final Implementation Schedule

Action	Anticipated Time Frame
I. Public Sewer Service Areas	
Enter into Agreement with Red Barn Trading Company for the purchase of nitrogen credits needed to comply with the Township's nitrogen cap load from 2010 through 2025.	***Completed***
Adjust public sewer system user rates to provide sufficient funds to meet sewer system needs and secure nutrient credits (added $9/quarter for Chesapeake Bay costs).	***Completed***
Update Sewer System tapping fee to keep the rate current with market conditions.	At least every 3 years
Participate with Lower Allen Authority and Lewisberry Joint Authority on needed improvements to their WWTPs to comply with nutrient cap loads and adjust sewer rates as needed to meet facilities' financing needs	2010 Through 2015
Initiate public discussions with the Fairview Farms and Timber Ridge residents regarding public sewer service.	Ongoing 2010-2015
Initiate discussion with the Meadowbrook MHP owner to coordinate construction of necessary private sanitary sewer facilities from the MHP into proposed Fairview Farms sanitary sewer extension	Ongoing 2010-2015
Design sanitary sewer extension from the Northern WWTP sewer system to the Fairview Farms and Timber Ridge areas to provide public sewer service to this area.	Summer 2014
Obtain necessary rights-of-way for the Fairview Farms and Timber Ridge area sewer extensions.	Fall 2014
Apply for Water Quality Management Permit application for construction of wastewater pumping station needed to provide public sewer service to Fairview Farms and Timber Ridge areas.	Fall 2014
Adjust public sewer system user rates to provide sufficient funds to meet additional sewer service needs	Spring 2015
Secure funding for Fairview Farms and Timber Ridge sewer extensions.	Spring 2015
Construct Fairview Farms and Timber Ridge sewer extensions.	Summer 2015 to Spring 2016
Connect properties in Fairview Farms and Timber Ridge area to public sewer extension. Issue connection notice to Meadowbrook MHP.	Spring 2016
IV. Remainder of Township (On-lot Service Area)	
Adopt on-lot management ordinance requiring regular pumping and inspections of on-lot systems	Completed
Issue repair notices to the residents with failing on-lot systems in the Sandspur area	Spring 2011
Amend Subdivision and Land Development Ordinance to clarify requirement for preliminary hydrogeolgic evaluations.	Winter 2010
Implement on-lot management program	January 2011

1.0 DESCRIPTION OF PLANNING AREA

1.1 Introduction

The Pennsylvania Sewage Facilities Act requires that every municipality within the Commonwealth develop and maintain an up-to-date sewage facilities plan. The Fairview Township Board of Supervisors, York County, Pennsylvania, authorized the preparation of this report to serve as its Official Sewage Facilities Plan Update (Plan). The Township requested the services of Gannett Fleming, Inc. to assist with preparation of the Plan. The Township last prepared an Act 537 Plan Update in 1987.

The Pennsylvania Department of Environmental Protection (PADEP) administers the Act 537 program. PADEP has produced "A Guide for Preparing Act 537 Update Revisions", dated January 7, 2003, which includes the "General Plan Contents Checklist". This Plan has been prepared in conformance with Act 537 and the PADEP checklist. A completed copy of the PADEP checklist indicating where each required item can be found within the Plan is included in Appendix A.

The planning area is the entire Township of Fairview. The Township is located in northern York County and is the meeting point of Dauphin, Cumberland and York Counties. Fairview Township is comprised of approximately 36 square miles of land area. The Yellow Breeches Creek forms the Township's northern border with Cumberland County and the Susquehanna River forms the Township's eastern border with Dauphin County.

Most of Fairview Township is rural in character, however the northern and central portions of the Township along the United States Route 83 corridor are suburban in character. The suburban character is due primarily to the area's close proximity to the Pennsylvania Turnpike running east to west and US Route 83 which connects the west shore area of Cumberland County to York County and the City of York metropolitan area. US Route 83 traverses the Township north to south.

There are eight municipalities that border Fairview Township, four in York County, two in Cumberland County and two in Dauphin County. Running from east to west in York County the adjacent municipalities include Newberry Township, Lewisberry Borough, Warrington Township

and Monaghan Township. To the north is Cumberland County and the Borough of New Cumberland and Lower Allen Township, and across the Susquehanna River in Dauphin County, there is Swatara and Lower Swatara Townships. Plate No. 1, included in the back of this Plan, presents the general location of the adjacent municipalities.

1.2 Water Bodies

Fairview Township lies in the Chesapeake Bay watershed. All of the streams and drainage ways that run throughout the Township eventually flow into tributaries of the Susquehanna River or directly into the Susquehanna River, which forms the eastern border of the Township. The Yellow Breeches Creek forms the northern border of the Township and flows directly into the Susquehanna River. The remaining streams in the Township flow in a southern direction into larger tributaries of the Susquehanna River. The remaining streams located within Fairview Township include Bennett Run, Big Spring Run, Fishing Creek, Marsh Run, and Stony Run. Beaver Pond and Silver Lake are two large surface water bodies in Fairview Township. Other surface waters include small farm ponds less than one acre in area. Plate No. 1 shows the location of all surface water bodies within the Township.

1.3 Wetlands

Wetlands are defined by Pennsylvania Title 25, Chapter 105 as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions; including swamps, marshes, bogs and similar areas. The three essential characteristics possessed by wetlands are: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology, the driving force creating wetlands. The presence of wetlands on a property limits the type of activities that can take place on the wetland portions of the property.

Fish and Wildlife Service of the U.S. Department of Interior has mapped wetlands in the Township as part of the National Wetlands Inventory (NWI). Plate No. 1 shows the NWI identified wetlands within the Township. Hydric soils, which are one characteristic of a wetlands, are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the top layer. Hydric soils within the Township generally include the Athol

gravelly-silt loam (AtB),Brecknock channery silt loam (BrB), Chagrin silt loam (Cd), Clarksburg silt loam (CkA) (CkB), Codorous silt loam (Cm), Duffield silt loam (DuB), Elk silt loam(EkB), Landsdale loam (LeB), Legore channery silt loam (LgB), Lehigh channery silt loam (LhB), Lewisberry gravelly sandy loam (LrB), Lindside silt loam (Lw), Mount Lucas silt loam (MdA) (MdB), Neshaminy channery silt loam (NaB), Penn silt loam (PdB), Raritan silt loam (RaB), Readington silt loam (ReA), and Rowland silt loam (Rw). These soils are found in depressions and gently sloping lands along Yellow Breeches Creek, Bennett Run, Marsh Run, Fishing Creek, Big Spring Run and unnamed tributaries to these streams. Plate No. 1 shows the locations of these hydric soils as established by U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) mapping.

1.4 Potable Water Supplies

Public water service is generally available to the higher density developed portions of the Township. These include developed areas outside the Rural Residential zoning district and developed parcels within the Rural Residential zoning district that are located along the Route 83 corridor. All developed land outside the existing public water service area is served by individual wells. The Pennsylvania American Water Company (PAWC) is the public water service provider for Fairview Township. PAWC's potable water system is mostly dependent upon the Yellow Breeches Creek and the Conodoguinet Creek as its water sources. The PAWC operates a plant on each creek, and in 2002 had a permitted capacity of 15.72 million gallons per day (mgd), with an average demand of 8.1 mgd. PAWC recently competed construction of a new water treatment plant in Fairview Township, which became operational in April 2006. This new facility, referred to as The West Shore Regional Treatment Plant, replaces the older plant located along the Yellow Breeches in Fairview Township. The West Shore Regional Treatment Plant has a design capacity of 12.0 mgd. Currently there are no known restrictions on any surface water quality within Fairview Township. Discussions on existing groundwater quality are presented in Section 1.8 of this Plan.

1.5 Public Sanitary Sewer Areas

Public sanitary sewer service is provided within the Township via facilities owned by Fairview Township Municipal Authority and operated by Fairview Township. Plate No. 2 identifies

those areas of the Township currently served by public sanitary sewers. Approximately 62% of the developed properties within the Township receive public sewer service. Wastewater generated within Fairview Township is conveyed to and treated at one of four Wastewater Treatment Plants (WWTPs); the Lower Allen WWTP, the North WWTP, the South WWTP, or the Lewisberry WWTP. Developed commercial and residential properties outside the public sewer area use individual on-lot wastewater treatment and disposal systems (on-lot systems). Chapter 3 provides additional information regarding existing sanitary sewage facilities within the Township.

1.6 Geology

Fairview Township is located within two geologic physiographic provinces: the Great Valley Section of the Ridge and Valley Province located in the northern part of the Township and the Gettysburg-Newark Lowland Section of the Piedmont Province located in the southern part of the Township. The majority of the Township is underlain by the Gettysburg-Newark Lowland Section of the Piedmont Province, as demonstrated on the Pennsylvania Department of Conservation and Natural Resources (DCNR) Map 13, entitled Physiographic Provinces of Pennslyvania. A copy of this map is included in Appendix G.

The bedrock geology of each province and the significance of the geologic formations relative to wastewater treatment and disposal is discussed in the York County Planning Commission's York County Comprehensive Plan, dated October 2004, and repeated below. Map 6 in Appendix G is a map of the geological formations present in York County, as taken from the York County Comprehensive Plan. The relationship between existing or potential nitrate-nitrogen pollution and drinking water sources is discussed in Section 1.8.1.

1.6.1 Great Valley Section

The Great Valley Section of the Ridge and Valley Province lies to the northeast of the South Mountain Section. This Section consists of a broad lowland karst terrain with a relief between 101 and 600 feet. The average elevation of the Ridge and Valley Province is between 140 and 1,100 feet. Fluvial erosion and some peri-glacial mass wasting formed this area. Drainage in this Section takes place via dendritic and karst drainage patterns.

The rock units of the Great Valley Section, with the exception of the Martinsburg Formation, are carbonate rocks. Movement of groundwater in carbonate bedrock typically occurs through secondary porosity, primarily bedding planes or joints and fractures created by folding and faulting of the bedrock. As groundwater moves through the fractures and joints, these features become enlarged and interconnected as a result of the dissolution of the carbonate material in the bedrock. As this process continues, a well interconnected system capable of transmitting significant quantities of water, sometimes rapidly over great distances, can develop.

The carbonate rocks of the Great Valley Section are prone to sinkhole development. Sinkholes also develop in the residual soils underlain by the carbonate rocks as a result of the undermining and removal of material into the solution-enlarged drainage system of the underlying bedrock. Wastewater from on-lot sewage disposal systems, especially when large volumes of wastewater are concentrated in a small area, may accelerate the removal of material from the overburden and trigger the development of sinkholes. The possibility of sinkhole development is greatest where bedrock is fairly shallow and the water table occurs near or below the soil rock interface. On-lot wastewater treatment and disposal systems should be located sufficiently distant from sinkholes and closed depressions so as to avoid triggering sinkhole activity.

Wastewater treatment and disposal systems in areas underlain by carbonate rocks also pose a threat to groundwater quality. Because of the moderate to high secondary porosity developed in the carbonate rocks, wastewater from on-lot systems entering the bedrock may rapidly reach the groundwater table with little opportunity for renovation. In this manner, groundwater may become contaminated with highly soluble compounds such as nitrates. Nitrate loading may become a significant problem when large volumes of effluent are concentrated in a small area. The possibility of groundwater contamination from on-lot facilities is greatest where bedrock is most shallow and riddled with sinkholes.

Geological formations present in the area of Fairview Township underlain by the Great Valley Section of the Ridge and Valley Province include the Beekmantown Limestone Formation

and the Martinsburg Shale Formation. The approximate location of these formations is shown on Map 13 in Appendix G.

1.6.2 Gettysburg-Newark Lowland Section

Over 95% of the Township is underlain by the Gettysburg-Newark Lowland Section of the Piedmont Province. The Gettysburg-Newark Lowland Section consists of rolling lowlands, shallow valleys, and isolated hills. This area has a linear appearance that runs northeast to southwest. The relief varies from 100 to 600 feet and the elevation ranges from 20 to 1,355 feet. The area is comprised of sedimentary rocks that were deposited in a long, narrow, inland basin that formed when North America and Africa separated more than 200 million years ago, and has basic dendritic and trellis drainage patterns. One of the more distinctive characteristics of this area is the red soils. Generally, there are no major hazards with constructing on-lot wastewater systems within this section, as long as soils and slope conditions are adequate.

Geological formations present in the area of Fairview Township the Gettysburg-Newark Lowland Section of the Piedmont Province include the Gettysburg Formation, Diabase, Heidersburg Member of the Gettysburg Formation, Beekmantown Limestone, and Leesport Limestone. The approximate location of these formations is shown on Map 13 in Appendix G.

1.7 Soils

The soils in the Township are mapped and described in the USDA SCS Soil Survey of York County, Pennsylvania, which was issued in May 1963. The SCS is now called the Natural Resources Conservation Service (NRCS). Soils information is now available in digital format on the USDA website at http://soils.usda.gov. The major soil associations located in the Township generally run east to west (from north to south) and include the following:

- Lewisberry-Athol-Landsdale-Arendtsville Association – Deep and moderately deep soils underlain by sandstone, conglomerate, or fanglomerate.
- Montalto-Legore-Lehigh Association – Shallow to deep upland soils underlain by diabase or porcelanite.

- Penn-Readingtown Association – Shallow to deep, mostly gently sloping to strongly sloping soils, underlain by Triassic sandstone or shale.

- Hagerstown-Duffield Association – Deep, nearly level to moderately steep soils underlain by limestone.

The types of soils located on a site have a significant impact on the suitability of that site for supporting on-lot wastewater treatment and disposal systems. Suitable soils must be present to remove and renovate the contaminants present in wastewater by physical, chemical, and biological means before the "wastes" reach the groundwater. Title 25, Chapter 73 of the Pennsylvania Code establishes standards for on-lot systems. Key parameters that must be considered include land slope, flooding potential, depth to seasonal high groundwater, depth to bedrock, soil permeability, and horizontal distance to specific land and manmade features.

A general evaluation regarding the suitability of soils for on-lot treatment and disposal of sewage was made as part of this Plan. The soil suitability evaluation was conducted for those parts of the Township currently not served by public sanitary sewers. The evaluation included a review of the following:

- USDA SCS Soil Survey of York County, Pennsylvania.
- Township and other topographic maps.
- PADEP's Technical Manual for Sewage Enforcement Officers.

The information used in the soil suitability evaluation is listed in Table 1-1. The information includes USDA SCS mapping units and soil names, land slopes, depth to bedrock, depth to seasonal high-water table, and soil group designation for land disposal as shown in Appendix A of the PADEP's Technical Manual for Sewage Enforcement Officers.

The following criteria were used to determine which areas are generally unsuitable for on-lot disposal of sewage:

- Land slopes exceeding 25%.

- A depth to seasonal high water table less than 20 inches from the ground surface, according to Table 5 of the USDA SCS Soil Survey of York County, Pennsylvania.

- A depth to bedrock less than 20 inches from the ground surface, according to Table 5 of the USDA SCS Soil Survey of York County, Pennsylvania.
- Soils included in Groups 13, 14, and 15 of Appendix A of the Department of Environmental Protection's Technical Manual for Sewage Enforcement Officers.

Soils included in Group 13 occur on floodplains and have a high flooding hazard, making them unsuitable for on-lot disposal systems. Group 14 soils have a seasonal high-water table, which limits their use for on-lot disposal systems with conventional adsorption or elevated sand mound drainage fields. Group 15 soils are poorly or very poorly drained and have a high-water table, also generally making them unsuitable for on-lot systems.

Plate No. 3, included in the back of this Plan, provides a soil suitability map prepared using the soil survey mapping units and associated soil suitability comments from Table 1-1. All mapping units with Comments 1 or 2 in Table 1-1 are shown as unsuitable in Plate No. 3. Mapping units with Comments 3 through 7 in Table 1-1 are shown as potentially suitable for on-lot sewage disposal in Plate No. 3. As seen from Plate No. 3, the majority of land outside the public sewer service area meets the above criteria as potentially suitable for an on-lot sewage disposal.

Prime agricultural soils and hydric soils within the study area are also shown on Plate No. 3. The prime agricultural soils and the hydric soils within the study area were identified using the USDA Web Soil Survey using York County, Pennsylvania as the area of interest.

It should be understood that soil testing was not performed in conjunction with the preparation of this Plan. Site specific investigations are required to determine soil characteristics and suitability at a given location within the study area on a case-by-case basis.

Table 1-1
Fairview Township
Soil Suitability for On-Lot Sewage Disposal Systems

Soil Mapping Units	Soils Series, Name	Slope (%)	Depth to Seasonal High Water Table (in.)	Depth to Bedrock (in.)	Soil Group	Comment	Hydric Soil	Prime Agricultural Soil
AtB	Athol gravelly-silt loam	3 to 8	> 72	60 - 99	11	(5)	Yes	Yes
AtC	Athol gravelly-silt loam	8 to 15	> 72	60 - 99	11	(5)		
Bo	Bowmansville silt loam		6 - 18	72 - 99	13	(2, 4)		
BrB	Brecknock channery silt loam	3 to 8	> 72	40 - 60	5	(5)	Yes	Yes
BrC	Brecknock channery silt loam	8 to 15	> 72	40 - 60	5	(5)		
BrD	Brecknock channery silt loam	15 to 25	> 72	40 - 60	5	(5)		
BsD	Brecknock channery silt loam	8 to 25	> 72	40 - 60	5	(5)		
BsF	Brecknock channery silt loam	25 to 60	> 72	40 - 60	5	(1)		
Cd	Chagrin silt loam		48 - 72	> 60	13	(4)	Yes	Yes
CkA	Clarksburg silt loam	0 to 3	18 - 36	60 - 99	14	(4)	Yes	Yes
CkB	Clarksburg silt loam	3 to 8	18 - 36	60 - 99	14	(4)	Yes	Yes
Cm	Codorus silt loam		12 - 24	> 60	13	(4)	Yes	Yes
CrA	Croton silt loam	0 to 3	0 - 6	42 - 60	15	(2, 4)		
CrB	Croton silt loam	3 to 8	0 - 6	42 - 60	15	(2, 4)		
DuB	Duffield silt loam	3 to 8	> 72	60 - 99	11	(5)	Yes	Yes
DuC	Duffield silt loam	8 to 15	> 72	60 - 99	11	(5)		
DWD	Duffield and Hagerstown silt loams	15 to 25	> 72	60 - 99	11	(5)		
EkB	Elk silt loam	3 to 8	> 72	> 60	6	(5)	Yes	Yes
HaC	Hagerstown silt loam	8 to 15	> 72	60 - 80	11	(5)		
HC	Hatboro silt loam		0 - 6	> 60	13	(2, 4)		
KnD	Klinesville channery silt loam	12 to 25	> 72	10 - 20	12	(3)		
KnE	Klinesville channery silt loam	25 to 40	> 72	10 - 20	12	(1, 3)		
Lc	Lamington silt loam		0 - 6	> 60	15	(2, 4)		
LeB	Landsdale loam	3 to 8	> 72	42 - 60	4	(5)	Yes	Yes
LfC	Landsdale channery loam	8 to 15	> 72	42 - 60	4	(5)		
LgB	Legore channery silt loam	3 to 8	> 72	> 60	10	(5)	Yes	Yes
LgC	Legore channery silt loam	8 to 15	> 72	> 60	10	(5)		
LgD	Legore channery silt loam	15 to 25	> 72	> 60	10	(5)		
LhB	Lehigh channery silt loam	3 to 8	6 - 36	40 - 60	14	(2, 4)	Yes	Yes
LhC	Lehigh channery silt loam	8 to 15	6 - 36	40 - 60	14	(2, 4)		
LrB	Lewisberry gravelly sandy loam	3 to 8	> 72	48 - 84	4	(5)	Yes	Yes
LrC	Lewisberry gravelly sandy loam	8 to 15	> 72	48 - 84	4	(5)		
LSD	Lewisberry and Landsdale soils	8 to 25	> 72	48 - 84	4	(5)		
Lw	Lindside silt loam		18 - 36	> 60	13	(2, 4)	Yes	Yes
MdA	Mount Lucas silt loam	0 to 3	6 - 36	48 - 99	14	(2, 4)	Yes	Yes
MdB	Mount Lucas silt loam	3 to 8	6 - 36	48 - 99	14	(2, 4)	Yes	Yes
MeB	Mount Lucas silt loam	0 to 8	6 - 36	48 - 99	14	(2, 4)		
NaB	Neshaminy channery silt loam	3 to 8	> 72	48 - 99	8	(5)	Yes	Yes
NaC	Neshaminy channery silt loam	8 to 15	> 72	48 - 99	8	(5)		
NdB	Neshaminy channery silt loam	0 to 8	> 72	> 48	8	(5)		
NdD	Neshaminy channery silt loam	8 to 25	> 72	> 48	8	(5)		
NdE	Neshaminy channery silt loam	25 to 45	> 72	> 48	8	(5)		
PbB	Penn loam	0 to 8	> 72	20 - 40	7	(5)		
PbD	Penn loam	8 to 25	> 72	20 - 40	7	(5)		
PcF	Penn channery loam	25 to 50	> 72	20 - 40	7	(5)		
PeB	Penn silt loam	3 to 8	> 72	20 - 40	7	(5)	Yes	Yes
PeC	Penn silt loam	8 to 15	> 72	20 - 40	7	(5)		
PoB	Penn-Klinesville channery silt loams	3 to 8	> 72	10 - 20	7	(5)		
PoC	Penn-Klinesville channery silt loams	8 to 15	> 72	10 - 20	7	(5)		
RaB	Raritan silt loam	3 to 8	6 - 36	> 60	14	(2, 4)	Yes	Yes
ReA	Readington silt loam	0 to 3	18 - 36	> 40	14	(2, 4)	Yes	Yes
ReB	Readington silt loam	3 to 8	18 - 36	> 40	14	(2, 4)		
RfC	Reaville channery silt loam	8 to 15	6 - 36	20 - 40	15	(2, 4)		
Rw	Rowland silt loam		12 - 36	> 72	13	(2, 4)	Yes	Yes
StC	Steinsburg channery sandy loam	8 to 15	> 72	24 - 40	5	(5)		
StD	Steinsburg channery sandy loam	15 to 25	> 72	24 - 40	5	(5)		
WaA	Watchung silt loam	0 to 3	0 - 12	> 60	15	(2, 4)		
WaB	Watchung silt loam	3 to 8	0 - 12	> 60	15	(2, 4)		
WbB	Watchung silt loam	0 to 8	0 - 12	> 60	15	(2, 4)		

Comments:

(1) Unsuitable for on-lot sewage disposal due to slopes > 25%

(2) Unsuitable for on-lot sewage disposal due to seasonal high water table < 20"

(3) Unsuitable for on-lot sewage disposal due to depth to bedrock < 20"

(4) Unsuitable for on-lot sewage disposal due to soils group

(5) Potentially suitable for on-lot sewage disposal

1.8 Groundwater Quality

Approximately 2,565 residences within the Township are located outside the public sanitary sewer service areas and currently depend on individual on-lot systems for sanitary sewage disposal. The majority of these residences are located in the western portion of the Township; however, there are pockets of homes not connected to the public sewer in the southern and northern portion of the Township. Plate 4 identifies all developed parcels in the southern half of the Township with on-lot systems.

A well water sampling program was conducted as part of this Plan to assess the quality of the groundwater in areas outside the public water and sewer service areas. A questionnaire was developed to obtain general information relative to wells and on-lot systems within the Township. A copy of the questionnaire is included in Appendix B. The questionnaire was sent to all of the properties that Township staff believed to be outside the public sewer service area. The property owners were requested to complete the questionnaire and indicate whether they were willing to participate in a free well water sampling program. As a result, 619 questionnaires were completed and returned to the Township, a 24% response rate. Appendix C presents a summary of the responses provided in the questionnaires.

Township staff then visited 557 randomly selected properties that authorized access in the questionnaire to verify the homeowner's responses and collect a well water sample. The 557 properties sampled represents 22% of the total developed properties outside the public sewer areas. Samples were sent to a local laboratory for analysis of Total Coliform Bacteria, Fecal Coliform (E. Coli) Bacteria, and Nitrate Nitrogen.

A total of 35% of the samples (196 samples) taken had positive Total Coliform Bacteria results, 4% (23 samples) tested positive for E. Coli Bacteria. A copy of the laboratory results for each sample was provided to the property owner with a letter giving general information on water quality. An example of the sample results letter is given in Appendix D.

Table 1-2 presents the Township-wide results of the well water analyses. Plate 4 identifies the location of the well water samples collected and gives a graphic representation of the test results.

Generally, the positive Total Coliform results are distributed throughout the Township. Three areas appear to have consolidated pockets of confirmed or suspected malfunctions. The first area is the Sand Spur Estates development in southern part of the Township. The other consolidated pockets are the Fairview Farms and Fairview Terrace developments (referred to throughout the remainder of the report as "Fairview Farms" area) and the Timber Ridge development; all of which are located in the northern part of the Township.

Wastewater management alternatives for the areas currently served by on-lot wastewater systems are discussed in Chapter 5. As shown in Appendix D, there was a significant amount of nitrate-nitrogen contamination detected during the well water-sampling program. Of the 517 samples analyzed, 26% (135 samples) had nitrate-nitrogen levels greater than 5.0 mg/L and 5% (28 samples) had nitrate-nitrogen levels exceeding 10.0 mg/L.

Plate 4 identifies each of the parcels with nitrate-nitrogen levels exceeding 5.0 mg/L during the sampling program and demonstrates the ¼ mile restrictive radii around those parcels. These ¼ mile restrictive radii should be used for planning purposes only, and the actual ¼ mile radius should be determined from a site survey. In accordance with Pennsylvania Act 537, sewage facility planning exemptions, under Chapter 71 of the Pennsylvania Code, are not acceptable within the ¼ mile radius of wells containing concentrations of 5.0 mg/L or greater nitrate-nitrogen, and may not be used for subdivision or new land development in those areas.

A fundamental part of Act 537 planning is the identification and documentation of existing sewage disposal needs within the municipality. Information collected as part of the well water sampling program will be used with other available information sources to identify areas of existing sewage disposal needs. A discussion of the existing sewage disposal needs assessment for Fairview Township is provided in Chapter 3 and tabulated in Appendix F of this Plan.

Table 1-2
Fairview Township
On-Lot Wastewater System Statistics
Results Of Survey and Sampling Program

1. Township Developed Parcel Summary	
Total occupied parcels served by on-lot wastewater systems	2,565
2. Well Sampling Program Summary (1)	
Number of samples collected	557
Percentage of occupied parcels with on-lot systems sampled	21.7%
Samples with positive results for Total Coliform bacteria	196
Percentage of samples with positive Total Coliform bacteria results	35.2%
Samples with positive results for E. Coli bacteria	23
Percentage of samples with positive E. Coli results	4.1%
Number of samples with nitrate-nitrogen > 5mg/L	135
Percentage of samples with nitrate-nitrogen > 5mg/L	24.2%
Number of samples with nitrate-nitrogen > 10mg/L	28
Percentage of samples with nitrate-nitrogen > 10mg/L	5.0%

Notes:
(1) See Appendix D for compete well water sample results.

1.8.1 Nitrate-Nitrogen Pollution and Geological Features

As demonstrated on Table 1-2, 135 of the 557 wells tested as part of the well water sampling program contained nitrate-nitrogen levels greater than 5 mg/L but less than 10 mg/L, representing 24.2% of the total wells tested. Similarly, 28 of the 557 wells tested contained nitrate-nitrogen levels greater than 10 mg/L. Over 75% of the well tested as part of the well water sampling program contained nitrate-nitrogen levels less than 5mg/L, while 95% of the wells in the Township tested below the Environmental Protection Agency's (EPA) Maximum Contaminant Level (MCL) of 10 mg/L (ppm) nitrate-nitrogen. As shown on Plate 4, there is a relatively even distribution of wells containing nitrate-nitrogen levels greater than 5 mg/L in Fairview Township.

The transport of septic system effluent is a variable of the characteristics of the rock or sediment through which the liquid moves; specifically the porosity and permeability of that rock or sediment. Porosity is the measure of the quantity of void spaces present in a material, while permeability is the measure of how the bedrock transmits fluids. Geological formations with high porosity and permeability can result in septic system effluent rapidly reaching the groundwater table with little opportunity for renovation. In this manner, groundwater may become contaminated with highly soluble compounds, such as nitrates.

The residential drinking water wells with nitrate-nitrogen concentrations greater than 5 mg/L seem to correlate to areas underlain by Diabase and Gettysburg Formations. Diabase is characterized by igneous rocks, with low porosity and permeability, due to the fact that igneous rocks were formed under high pressure and temperature conditions. However, fractures or joints in these formations can lead to effluent rapidly reaching the groundwater table, causing nitrate-nitrogen pollution. The Gettysburg Formation is characterized by sedimentary rocks, such as mudstone and shale. The porosity and permeability of sedimentary rocks depends on the sizes and arrangement of the rock particles present.

It is difficult to evaluate the correlation between nitrate-nitrogen pollution and geological features without a more in depth analysis of the existing geological features. Based on the well water sampling analysis conducted as part of this Plan, and the geological mapping included in Appendix G, there does not appear to be a direct correlation between elevated nitrate-nitrogen levels in the groundwater and the identified geological features.

The quarter mile radius circles, shown on Plate 4, represent the extent of the elevated nitrate-nitrogen areas. New development proposing the use of on-lot wastewater systems within a quarter mile of a well with nitrate-nitrogen levels exceeding 5 mg/L must conduct a preliminary hydrogeologic evaluation to ensure that a conflict does not exist between the proposed and existing groundwater use. In a situation where a conflict exists, a detailed hydrogeologic evaluation is required under Title 25 Chapter 71.62.(c).(4) of the Pennsylvania Code. Alternatives to address nitrate-nitrogen dilution requirements in Pennsylvania include a larger property size, an approved

nitrogen reduction technology, or a plume dilution easement.

2.0 PLANNING HISTORY

2.1 Sewage Facility Planning

Fairview Township Supervisors formed an Authority in 1965 to finance and construct a sewage collection system to serve the northern portion of the Township. Several sewage facility planning activities for Fairview Township have occurred since 1965. The Comprehensive Sewerage Plan for York County was adopted in 1968. The County Plan saw a need for public sewers for the developed portion of Fairview Township. The Fairview Township Authority completed a Feasibility Study in 1970 to determine the needs and the most cost effective way to treat sewage flows from the southern portion of the Township, referred to in the Study as Sewer District No. 2. By 1975, the Northern York County Joint Sewer Authority was formed. The Joint Sewer Authority undertook planning to determine the needs, feasibility and best procedures to serve portions of the Townships of Fairview and Newberry, as well as the Boroughs of Lewisberry and Goldsboro. While still a member of the Joint Authority, Fairview Township considered sewage treatment needs for discrete areas of the Township on a parcel-by-parcel basis.

The Lower Allen Authority undertook sewage facilities planning under Section 201 of the Federal Clean Water Act in the 1970s to address the needs of Lower Allen Township, Upper Allen Township, and Shiremanstown Borough in Cumberland County. The Lower Allen Authority also addressed the northern portion of Fairview Township. This planning resulted in the construction of the Lower Allen Authority's treatment plant in Fairview Township along the Yellow Breeches Creek.

Fairview Township last updated its Act 537 Sewage Facilities Plan, on a township-wide basis, in 1987. Table 2-1 summarizes the major recommendations of the 1986 Plan and the current implementation status of the recommendations.

Table 2-1
Major Recommendations of the Fairview Township 1987 Act 537 Plan

Recommendation	Implementation Status
1. Consider an on-lot management system for the Township.	1. No further action taken
2. "Capped Sewer Ordinance" should be strictly enforced	2. Completed
3. Construct sanitary sewer extension south of Lewisberry Road and west of Interstate 83 to connect to the North WWTP	3. Completed
4. Construct sanitary sewer extension west of Interstate 83 and north of Lewisberry Road to connect to the Lower Allen WWTP	4. Completed
5. Construct sanitary sewer facilities along Interstate 83 and south of Shuey Road to connect to a new WWTP to serve southern Fairview Township (South WWTP)	5. Completed

In addition to the above planning, the Township has undertaken various engineering studies that resulted in expansion of sewer interceptors, wastewater treatment facilities, and pumping stations. The Township has completed all of the recommendations contained in its previous Act 537 Plan except implementation of an on-lot wastewater management program, which is evaluated further as part of this Plan.

Fairview Township's Official Sewage Facilities Plan is revised each time PADEP Sewage Facilities Planning Modules or Planning Module Exemptions are submitted and approved for on-lot sewage disposal systems or sanitary sewer extensions to serve new developments.

2.2 York County Comprehensive Plan

The York County Board of Commissioners adopted an update to the County Comprehensive Plan in December 2006. The Plan discusses the current treatment of sewage and the existing problems associated with treatment. The Plan offers recommendations on growth and land use within the County while recognizing land and infrastructure capabilities in relation to natural features

and environmental and physical factors. The Plan proposes that the majority of new development within the County be located in areas that have been designated as Primary Growth areas, or Secondary Growth areas, which are characterized by dense residential populations and urban settings that have existing services and infrastructure, such as public sewer and water. The Plan discourages the expansion of new infrastructure into existing agricultural areas. The intent of directing future development to existing infrastructure areas is to maximize the investment of the existing infrastructure systems, fill in the undeveloped areas within already developed land, and reduce the pressure to develop agricultural areas for other uses. Recommendations for municipalities within the County, related to land use or sewage facilities called out in the County Plan, included the following:

- Maintain an updated Act 537 Plan that supports farmland preservation and restricts the expansion of infrastructure into agricultural areas.
- Encourage development to occur in areas planned for sewer and water supply systems.
- Maintain adequate levels of municipal services and facilities, including sanitary sewer facilities, in designated growth areas and to provide sanitary sewer to future growth areas.
- Connect areas with malfunctioning on-lot systems to existing sanitary sewer systems where economically and physically possible.
- Restrict development on land having steep slopes, within floodplains and other limiting environmental factors to reduce the probability of water pollution from on-lot wastewater systems.

The Comprehensive Plan for the County of York includes a Future Land Use Plan. The future land use plan shows the central portion of Fairview Township around the Route 83 corridor as an Interim Primary Growth area, while the rest of the Township was designated as Interim Rural areas. Appendix G is an excerpt from the County's Future Land Use Plan map showing Fairview Township.

2.3 Fairview Township Comprehensive Plan

The Fairview Township Comprehensive Plan was adopted in 1993 as an update to the original 1968 Fairview Township Comprehensive Plan. This Plan was designed to serve as the basis for decisions that were made through 2003. In 2006, the Township initiated efforts for an updated Comprehensive Plan. The Fairview Township Comprehensive Plan was completed in the spring of 2010 and was adopted by Resolution at the June 28, 2010 Township Board of Supervisors Meeting.

The Comprehensive Plan addresses a variety of community issues such as land use, transportation, housing, natural and historic resources, and community facilities and services. The plan addresses current conditions and desired future conditions by identifying strategies to manage growth through techniques such as preservation and conservation, designation of future growth areas and rural resource areas and identification of non-residential uses to insure an adequate tax base and provisions for appropriate public facilities. The plan includes short-term and long-term implementation strategies for the next 20 years. The plan will provide the basis for development and update of a variety of ordinances including, but not limited to, the Township's Zoning Ordinances and Zoning Maps and Subdivision and Land Development Ordinance.

A build-out analysis was performed as part of the 2010 Comprehensive Plan to identify all unimproved parcels to be developed by 2030, based on current zoning standards, to determine the corresponding population. Three scenarios were analyzed as part of the build out, as described in the Plan:

Baseline Scenario: Maximum Build-Out Scenario

The build-out analysis quantifies land use and the costs and/or impacts associated with growth. This analysis describes a maximum build-out scenario (the maximum amount of residential and commercial uses permitted per acre). The term "Maximum Build-Out" will be used to throughout this analysis to describe this scenario.

Planning Scenario 1: Modified Build-Out Scenario with Residential Focus

Planning Scenario 1 uses the zoning information from the baseline scenario however only certain parcels were selected from unimproved lands within the Designated Growth Areas with an emphasis

on residential build-out based upon sewer service areas (See Section 6.0). The term "Planning Scenario 1" will be used to throughout this analysis to describe this scenario.

Planning Scenario 2: Modified Build-Out Scenario with Non-Residential Focus

Planning Scenario 2 modifies the baseline and Planning Scenario 1 even further by adding more lands for future nonresidential uses. Planning Scenario 2 uses the same unimproved lands within growth areas as used in Planning Scenario 1 but with some lands developing as if they were zoned commercial. This analysis considers both residential and non-residential development changes under these scenarios. The term "Planning Scenario 2" will be used to throughout this analysis to describe this scenario.

Major Comprehensive Plan recommendations that relate to existing and future sewage facilities and environmental concerns in Fairview Township included the following:

- Amend existing zoning and subdivision and land development ordinances;
- Encourage growth in the northern service area through development incentives, higher development densities, lower tap-in fees, assistance for tap-in fees, and/or land use flexibility.
- Plan for growth in designated growth areas. Sewer and water should be contained within these areas.
- Work with the Lower Allen Sewer Authority to establish additional sewer capacity needs within the designated growth areas.

2.4 Township Zoning Ordinance

Fairview Township recognizes the need for controlling the development patterns within its boundaries by establishing and enforcing appropriate zoning ordinances. The Township of Fairview has enacted an updated Zoning Ordinance to regulate the type and density of development within the Township. The updated zoning ordinance was adopted on December 14, 1998 as Ordinance 98-13. A copy of the current zoning map is included as a Plate 5 in the back of this Plan. The various zoning districts and permitted uses within each district are detailed in the Zoning Ordinance. The current Township zoning is a valuable tool in evaluating the wastewater facility needs of the planning area by regulating lot sizes and densities. These factors dictate the type of sewage treatment and disposal system that will serve the property or development, as summarized in Table 2-2.

Proposed construction activities within any identified flood-prone area are subject to the provisions of Chapter 8 of the Fairview Township General Code.

The Zoning Ordinance and map were also used to establish projected land uses and development densities for evaluating the future wastewater facilities needs of the Township.

Table 2-2
Fairview Township Zoning Ordinance
Minimum Lot Size Requirements Based On Sewage Disposal
For Single-Family Detached Dwellings

Zoning District	Minimum Lot Size (square feet)		
	Public Sewers (1)	On-Lot Disposal (1)	Public Sewer and Water
Residential Rural (RR)	30,000	43,560	20,000
Residential Single (RS)	13,000	20,000	12,000
Residential Multifamily (RM)	13,000	20,000	9,000
Residential Village (RV)			
Single Family Detached	Must have both sewer and water		7,500
Single Family Semi			2,000
Single Family Duplex			2,000
Single Family Attached			2,000
Commercial Neighborhood (CN)	Must have both sewer and water		20,000
Commercial Highway (CH)	Must have both sewer and water		20,000
Limited Industrial (LI)	Must have both sewer and water		20,000

Notes:
(1) For lots that do not have public water

2.5 Subdivision and Land Development Ordinance

The Township of Fairview has adopted a Subdivision and Land Development Ordinance to govern subdivision and land development activity within the Township. The Township Board of Supervisors adopted the existing Land Development Ordinance on October 9, 1997 as Ordinance 97-11. This ordinance was further amended on July 26, 2004 as Ordinance 2004-4. Provisions of the current ordinance related to sanitary sewage disposal include the following:

- If onsite sewage disposal systems are not feasible, connection to a public sanitary sewer system or the installation of a community sanitary system must be made prior to the development of any subdivision or land development.

- The appropriate Sewage Facilities Planning Module must accompany all development plans.

- Any building or development that is within 1,000 feet of existing or approved plans for a public sanitary sewer system, there must be provided a complete sanitary sewer system connected to the existing or proposed system.

- Where there is no existing public sanitary sewer system or plans for such, a community sewer system and treatment plant approved by the Pennsylvania Department of Environmental Protection must be installed.

- Where there is no existing public sanitary sewer system and a community sanitary sewer system and treatment plant is not feasible, onsite sewage disposal systems must be installed.

3.0 EXISTING SEWAGE FACILITIES

3.1 Public Sewage Facilities

Wastewater generated in Fairview Township that is discharged to the public sewer system is conveyed to and treated at one of five WWTPs; the Lower Allen WWTP, the North WWTP, the South WWTP, the Lewisberry WWTP, or the United States Army Depot WWTP. The extent of existing public sewer service within the Township and the service basin borders are shown on Plate 2. The Fairview Township Authority owns the North and South WWTPs and the Fairview wastewater collection and conveyance system. These facilities are operated and maintained by the Fairview Township wastewater staff.

Fairview Township has entered into Agreements with other municipal authorities to address the conveyance and treatment of wastewater generated in Fairview Township to the facilities owned by these municipal authorities. The details of these agreements are summarized in Appendix H.

Wastewater generated in the Township is currently treated at public treatment facilies or private wastewater systems as described below.

3.1.1 Lower Allen WWTP Service Area

The Lower Allen WWTP is located along Beacon Hill Boulevard in Fairview Township adjacent to the Yellow Breeches Creek. The plant is owned and operated by the Lower Allen Authority and provides wastewater service to portions of Fairview Township, Lower Allen Township, Upper Allen Township, Shiremanstown Borough, and Mechanicsburg Borough. All of these municipalities except for Fairview Township are located in Cumberland County. The plant provides treatment of sewage generated within the Green Lane Farms, Buttonwood Development and the Limekiln Road areas of Fairview Township. Fairview Township has an agreement with the Lower Allen Authority for the sewer service for these areas.

Fairview Township's collection and conveyance facilities within the Lower Allen WWTP service area include interceptor and sanitary sewer mains ranging in size from 8 to 10 inches in diameter, and two wastewater-pumping stations. Pump stations are located at Buttonwood

Estates and Limekiln Road. Generally, the Lower Allen WWTP Service Area in Fairview Township encompasses the northwest corner of the Township between the Yellow Breeches Creek and the Pennsylvania Turnpike. Figure 3.1 is a schematic of Fairview Township's Lower Allen WWTP basin showing the relationships between the pumping stations, interceptors, and WWTP. All of Fairview Township's conveyance facilities within the Lower Allen WWTP service area eventually connect to the Lower Allen interceptor which generally follows the Yellow Breeches Creek.

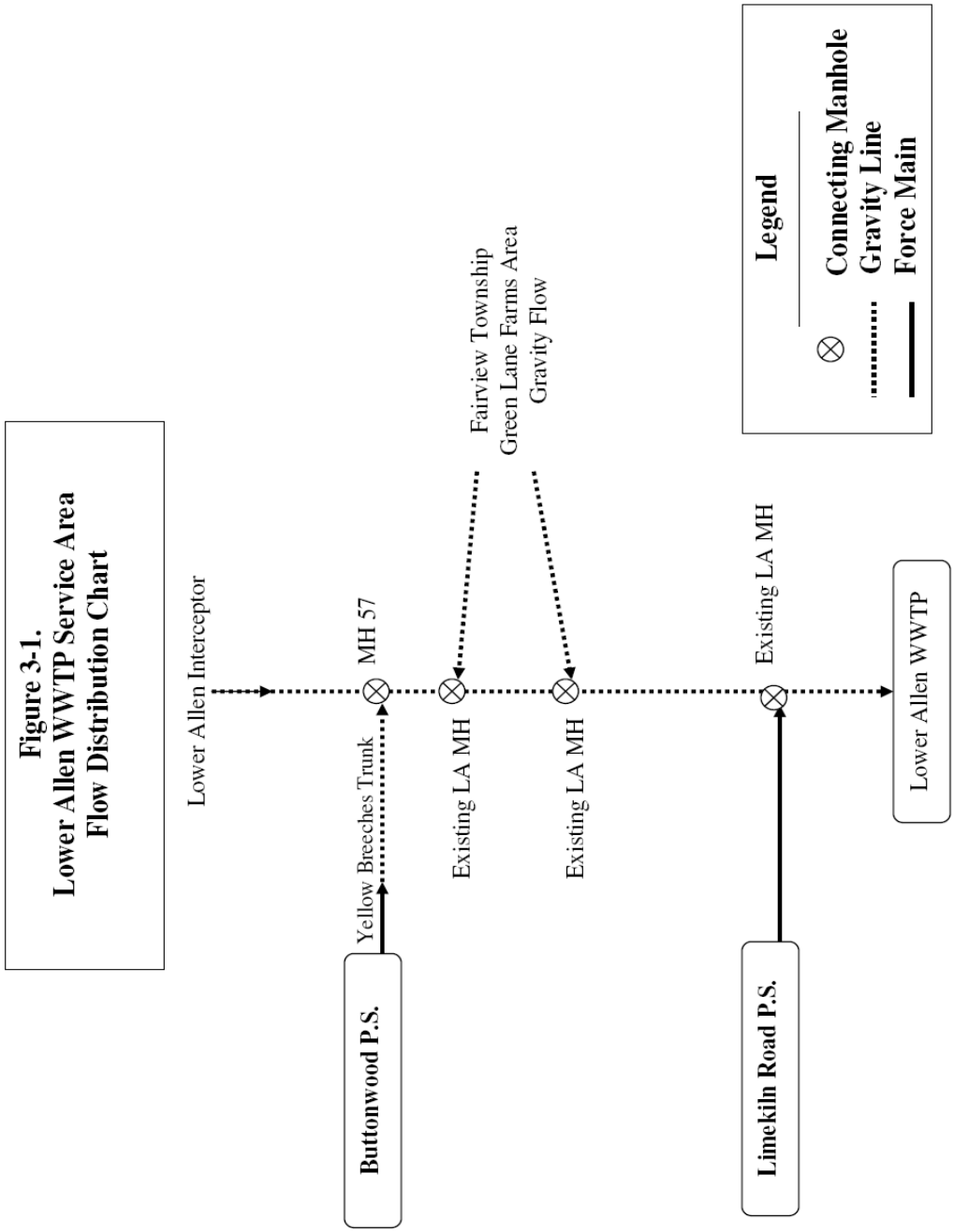


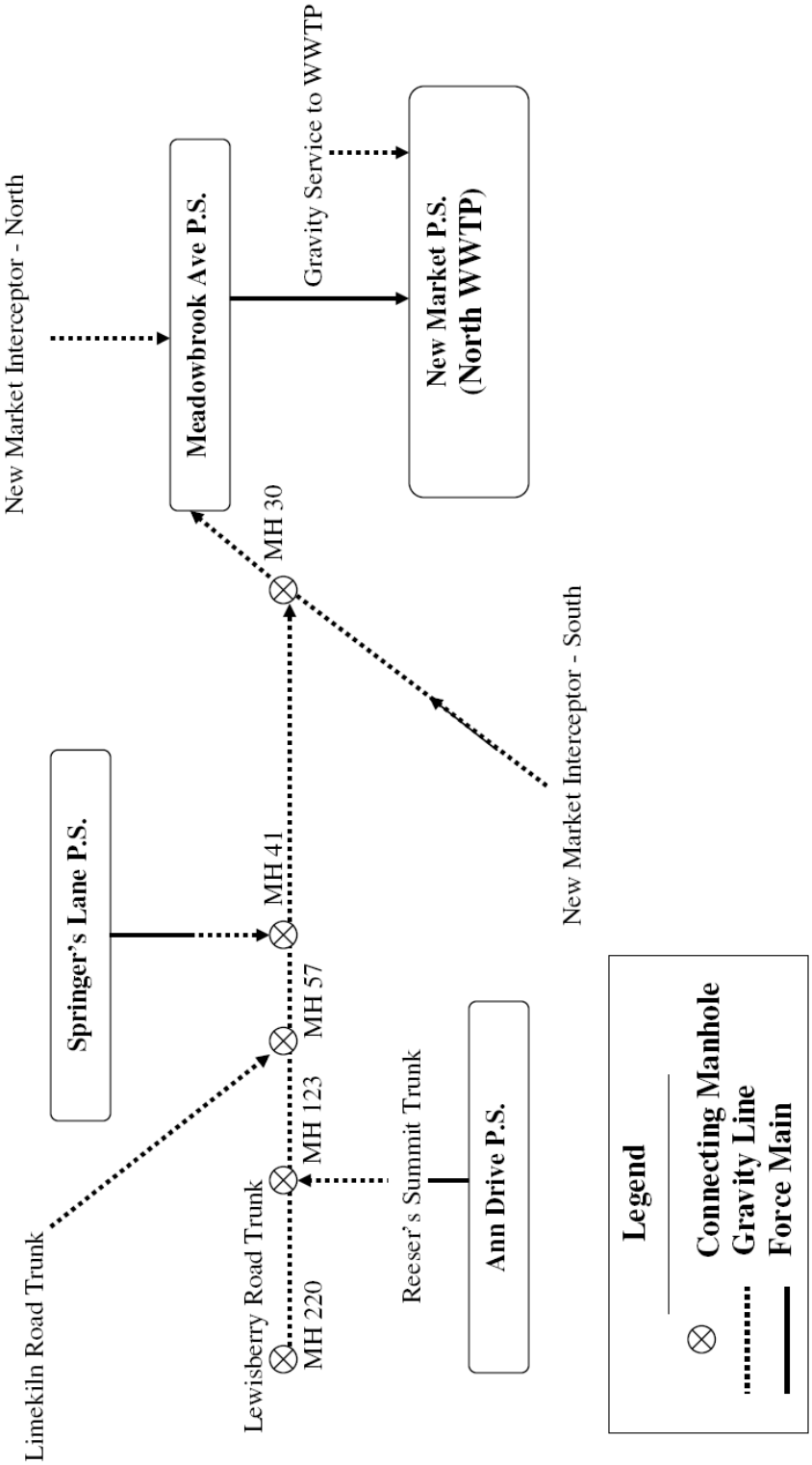
Figure 3-1.
Lower Allen WWTP Service Area
Flow Distribution Chart

3.1.2 North WWTP Service Area

The North WWTP is located in the north eastern end of Fairview Township at 57 Fairview Road near the Yellow Breeches Creek. The original plant was constructed in 1965 and was upgraded to its current configuration in 1992. The North WWTP is owned by Fairview Township Authority and operated by Fairview Township. All sewage treated at the plant is generated in Fairview Township.

The collection and conveyance facilities tributary to the North WWTP include interceptor and sanitary sewer mains ranging in size from 8 to 10 inches in diameter, and four (4) wastewater-pumping stations. Pump stations are located at Ann Drive, Springer's Lane, Meadowbrook Road and at the North WWTP. The North WWTP service area generally encompasses US Route 83 corridor in Fairview Township from the Pennsylvania Turnpike south to Ressers Summit and the area north of the Pennsylvania Turnpike to Yellow Breeches Creek east of the turnpike exchange. Figure 3.2 is a schematic of Fairview Township's North WWTP basin showing the relationship between the pumping stations, interceptors, and WWTP.

Figure 3-2.
North WWTP Service Area
Flow Distribution Chart



3.1.3 South WWTP Service Area

The South WWTP is located in the southern end of Fairview Township along Wyndamere Road, just north of the municipal border with Newberry Township. The Southern WWTP is owned by Fairview Township Authority and operated by Fairview Township. All of the sewage treated at the plant is generated in Fairview Township.

The collection and conveyance facilities include interceptor and sanitary sewer mains ranging in size from 8 to 16 inches in diameter, and six (6) wastewater-pumping stations. Pump stations are located at the developments of Beinhower, Corn Hill, Cee Jay, Fairmont, Deer Run Estates, and PRD Lakeside. The South WWTP service area generally encompasses the area surrounding Interstate 83 and south of State Route 262. Figure 3.3 is a schematic of Fairview Township's South WWTP basin showing the relationship between the pumping stations, interceptors, and WWTP.

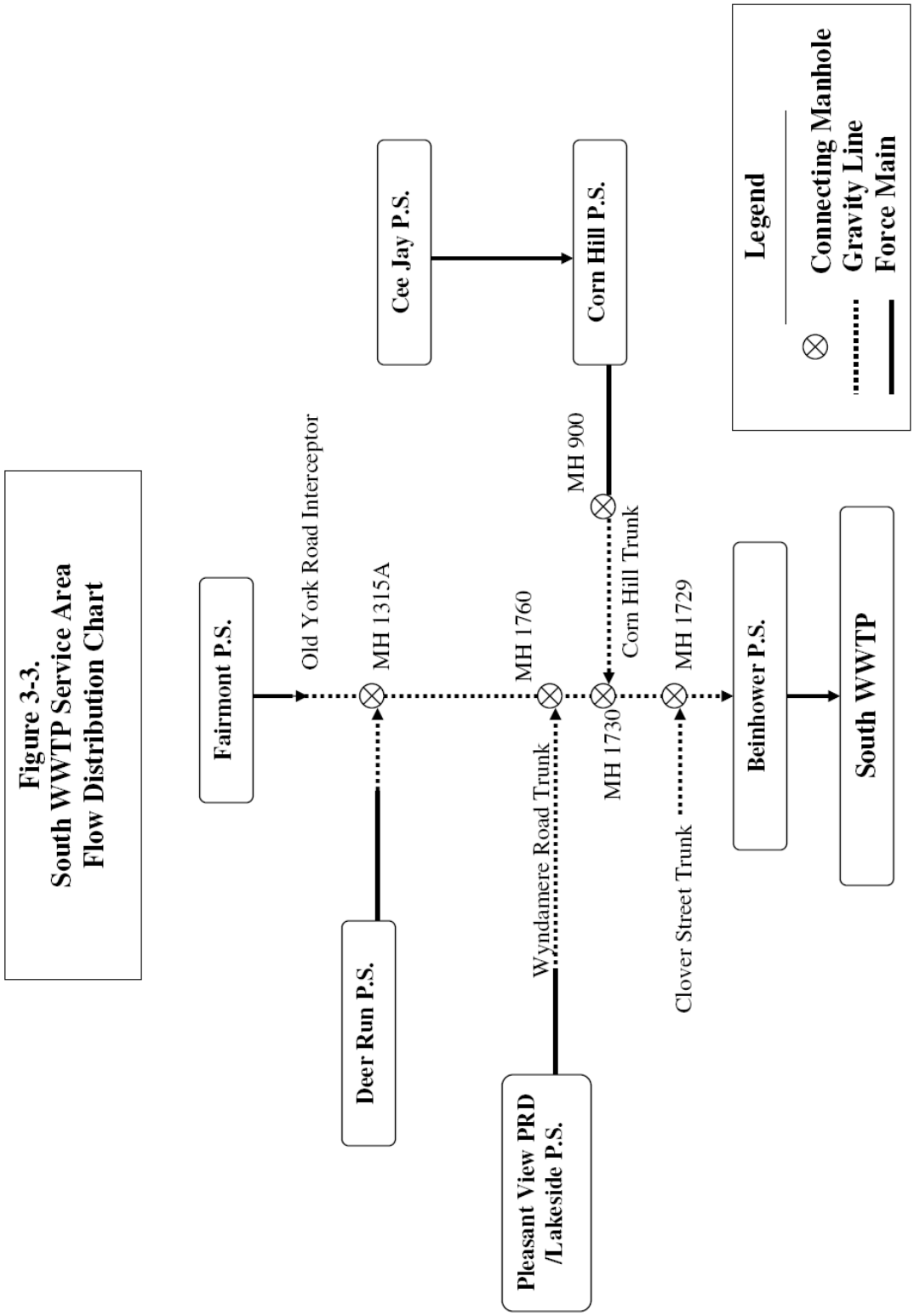


Figure 3-3.
South WWTP Service Area
Flow Distribution Chart

3.1.4 Lewisberry WWTP Service Area

The Lewisberry WWTP is located along the intersection of State Route 382 and State Route 177 in the Borough of Lewisberry. The plant is owned and operated by the Lewisberry Joint Authority and serves the Borough of Lewisberry and portions of adjacent Fairview and Newberry Townships. Fairview Township has an agreement with the Lewisberry Area Joint Authority for sewer service in the Lewisberry WWTP. Appendix H summarizes the key components of the Sewer Agreement. The Lewisberry WWTP Service Area in Fairview Township generally serves the developed areas in and around Silver Lake. The sanitary sewer system within the Fairview Township Lewisberry WWTP Service Area is owned and maintained by the Lewisberry Joint Authority. Portions of Fairview Township contributing wastewater flow to the Lewisberry WWTP are shown on Plate 2.

3.1.5 United States Army Depot WWTP Service Area

The Army Depot WWTP is located in the United States Department of Defense Distribution Depot Susquehanna, PA commonly known as the New Cumberland Army Depot. The Depot is located in the northeastern portion of Fairview Township. The plant is owned and operated by the United States Department of Defense and only provides service to the Army's Defense Distribution Depot. Fairview Township has no involvement with the Department of Defense regarding the facility. No sewage generated outside of the Defense Distribution Center is handled at the WWTP and there is no potential for sending sewage from other areas of Fairview Township to the facility in the future.

3.2 Contributing Municipalities

There are no contributing municipalities to the Fairview Township sewer system. All wastewater handled by the Fairview sewer system is generated in Fairview Township. No changes to this treatment strategy are expected during the planning period.

3.3 Pumping Stations

Fairview Township's sanitary sewer system includes twelve wastewater pumping stations. The location of each pumping station is shown on Plate No. 2. Each pump is equipped with a run-time meter. Township staff conducts draw-down tests at each pumping station to

determine pumping capacities. These pumping capacities are used in conjunction with pump run-time records to calculate pumping stating flows.

Table 3-1 presents available pumping station capacity and flow records for 2007. Based on a comparison of each station's actual capacity verses existing flows and operator observation, all of the facilities have sufficient capacity to handle the existing daily flows. Appendix I contains monthly flow records for each pumping station for the period from January 2002 to December 2007. All twelve of the public pumping stations located within Fairview Township appear to be in generally good condition. No proposed improvements to the facilities are expected by the Township over the next 5 years.

Table 3-1
Fairview Township
Wastewater Pumping Stations

Pumping Station Identification	Rated Pump Capacity gpm (1)	Rated Pump Capacity (mgd) (1)	2007 Conditions		
			Avg. Daily Flow (mgd) (2)	Max Daily Flow (mgd) (3)	Remaining Facility Capacity (4) (mgd)
SOUTH WWTP BASIN					
Deer Run Estates	120	0.173	0.021	0.023	0.150
Beinhower	700	1.008	0.325	0.413	0.595
Fairmont	120	0.173	0.038	0.047	0.126
Cornhill	230	0.331	0.058	0.070	0.261
Cee Jay	200	0.288	0.019	0.022	0.266
Pleasant View	375	0.540	0.016	0.023	0.517
NORTH WWTP BASIN					
Meadowbrook Avenue	200	0.288	0.118	0.164	0.124
New Market (North WWTP)	1,100	1.584	0.155	0.199	1.385
Springer's Lane	120	0.173	0.020	0.029	0.144
Ann Drive	120	0.173	0.010	0.012	0.161
LOWER ALLEN WWTP BASIN					
Buttonwood Estates	210	0.302	0.008	0.009	0.293
Limekiln Road	55	0.079	0.002	0.003	0.076

Notes:
1. Capacity with largest pump out of service.
2. Average daily flow is based on pump run time meter readings times draw down test results.
3. Average Daily Flow for the maximum flow month.
4. Remaining capacity equal to Rated Pump Capacity minus Max Daily Flow column.

3.4 Wastewater Interceptors

For the purpose of this Plan, wastewater interceptors are defined as sewer pipe, generally larger than 8 inches in diameter, which receive wastewater from collection sewers and convey the wastewater to a downstream interceptor, pumping station, or WWTP. Collection sewers are 8-inch-diameter gravity pipe that receive wastewater directly from user connections.

An analysis of the capacity of the existing Fairview Township interceptors to convey peak wastewater flows was undertaken as part of this Plan. There are currently no permanent

wastewater flow meters installed in any of the Fairview Township interceptors. Flow data collected from the permanent pumping station run time meters and from the permanent WWTP flow meters was used in the capacity analysis.

Appendix J presents an analysis of the capability of the existing Fairview Township interceptors to convey peak wastewater flows. Table 3-2 summarizes the results of this capacity analysis. Table 3-2 gives the available gravity flow capacity of each interceptor within the Fairview Township sanitary sewer by listing the downstream manhole number of the pipe section, by diameter, with the lowest available gravity flow capacity. Capacity calculations are based on available Township record drawing information and estimated 2007 flows. The estimated flows were calculated using the maximum monthly flow from the pump run time data and multiplying the value by 2.5 peaking factor to find the peak flow. The analysis shows that all of the interceptors have sufficient capacity to convey the existing peak flows.

Table 3-2
Fairview Township Sewer System
Interceptor Characteristics

Manhole No. (1)	Name of Interceptor	Pipe Diameter (inches)	Line (2) Design Capacity (mgd)	Existing Flow (3) (mgd)	Remaining Gravity Flow Capacity (4) (mgd)	Receiving Facility
North WWTP Basin						
112	Limekiln Road	10	0.7472	0.0047	0.7425	Lewisberry Road, MH 57
58	Lewisberry Road	10	1.1793	0.1635	1.0158	New Market South, MH 30
123	Reeser's Summit	10	1.4856	0.0849	1.4007	Lewisberry Road, MH 123
27	New Market South	10	0.9744	0.3037	0.6707	Meadowbrook Ave P.S.
7	New Market North	10	0.9698	0.0454	0.9244	Meadowbrook Ave P.S.
South WWTP Basin						
1772	Wyndamere Road	12	1.4721	0.0681	1.4040	Old York Road, MH 1760
2108	Clover Street	10	0.9204	0.0437	0.8767	Old York Road, MH 1729
1736	Corn Hill	10	0.8576	0.0742	0.7834	Old York Road, MH 1730
1315	Old York Road	10	0.9631	0.1781	0.7850	Beinhower P.S.
1282	Old York Road	12	1.3299	0.2189	1.1110	Beinhower P.S.
1759	Old York Road	16	2.6222	0.3877	2.2345	Beinhower P.S.
1730	Old York Road	15	2.5067	0.4075	2.0992	Beinhower P.S.
1729	Old York Road	18	3.0894	0.4910	2.5984	Beinhower P.S.
P.S.	Old York Road	21	3.8444	0.5347	3.3097	Beinhower P.S.
Lower Allen WWTP Basin						
31	Yellow Breeches	10	0.6153	0.0642	0.5511	Lower Allen MH 57
87	Tall Tree Drive	10	2.0375	0.0932	1.9443	Existing Lower Allen MH

Notes:

(1) Downstream manhole of pipe limiting segment for listed pipe diameter.

(2) Gravity flow capacity of limiting pipe segment based on Manning's Equation and available pipe information from Township's record drawings.

(3) Estimated Flow based on upstream pump station run time data maximum month flow plus gravity EDUs to tributary line (established based on parcel counts) @ 233 gpd/EDU(from Chapter 94 Reports) times the Number of tributary EDUs x 2.5 peaking factor.

(4) Remaining line capacity equal to line design capacity column minus existing flow column (see Appendix J for complete listing of each interceptor pipe segments.)

3.5 North WWTP

The North WWTP is located along the Yellow Breeches Creek at 57 Fairview Road in the northern portion of the Township. Plate No. 2 shows the general location of the plant site. Figure 3.4 shows the North WWTP's approximate service area border and outfall location. The original WWTP was constructed in 1965 and was upgraded to its current configuration in 1992. The North WWTP is presently permitted (NPDES Permit No. PA 0081868) to provide secondary treatment at the annual average hydraulic and organic loading capacities of 0.726 mgd and 967 lbs BOD/day, respectively and maximum month hydraulic and organic loading capacities of

1.206 mgd and 2,093 lbs BOD/day, respectively. Unit processes provided to achieve the required pollutant removals include preliminary screening, extended aeration activated sludge and disinfection by chlorination. Figure 3-5 presents a process flow diagram of the North WWTP.

Operation and routine maintenance activities at the WWTP and pumping stations are performed in-house by operations personnel. Laboratory analyses required for NPDES Permit monitoring purposes, as well as those required for process control, are also performed in-house by the laboratory staff. The results of those analyses performed in conjunction with the requirements of the NPDES Permit for the facility are forwarded on a regular basis to the appropriate state and federal agencies.

Waste sludge generated in conjunction with the wet-end treatment processes are transported in liquid form to the South WWTP. The sludge is blended in an aerobic digester/storage tank at the South WWTP. The sludge is dewatered using belt filter presses, and placed directly into a roll-off type dumpster. The dewatered sludge cake is transported by a contract hauler to the Cumberland County Landfill.

WWTP effluent is discharged through Outfall No. 001 to the Susquehanna River. Outfall No. 001 is a shared discharge line, with both the Lower Allen WWTP and the North WWTP using the line. Effluent flow metering and effluent sampling, however, occur at the North WWTP site prior to commingling with Lower Allen WWTP effluent.

The service area of the North WWTP previously included a Sanitary Sewer Overflow (SSO). The SSO was a pipe connecting a sanitary sewer manhole with an adjacent storm sewer. The pipe was approximately 3 feet above the invert of the sanitary sewer manhole. The SSO was permanently sealed on September 23, 2002. Additionally, there is no storm water outfalls located at the WWTP site.

Table 3-3 presents the current NPDES discharge limits and the average annual discharge characteristics from the WWTP for 2007. The facility was in compliance with its discharge permit during 2007.

Table 3-3
North WWTP
NPDES Discharge Limits and Effluent Characteristics

Parameter	Discharge Limits (1)	2007 Average Annual Discharge Characteristics (2)
Flow, mgd	0.726	0.370
CBOD, mg/L	25	1.61
CBOD, lbs/day	151	4.97
Suspended Solids, mg/L	30	2.35
Suspended Solids, lbs/day	182	7.25
Ammonia-Nitrogen, mg/L (3)	-	0.23
Ammonia-Nitrogen, lbs/day (3)	-	0.70
Chlorine Residual, mg/L	0.5	0.43
Fecal Coliform, #/100 ml (4)	200/2,000	9/28
pH, (S.U.)	6.0 – 9.0	7.3
Dissolved Oxygen, mg/L	5.0 min	8.7

Notes:
(1) NPDES Permit Discharge Limits, average monthly values.
(2) Average monthly discharge values for 2007.
(3) Summer = 5/1 to 10/31, Winter = 11/1 to 4/30
(4) Summer = 5/1 to 9/30, Winter = 10/1 to 4/30

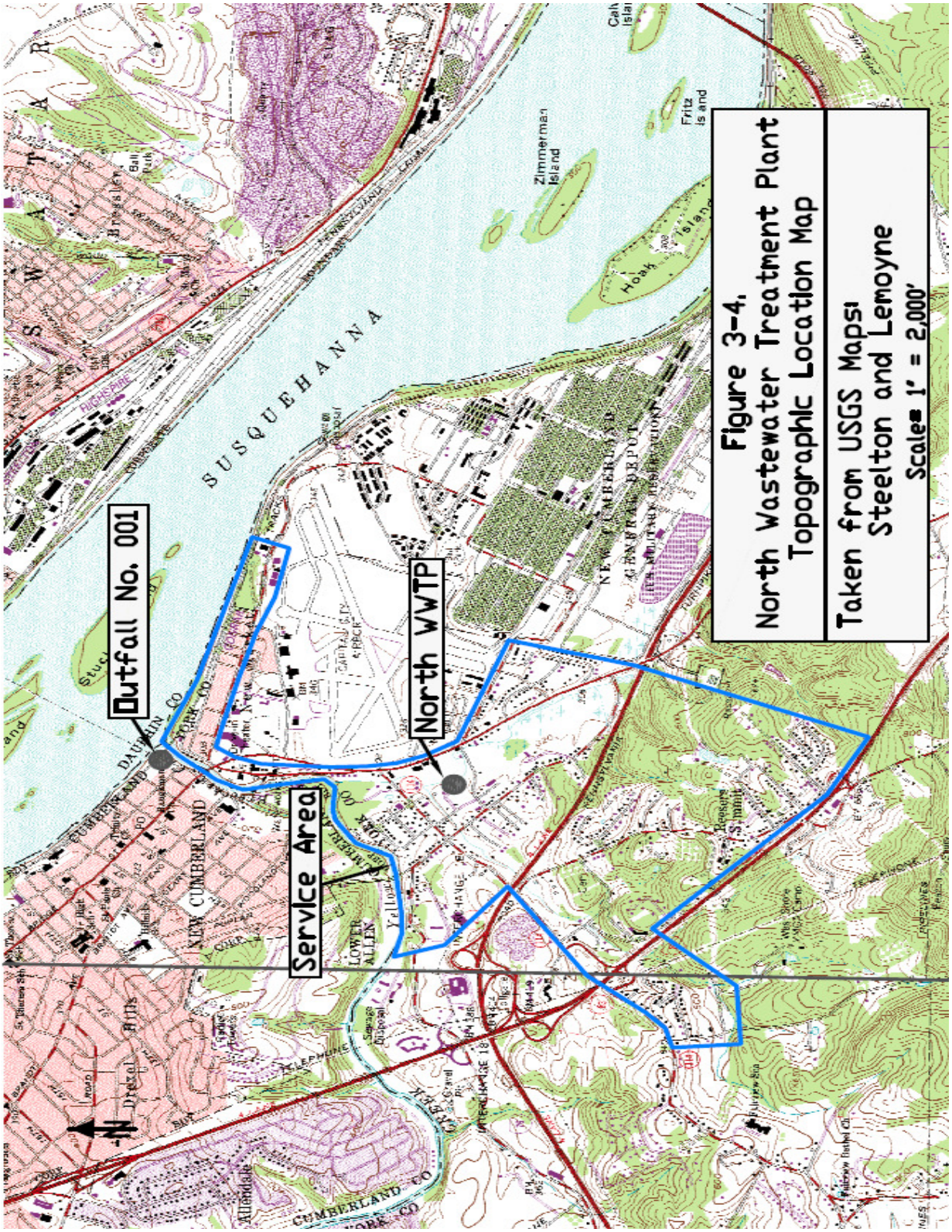

Outfall No. 001
North WWTP
Service Area
SUSQUEHANNA
Zimmerman Island
Fritz Island
Hook Island
NEW CUMBERLAND
LOWER ALLEN
CUMBERLAND CO
YORK CO
DAUPHIN CO
Figure 3-4.
North Wastewater Treatment Plant
Topographic Location Map
Taken from USGS Maps:
Steelton and Lemoyne
Scale: 1" = 2,000'

Figure 3-5
North WWTP Process Flow Diagram

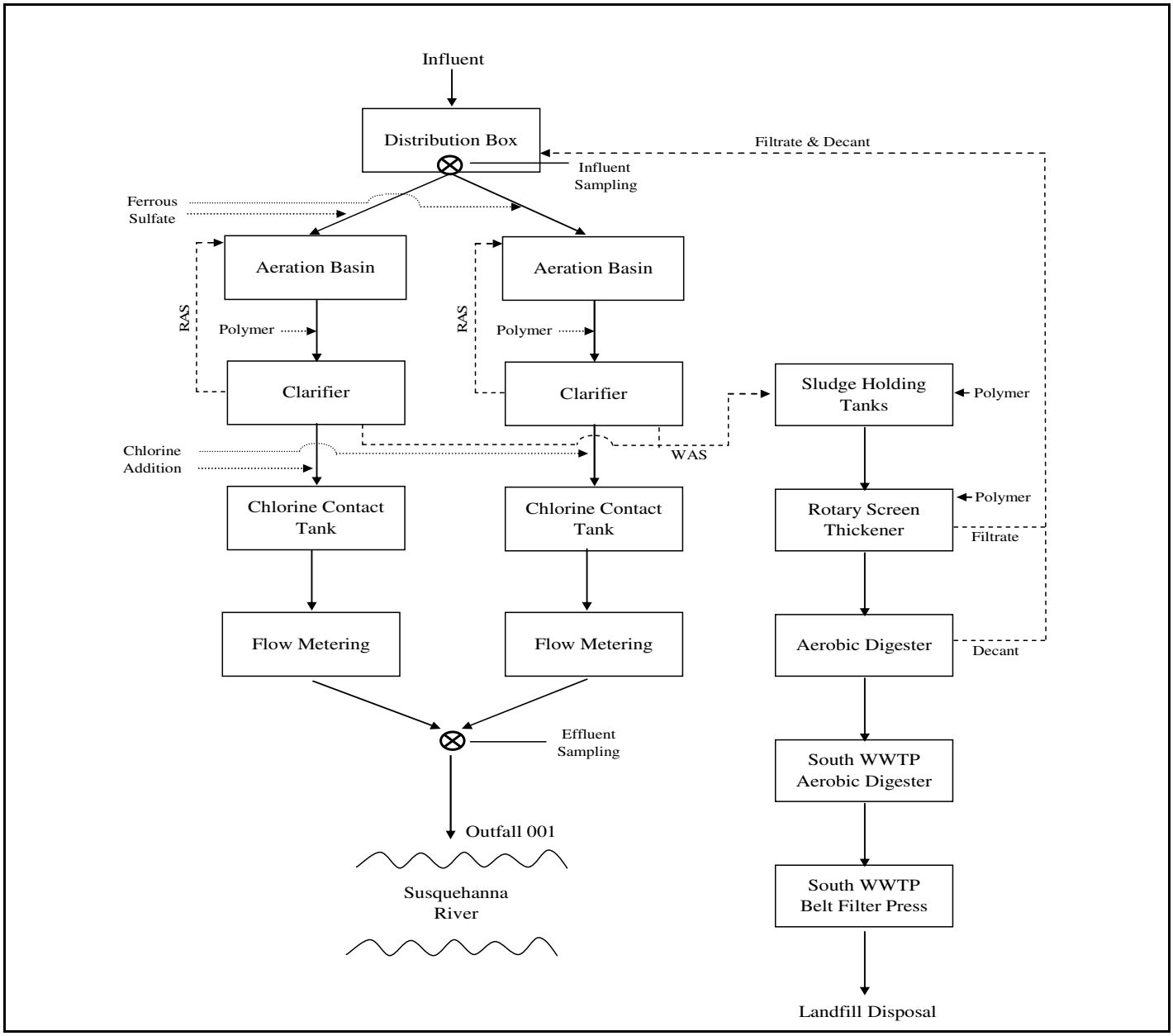


Table 3-4 presents a summary of influent hydraulic and organic loadings to the North WWTP for 2007 and compares those loadings to the facility's permitted capacity. Figure 3-6 graphically presents the hydraulic and organic loadings to the North WWTP for the last 5 years, as taken from the 2007 Wasteload Management Report. Hydraulic loads on both an annual average basis and a maximum consecutive 3-month basis were below the facility's permitted capacity during 2007. The annual average organic loadings of 319 lbs/day and the maximum

month organic loading of 518 lbs/day both were below the facility's permitted capacity of 2,093 lbs/day during 2007. No overloads are projected at the facility for at least the next 5 years as stated in the 2007 Wasteload Management Report.

The average hydraulic loadings to the plant have been holding steady over the last 3 years. During 2005, the plant experienced a decrease in flow but an increase in organic loading as illustrated in the graphs provided in Figures 3-6A and 3-6B. The cause of this organic loading increase is unknown. The average organic loading has decreased over the past 2 years.

The North WWTP's NPDES Permit was scheduled to expire on September 1, 2005. The Authority submitted a renewal application to PADEP on February 24, 2005 which was determined to be administratively complete. PADEP issued a draft NPDES Permit on September 8, 2007. The Authority provided comments on the draft NPDES Permit to PADEP on October 3, 2007. PADEP issued a final NPDES Permit on January 25, 2008. The final NPDES Permit includes new requirements for removing nitrogen and phosphorus by October 2010. The existing facility is not able to achieve the new limits. Options to achieve compliance with the pending nitrogen and phosphorus limits will be evaluated in the remainder of this study.

Table 3-4
North Wastewater Treatment Plant
2007 Hydraulic and Organic Loading Data

	Hydraulic Loading (2) (mgd)	Organic Loading (2) (lbs/day)
Permitted Capacity	**1.206**	**2,093**
January	0.426	518
February	0.396	506
March	0.487	301
April	0.398	342
May	0.299	186
June	0.284	217
July	0.286	206
August	0.327	218
September	0.303	252
October	0.369	295
November	0.436	405
December	0.428	379
Annual Average	**0.370**	**319**
Maximum (1)	**0.436**	**518**

Notes:
(1) The maximum flow is the Maximum Consecutive 3-Month Average (for January through March 2007)
(2) Values listed for January through December are monthly average values.

Figure 3.6A
North WWTP
Historical Hydraulic Loading

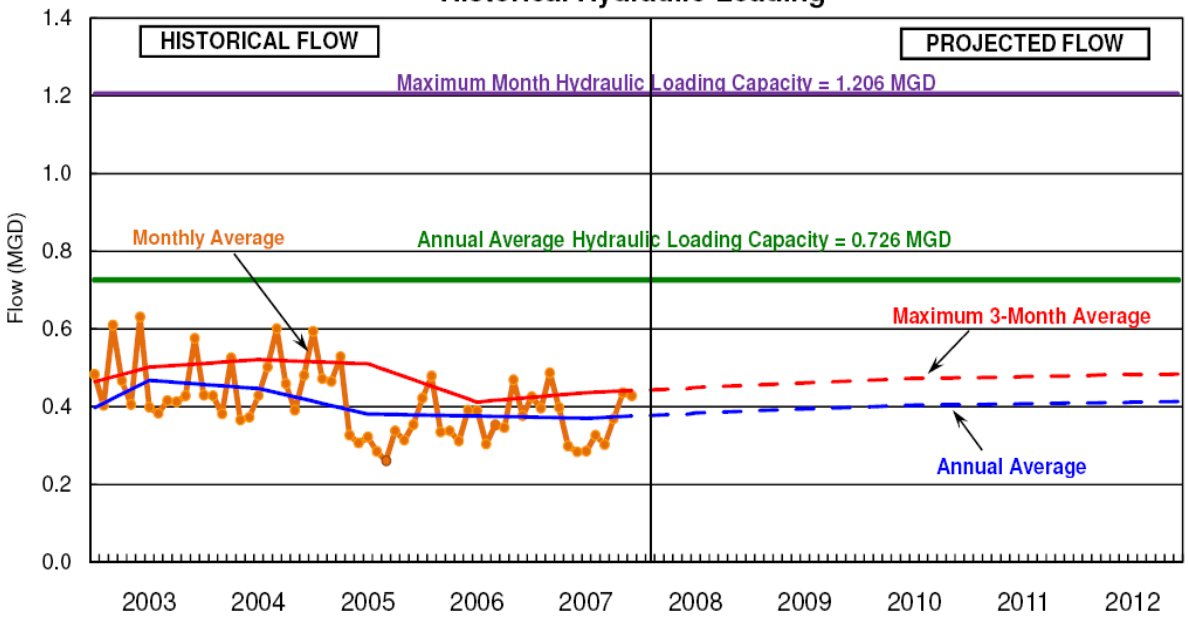
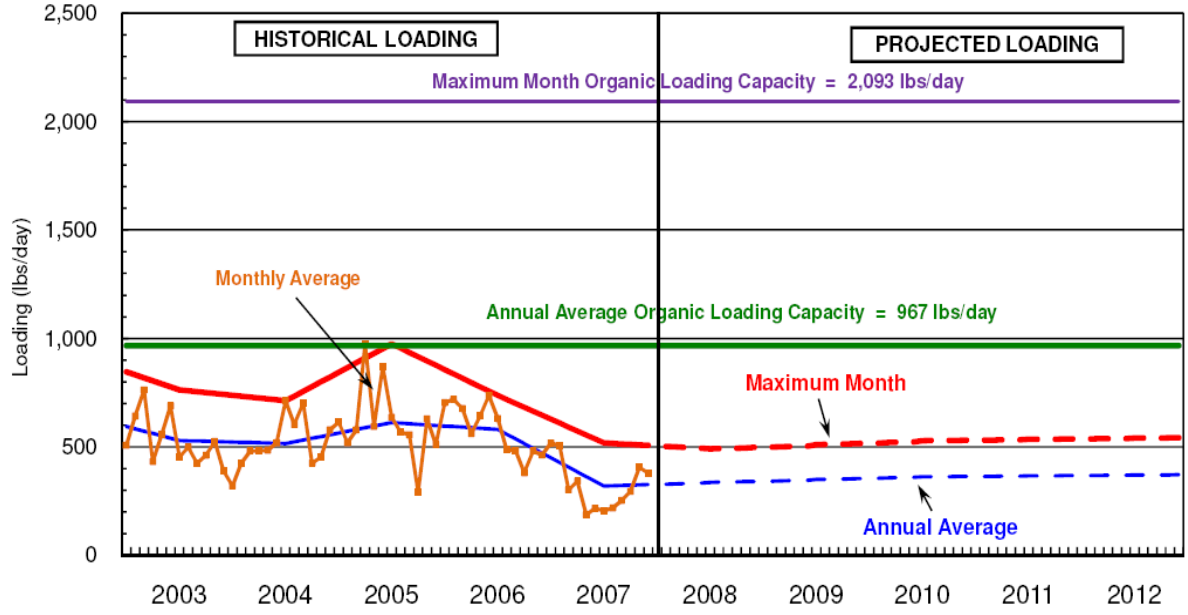


Figure 3.6B
North WWTP
Historical Organic Loading



3.6 South WWTP

The South WWTP is located along Wyndamere Road in the southern portion of the Township. Plate No. 2 shows the general location of the plant site. The South WWTP is presently permitted (NPDES Permit No. 0082589) to provide secondary treatment at the annual average hydraulic and organic loading capacities of 0.50 mgd and 917 lbs BOD/day, respectively. Unit processes provided to achieve the required pollutant removals include preliminary screening, activated sludge with Sequencing Batch Reactors (SBRs), and disinfection by chlorination. Treated effluent is discharged to an unnamed tributary of Fishing Creek adjacent to the plant site.

The WWTP is rated for a maximum month flow of 0.94 mgd, a peak hourly flow of 1.25 mgd, a maximum month organic loading of 1,280 lbs/day, and a maximum day organic loading of 1,912 lbs/day, as approved by PADEP. Figure 3-8 presents a process flow diagram of the South WWTP.

Operation and routine maintenance activities at the WWTP and pumping stations are performed in-house by Township operations personnel. Laboratory analyses required for NPDES Permit monitoring purposes, as well as those required for process control, are also performed in-house by the laboratory staff. The results of those analyses performed in conjunction with the requirements of the NPDES Permit for the facility are forwarded on a regular basis to the appropriate state and federal agencies.

Waste sludges generated in conjunction with the wet-end treatment processes and waste sludge hauled to the facility from the North WWTP are blended in an aerobic digester/storage tank. The sludge is dewatered using belt filter presses, and placed directly into a roll-off type dumpster. The dewatered sludge cake is transported by a contract hauler to the Cumberland County Landfill. Table 3-5 presents the current NPDES discharge limits and the average annual discharge characteristics from the WWTP for 2007.

Table 3-5
South WWTP
NPDES Discharge Limits and Effluent Characteristics

Parameter	Discharge Limits (1)	2007 Average Annual Discharge Characteristics (2)
Flow, mgd	0.940	0.375
CBOD, mg/L	25	3.75
CBOD, lbs/day	196	11.73
Suspended Solids, mg/L	30	5.4
Suspended Solids, lbs/day	235	16.9
Ammonia-Nitrogen, mg/L (3)	1.5/4.5	2.3/3.7
Ammonia-Nitrogen, lbs/day (3)	11.5/35	7.2/11.6
Total Phosphorus, mg/L	2.0	0.50
Total Phosphorus, lbs/day	15.5	1.6
Chlorine Residual, mg/L	0.19	0.12
Fecal Coliform, #/100 ml (4)	200/2,000	82/146
pH, (S.U.)	6.0 – 9.0	7.24
Dissolved Oxygen, mg/L	5.0 min	7.47

Notes:
(1) NPDES Permit Discharge Limits, average monthly values.
(2) Average monthly discharge values for 2007.
(3) Summer = 5/1 to 10/31, Winter = 11/1 to 4/30
(4) Summer = 5/1 to 9/30, Winter = 10/1 to 4/30

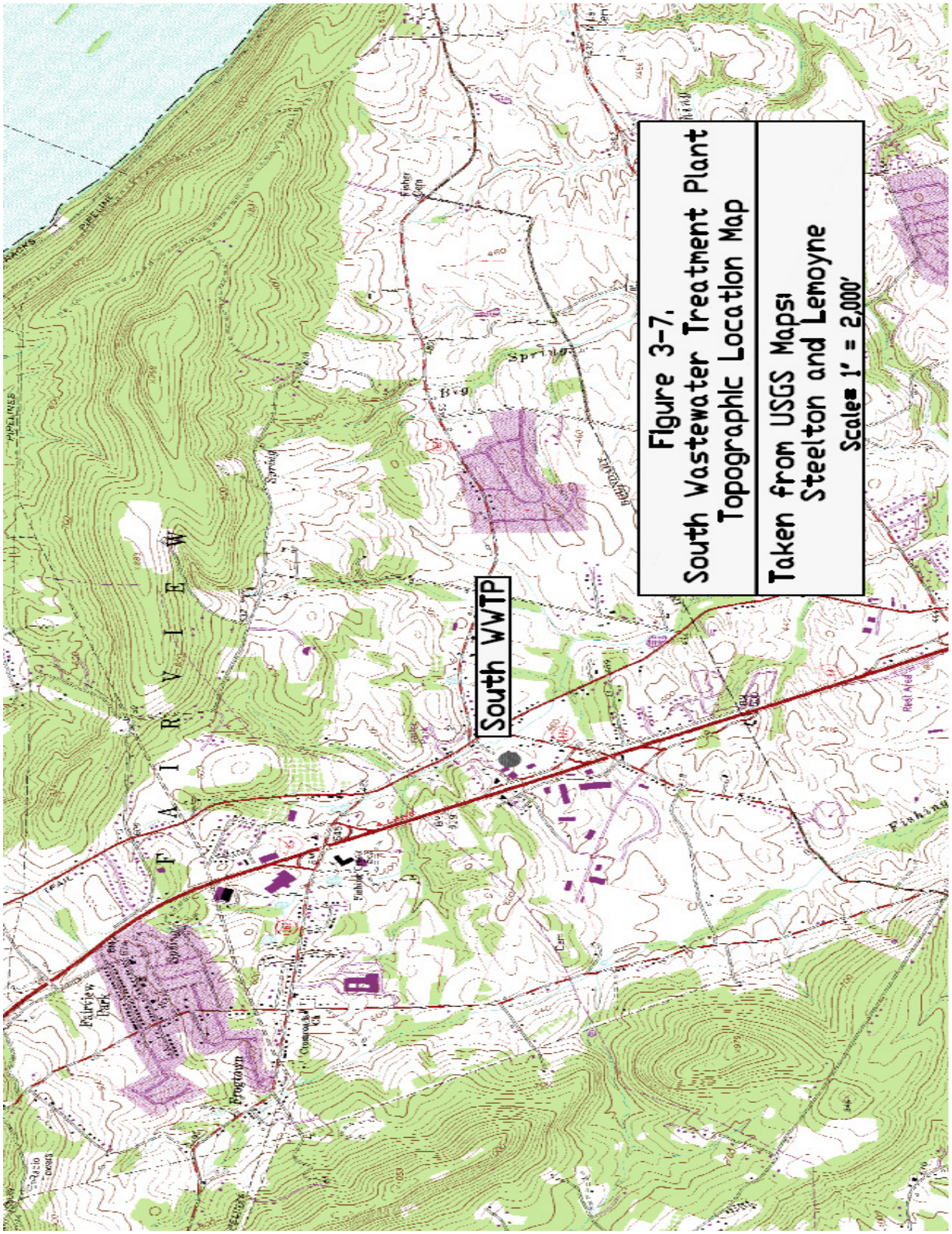
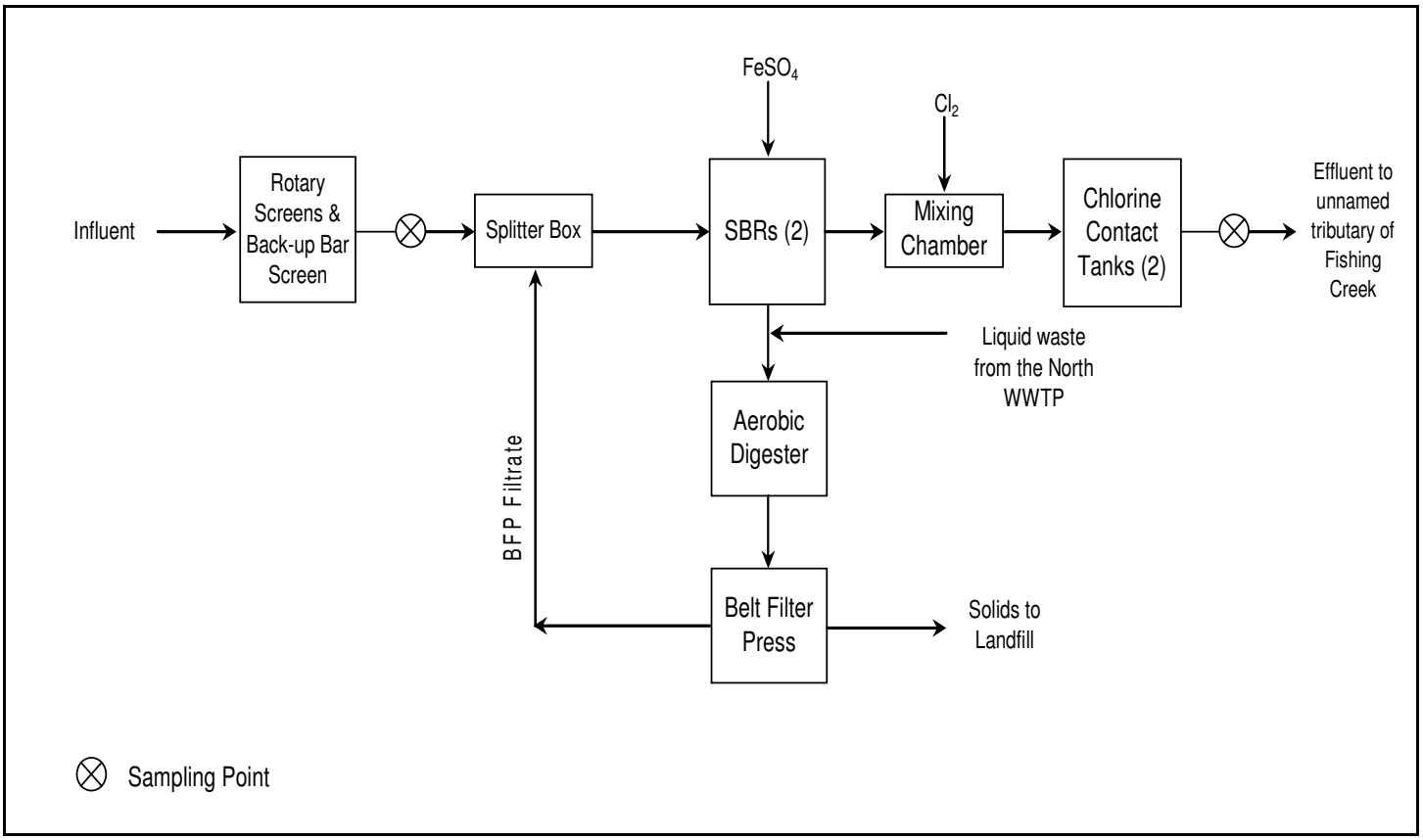


Figure 3-7.
South Wastewater Treatment Plant
Topographic Location Map

Taken from USGS Maps:
Steelton and Lemoyne
Scale= 1" = 2,000'

Figure 3-8
South WWTP Process Flow Diagram



Township staff reported that the WWTP has met all of its NPDES discharge limits since receipt of the last NPDES Permit Amendment.

Table 3-6 presents a summary of influent hydraulic and organic loadings to the Fairview Township South WWTP for 2007 and compares those loadings to the facility's permitted capacity. Figures 3-9A and 3-9B graphically presents the hydraulic and organic loadings to the South WWTP for the last 5 years, as taken from the 2007 Wasteload Management Report. Hydraulic loads on both an annual average basis and a maximum consecutive 3-month basis were below the facility's permitted capacity during 2007. The annual average organic loadings of 652 lbs/day and the maximum month organic loading of 859 lbs/day both were below the facility's permitted capacity of 1,280 lbs/day during 2007.

The average hydraulic loadings to the plant have been steadily increasing over the last 5 years, whereas the average organic loadings to the plant decreased then increased such that the 2007 loadings were similar to the 2002 loadings as shown on the graphs provided in Figure 3-9. The reason for the slight decrease in organic loading until 2005 is not known.

The South WWTP's NPDES Permit was scheduled to expire on December 31, 2007. The Authority submitted a renewal application to PADEP on June 28, 2007 which was determined to be administratively complete. PADEP has not yet issued a NPDES Permit renewal. The WWTP continues to operate under its existing permit until a new permit is issued. It is expected the new permit will include new cap load amounts for nitrogen and phosphorus. Options to meet the new limits are evaluated in the remainder of this report. No overloads are projected at the facility for at least the next 5 years as stated in the 2007 Wasteload Management Report.

Table 3-6
South Wastewater Treatment Plant
2007 Hydraulic and Organic Loading Data

	Hydraulic Loading (2) (mgd)	**Organic Loading (2) (lbs/day)**
Permitted Capacity		
January	0.398	802
February	0.381	686
March	0.475	859
April	0.405	NA(3)
May	0.358	460
June	0.353	608
July	0.328	473
August	0.368	516
September	0.354	649
October	0.368	828
November	0.331	614
December	0.386	790
Annual Average	**0.375**	**652**
Maximum (1)	**0.420**	**859**

Notes:
(1) The maximum flow is the Maximum Consecutive 3-Month Average (for February through April 2007)
(2) Values listed for January through December are monthly average values.
(3) No data available for the month of April.

Figure 3-9 A
South WWTP
Historical Hydraulic Loading

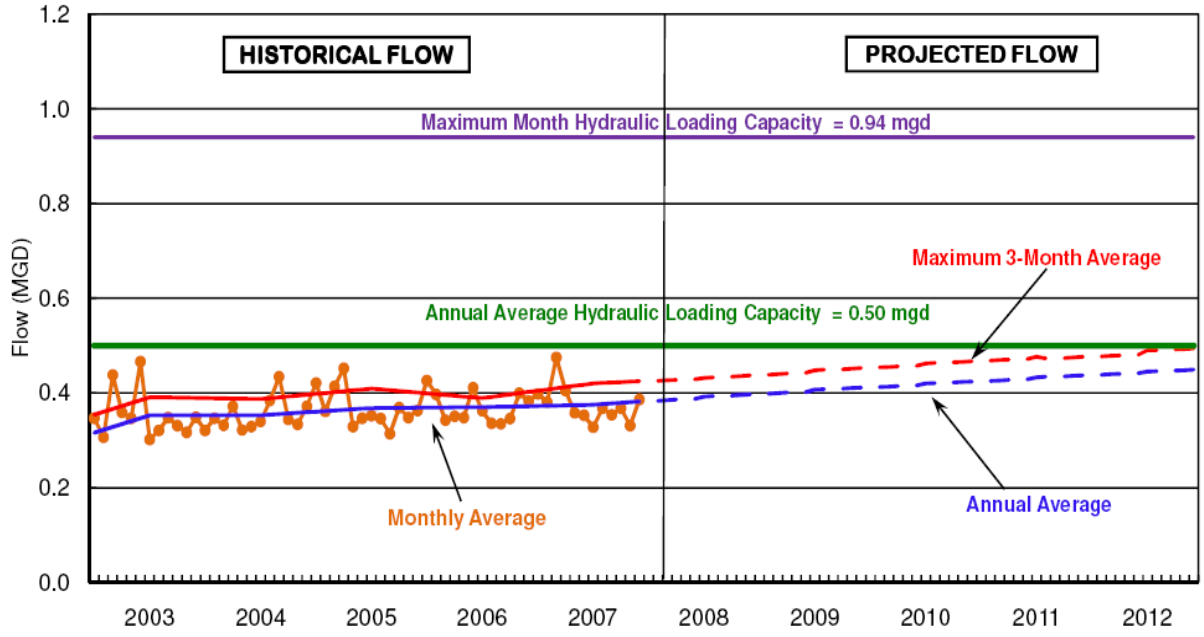
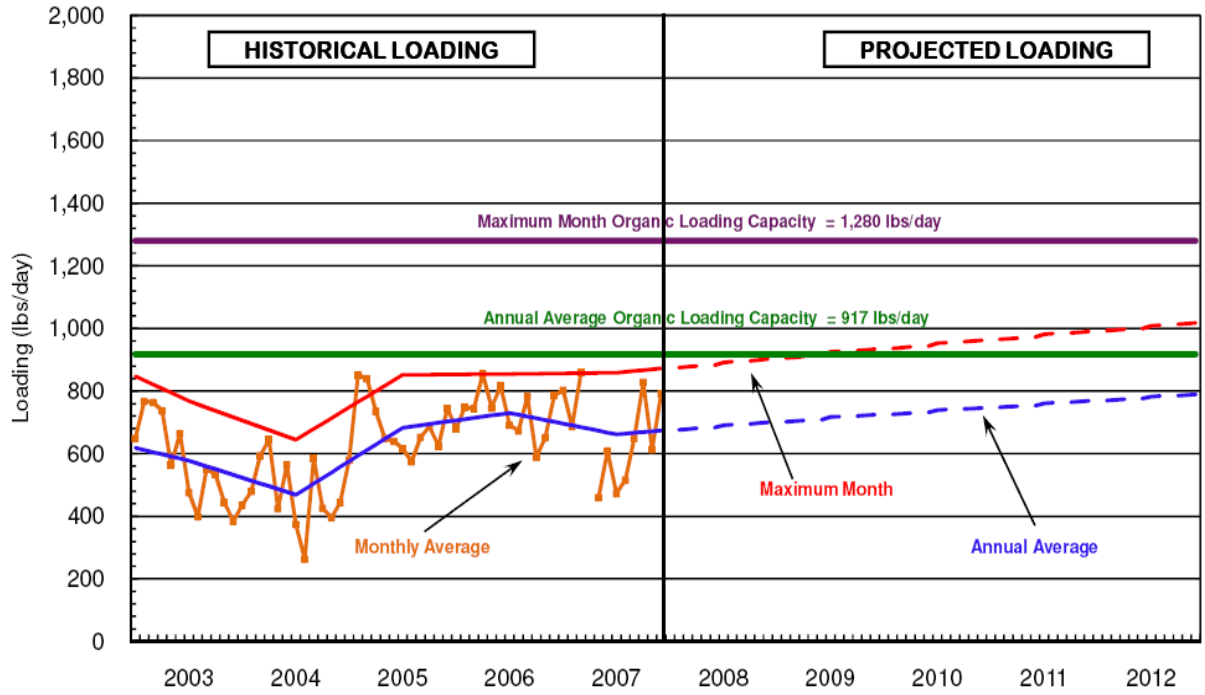


Figure 3-9 B
South WWTP
Historical Organic Loading



In 2003, the Township expressed concern that additional capacity would be necessary in the future to accommodate township growth. Accordingly, a rerate evaluation was performed to determine whether additional capacity could be obtained with minor improvements. The 2003 rerate evaluation is included in Appendix K. Included in the evaluation were analyses of current operations data, identification of the Annual Average Daily Flow (AADF) limit, identification of revised Biochemical Oxygen Demand (BOD_5) and Ammonia-Nitrogen (NH_3-N) loading capacities, analysis of oxygen demand and identification of required improvements.

The peak flow capacity of a SBR plant, like the South Plant, is defined by the tank volume between the high water level and low water level. From the analysis of the existing SBR treatment units, it was determined that by raising the water level one foot, the total volume of the tank would be increased to approximately 149,300 gallons, an 18% increase over the existing tank volume of 126,700. The new tank volume would be capable of accommodating a peak sustained daily flow (PSDF) of 1.49 mgd. Using this new peak daily flow in association with historical flow ratios, the new maximum month average daily flow (MMADF) could be increased to 1.12 mgd and the AADF to 0.596 mgd. This revised average annual daily flow represents a 19% increase over the current average daily flow limit of 0.500 mgd. Table 3-7 includes a summary of the findings from the 2003 rerate evaluation.

Table 3-7
Summary of 2003 Rerate Evaluation (1)

Parameter	**June 2000 Rerate Capacity**	**2003 Rerate Capacity**	Units
Annual Average Daily Flow (AADF)	0.500	0.596	MGD
Maximum Month Average Daily Flow (MMADF)	0.94	1.12	MGD
Peak Sustained Daily Flow (PSDF)	1.25	1.49	MGD
Biochemical Oxygen Demand (BOD_5)			
Annual Average	917	934	lb/day
Maximum Month	1,687	1,756	lb/day
Maximum Day	1,912	2,336	lb/day
Total Kjeldahl Nitrogen (TKN)			
Annual Average	167	159	lb/day

Notes:
(1) See Appendix K for 2003 Rerate Evaluation.

Based on the information in the 2003 Rerate Evaluation, it appears that the proposed rerate hydraulic and organic capacities would adequately serve a portion of the Fairview Township's South WWTP needs, as discussed further in Section 5.2

3.7 Lower Allen WWTP

The Lower Allen WWTP is located on the Fairview Township side of the Yellow Breeches Creek just east of Route 83. Plate No. 2 shows the general location of the plant site. The Lower Allen WWTP (NPDES 0027189) was constructed in 1974 and has a permitted annual average flow capacity of 6.25 mgd. The facility is owned and operated by the Lower Allen Authority. Effluent from the plant is discharged into an outfall sewer that transports the treated water to the Susquehanna River. Figure 3-10 gives the general location of the Lower Allen WWTP and its outfall, listed as 001 on the figure. Besides serving portions of Fairview Township and Lower Allen Township, the Lower Allen WWTP also services portions of Upper Allen Township and Hampden Township, and all of Shiremanstown Borough located in Cumberland County.

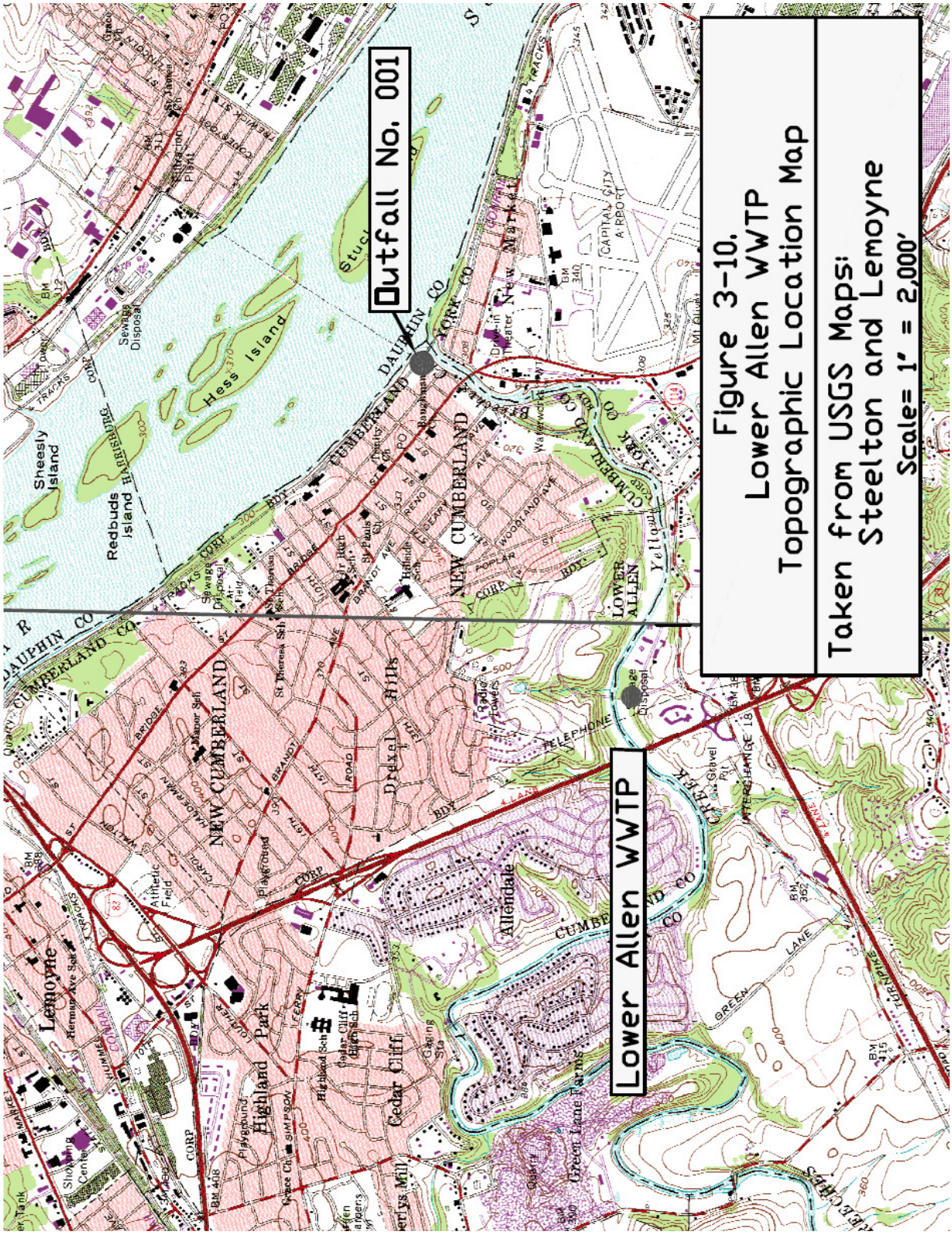


Figure 3-10.
Lower Allen WWTP
Topographic Location Map

Taken from USGS Maps:
Steelton and Lemoyne
Scale= 1" = 2,000'

Fairview Township currently holds 0.420 mgd of capacity in the Lower Allen WWTP, or about 6.72% of the facility's total permitted capacity.

Fairview Township's Annual Average flow to the Lower Allen WWTP totaled about 0.170 mgd during 2007, leaving 0.250 mgd of capacity available for new flow. No additional capacity needs are projected for Fairview Township in the Lower Allen WWTP above its current reserve capacity for the planning period.

Lower Allen will need to upgrade its WWTP to achieve compliance with the nutrient reductions limits of the Chesapeake Bay Tributary Strategy. Compliance with the new cap limits are not expected during the next 5 years. In accordance with the terms of its Sewer Agreement, Fairview Township will be responsible for 6.72% of the cost required for any upgrades needed to the Lower Allen WWTP. The Township will need to account for these anticipated capital costs when it schedules other Township sewage facility improvements.

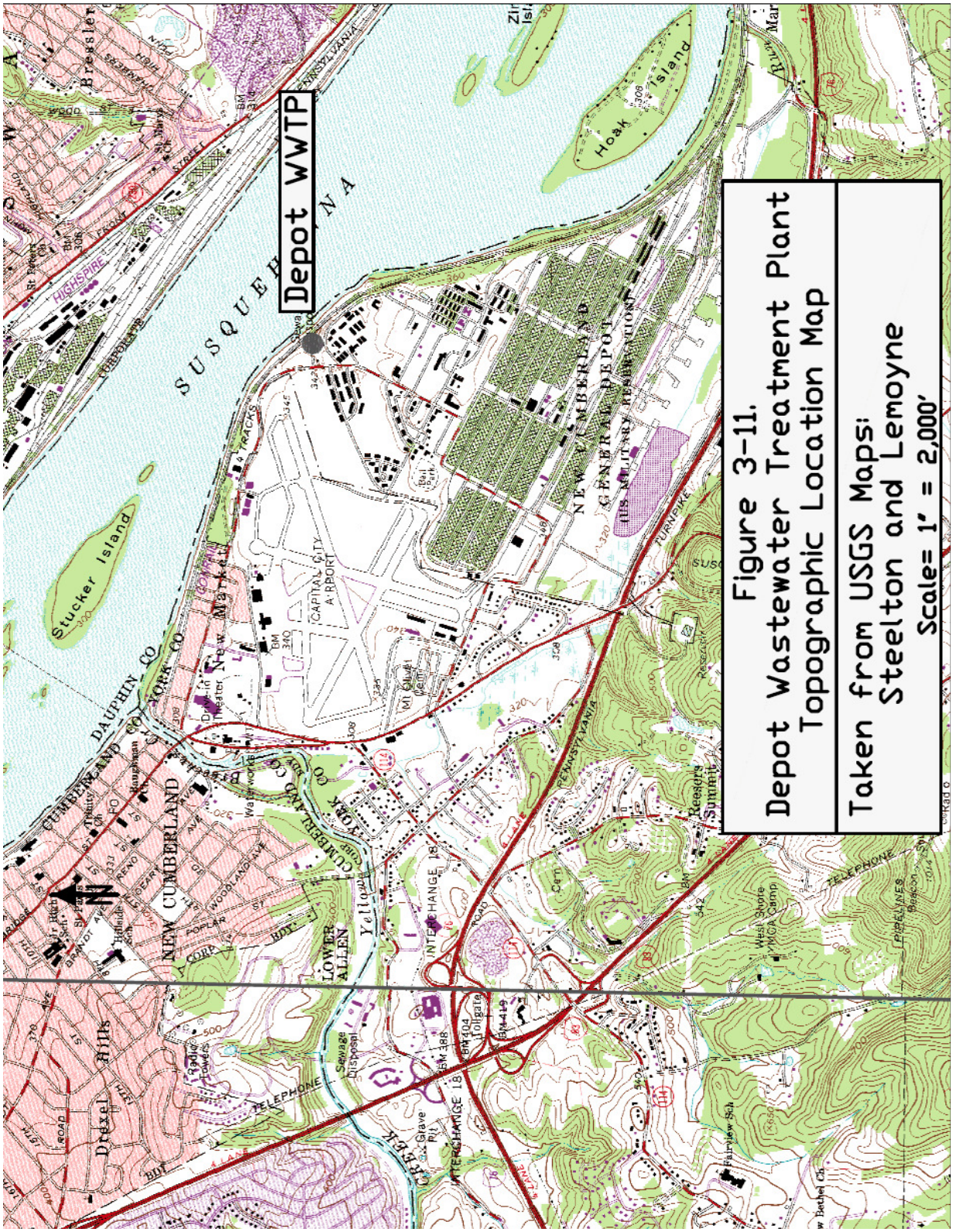
3.8 Army Depot WWTP

The United States Department of Defense's Defense Distribution Depot Susquehanna, Pa (DDSP) is located in the northeastern corner of Fairview Township. The Depot is bordered on the south by the Pennsylvania Turnpike, to the east and north by the Susquehanna River, and to the west by the Capital City Airport. The US Department of Defense maintains a WWTP at the Depot to provide wastewater service for the Depot. Figure 3.11 shows the general location of the Depot and its WWTP.

DDSP owns, operates, and maintains the wastewater collection and treatment plant serving the Depot. No sewage generated outside of DDSP is handled at the Depot WWTP. The Depot WWTP uses a contact stabilization process followed by a sand filter. The facility has a permitted capacity of 0.5 mgd under NPDES Permit No. PA0038385. The Depot WWTP discharges treated effluent into the Susquehanna River via an outfall sewer directly adjacent to the plant site.

DDSP undertook a study of its wastewater facilities in 1998 that considered several options associated with the future of the WWTP. One of the options was to abandon the WWTP and pump all wastewater generated at DDSP to Fairview Township's North WWTP. However, this alternative was eliminated from further consideration since the North WWTP could not accept the flow without an expansion and the North WWTP site did not have adequate area to support the required expansion. The 1998 study recommended continued use of the Depot WWTP.

Since the Depot WWTP is a federal government facility that only serves the needs of DDSP; its current condition, operation and maintenance, and long-term needs are outside the scope of this Plan. It is assumed that DDSP will continue to take whatever actions are needed to serve the wastewater needs of the Depot with an on-site facility.


Depot WWTP
SUSQUEHANNA
Stucker Island
Hook Island
CAPITAL CITY AIRPORT
NEW CUMBERLAND
GENERAL DEPOT
DAUPHIN CO
YORK CO
CUMBERLAND CO
LOWER ALLEN
Drexel HILL
Figure 3-11.
Depot Wastewater Treatment Plant
Topographic Location Map
Taken from USGS Maps:
Steelton and Lemoyne
Scale= 1" = 2,000'

3.9 Lewisberry WWTP

The Lewisberry WWTP is located at the intersection of State Route 382 and State Route 177. Plate No. 2 shows the general location of the plant site. The existing facility was originally constructed in 1966 and last upgraded in 1990. The Lewisberry WWTP (NPDES Permit Number PA 0081922) discharges all effluent into Bennett Run, which is a tributary to the Susquehanna River. Table 3-8 presents the current NPDES discharge limits for the Lewisberry WWTP. Fairview Township's capacity in the Lewisberry WWTP is set at 27,000 gpd based on existing agreements (see Appendix H). 2007 flows were less than half this value. No additional capacity needs are projected for Fairview Township in the Lewisberry system in the next five years. Lewisberry will eventually need to upgrade the WWTP to achieve compliance with the nutrients reduction limits of the Chesapeake Bay Tributary Strategy. The Lewisberry WWTP is a Phase III facility. Compliance with the new nutrient cap limits are not expected during the next 5 years.

Table 3-8
Lewisberry WWTP
NPDES Discharge Limits and Effluent Characteristics

Parameter	Discharge Limits (1)
Flow, mgd	0.1
CBOD, mg/L	20 (May – October) 25 (November – April)
CBOD, lbs/day	17 21
Suspended Solids, mg/L	30
Suspended Solids, lbs/day	25
Ammonia-Nitrogen, mg/L	3.0 (May – October) 9.0 (November – April)
Ammonia-Nitrogen, lbs/day	2.5 7.5
Chlorine Residual, mg/L	0.28
Fecal Coliform, #/100 ml	200 (May – September) 3,800 (October – April)
pH, (S.U.)	6.0 – 9.0
Dissolved Oxygen, mg/L	Minimum of 5.0

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

3.10 Private On-Lot Wastewater Systems

Plate 2 identifies those areas of Fairview Township with public sanitary sewer service. Developed parcels outside the public sanitary sewer service areas must rely on either individual on-lot systems for wastewater treatment and disposal or private sanitary sewer systems that convey the collected sewage to a private treatment facility.

On-lot systems in Fairview Township are privately owned, operated and maintained. The Township relies on a contracted Sewage Enforcement Officer (SEO) to provide SEO services within the Township. The SEO is responsible for reviewing permit applications, on-lot system designs, and investigating reported on-lot system problems.

Based on Township records, 2,565 properties are served by individual on-lot systems. Plate 4 identifies the developed parcels within the Township that are currently served by on-lot systems. It should be noted that the enclosed mapping products were created using the York County Tax Parcel Database. In order to protect the integrity of this source, revisions were not made to the data. Consequently, some of the mapping products, such as Plate 4, may appear anomalous. For instance, some parcels located in a sewer service area may be shown as being served by an on-lot wastewater system. These are likely undeveloped parcels, as the Township enforces connections to the sanitary sewer system in accordance with regulations in the Zoning Ordinance and the SALDO. These planning tools are explained further in Chapter 2.

The majority of the on-lot systems are located in the southern and western parts of the Township, although there are on-lot systems scattered throughout the Township. There are currently no holding tanks located within the Township and the Township is not aware of the presence of any "wildcat" sewers, borehole disposal systems, or any other unpermitted collection and disposal systems. Most of the on-lot systems within the Township are considered to be operating satisfactorily; however, there are a few pockets of on-lot systems that are suspected to be in poor condition.

Township staff provided a review of all available SEO permit records as part of this Plan and the findings were incorporated into the sewage facility needs assessment. Based on the

permit records review, there were a total of 131 repair permit records in the past five years. Repair permits are issued for any system repair or modification, such as the replacement of a malfunctioning septic system drainfield, a failing septic tank, or defective building sewers from the house to the septic tank. Six of the 131 permits were issued using Best Technical Guidance (BTG) and there are currently no sewage holding tanks in use in the Township. The BTG repair permits were issued for on-lot systems with drinking water wells located less than the minimum horizontal isolation distance of 100-feet. Table 3-9 summarizes the repair permits by year.

Table 3-9
Fairview Township
Summary of On-Lot System Permits Issued (1)

Year	System Repairs/ Modifications	Classified as BTG Repairs
2004	17	0
2005	17	1
2006	19	2
2007	25	1
2008	20	1
2009	33	1
Total	**131**	**6**

Notes:

(1) Based on Township's review of SEO permit records. See appendix E for a list of all repair permits issued from 2004 to 2009.

A general assessment of the on-lot systems was conducted as part of this Plan, in accordance with the procedures provided in the PADEP Guidance Document, "Act 537 Sewage Disposal Needs Identification". This assessment included the following steps:

1. Identification of all developed parcels in the Township served by on-lot systems (see Plate 4).
2. Distribution of an on-lot system questionnaire to all properties identified in Step 1 (see Appendix B).
3. Collection and analysis of well water samples from at least 15% of the developed properties served by both private well and on-lot systems (see Appendix D; 21.7% were sampled).
4. Conduction of a general survey of on-lot system properties to verify on-lot system information and look for obvious signs of system operating problems. The Township SEO conducted this survey at the same time he collected the well water samples as part of Step 3.

5. Distribution of on-lot system properties into distinct geographic areas.
6. Assessment of the general suitability of the soils to support on-lot systems (see Plate 3).
7. Preparation of general inventory of all on-lot systems, based on available information, into one of the following groups, using the definitions given in the PADEP "Act 537 Sewage Disposal Need Identification" Guidance Document: Confirmed Malfunctions, Suspected Malfunctions, Potential Malfunctions, or No Malfunctions.

The results of the on-lot systems sampling program are summarized in Appendix D. Although 38% of the lots sampled tested positive for the presence of bacteria (Total Coliform), only 4% tested positive for the presence of fecal coliform bacteria (E. Coli). Appendix F presents the results of a sewage disposal needs assessment conducted for each of the areas in accordance with the PADEP Guidance Document, "Act 537 Sewage Disposal Needs Identification". The Guidance Document states that all on-lot systems must be placed into one of the following four categories:

Confirmed Malfunctions. Malfunctions documented by dye testing, laboratory tests, observations by a certified SEO or professional with experience in on-lot systems, "Best Technical Guidance" repair permits, and seasonally wet adsorption areas. Also included are piped discharges from a single structure with direct evidence of sewage, reported system backups, malfunctions with photographic documentation or other similar evidence.

Suspected Malfunctions. Those systems exhibiting some malfunction characteristic such as abnormally green grass in the vicinity of an adsorption area, piped discharges from one dwelling without direct evidence of sewage, adsorption areas located in known unsuitable soils (observed wetlands, rock outcropping, etc.), cesspools, and pit privies.

Potential Malfunctions. Those systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements (constructed prior to 1972), systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations, and systems located on slopes greater than 25%. Systems that have been repaired under permits meeting Chapter 73 standards are also considered Potential Malfunctions.

No Malfunctions. Those systems that appear to be operating satisfactory, were constructed since the implementation of system permitting requirements (since 1972), and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction.

Table 3-10 summarizes the number of existing on-lot systems defined by each of the PADEP prescribed malfunction categories. The smallest group is the confirmed malfunctions, representing less than one percent of the total systems in the Township. Fourteen of the 18 confirmed malfunctions identified correspond to systems observed by the Township SEO. The other four confirmed malfunctions were determined from homeowner comments. Systems with no malfunctions represent the largest group, comprising approximately 54% of the total number of systems.

The distribution of the malfunction classifications is shown on Plate 7. Parcels with on-lot systems defined as confirmed malfunctions are highlighted in red, those with on-lot systems defined as suspected malfunctions are highlighted in orange, and those on-lot systems repaired using a BTG repair permit are highlighted brown. It should be noted that an on-lot system repaired using BTG is considered a confirmed malfunction based on the above criteria for a confirmed malfunction.

Table 3-10
Sewage Disposal Needs Assessment Groupings (1)

Category	Number of Total Existing Systems (2)	% of Total Existing Systems
Confirmed Malfunction	23	0.9
Suspected Malfunction	32	1.3
Potential Malfunction	1,125	43.8
No Malfunction	1,385	54.0
Total	2,565	100.0

Notes:
(1) Includes both occupied and vacant housing units.
(2) See Appendix F for lot-by-lot assessment.

Based on the results of the needs assessment, three areas of the Township, Sandspur Estates, Fairview Farms/Terrace Acres and Timber Ridge, were determined as "Potential Needs Areas". The portion of Sand Spur Estates included in the Needs Assessment is only those homes along Sand Spur Drive, Appaloosa Way, and Clydesdale Court. The Fairview Farms/Fairview Terrace area is considered the accumulation of the Fairview Acres, Fairview Farms, and

Fairview Estates developments. Timber Ridge is a development located in the northern portion of the Township between Lewisberry Road and the Pennsylvania Turnpike. These three potential needs areas are discussed further in Section 5 of this Plan. Appendix L contains additional information on these preliminary needs areas.

As requested in the January 13, 2010 comment letter from DEP, the original area referred to as the Fairview Farms area has been expanded to include the areas of Bunker Hill and Meadowbrook Mobile Home Park (MHP). Compliance issues with the private treatment facility serving the Meadowbrook MHP are discussed in Chapter 3.11.

Based on Township records, 2,565 occupied properties are served by individual on-lot sewage systems. Assuming a septage generation rate of 350 gallons per year per tank, estimated septage production in the Township totals about 897,750 gallons per year. The owner of the on-lot system is responsible for septage dispersal. A homeowner typically contracts with a private hauler for septage pumping and disposal.

3.11 Other Private Sewage Facilities

The Township's 1987 Act 537 Plan identified five privately owned wastewater sewage facilities. These included Red Land High School, Fishing Creek Elementary School, Regent Acres Mobile Home Park, DuPont Connector Systems, and Rheams Mobile Home Park. Since the 1987 Plan, all but DuPont Connector Systems, which has since changed its name to DuPont Berg Electrical Manufacturing, have connected to the public sewer system. Currently, there are five (5) privately owned wastewater treatment facilities in Fairview Township. Plate 2 shows the general location of each facility. Table 3-11 presents NPDES Permit information and recent compliance history for each facility.

All of the facilities, with the exception of the Meadowbrook MHP WWTP, have been in compliance with their NPDES Permit discharge limits for the last 5 years. A 2009 search of the PADEP compliance file was undertaken for the Meadowbrook MHP WWTP. Since 1992, the Meadowbrook WWTP has failed to comply with NPDES discharge limits a total of 31 times. Of more importance, there have been two "Consent Assessment of Civil Penalty" cases from

PADEP and one from the United States Environmental Protection Agency (EPA) filed against the Meadowbrook WWTP owner for effluent violations. The Consent Assessments issued by PADEP are dated November 22, 1995 and August 4, 2004, while the EPA issued Consent Assessment is dated September 30, 1999. A copy of these assessments can be found in Appendix M.

Table 3-11
Private Wastewater Treatment Plants

Facility Name	Activity	NPDES Permit No.	Recent Permit Issuance Date	Permitted Flow	Receiving Stream	Compliance History (1)
Fairview Elem School	Elementary School	PA0030473	Jan-11-2001	0.004	Unnamed tributary to Yellow Breeches Creek	No Violations Reported
Meadowbrook Mobile Home Park	Sewage Systems	PA0081060	Feb-14-2002	0.025	Unnamed tributary to Yellow Breeches Creek	From March 2002 - October 2005 1 pH, 1 TSS, 10 Total Phosphorus, 4 Fecal Coliform effluent discharge violations
Cycle Chem Lewisberry	Refuse Systems	PA0084170	Jul-09-2003	0.000	Unnamed tributary to Fishing Creek	No Violations Reported
Dupont Berg Elec Mfg	Electronic Connectors	PA0081019	Jul-21-2000	0.144	Unnamed tributary to Fishing Creek	No Violations Reported
Cycle Chem Lewisberry (Formally Remtech Environmental Group)	Refuse Systems	PA0084107	Jan-23-1998	0.000	Unnamed tributary to Fishing Creek	No Violations Reported

Note:
(1) Obtained from Envirofacts on the U.S. EPA website (http://oaspub.epa.gov/enviro/ef_home2.water), No Permit Compliance System Measurements and Violations Information Found.

Table 3-12 presents the current NPDES discharge limits and the average discharge characteristics for the Meadowbrook WWTP from January 2004 through April 2006.

Table 3-12
Meadowbrook Mobile Home Park WWTP
NPDES Discharge Limits and Effluent Characteristics

Parameter	Discharge Limits (1)	Average Monthly	
		January 2004-April 2006 (2)	Maximum Value
Flow, mgd	0.025	0.019	0.023
CBOD, mg/L	25.0	3.3	10.5
CBOD, lbs/day	5.2	0.6	1.6
Suspended Solids, mg/L	30.0	11.9	28.5
Suspended Solids, lbs/day	6.0	2.1	5.5
Total Phosphorus, mg/L	2.00	1.73	3.95
Chlorine Residual, mg/L	1.5	0.5	0.8
Fecal Coliform, #/100 ml (3)			
Winter	50,000	284	3,752
Summer	200	1,089	8,800
pH, (S.U.)			
Minimum	6.0	7.1	7.6
Maximum	9.0	7.4	8.0
Dissolved Oxygen, mg/L	5.0	7.0	9.0

Notes:
(1) NPDES Permit Discharge Limits, average monthly values.
(2) Average monthly discharge values from DMRs submitted to DEP.
(3) Summer = 5/1 to 9/30, Winter = 10/1 to 4/30

A meeting was held between DEP and Township Representatives on February 16, 2010. At that time, DEP requested that the Township consider serving the Meadowbrook MHP and the Fairview Elementary School and that the private WWTPs serving these two areas be abandoned by the owners. The feasibility of providing service to these two areas was incorporated into the development and evaluation of wastewater management alternatives as part of this Plan. Following the meeting, an unauthorized discharge of sewage and operation and monitoring reporting violations were documented during a DEP inspection of the the Meadowbrook MHP. Consequently, DEP issued a Notice of Violation dated April 2, 2010, a copy of which is included in Appendix M. Alternatives for addressing these two areas are explored in Chapter 6.2.

4.0 POPULATION AND WASTEWATER FLOW PROJECTIONS

4.1 Existing Population

Fairview Township has grown moderately over the past 40 years, experiencing an overall growth of approximately 119% from 1960 through 2000 and an average annual growth rate of 0.77% between 1990 and 2000. Table 4-1 presents population data for the Township obtained from the United States Census Bureau records. Table 4-1 also lists the number of occupied housing constructed in the Township. Between 1990 and 2000, an average of 62 new housing units were added each year in Fairview Township. Based on 2000 US Census data, the average occupied household in Fairview Township contained 2.59 persons. This average household size represents a reduction from the 2.73 persons per household living in the Township during the 1990 census.

Table 4-1
Fairview Township Population (1)

Year	Total Population	Annual Average Percent Increase (2)	Occupied Housing Units	Average Number of Persons Per Occupied Household
1960	6,530	-----	-----	-----
1970	9,248	3.54 %	-----	-----
1980	11,941	2.59 %	-----	-----
1990	13,258	1.05 %	4,857	2.73
2000	14,321	0.77 %	5,480	2.59

Notes:
(1) Obtained from the United States Census Bureau
(2) Annual average increase over 10-year period.

The decline in the average household size in Fairview Township reflects a national trend. From the standpoint of this Plan, the average household size of 2.59 from the 2000 census will be used for population projection purposes.

Fairview Township has experienced relatively brisk growth since the year 2000, averaging 104 new housing units per year, as shown in Table 4-2. The Township's 2006 population is estimated at 15,671 based on York County Planning Commission records, assuming 2.59 persons per new housing unit added since 2000.

Table 4-2
Estimated 2006 Fairview Township Population

New Housing Units				New [3] Population
Year	Public [1] Sewer Connections	New [2] On-Lot Systems	Total New Housing Units	
2001	59	50	109	282
2002	64	53	117	303
2003	56	47	103	266
2004	53	44	97	251
2005	52	44	96	248
			5-Year Addition	1,350
			Estimated 2006 Population (2000 US Census + 5-Year Addition)	15,671

Notes:
[1] Based on Township sewer connection records.
[2] Based on Township Sewage Enforcement Officer permit records.
[3] Total new housing units x 2.59 persons per household.

4.2 Projected Population

Five (5), (10), and (20)-year population projections were developed for this Plan. A variety of sources were used to develop these projections, including Township records for approved subdivisions, the most-recent York County Planning Commission projections, and the annual Wasteload Management Reports prepared by Fairview Township.

Fairview Township develops 5-year sewer connection projections as part of its annual PADEP Wasteload Management Reports. Fairview Township prepares annual Wasteload Management Reports for the North WWTP and the South WWTP, which it submits directly to PADEP. Fairview Township also prepares information for use by Lower Allen Authroity in

preparing a Wasteload Management Report for the Lower Allen WWTP for the portion of Fairview Township tributary to the Lower Allen WWTP.

Table 4-3 lists the projected developments anticipated in the Township over the next 5 years for the Lower Allen WWTP basin, the North WWTP basin, and the South WWTP basins of Fairview Township. Table 4-3 identifies the number of EDUs anticipated from active or projected developments where all of the development not yet been completed. The projected residential developments identified in the 2007 Wasteload Management Reports are expected to generate 477 new residential units in the Township over the next 5 years, an average of 95 units per year. The total number of new residential units included in the 2007 Wasteload Management Reports equals 607 units. Based on an average household density of 2.59 persons, these 607 units are expected to house 1,572 new residents in Fairview Township.

York County Planning Commission completed a Comprehensive Plan Update for the County in December 2006. A section of the Plan is titled the York County Growth Management Plan. This portion of the Comprehensive Plan is intended to act as a guide to County growth and development. The Future Land Use Plan included in the Plan Update identified growth areas within York County. York County is an area with "naturally-defined" land use boundaries. These include drainage basins, poorly draining soils, and steep slopes. The portions of land surrounding US Interstate Route 83 were designated as a Primary Growth Area. This area is near public facilities, has access to transportation and other existing communities. Generally, the Route 83 corridor through Fairview Township has access to public sewers.

The County Planning Commission also prepared population projections as part of the Comprehensive Plan Update. The County's projections for Fairview Township are presented in Table 4-4. The County's long-term projections for Fairview Township correspond to an average of 85 new residential housing units added per year from 2000 through 2040 and result in a projected 2020 Township population of 19,426. Adding the 607 housing units identified in the Township's 2007 Chapter 94 reports to the estimated 2006 population, and accounting for the 131 new residential connections made to the sewer system in 2006 and 2007, yields a projected Township population of 17,584 (based on 2.59 persons per new housing unit).

TABLE 4-3.
EXISTING DEVELOPMENT AREAS[1]

	Development Name	Total Planned EDUs	Total Connected EDUs	Total Remaining EDUs	Total Remaining Flow (gpd)[2]	Drainage Area	Development Type	
	Briar Cliff	151	60	91	21,203	South WWTP	Residential	
	Buttonwood Estates	41	39	2	466	Lower Allen	Residential	
	Cascades	10	-	10	2,330	North WWTP	Residential	
	Deer Run Est./Woods	46	20	26	6,058	South WWTP	Residential	
	Fairview Ridge	102	51	51	11,883	South WWTP	Residential	
	Fairview Summit	86	-	86	20,038	North WWTP	Residential	
	I-83 Whse	77	64	13	3,029	South WWTP	Commercial	
	Irish Meadows	10	9	1	233	South WWTP	Residential	
	Olde Orchard Hill	180	94	86	20,038	North WWTP	Residential	
	Pleasant View PRD	102	71	31	7,223	South WWTP	Residential	
	Rutters	14	-	14	3,262	North WWTP	Commercial	
	Shops at Old York	30	4	26	6,058	South WWTP	Commercial	
	Travel Inn	35	-	35	8,155	Lower Allen	Commercial	
	Weatherstone	104	5	99	23,067	North WWTP	Residential	
	Woodbridge Farms	240	116	124	28,892	South WWTP	Residential	
	Total				-		Comm.	Residential
	North WWTP	214	5	209	48,697		3,262	45,435
	South WWTP	938	489	449	104,617		9,087	95,530
	Lower Allen	76	39	37	8,621		8,155	466
	Total	1,228	533	695	161,935		20,504	141,431

Notes:

(1) Taken from 2007 Wasteload Management Reports prepared for Fairview Township and land development plans submitted to Fairview Township after completion of 2007 Wasteload Management Reports.

(2) Based on 233 gpd/EDU. Calculated using the 2000 U.S. Census Bureau value of 2.59 people per household times 90 gpcd.

Table 4-4
Fairview Township Population Projections (1)
Prepared By York County Planning Commission

Year	Population	Annual Percent Change	Cumulative Increase	New (2) Housing Units
2000	14,321	----	----	----
2010	17,732	2.38%	3,411	1,317
2020	19,426	0.95%	1,694	655
2030	21,254	0.94%	1,828	706
2040	23,170	0.90%	1,916	740
			Total	**3,418**

Notes:
(1) Obtained from York County Planning Commission, January 2006.
(2) Assumed density for new development of 2.59 persons per household.

Table 4-5 gives the estimated January 2008 Fairview Township population based on Township records for new housing units constructed between 2000 and 2007 and the 2000 US Census value of 2.59 persons per household. Based on these values, the Township's 2008 estimated population was 16,012.

As shown in Table 4-5, 653 new housing units were added between 2001 and 2007 resulting in an average of about 109 per year. Table 4-3 identifies another 695 housing units that could be added, based on development plans received by the Township and included in the Township's 2007 Chapter 94 Report.

Table 4-5
Fairview Township
Estimated Population

	New Housing Units	New Population [1]	Total Township Population
2000 US Census Value	----	----	14,321
New Housing Units Added Between 2001 and 2005 [2]	522	1,352	15,671
New Housing Units Added in 2006 and 2007 [3]	131	339	16,010
Estimated January 2008 Population	----	----	16,010
2007 Chapter 94 Report New Developments [4]	607	1,572	17,583
Potential Southern Drainage Area Buildout (2028) [5]	1,191	3,085	20,668

Notes:
[1] Calculated using the 2000 Census Bureau value of 2.59 people per household
[2] Taken from Table 4-2
[3] Based on Township sewer connection records for 2006 and 2007
[4] Taken from Table 4-3, excluding 88 commercial EDUs
[5] Taken from Table 4-8

The County Planning Commission's population projections for Fairview Township between 2000 and 2040 correspond to an average of 85 new housing units added per year. This rate of new growth is consistent the Township's projections between 2001 and 2007. Rounding the County's average new units per year to 85 for the planning period and adding this to the estimated 2007 Township population results in a projected 2028 population of about 20,415, as shown in Table 4-6. For the purpose of this plan, the Township will use the County's projected average increase in new housing units per year (85 units/year) during the planning period to estimate the 2028 population.

Table 4-6
Fairview Township
Estimated 2028 Population

	New Housing Units[2]	New Population [3]	Total Township Population
Estimated January 2008 Population[1]	----	----	16,010
Projected 2010 Population	170	441	16,451
Projected 2020 Population	850	2,202	18,653
Projected 2028 Population	680	1,762	20,415
Total	1,785	4,625	

Notes:
[1] Taken from Table 4-5
[2] Projections based on York County Planning Commission's anticipated average annual growth rate in Fairview Township of about 85 units/year as presented in the 2006 Comprehensive Plan
[3] Calculated using 2000 U.S. Census value of 2.59 people per household

All existing parcels within the southern part of the Township were assessed for development potential based on current zoning regulations and development patterns as part of this Plan. Focus was placed on the southern part of the Township since this area has the most developable land and the South WWTP does not have sufficient capacity to handle all of the anticipated growth. Plate 6 identifies the location of the active and planned developments in the southern drainage area of Fairview Township, as listed in the Township's 2007 Wasteload Management Report and identified in Township mapping. Plate 6 identifies active developments and vacant parcels. Parcels within the Route 83 corridor shown as white are already developed.

Table 4-7 quantifies the total number of planned EDUs and EDUs that have already been constructed as of January 2008, for each of the developments shown on Plate 6. Build-out of these developments will result in about 500 new housing units. Table 4-7A lists the existing development areas served by on-lot systems. The developments listed that are served by on-lot systems are already built-out based on existing Township zoning.

The vacant parcels shown in Plate 6 were assessed for development potential by quantifying the total acres of vacant land, then subtracting from this amount land within

floodplains, on steep slops, or within wetlands. This "potentially developable land" amounts to 761 acres. Table 4-8 groups this land by zoning classification and estimated the number of new housing units that could be constructed based on the density allowed for if public water and sewer services are available to the parcel. About 95% of the "potentially developable" land is zoned for residential development. Actual development density is generally less than allowed by zoning. Table 4-8 lists the average build-out density by zoning classification, based on existing development in similarly zoned areas. The projected new residential units that could be constructed at build-out, based on this average density, are listed in the final column of Table 4-8. Total number of new residential units, at build-out conditions, could equal up to 1,191 units with an additional 82 commercial EDUs.

Table 4-9 provides the assumptions used to project nonresidential development within the southern drainage basin and resultant wastewater flows. Generally, nonresidential development is more variable and less predictable then residential development within established zoning districts. The assumptions used for nonresidential density are consistent with the Township's 1998 Zoning Ordinance.

TABLE 4-7
FAIRVIEW TOWNSHIP
SOUTHERN DRAINAGE AREA
EXISTING DEVELOPMENT AREAS

Map[1] Number	Development Name	Total Planned EDUs	Total Developed EDUs	Total EDUs Remaining to be Developed	Total Remaining Flow [2] (gpd)	Development Type
I. Developments in Chapter 94 Report [3]						
10	Woodbridge Farms	240	116	124	28,892	Residential
11	Old Orchard Hills	180	94	86	20,038	Residential
18	Fairfield	138	138	0	0	Residential
22	Clover Crossing	50	50	0	0	Residential
7	Irish Meadows	10	9	1	233	Residential
24	PRD-Pleasant View Road New	102	71	31	7,223	Residential
	Industrial Park	77	64	13	3,029	Commercial
2	Briarcliff Estates	151	60	91	21,203	Residential
1	Fairview Ridge [5]	102	51	51	11,883	Residential
12	Deer Run Estates	46	20	26	6,058	Residential
	Shops at Old York	30	4	26	6,058	Commercial
	Subtotal	**1,126**	**677**	**449**	**104,617**	
II. Other Active Developments [4]						
A. Sewered Developments						
16	Hickory Meadows	50	45	5	1,165	Residential
19	Redland Village	70	70	-	-	Residential
5	Colonial Woods	53	42	11	2,563	Residential
15	Fox Run	59	57	2	466	Residential
4	Fairview Park	427	416	11	2,563	Residential
17	The Woods at Deer Run	33	26	7	1,631	Residential
20	Redland Acres	30	30	-	-	Residential
9	Green Hills	42	38	4	932	Residential
3	Old Colonial Woods	38	37	1	233	Residential
	Subtotal	**802**	**761**	**41**	**9,553**	
B. On-Lot Developments						
8	Mountainview Terrace	20	16	4	932	Residential
6	Mountainview Estates	22	21	1	233	Residential
13	Sandspur Estates/Farms	48	46	2	466	Residential
	Stonerow Estates	7	6	1	233	Residential
23	Ridgewood	34	31	3	699	Residential
21	Fox Hollow Estates	27	27	-	-	Residential
	Subtotal	**158**	**147**	**11**	**2,563**	
	Total	**2,086**	**1,585**	**501**	**116,733**	

Notes:
(1) Development number from Southern Drainage Area Potential Development, Plate 6.
(2) Flow is equal to Total EDUs Remaining to be developed times 233 gpd/EDU.
(3) Taken from 2007 Wasteload Management Reports prepared for Fairview Township for Southern WWTP.
(4) Developments shown on the Fairview Township Southern Developments Map provided by the Township that are not included in the 2007 Wasteload Management Report.

TABLE 4-7A
FAIRVIEW TOWNSHIP
SOUTHERN DRAINAGE AREA
EXISTING DEVELOPMENT AREAS-WITH ON-LOT SYSTEMS

Map[1] Number	Development Name	Total Planed EDUs	Total Developed EDUs	Total On-Lot Systems[2]	Total Sewered
I. Developments Identified in Chapter 94 Report [3]					
10	Woodbridge Farms	240	116	0	116
11	Old Orchard Hills	180	94	0	94
18	Fairfield	138	138	0	138
22	Clover Crossing	50	50	0	50
7	Irish Meadows	10	9	0	9
24	PRD-Pleasant View Road New	102	71	0	71
	Industrial Park	77	64	0	64
2	Briarcliff Estates	151	60	0	60
1	Fairview Ridge	102	51	0	51
12	Deer Run Estates	46	20	0	20
	Shops at Old York	30	4	0	4
	Subtotal	1,126	677	0	677
II. Other Active Developments [4]					
A. On-Lot Developments					
8	Mountainview Terrace	20	16	16	0
6	Mountainview Estates	22	21	21	0
13	Sandspur Estates/Farms	48	46	46	0
	Stonerow Estates	7	6	6	0
23	Ridgewood	34	31	31	0
21	Fox Hollow Estates	27	27	27	0
B. Sewered Developments					
16	Hickory Meadows	50	45	0	45
19	Redland Village	70	70	0	70
5	Colonial Woods	53	42	0	42
15	Fox Run	59	57	0	57
4	Fairview Park	427	416	0	416
17	The Woods at Deer Run	33	26	0	26
20	Redland Acres	30	30	0	30
9	Green Hills	42	38	0	38
3	Old Colonial Woods	38	37	0	37
	Subtotal	960	908	147	761
	Total	2,086	1,585	147	1,438

Notes:

(1) Development number from Southern Developments Map, Plate 6
(2) Number of on-lot systems taken from the Township's Well Water Sample Results Map.
(3) Taken from 2007 Wasteload Management Reports prepared for Fairview Township for South WWTP.
(4) Developments shown on the Fairview Township Southern Developments Map provided by the Township that are not included in the 2007 Wasteload Management Report.

TABLE 4-8
FAIRVIEW TOWNSHIP
SOUTHERN DRAINAGE AREA
PROJECTED BUILD-OUT (1)

Zoning	Acres Available For Development	Density(2) Allowed Under Existing Zoning (EDUs/acre)	Average(3) Projected Build-out Density (EDUs/acre)	Projected(4) New EDUs at Township Build-out
Residential Development				
Residential Rural (RR)	420	2.18	1.00	420
Residential Single (RS)	206	3.60	2.30	474
Residential Multiple (RM)	99	10.00	3.00	297
Residential Village (RV)	0	21.78	16.00	0
Subtotal	725	-----	-----	1,191
Nonresidential Development				
Commercial Highway (CH)	30	2.18	2.3	69
Commercial Neighborhood (CN)	5	2.18	2.3	12
Limited Industrial (LI)	1	2.18	0.7	1
Subtotal	36	-----	-----	82
Total	761	-----	-----	1,273

Notes:

(1) Remaining undeveloped parcels not identified in the Township's 2007 Wasteload Management Report or not included in Plate 6

(2) Maximum allowed units per acre based on Township zoning ordinance, adopted on December 14, 1998 as Ordinance 98-13 and assumption that all undeveloped lots will be served by public sewer and public water.

(3) Anticipated average development density, based on existing development in similarly zoned areas for residential development and assumed build-out development densities for commercial development. (See Table 4-9 for nonresidential development assumptions).

(4) Acres available for development times average build-out density.

TABLE 4-9
BASIS FOR PROJECTED NONRESIDENTIAL GROWTH RATES

Current Zoning Regulations[1]					Maximum[2] Commercial Floor Area (sq.ft/unit)	Assumed[3] Density (EDU/acre)
District	Purpose	Minimum Lot Size (sq. ft.)	Maximum Coverage (%)	Maximum Allowed (units/acre)		
Commercial Highway (CH)	Vehicle sales, shopping centers, Taverns/distributors, motels/hotels, restaurants, labs, business or trade schools, self service storage,	20,000	75%	2.2	15,000	2.3
Commercial Neighborhood (CN)	Retail business, personal service, banks, restaurants, professional offices, convenience stores, municipal buildings, studios,	20,000	75%	2.2	15,000	2.3
Limited Industrial (LI)	Electronic assembly, warehouse and distributors, office/business parks, light manufacturing, wholesale business, construction equipment, junkyards, schools	20,000	60%	2.2	12,000	0.7

(1). Based on current Township zoning ordinance that was adopted on December 14, 1998 as Ordinance 98-13

(2). Minimum lot size x Maximum building coverage

(3). Based on 25% anticipated build-out multiplier, 1 EDU/unit for commercial development, 1 EDU/3,495 sq.ft. for office buildings, and 0.1075 EDU/1,000 sq.ft. for industrial development (see below assumptions):

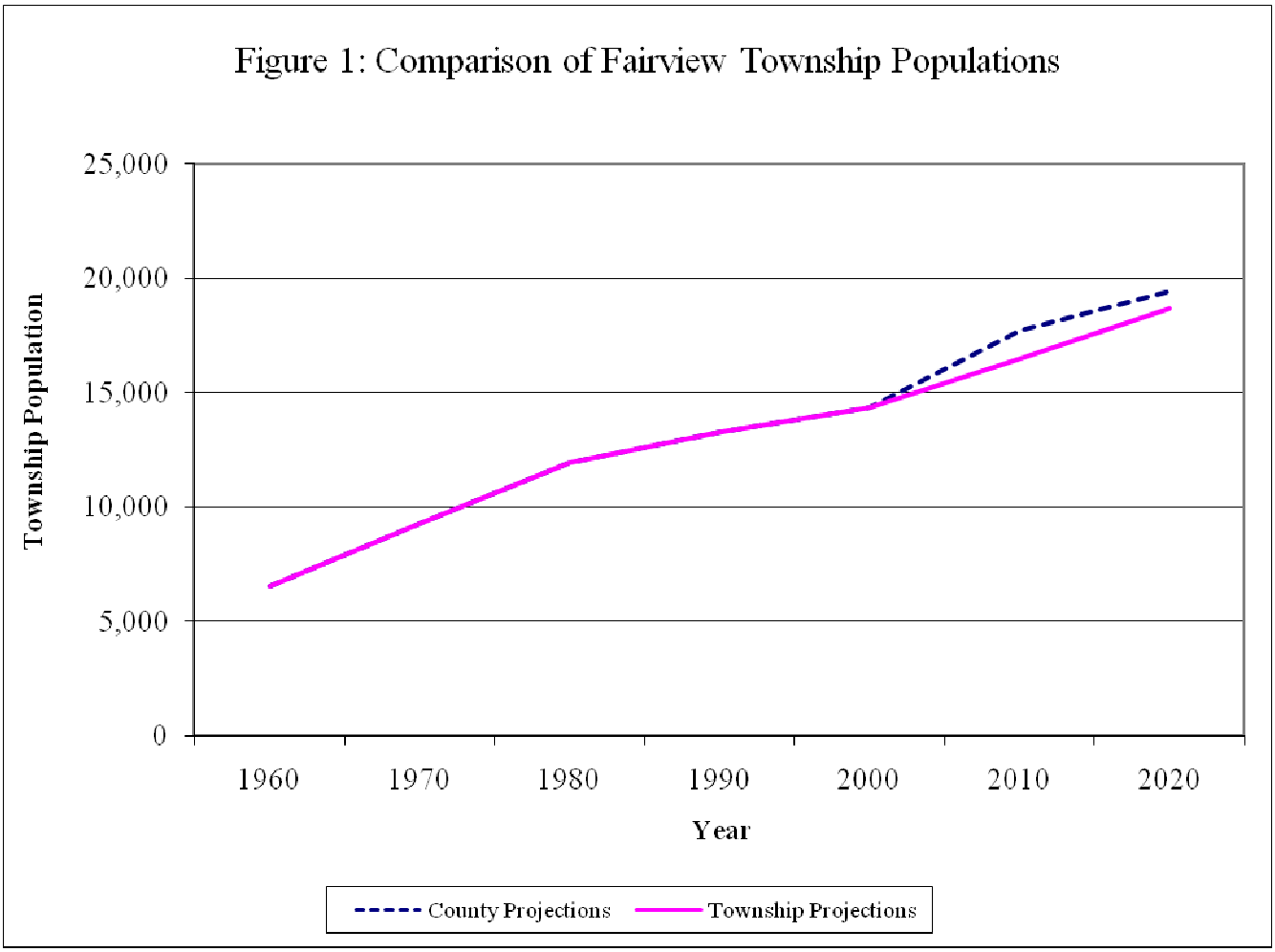
Office Building Assumptions:
Each employee occupies 150 sq.ft. and generates 10 gpd of wastewater
One EDU equals 233 gpd.
EDUs/sq.ft. = [1EDU/233 gpd x 10 gpd/employee x 1employee/150 sq. ft.] = 1 EDU/3,495 sq.ft.

Industrial Development Assumptions:
Each employee occupies 1,000 sq.ft. and generates 25 gpd of wastewater
One EDU equals 233 gpd.
EDUs/sq.ft. = [1EDU/233 gpd x 25 gpd/employee x 1 employee/1000 sq. ft.] = 0.1075 EDUs/1,000 sq.ft.

Table 4-10 compares the County projections for Fairview Township to the Township projections developed as part of this Plan (referred to as "Township projections"). The York County 2020 projections are 9.6 percent larger than the Township projections, and are well above the projected build-out population. The figure in Table 4-10 graphically compares the Township projections (solid line) to the County projections (dashed line). The Township population projections will be used for projecting wastewater treatment needs for this Plan.

Table 4-10.
Comparison of Population Projections

Year	US Census Records	York County Planning Commission Projections	Fairview Township Act 537 Projections	% Difference Between County and Township Projections
1960	6,530	---	---	---
1970	9,248	---	---	---
1980	11,941	---	---	---
1990	13,258	----	---	---
2000	14,321	14,321	14,321	0.0%
2010	---	17,732	16,453	7.2%
2020	---	19,426	18,655	4.0%
2028			20,417	



4.3 Wastewater Flow Projections

For the purpose of this Plan, a new EDU is assumed to generate an average of 233 gpd. The Township also uses 233 gpd/EDU for Wasteload Management Report flow projection purposes, based on 2.59 persons/EDU and a water usage rate of 90 gpd per person. Existing system wide flows per residential EDU vary depending on weather conditions with less flow per EDU during dry weather conditions and higher flow per EDU during wet weather conditions. Generally, flow per EDU for new development is less than the average flow per EDU for existing development due to the use of modern construction methods that require air testing prior to sewer line acceptance. Newer homes also have water saving fixtures that reduce the amount of water consumption and therefore, lower wastewater flows when compared to older homes.

Table 4-3 lists the existing development areas as identified in the Township's 2007 Wasteload Management Reports. The reports identified about 162,000 gpd of new flow from active and pending developments. Table 4-11 summarizes the remaining capacity available for Fairview Township developments at each of the four public WWTPs serving the Township. As shown in Table 4-11, about 583,000 gpd of capacity remains for new Fairview Township developments after satisfying the capacity needs for the active and pending developments identified in the 2007 Wasteload Management Reports.

Table 4-6 projects about 1,000 new housing units will be added in the Township during the planning period. Subtracting the 607 new housing units identified in the 2007 Wasteload Management Reports from this value leaves about 400 new housing units that will need wastewater treatment capacity. Using an average flow of 233 gpd/EDU, these 400 new housing units are expected to generate about 94,000 gpd of wastewater flow, well below the 583,000 gpd of available capacity identified in Table 4-11.

However, as shown in Table 4-11, practically all of the capacity in the South WWTP has already been committed. The southern part of the Township is expected to experience the most development pressures, given the amount of vacant, developable land in the area and easy access to Route 83.

Table 4-12 lists the anticipated wastewater treatment capacity needs in the southern part of Fairview Township through build-out of the area. Although there is capacity available in the South WWTP to meet current capacity commitments, almost 315,000 gpd of additional capacity may be needed to provide public sewer service to the southern part of the Township, if build-out conditions were to occur. Alternatives to satisfy this capacity shortfall are evaluated in the remainder of this plan.

Table 4-11
Fairview Township
Wastewater Treatment Capacity Analysis (1)

WWTP	2007 Annual Average Daily Flow (mgd)	Annual Average Allocated Capacity (mgd)	Anticipated Flow from Identified New Developments (2) (mgd)	Projected Total Flow (mgd)	Projected Total Flows Percent of Allocated Capacity (%)	Remaining Capacity (mgd)
North	0.370	0.726	0.049	0.419	58	0.307
South	0.375	0.500	0.105	0.480	96	0.020
Lower Allen	0.170	0.420	0.009	0.179	43	0.241
Lewisberry	0.012	0.027	0.000	0.012	45	0.015
Total	0.927	1.673	0.163	1.090		0.583

Notes:
(1) Listed flows and capacities are applicable to Fairview Township and do not account for flows and capacities attributable to other municipalities
(2) Taken from Table 4-3.

Table 4-12
Fairview Township
Projected Build-Out

	EDUs	Annual[1] Average Flow (gpd)
Existing South WWTP Permitted Capacity	----	500,000
2007 South WWTP Condition [2]	1,438	375,000
Unused Capacity		125,000
Potential New Flow From:		
Existing Development Areas [3]	449	104,617
Existing On-Lot Systems Developments[4]	158	36,814
Subtotal	2,045	516,431
Potential Developable Land [5]	1,273	296,609
Built-Out Conditions (Existing + Potential)	3,318	813,040
Additional Capacity Needed to Serve:		
Existing Development Areas		0
Build-Out Conditions		313,040

Notes:
(1) New Flow equals New EDUs times 233 gpd/EDU.
(2) 2007 flow taken from the Township's 2007 Wasteload Management Report for the Southern WWTP.
(3) Taken from Table 4-3, total EDUs identified in 2007 Chapter 94 Report remaining to be developed
(4) Taken from Table 4-7, total On-Lot Systems (existing and planned).
(5) Taken from Table 4-8, projected new EDUs at Township build-out for southern drainage area

5.0 WASTEWATER MANAGEMENT ALTERNATIVES

5.1 Identified Needs

Population and wastewater flow projections were developed in Chapter 4 for a 20-year planning period. Continued growth is anticipated within Fairview Township such that the existing public WWTP facilities will not be able to handle the projected demand for the entire planning period. Projections developed in Chapter 4 for those portions of the Township tributary to the Lower Allen WWTP, the North WWTP, and the Lewisberry WWTP indicate these existing facilities have sufficient capacity to handle the Township's projected growth in each facility's basin with the 20-year planning period. However, there is a potential capacity shortfall of about 315,000 gpd for the southern part of the Township at build-out conditions if all of the wastewater generated by new development was conveyed to the South WWTP. Alternatives to address this potential shortfall are discussed further in Section 5.

Fairview Township is located within the Lower Susquehanna River watershed, which eventually flows into the Chesapeake Bay. All of the public wastewater facilities serving Fairview Township discharge to surface waters that eventually flow into the Susquehanna River. The Susquehanna River provides more than half of the fresh water to the Chesapeake Bay. Pennsylvania has entered into agreements with other states tributary to the Chesapeake Bay and the federal government to control the level of nitrogen and phosphorus discharged into the Bay. The PADEP developed the Pennsylvania Chesapeake Bay Tributary Strategy to establish a course of action that will enable the commonwealth to comply with its Chesapeake Bay commitments. A key component of the Tributary Strategy is the establishment of a cap load on the annual amount of nitrogen and phosphorus discharged from WWTPs within the Chesapeake Bay watershed. These cap loads will be imposed on each WWTP's NPDES Permit during the Permit renewal process.

Fairview Township received notification from PADEP on the Township's pending cap load in December 2006. Although the North WWTP and the South WWTP currently remove phosphorus from the wastewater, the WWTPs were not designed to consistently remove nitrogen down to the levels that will be required to meet the Township's cap load. An analysis of alternatives available to the Township to comply with the pending cap load limits, which are scheduled to go into effect on

October 1, 2010, is needed. Although the cap load will not take effect for 2 years, the Township must decide now on its selected approach to comply with the cap load since construction of new wastewater treatment facilities takes at least 2 years from start of design to construction completion and new facility startup and operation.

Three areas of the Township were classified as "Potential Needs Areas" based on the findings from the sewage disposal needs assessment along with the Township's concern of the effectiveness of on-lot wastewater systems for a long term wastewater treatment alternative. The three "Potential Needs Areas" included the Fairview Farms area, the Sandspur Estates area, and the Timber Ridge area. A full description of these three areas is included below, along with a determination of whether a public health or water pollution needs as defined in DEP's Guidance Document "Act 537 Sewage Disposal Needs Identification" exists in the three areas. Wastewater management alternatives are evaluated for the area if a public health or water pollution need was confirmed. Section 6 includes the evaluation of wastewater management alternatives.

5.1.1 Fairview Farms Potential Needs Area

Figure 5-1 is an excerpt of the Lemoyne USGS Quadrangle map, showing the border of the Fairview Farms potential needs area, outlined in red. The Fairview Farms area is located in the northcentral area of the Township and includes residential development along Carriage, Northview, Old Forge, Sunset View, Diller and Ridge Streets. In their January 13, 2010 comment letter, DEP requested that the Meadowbrook MHP and the Bunker Hill area be included in the analysis of this potential needs area, collectively referred to as the Fairview Farms Area. The closest public sewage facilities are the North WWTP and the Lower Allen WWTP.

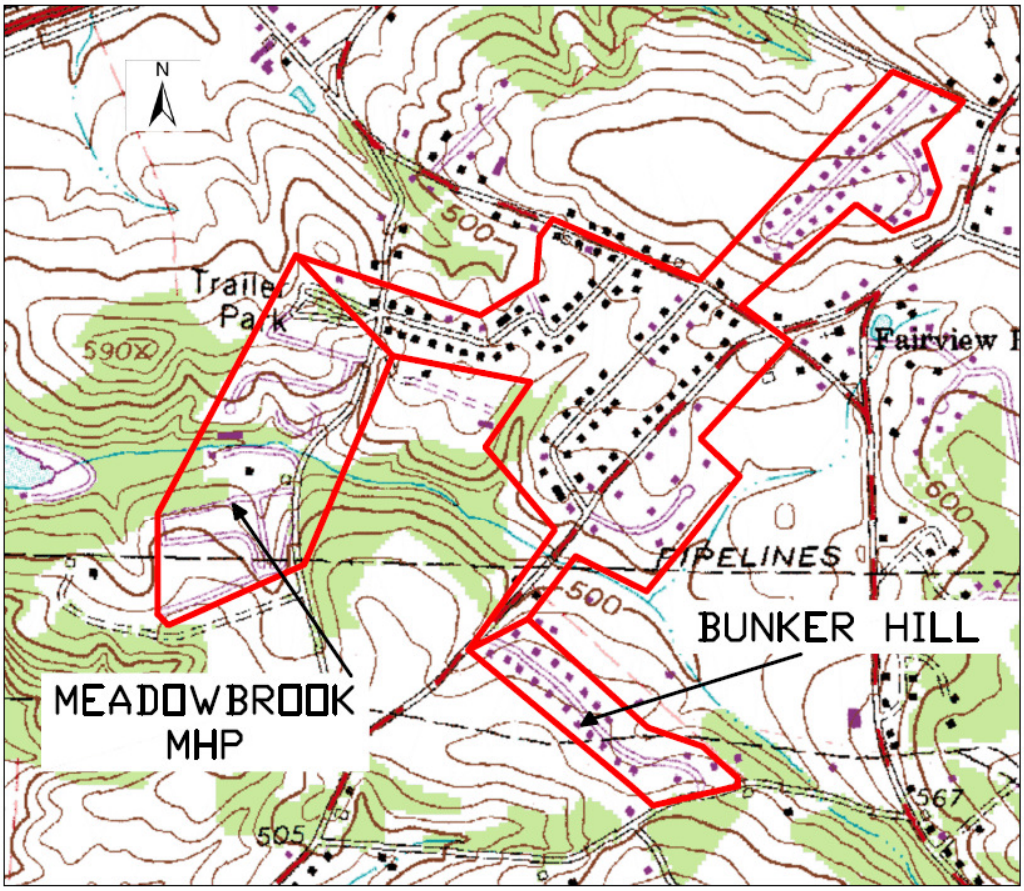


Figure 5-1: Fairview Farms Needs Area

Table 5-1 presents a summary of the needs assessment statistics for the Fairview Farms Needs Area. For the purposes of this planning study, the Fairview Acres needs area is comprised of 98 parcels in the Fairview Acres, Fairview Farms, and Fairview Estates developments, 21 occupied parcels in the Bunker Hill Area, and approximately 100 mobile homes located in the Meadowbrook MHP. Since the Meadowbrook MHP is served by a private community wastewater system, with stream discharge, the area was not included in the statistics in Table 5-1. As demonstrated in Table 5-1, 76.5% of the parcels were defined as potential, suspected, or confirmed malfunctions.

Table 5-1
Fairview Farms Needs Assessment Summary (1)

	Fairview Farms	Bunker Hill	Total Number	Percent of Total
Total Number of Occupied Parcels	98	21	119	100%
Properties Sampled (2)	24	8	32	26.9%
Samples with Positive Bacteria				
Total Coliform	12	5	17	14.3%
Fecal Coliform	2	0	2	1.7%
Samples with Nitrate-Nitrogen >5 mg/l	15	2	17	14.3%
Properties Less than 1 Acre	88	20	108	90.8%
Properties Less than 0.5 Acres	67	8	75	63.0%

Malfunction Status(3)	Fairview Farms	Bunker Hill	Total Number	Percent of Total
Confirmed	5	0	5	4.2%
Suspected	6	0	6	5.1%
Potential	75	5	80	67.2%
None	12	16	28	23.5%
TOTAL	98	21	119	100.0%

Notes
(1) Does not include Meadowbrook MHP
(2) See Appendix L, Table 1 for list of individual well water sample results
(3) Malfunction status definitions are as provided by the PADEP's Guidance Document "Act 537 Sewage Disposal Needs Identification"

DEP's January 10, 2010 comment letter requested that the Bunker Hill area be included in the evaluation of the Fairview Farms needs area. Based on the potential soil suitability, adequate size for construction of a replacement system and the lack of any major on-lot problems to date in the Bunker Hill area, there does not appear to be any public health or water pollution needs as defined in DEP's Guidance Document "Act 537 Sewage Disposal Needs Identification". Consequently, a continued on-lot wastewater treatment approach is appropriate for the Bunker Hill Area. For the purpose of developing wastewater management alternatives, Bunker Hill was not included in the Fairview Farms Area.

The continued use of on-lot wastewater systems in the remaining portions of the Fairview Farms area is not a viable option. Accordingly, the Fairview Farms area is a confirmed needs area,

and Section 6 evaluates four wastewater management alternatives for the area. In accordance with DEP's concern with the continued non-compliance issues with the Meadowbrook MHP, the area was included in the alternatives evaluation.

5.1.2 Sandspur Estates Potential Needs Area

Figure 5-2 is an excerpt of the Township Parcel map showing the Sandspur Estates area, located on the north side of Valley Road between the Woodbridge Farms development to the northeast and the Fairfield development to the southwest. Table 5-2 presents a summary of the needs assessment statistics for the Sandspur area in southeastern Fairview Township. For the purposes of this planning study, the Sandspur area is comprised of 37 occupied dwelling units in the Sandspur Estates development. As seen in Table 5-2, about 14% (5 of 37 parcels) have on-lot systems that are classified as either a confirmed or suspected malfunction.

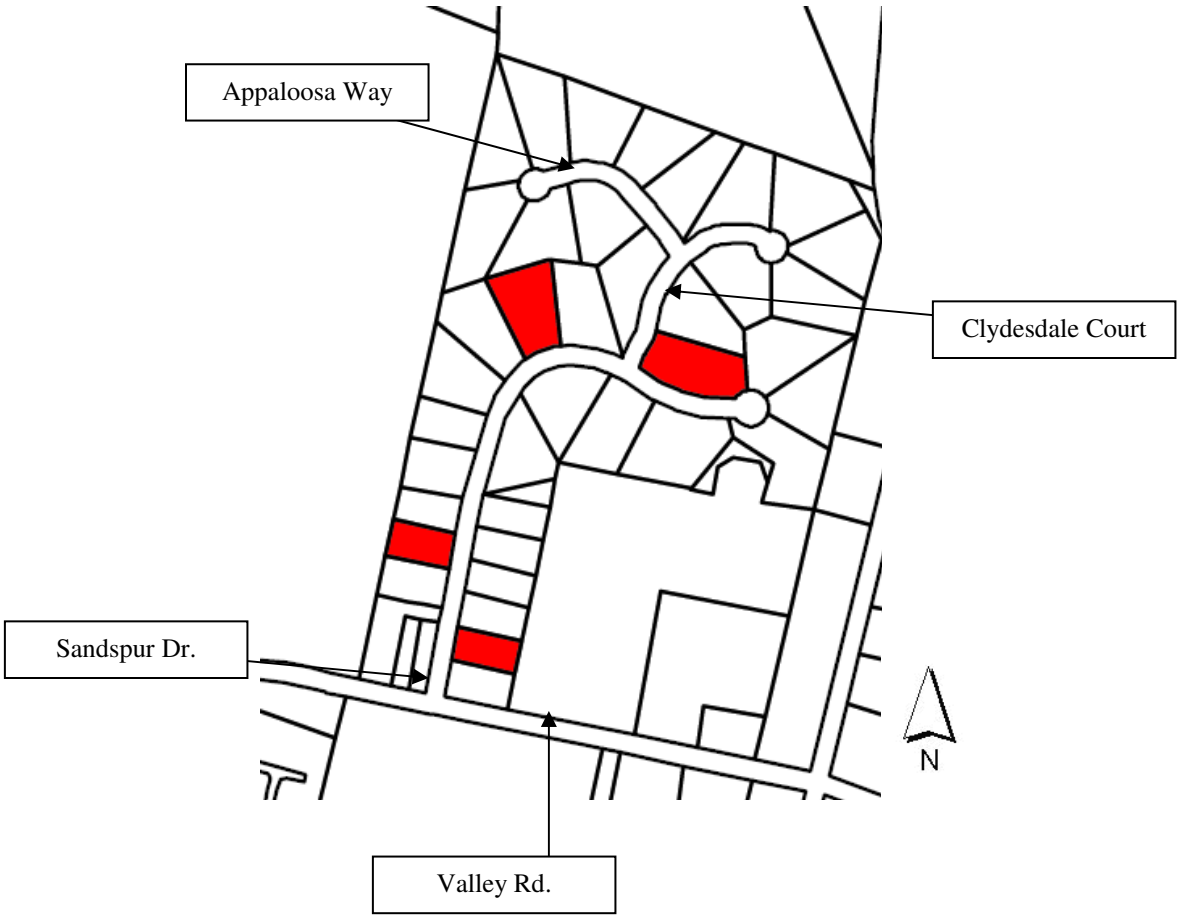


Figure 5-2: Sandspur Estates Needs Area

The Sandspur development was constructed in the mid-1980s. All of the homes rely on on-lot systems for wastewater treatment and private wells for potable water. All of the lots are greater than one acre, with an average lot size of 1.13 acres. Two of the four confirmed malfunctions are on lots greater than 2 acres.

The Sandspur area is located within the portion of the Township served by the South WWTP and surrounding developments have public sewer service. The area was defined as a "Potential Needs Area" primarily because of the SEO field observations, which resulted in the classification of four properties as confirmed malfunctions. The soils present in the area belong to the Lewisberry gravelly sandy loam series and are generally suitable for on-lot systems.

Table 5-2
Sandspur Estates Needs Assessment Summary

Total Occupied Parcels in Sandspur Estates	37	
Properties Sampled (1)	17	46.0%
Samples with Positive Bacteria		
Total Coliform	1	2.7%
Fecal Coliform	0	0.0%
Samples with Nitrate-Nitrogen >5 mg/l	8	21.6%
Properties Less than 1 Acre	10	27.0%
Properties Less than 0.5 Acres	5	13.5%

Malfunction Status(2)	Number	Percent of Total
Confirmed	4	10.8%
Suspected	1	2.7%
Potential	1	2.7%
None	31	83.8%
TOTAL	37	100.0%

Notes:
(1) See Appendix L, Table 2 for list of individual well water sample results
(2) Malfunction status definitions are as provided by the PADEP's Guidance Document "Act 537 Sewage Disposal Needs Identification"

Based on the large lot size, suitable soils, and construction following the implementation of wastewater system standards in 1972, it is likely that any operating problems in the Sandspur Estates area are caused by lack of system maintenance. Rather than extending public sewers into an area that is suitable for on-lot wastewater disposal, as demonstrated through the well water sampling program and soil suitability analysis, the Township will require the property owner to repair or replace any system malfunctions as noted by the SEO. The Township will issue repair notices to the residents with failing on-lot systems in the Sandspur area in 2010, and the proper maintenance of on-lot systems in the area, and Township wide, will be further reinforced by the implementation of the on-lot sewage management program.

5.1.3 Timber Ridge Potential Needs Area

Figure 5-3 is an excerpt of a USGS Quadrangle map map showing the Timber Ridge area, located in the northern portion of the Township between Lewisberry Road and the Pennsylvania Turnpike. The area includes 52 occupied properties on Tall Oaks Drive, Pine Tree Drive, Holly Drive, Timber Lane and 5 properties along Lewisberry Road. The properties located along Lewisberry Road were included in the potential needs area because of their close proximity to the Timber Ridge area as well as the results from the sewage disposal needs assessment.

Table 5-3 presents a summary of the needs assessment statistics for the Timber Ridge area. For the purposes of this planning study, the Timber Ridge area is comprised of 55 occupied dwelling units. As seen in Table 5-3, only 6% (3 of 55 parcels) are defined as either a confirmed or suspected malfunction. The on-lot system at 204 Tall Oak Drive was classified as a confirmed malfunction because of a repair permit issued under best technical guidance.

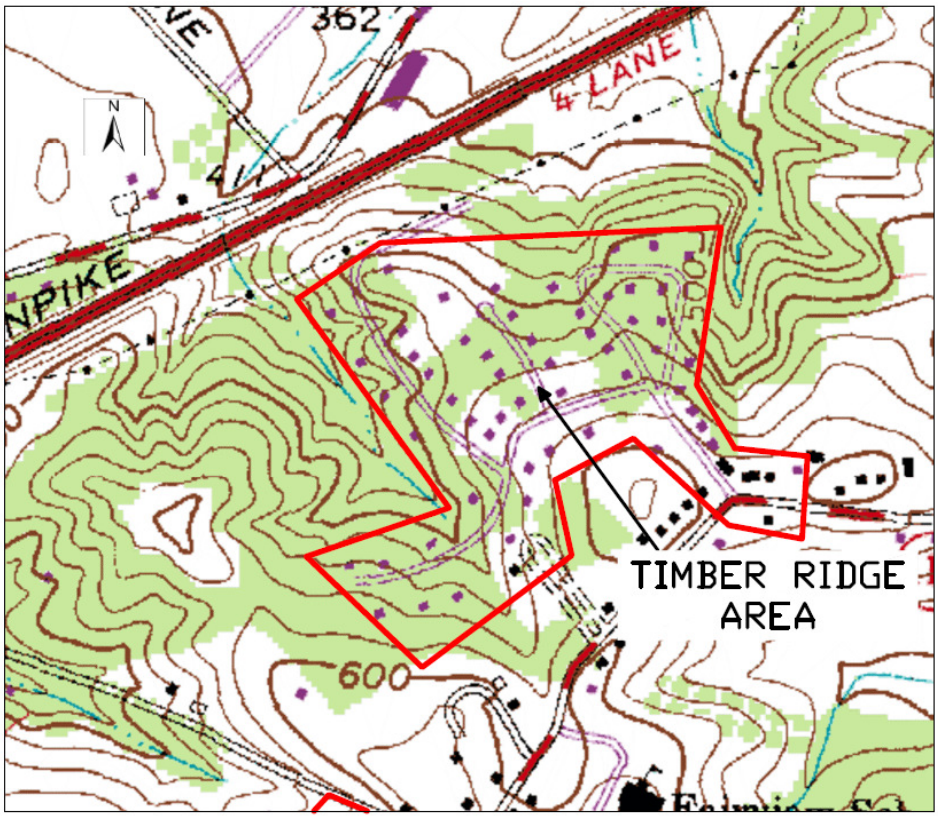


Figure 5-3: Timber Ridge Needs Area

The area was defined as a "Potential Needs Area" primarily because of the Township's concern that a public health or water pollution need exists in the area. While many of the parcels are larger in size and the soils are generally suitable for on-lot wastewater systems, there have been homeowner concerns regarding on-lot wastewater system malfunctions. Based on the review of the SEO permit records, five repair permits were issued in this area since 2004. The area is located adjacent to existing sewage facilities that are tributary to the North WWTP.

Table 5-3
Timber Ridge Needs Assessment Summary

Total Occupied Parcels in Timber Ridge Area	55	
Properties Sampled (1)	17	30.9%
Samples with Positive Bacteria		
Total Coliform	6	10.9%
Fecal Coliform	2	3.6%
Samples with Nitrate-Nitrogen >5 mg/l	2	3.6%
Properties Less than 1 Acre	37	67.3%
Properties Less than 0.5 Acres	15	27.3%

Malfunction Status(2)	Number	Percent of Total
Confirmed	1	1.8%
Suspected	2	3.6%
Potential	5	9.1%
None	47	85.5%
TOTAL	55	100.0%

Notes:

(1) See Appendix L, Table 2 for list of individual well water sample results
(2) Malfunction status definitions are as provided by the PADEP's Guidance Document "Act 537 Sewage Disposal Needs Identification"

The continued use of on-lot wastewater systems in the Timber Ridge area is a viable option. However, based on the Township's concern, the Timber Ridge area is a confirmed needs area. Section 6 evaluates two wastewater management alternatives for the area.

5.2 Potential Wastewater Treatment Alternatives

Rules and regulations pertaining to the content of Act 537 Plans are contained in Title 25 Pennsylvania Code Chapter 71. These rules and regulations require that an Act 537 Plan present and evaluate alternatives for sewage service. PADEP's guidelines for the preparation of Act 537 Plans

indicate that alternatives for sewage service should consider use of the following:

- Conventional collection, conveyance and treatment systems;
- Individual sewage disposal systems;
- Small flow treatment facilities;
- Community wastewater treatment facilities;
- Holding tanks;
- Non-structural comprehensive planning activities;
- Sewage management programs; and
- No-action alternative.

The potential uses of each of these methods to meet Fairview Township's projected wastewater treatment and disposal needs are developed in the remainder of this Section.

5.2.1 Conventional Treatment Systems

The Lower Allen, Lewisberry, North, and South WWTPs provide wastewater treatment service to portions of Fairview Township. Given the condition of the existing treatment facilities, the infrastructure in place to convey wastewater to the WWTP and the existing commitments to provide sanitary sewer service, continued use of these facilities to provide wastewater treatment is the preferred approach for the majority of the Township.

Fairview Township will be subject to annual cap loads for nitrogen and phosphorus starting October 1, 2010. The Township's annual cap for discharges from its North and South WWTP will be 22,392 pounds per year, based on a total permitted capacity of 1.226 mgd and an allowable nitrogen concentration of 6.0 mg/L. As seen in Table 5-4, total nitrogen discharge concentrations from the North WWTP averaged 17 mg/L during 2007 and the South WWTP averaged 8.2 mg/L. Improvements will be needed at these facilities to meet the pending nitrogen cap. It is expected that the facilities will be able to meet the pending phosphorus cap load of 2,985 pounds per year (based on an allowable phosphorus effluent limit of 0.8 mg/L) without any facility upgrades.

Table 5-4
Fairview Township 2007 WWTP Operating Data

NORTH WWTP

Month	Average Flow (mgd)	Influent BOD_5 mg/L	Influent BOD_5 lbs/day	Effluent TN mg/L	Effluent TN lbs/day	Effluent TN Total Lbs
Jan	0.426	158	561	14.6	52.0	1,612
Feb	0.396	139	459	13.4	44.4	1,243
Mar	0.487	77	313	10.3	42.0	1,302
Apr	0.398	104	345	13.6	45.1	1,353
May	0.299	75	187	18.7	46.7	1,448
Jun	0.284	90	212	21.0	49.7	1,491
Jul	0.286	84	200	21.0	50.2	1,556
Aug	0.327	82	224	19.1	52.0	1,612
Sep	0.303	103	259	21.7	54.8	1,644
Oct	0.369	100	308	18.7	57.5	1,783
Nov	0.436	109	397	15.4	56.0	1,680
Dec	0.428	99	353	15.8	56.5	1,752
min	0.284	75	187	10.3	42.0	
avg	0.370	102	318	17.0	50.6	
max	0.487	158	561	21.7	57.5	
Total						18,475

SOUTH WWTP

Month	Average Flow (mgd)	Influent BOD_5 mg/L	Influent BOD_5 lbs/day	Effluent TN mg/L	Effluent TN lbs/day	Effluent TN Total Lbs
Jan	0.398	230	763	4.9	16.4	508
Feb	0.381	209	664	10.3	32.6	913
Mar	0.475	213	844	13.8	54.6	1,693
Apr	0.405		n/a	14.8	50.0	1,500
May	0.358	157	468	8.5	25.4	786
Jun	0.353	211	620	4.0	11.8	354
Jul	0.328	164	450	3.8	10.3	319
Aug	0.368	175	537	8.3	25.4	787
Sep	0.354	229	675	7.0	20.7	621
Oct	0.368	272	835	6.8	20.9	648
Nov	0.331	231	637	8.6	23.7	711
Dec	0.386	252	811	7.3	23.5	729
min	0.328	157	450	3.8	10.3	
avg	0.375	213	664	8.2	26.3	
max	0.475	272	844	14.8	54.6	
Total						9,568

Township Total Annual Nitrogen Loading, lbs 28,044

Fairview Township retained the services of Stearns and Wheler, Inc. to evaluate the best approach to achieve the pending nutrient cap loads. Stearns and Wheler Inc. prepared the Expansion and Nutrient Removal Study, included in Appendix N, for Fairview Township in August 2007. The purpose of this study was to evaluate nitrogen reduction approaches at the North and South WWTPs and the expansion of the South WWTP to satisfy new development within the southern drainage area of the Township.

The flow projections presented in Section 4 had not yet been completed when Stearns and Wheler initiated its study. The study, therefore considered three flow scenarios for the South WWTP, keeping the capacity at 0.50 mgd, expanding the capacity to 0.75 mgd, and expanding the capacity to 1.0 mgd. Four alternatives to upgrade and/or expand the South WWTP were evaluated as listed in Table 5-5. The study also addressed the need to increase influent pumping capacity with Alternatives S-1, S-2, and S-3. The two options considered to provide this increased influent pumping capacity where the expansion of the existing Beinhower Road Pumping Station and construction of a new pumping station along Old York Road.

Table 5-5
Southern WWTP Upgrade/Expansion Alternatives
Considered in Sterns and Wheler Report

Alternative	Description	Estimated Project Cost
S-1	SBR Expansion to 1.0 mgd	$9,800,000
S-2	Membrane Bioreactors to 1.0 mgd	$16,400,000
S-3	SBR Expansion to 0.75 mgd	$4,000,000
S-4	Upgrade for Nutrient Removal Only, Keeping capacity at 0.50 mgd	$1,100,000

The report concluded that alternatives S-1, S-3, and S-4 should be considered for significant, moderate, or limited anticipated growth, respectively.

Two upgrade alternatives were evaluated for the North WWTP. Table 5-6 includes the two alternatives, along with the estimated project cost of each.

Table 5-6
North WWTP Upgrade Alternatives

Alternative	Description	Estimated Cost
N-1	SBR Conversion	$4,800,000
N-2	Enhanced Modified Ludzack-Ettinger (eMLE) conversion	$3,700,000

The recommended alternative was to convert the existing extended aeration tanks to an eMLE biological process. This alternative requires a re-rate of the North WWTP from an average annual flow of 0.73 mgd to an average annual flow of 0.6 mgd.

The combined cap loads for the South and North plants were estimated in the study to be 2,986 lbs/day Total Phosphorus (TP) and 22,392 lbs/day Total Nitrogen (TN). The report projected the TP and TN cap loads would be met until approximately the year 2024 with the recommended upgrades to the North and South WWTPs and the assumed moderate rates of growth.

The report also considered upgrading the North WWTP with alternative N-2 and purchasing TN credits for the South WWTP, rather than upgrading the South WWTP. This alternative would delay expansion of the South WWTP until additional capacity was needed in the southern drainage area to satisfy development demand. The annual cost for the purchase of nitrogen credits for this alternative was estimated to be approximately $73,000 (based on $9/lb TN credit cost) along with the upgrade costs to the North WWTP.

Additional discussions regarding upgrade options for the North WWTP and upgrade and expansion options for the South WWTP, along with exploration of securing nutrient credits in lieu of WWTP upgrades, are provided in Section 6.

5.2.2 Individual Sewage Disposal Systems

Developed parcels outside the public sewer service area rely on individual on-lot systems for wastewater treatment and disposal. Based on the assessment conducted as part of this Plan Update, there are currently 641 on-lot systems serving occupied parcels in the southern drainage area of the Township and 1,924 in the remaining drainage areas. The majority of the residents on these parcels also rely on on-lot wells for drinking water. Plate 4 highlights the parcels currently using on-lot systems for wastewater treatment and disposal.

The property owner is fully responsible for the proper operation and maintenance of his on-lot system. Fairview Township does not currently have an on-lot sewage management program that establishes minimum maintenance requirements. Proper maintenance of the on-lot systems will be needed to keep the systems in good working order and to identify potential problem areas. Implementation of an on-lot management program will be discussed in Section 5.2.6.

Plate 3 presents the results of the soil suitability evaluation conducted as part of this Plan. The soils present on the majority of the parcels outside the public sewered area meet the criteria presented in Section 1 as potentially suitable for on-lot systems (the requirements of Pennsylvania Title 25, Chapter 73). Based on the sewage disposal needs assessment conducted as part of this Plan, on-lot wastewater systems appear to be operating satisfactory, with the exception of a few pockets of systems in the areas of Fairview Farms, Sandspur Estates and Timber Ridge.

5.2.3 Small Flow Treatment Facilities

There are currently no small flow treatment systems (flows up to 2,000 gpd or less) in Fairview Township. The West Shore School District's Fairview Elementary School's WWTP has a design capacity of 4,000 gpd. The Township would consider use of a small flow treatment system to serve new development outside the public sewer service area or as a replacement system for a failed or group of failed on-lot systems as long as the operation and maintenance measures have been clearly established by agreement to ensure the long-term use of these systems. Proposals for small flow treatment systems need to be considered on a case-by-case basis and the person proposing the facility must perform the necessary soil, site, and hydrogeologic evaluations to the satisfaction of the Township and PADEP. Given the availability of treatment capacity within the Lower Allen, North

and Lewisberry WWTP service areas of the Township, developers proposing use of small flow treatment facilities located near any of these WWTP service areas must also evaluate sewer extension options as part of the Sewage Facility Planning Module process.

5.2.4 Community Wastewater Treatment Facilities

There are currently no community wastewater treatment facility (wastewater treatment system serving more than one home that relies on land disposal of the treated wastewater) located within the Township, other than the system serving the mobile home park off Shauffnertown Road. The soils and topography outside the majority of the public sewer service area appear to be generally suitable for community wastewater treatment facilities. Use of a community wastewater treatment facility would be considered by the Township if public sanitary sewer service was determined not to be economically available and the soil conditions were determined suitable, after conducting site soil investigations and a preliminary hydro-geological evaluation, to support such a system, and proper operation and maintenance responsibilities where established in an agreement between the system owner and operator. The Township will require that the long-term maintenance agreement be executed and provided to the Township before approval of a community system.

The Township's Subdivision and Land Development Ordinance allows for the use of a community wastewater treatment facility if it can be shown by the developer that such an approach would provide more reliable and effective treatment of wastes than individual on-lot systems or connection to the public sewer system is not available. Requirements associated with the community system, as specified in the Township Subdivision and Land Development Ordinance, include the following:

- The design and installation of the system is subject to the approval of the Township Board of Supervisors and PADEP.
- The construction of the system is at the sole expense of the developer.
- The Township shall have the right to inspect and test the system at any time. The costs of the inspections and testing shall be the responsibility of the owner.
- All suitable agreements, including financial guarantees, shall be established for the ownership and maintenance of the system prior to Township approval of the system.

As stated above, proper operation and maintenance of the facility is the responsibility of the developer.

5.2.5 Holding Tanks

There are currently no properties within Fairview Township that are served by sewage holding tanks. Fairview Township executed a holding tank ordinance, Ordinance 2001-3, on March 26, 2001. A copy of Ordinance 2001-3 is included in Appendix O. Property owners utilizing holding tanks are responsible for the proper operation and maintenance of the tanks. The property owners must also have a private hauler under contract to properly dispose of the sewage when the tank is full. Disposal of the holding tank contents may only be made at sites approved by PADEP. The ordinance addresses all of the requirements pertaining to holding tanks that are listed in Chapter 71.63 of the Pennsylvania Code Title 25 - Environmental Protection, effective November 7, 1997.

5.2.6 Sewage Management Programs

Public sewers are not planned for some areas of the Township served by on-lot systems. It is, therefore, important that the systems are properly operated and maintained. Development and implementation of a sewage management program would provide a mechanism by which the operation and maintenance of private systems would be regulated and monitored. Other factors, which necessitate the proper operation and maintenance of the systems, are:

- Age of existing systems (the majority of the systems are over 25 years old);
- Need to maintain area groundwater quality for private wells;
- Type of system installed versus soils conditions; and
- High cost to provide public sewers to remote areas in cases where existing systems fail and are not repairable.

Development and implementation of a sewage management program for Fairview Township to address the above concerns and to assure the long-term operation of existing and new on-lot systems is selected as a component of the Township's Plan. Appendix O contains a copy of the adopted Ordinance (Ordinance# 2010-3), along with a map showing the four initial maintenance districts, is included in Appendix O. The Township adopted Ordinance # 2010-3 at its June 28, 2010 Board of Supervisors meeting.

Major program components in the Ordinance include the following:

- Public education to encourage proper operation and maintenance of the systems and implementation of water conservation measures;
- All on-lot systems in the Township must be pumped and inspected at least once every 4 years.
- Periodic inspections of all on-lot systems at the time the system is pumped. The Township SEO should conduct the initial inspection. Subsequent inspections can be completed by a pumper/hauler registered with the York County Solid Waste Authority (YCSWA);
- Required system pumping on a set schedule so that all of the systems in the Township are pumped on a frequency such that solids or scum do not accumulate in excess of 1/3 the liquid depth of the tank.
- Requirements for the proper operation and maintenance of any electrical, mechanical and chemical components of the wastewater treatment and disposal facilities.
- Requirements for a maintenance agreement between the system owner and an individual, firm, or corporation experienced in the operation and maintenance of sewage treatment systems for small flow treatment facilities, community land disposal facilities, or denitrification facilities.
- Other requirements of Title 25, Chapter 71.73 of the Pennsylvania Code related to sewage management program.

5.2.7 Non-Structural Comprehensive Planning Activities

Zoning and development ordinances have long been in place in Fairview Township to assist in promoting sound economic and consistent land development. Plate 5 presents a copy of the Township's current zoning map. The population and wastewater flow projections developed for this Update are based on existing zoning regulations. The Township retains a Code Enforcement Officer on staff to oversee implementation and enforcement of its zoning and land development ordinances. The Township SEO is charged with enforcing compliance with the Township's on-lot sewage disposal regulations.

The majority of the properties serviced by on-lot wastewater systems are located in the Rural Residential (RR) zoning district outside the public sewer service area. The RR zoning district generally accounts for low-density rural land uses. Lots located within the RR zoning district must be a minimum of 1 acre (when served by on-lot systems). A large portion of the RR district is located outside of the public sewer service area on land where public water and sewer service are not scheduled. Comparison of Plate 3, Soil Suitability, with Plate 5, Zoning, indicates that the majority of the on-lot systems are located on soils that are potentially suitable for on-lot sewage systems. It is the intent of the Township for on-lot systems to continue to serve those portions of the Township outside the established public sewer service area. These areas are generally located within the "Interim Rural Areas" and outside of the "Interim Primary Growth Areas" as shown on the York County Growth Management Map prepared as part of the York County Comprehensive Plan.

The wellwater sampling conducted as part of this Plan analyzed the collected samples for the concentration of nitrate-nitrogen. Although the average concentration of nitrate in the wells was approximately 4.0 mg/L, 24.2% of the samples contained nitrate-nitrogen levels above 5 mg/L. Title 25, Chapter 71.62 of the Pennsylvania Code requires any person proposing a new on-lot system within a quarter mile of a drinking water well with a nitrate-nitrogen level above 5 mg/L to conduct a preliminary hydrogeologic evaluation as part of the planning process to confirm the level of nitrate-nitrogen leaving the property will not exceed the safe drinking water limit of 10 mg/L. Given the number of wells in the Township with nitrate-nitrogen levels above 5 mg/L, the Township should amend its Subdivision and Land Development Ordinance to clarify the requirement for preliminary hydrogeologic evaluations and to reference Plate 4 of this Plan.

5.2.8 No-Action Alternative

Failure of Fairview Township to meet its pending nutrient cap loads would result in violations of its NPDES Permit and enforcement action by PADEP. Also, failure of the Township to address the long-term operation and maintenance of on-lot systems may result in higher failure rates and more expensive wastewater treatment options. Failing on-lot systems may lead to the degradations of drinking water resources and are a significant health risk to the residents of the area of these failures. Water quality problems may also reduce recreational opportunities in the water bodies throughout the Township, decreasing the likelihood of future growth of the Township.

Due to the negative impacts of the no-action alternative, it is eliminated from further considerations as part of this Plan Update.

5.3 Wastewater Conveyance Alternatives

The existing conveyance facilities appear adequate to convey wastewater generated in Fairview Township to the downstream WWTP. Given the elevation barrier presented by Reesers Summit, the location of US Route 83 separating the North WWTP service area from the South WWTP service area, and the need to expand downstream sewage facilities within the North basin; if flow is diverted form the south basin; diverting flow from the South WWTP service area to the North WWTP service area is eliminated from consideration.

The existing wastewater pumping stations have adequate capacity to handle projected flows, except if the capacity of the South WWTP is expanded above its current level of 0.5 mgd. The Sterns and Wheler Report considered options to expand the influent pumping capacity of the South WWTP if the WWTP capacity was expanded. These options will be explored further in Chapter 6.

The extension of sewers to the Fairview Farms and Timber Ridge areas of Fairview Township is evaluated in Chapter 6.

6.0 EVALUATION OF ALTERNATIVES

6.1 Consistency Analysis

Wastewater management alternatives developed as part of the Act 537 planning process must be evaluated in terms of their relationship to the goals and objectives of various planning, environmental, and natural resource laws and policies of the Commonwealth of Pennsylvania. Chapter 71.21(a) (5) of PADEP's regulations requires that the Act 537 Plan address the consistency of each wastewater management alternative with twelve of the Commonwealth's goals and policies. If a recommended alternative is determined to conflict with or is inconsistent with one of the goals and objectives, the conflict and inconsistencies must be resolved before PADEP will approve the alternative.

The following Sections discuss the twelve evaluation categories and the consistency analysis. Consistency analyses were performed only for those components of the alternatives within Fairview Township. Based on the following analysis, the alternatives are consistent with all eleven criteria.

6.1.1 Comprehensive Water Quality Management Plan (COWAMP)

Sections 4 and 5 of the Clean Streams Law require that consideration be given to water quality management and pollution control in a watershed as a whole. Section 208 of the Clean Water Act calls for the development of plans that identify the facilities necessary to meet anticipated municipal and industrial waste treatment needs. Comprehensive Water Quality Management Plans have been developed under Sections 4 and 5 of the Clean Streams Law and 208 of the Clean Water Act for areas in Pennsylvania.

York County is located within the Lower Susquehanna River Basin Water Quality Management Study Area 3. The COWAMP for York County was prepared for the Pennsylvania Department of Environmental Resources by Gannett Fleming Corddry and Carpenter, Inc. Chapter XII of the COWAMP, Evaluation of Alternative Programs, September 1980, listed the Fairview-Newberry Planning Area located in York County as a 201 Facilities Planning Area. The remainder of the Township was located in the Lower Allen – Northern Fairview Planning Area of

Cumberland County. The COWAMP included population projections for both of these planning areas to year 2000.

In the Fairview-Newberry Planning Area, the COWAMP stated that the 201 Facilities Planning Report for the Northern York County Regional Joint Sewer Authority was completed in December 1978. The 201 Facilities Plan recommended that sewer service be provided to the Boroughs of Goldsboro and Lewisberry and the developed areas of Fairview and Newberry Townships within the planning area. A secondary wastewater treatment plant was proposed near Goldsboro with discharge to the Susquehanna River. In addition, an advanced wastewater treatment plant was recommended near Lewisberry with discharge into Bennetts Run. Both of these facilities have since been constructed. The COWAMP did not duplicate the effort by separately developing and evaluating wastewater treatment and disposal alternatives, since the area had already undergone extensive environmental and technical evaluations via the 201 Facilities Planning Study. The COWAMP indicated that the planning area should have adequate capacity and facilities to meet wastewater treatment and disposal needs of the area until the year 2000.

For the Lower Allen – Northern Fairview Planning Area, the COWAMP identified two existing WWTPs in the area. The Lower Allen Authority's 5.9 mgd activated sludge plant with phosphorus removal and the Fairview Township Northern 0.24 mgd extended aeration treatment plant. Both of these treatment plants discharged into the Susquehanna River. Besides the two municipal plants, there were five non-municipal plants within the area. The remaining portions of the planning area were served by individual on-lot systems. The existing Lower Allen WWTP was expected to serve the planning area up to the year 2000. The Fairview Township treatment plant was to be used until it was necessary to expand or upgrade the facility, and then at that time, the plant was to be abandoned and its waste flows were to be diverted to the Lower Allen WWTP. The COWAMP recommended that the feasibility of phasing out the non-municipal treatment facilities and conveying their waste to a municipal system be investigated for cost-effectiveness and environmental impact. On-lot systems were to be maintained and/or improved upon as needed in those residential areas that are too distant from centralized treatment facilities or of too low a population density to make service economically practical.

Generally, the recommendations of the COWAMP have been implemented, except the abandonment of the Fairview Township North Plant, which has since been expanded and upgraded. However, according to PADEP, the COWAMP is also now obsolete to the point where it can neither be purchased nor provided for compliance reference. In the area of water quality protection, the State Water Plan incorporated the COWAMP by reference. Accordingly, the compliance with the State Water Plan now includes compliance with the COWAMP and the provisions of Chapter 93 and Chapter 16 of the Pennsylvania Code. All protected uses of water are protected by the decisions made in designing water uses protected by action of Chapter 93, and further application of toxicity standards of Chapter 16 of the Pennsylvania Code.

Since the COWAMP is obsolete, the consistency analysis of the wastewater management alternatives, required by Chapter 71.21(a)(5)(i)-(iii) of the Pennsylvania Code, will be satisfied through consistency with Chapter 93 and the current State Water Plan. Chapter 6.1.5 evaluates the alternatives with respect to Chapter 93, while Chapter 6.1.6 includes a discussion on the current State Water Plan.

6.1.2 Municipal Wasteload Management Plans

Fairview Township annually submits Chapter 94 Municipal Wasteload Management Reports to PADEP for its WWTPs and provides information to Lower Allen and Lewisberry for their WWTPs. The 2007 Chapter 94 Reports project future flow at 233 gpd per EDU. The 5-year population and wastewater flow projections used in this Plan Update are consistent with those included in the Township's 2007 Chapter 94 reports.

6.1.3 Title II of the Clean Water Act

Title II of the Clean Water Act requires the development and implementation of wastewater treatment management plans and practices which provide for the application of the best practical waste treatment technology before discharging into receiving waters. The developed alternatives are consistent with this approach.

6.1.4 Comprehensive Planning

Comprehensive land use plans have been prepared for Fairview Township and York County. Both planning efforts are discussed in detail in Chapter 2 of this Plan. It is crucial that the components of a sewage facilities plan are consistent with those of a comprehensive land use plan so that they may support and complement one another. The population projections considered in this study are consistent with the land use recommendations of the Township and County Comprehensive Plans. Additionally, the established and interim growth areas defined in the County Plan were developed through cooperation between the County and Township representatives. This Plan introduces proper wastewater management alternatives to serve the growth areas within Fairview Township.

6.1.5 Chapter 93, 95, and 102 Antidegradation Requirements

Chapters 93 and 95 under Pennsylvania's Clean Streams Law classifies all surface waters according to uses to be protected and establishes water quality criteria which need to be maintained in the surface waters. The surface water discharges proposed by the alternatives in this plan is from existing wastewater treatment plants that has been issued NPDES Permits. The discharges from these facilities currently comply with the established water quality criteria and are expected to remain in compliance with the criteria if any of the alternatives developed for this plan are implemented.

Chapter 102 requires a soil erosion and sedimentation control plan be prepared and followed for any construction activity impacting greater then one acre. The sewer system improvements to serve the Fairview Farms and Timber Ridge area will be completed in compliance with necessary erosion and sedimentation control plans.

6.1.6 State Water Plan

The Commonwealth of Pennsylvania enacted the Water Resources Planning Act (Act 220) in 2002, requiring that the State Water Plan be updated by March 2008 and every 5 years thereafter. Fairview Township is located within the Lower Susquehanna River watershed. The State Water Plan was updated in spring 2009 and a copy is available electronically on PADEP's website. The updated Plan replaces the original State Water Plan, published in February 1980.

Based on a review of the 2009 update to the State Water Plan, there are no expected conflicts between the water quality management goals and objectives of the State Water Plans and this Act 537 Plan. According to the State Water Plan Atlas and Principals, the updated Plan will help planners determine how to meet current and future water supply and wastewater disposal needs by protecting community growth and development. The alternatives discussed in this Act 537 Plan are consistent with the State Plan's goal of well-managed water resources.

6.1.7 Prime Agricultural Land Policy

The policy was established to protect prime agricultural land from irreversible conversions to uses that result in the loss of the land as an environmental or essential food source resource. Plate No. 3 of this Plan shows the extent of land outside the Township's existing sewered area containing prime agricultural soils as identified by the U.S. Department of Agriculture Soil Conservation Service. None of the alternatives propose the extension of public sewers by the Township into prime farmland, therefore, the alternatives of this Plan are consistent with the Prime Agricultural Land Policy by not promoting public sewage facilities in designated agricultural areas. Any wastewater generated outside the public sewer service area will be served by individual on-lot systems.

6.1.8 County Stormwater Management Plans

The Storm Water Management Act (Pennsylvania Act 167) of 1978 states that inadequate management of stormwater resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge and threatens public health and safety. This act requires each County in Pennsylvania to adopt a stormwater management plan for each watershed. The plan is to be a joint effort between the County Planning Agency and the municipalities located in the particular watershed. The major issues to be addressed in a stormwater management plan include the assessment of projected land development patterns, potential impact of runoff quality, and address

the present and projected development in flood prone areas. The main objective of a stormwater management plan is to establish regulations for the control of stormwater runoff.

The PADEP website was visited on August 30, 2010, to check on the Act 167 Plan status for Fairview Township. The Township is located within two separate watersheds; the Susquehanna River Watershed and the Yellow Breeches Creek (Lower) Watershed. The eastern portion of Fairview Township is located within the Susquehanna River Watershed. The Yellow Breeches Creek Watershed borders the Township to the north.

Stormwater Management Plans have not been prepared under Act 167 for either of these Watersheds at the time of the most resent visit, however, the Township of Fairview, has adopted an ordinance within the Township that is similar to those in current Act 167 Plans for other Watersheds. Any new development within the Township must follow the ordinances of the Drainage and Stormwater Management Plan (§22-701).

6.1.9 Wetlands

Areas classified as wetlands by the National Wetlands Inventory (NWI) are identified on Plate 1. As noted in Section 1.3 of this Plan, wetlands are defined by Pennsylvania Title 25, Chapter 105 as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions; including swamps, marshes, bogs and similar areas. The three essential characteristics possessed by wetlands are: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology, the driving force creating wetlands. Much of the land located along stream corridors in the Township contains NWI wetlands or hydric soils. Sanitary sewers are typically placed along stream corridors to minimize pumping requirements. Therefore, some wetland impacts potentially could occur during construction of sanitary sewers.

Any upgrades of the North or South WWTPs will occur within the existing WWTP site and will not impact wetlands. A wetland delineation to identify and define the actual location of wetlands and their boundaries will be performed during the design phase of any sewer extension.

Placement of the sewer line in or through wetlands or streams should be minimized. If wetland encroachment cannot be avoided, PADEP and U.S. Army Corps of Engineers approval will be needed. Construction through wetlands, if permitted, may require the use of a U.S. Army Corp of Engineers Nationwide Permit 12 and a PADEP General Permit BDWM-GP-5. Temporary road crossings through wetlands or streams may require a PADEP General Permit BDWM-GP-8.

6.1.10 Pennsylvania Natural Diversity Inventory

The Pennsylvania Natural Diversity Inventory (PNDI) maintains a database containing site information on regulated plant and animal species, outstanding geological features, and significant natural communities. A PNDI Project Planning Environmental Review was performed on March 12, 2010, for the Fairview Farms area and the Timber Ridge areas. The searches determine if any impacts are anticipated to federally listed, proposed, or candidate species if the construction project were to occur in the area. The Project Planning Environmental Review determined that no anticipated impacts exist for the areas. The results of the PNDI Project Planning Environmental Review are included in Appendix P.

PNDI searches will need to be conducted as part of the planning stage for any new developments in Fairview Township.

6.1.11 Historical and Archeological Resource Protection

Pennsylvania Title 37, Section 507 requires cooperation between public officials and the Pennsylvania Historical and Museum Commission (PHMC). A cultural resource notice request to the Bureau of Historic Preservation (BHP) for a list of known historical sites and potential impacts on known archeological and historic sites within Fairview Township by implementation of any of the wastewater alternatives is needed before proceeding with the alternative. Any upgrades of the North or South WWTPs will occur within the existing WWTP site and will have no impact on historical resources. A PHMC cultural resource notice request was submitted on March 24, 2010 for the proposed Fairview Farms and Timber Ridge sewer extension projects. A copy of the request is included in Appendix Q.

The PHMC BHP responded in a letter dated May 5, 2010, stating that the proposed construction activities should have no effect on historical buildings, structures, or archaeological

resources located in the project area. A copy of the response letter from the PHMC-BHP is included in Appendix Q.

6.1.12 Water Quality Standards and Effluent Limitations

The only alternatives proposing an increase in permitted capacity of a stream discharge are the two South WWTP options considered in the Sterns and Wheler report. The treatment units proposed in each alternative will achieve compliance with the anticipated water quality standards and discharge limits. New NPDES Permits will need to be obtained for any South WWTP expansion options during the preliminary design phase to confirm the discharge limits prior to final design.

6.1.13 Resolution of Inconsistencies

Based on the above analyses, it does not appear there are any inconsistencies, at the planning stage, between the alternatives and the various goals and objectives of the planning, environmental and natural resource laws and policies of the Commonwealth of Pennsylvania.

6.2 On-Lot Service Areas

The number of developed lots in Fairview Township currently served by on-lot systems is estimated to be 2,565. This value is equal to about 39% of the total number of housing units in the Township. An analysis of the on-lot system parcels was conducted in Section 3.10 and Appendices E and F. Properties served by the existing on-lot systems were divided into two geographic areas to assess the feasibility of continuing the use of on-lot systems in these areas versus extension of public sewers. The two areas include the Southern portion of the Township, potentially tributary to the South WWTP, referred to as the Southern Basin, and the rest of the Township, referred to as the Remaining Basins.

Three areas were evaluated in Section 3 as having a potential sewage management need. The Fairview Farms area and the Timber Ridge area required additional evaluation, while the Sandspur Estates area will continue to use an on-lot wastewater treatment approach.

6.2.1 Fairview Farms Needs Area

An evaluation of sewage management alternatives for the Fairview Farms area was performed and four potential alternatives were developed for consideration. Alternatives 1, 2 and 3 include the construction of a gravity/pressure sewer to connect the Fairview Acres area to the existing public sewer systems tributary to the North WWTP. Alternative 4 proposes a community treatment system for the area which would involve either a stream discharge or land dispersal of treated wastewater effluent.

It should be noted that the occupied property labeled as test sample number 36 on Plate 4 was classified as a suspected malfunction as part of the sewage disposal needs assessment. This classification was due to the drinking water well on the property testing positive for fecal coliform during the well water sampling program completed as part of this Plan. Due to the location of this property in relation to the Fairview Farms area, it was evaluated for feasibility of a continued on-lot wastewater approach. As shown on Plate 3, a portion of the property is underlain by soils that are suitable for on-lot wastewater disposal. Additionally, the property is approximately 1 acre in size, based on information from the York County Tax Assessment Database. Based on the soil suitability and the adequate area for a replacement on-lot wastewater system, this property was not included in the Fairview Farms needs area.

Figure 6-1 presents a general layout of the new collection and conveyance facilities needed for Alternative 1. Alternative 1 would convey the collected wastewater via one pumping station, located along Route 114, to the existing manhole AB-6, located in the ROW near the Fairview Township Elementary School. Gravity sewers would be installed on Bradley Circle, Carriage Road (ROW), Route 114, Sunset View, and Shauffer Drive. Low pressure sewer would be used in areas where wastewater could not be conveyed via gravity, specifically Route 262, Diller Road and Carriage Road. Alternative 1 would convey the wastewater from the Fairview Farms area to the North WWTP. This alternative would require that the Fairview Township Elementary School abandon its existing private treatment plant and connect to the Township's sewer system. A total of 135 EDUs would be served in Alternative 1. While there are only 98 parcels in the Fairview Farms area, the sanitary sewer facilities proposed as part of Alternatives 1, 2 and 3 would be capable of

serving additional EDUs along Old Forge Road with the construction of a short section of gravity sewer. The additional connections will make the project more affordable.

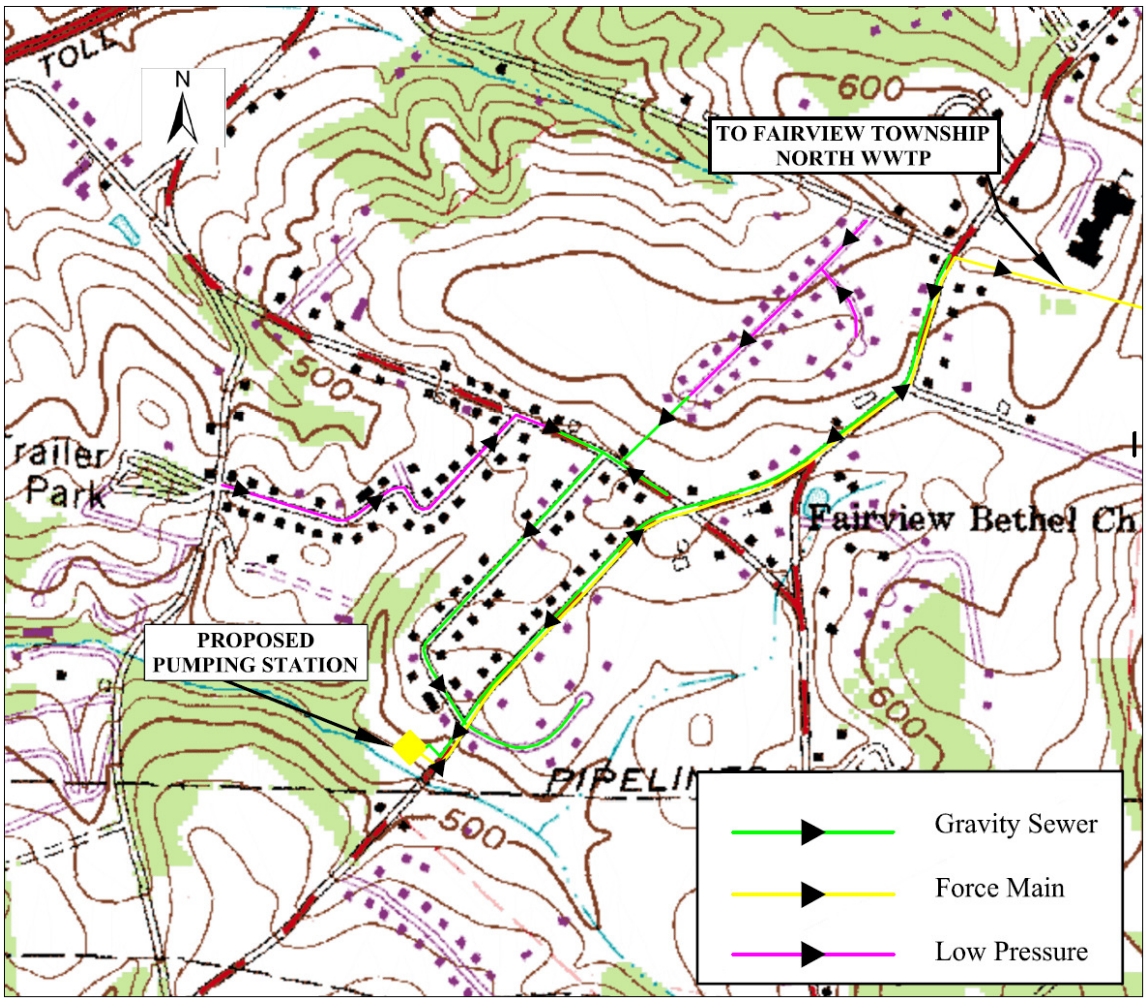


Figure 6-1
Proposed Layout- Fairview Farms Alternative 1

Figure 6-2 presents a general layout of the new collection and conveyance facilities needed for Alternative 2. Alternative 2 is similar to Alternative 1, with the addition of the Meadowbrook MHP area. In order to serve this area, an additional pumping station would be required near the existing privately owned WWTP serving the Meadowbrook MHP. Alternative 2 would serve the 135 occupied parcels included in Alternative 1, along with approximately 100 properties in the Meadowbrook MHP area, for a total of 235 properties served. The existing Meadowbrook MHP private wastewater collection system would be reused in Alternative 2. It should be noted that if

Alternative 2 was the selected approach, it would result in a number of properties in the Fairview Farms area contributing wastewater to the proposed Meadowbrook MHP pumping station. In doing so, it would not be possible to meter flow from these two areas separately.

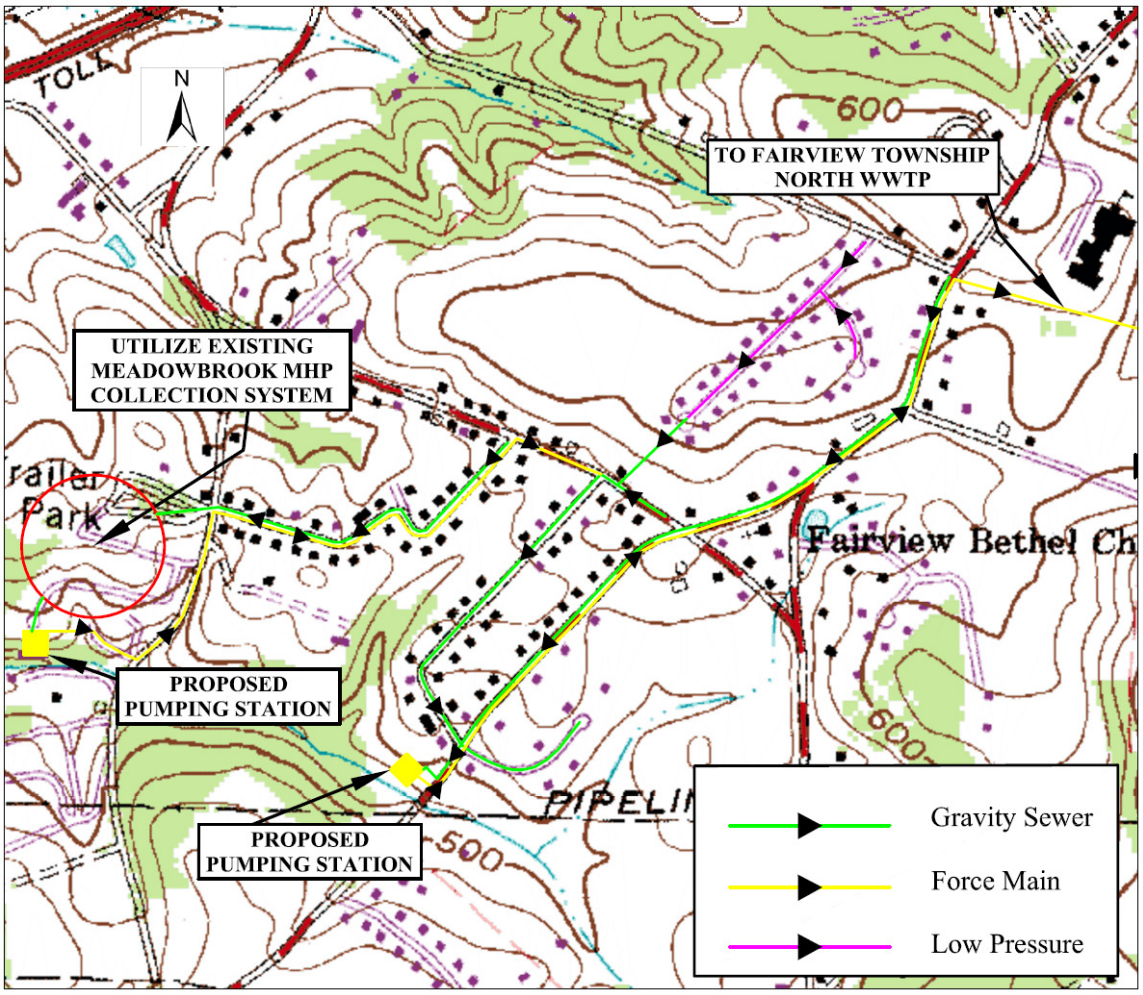


Figure 6-2
Proposed Layout- Fairview Farms Alternative 2

Figure 6-3 presents a general layout of the new collection and conveyance facilities needed for Alternative 3. Alternative 3 would require that the owner of the Meadowbrook MHP to construct the necessary sewage facilities to convey all of the wastewater generated in the MHP to the public sewer system designed to serve the Fairview Farms area. The preferred connection point is the low-pressure sewer located along Diller Road, as demonstrated on Figure 6-3. The configuration of the sanitary sewer system for the Fairview Farms area is the same as Alternative 1, with the exception of the additional capacity required in the low pressure main and the proposed pumping

station along Route 114 to convey wastewater flows from the Meadowbrook MHP. Consequently, a 4-inch low pressure sewer main rather than the 2-inch main needed for Alternative 1 and larger pumps in the pumping station will be needed for Alternative 3 resulting in an additional cost.

A total of 235 properties would be served, with 100 connections from the Meadowbrook MHP private sanitary sewer system. Implementation of Alternative 3 would allow for metering of the wastewater flows from the Meadowbrook MHP. Due to its age and lack of maintenance and rehabilitation, it is likely that the existing Meadowbrook MHP collection system will be susceptible to inflow and infiltration. By segregating the two areas in Alternative 3 and requiring the Meadowbrook Pumping Station to be metered, the Township could more accurately ascertain the source of inflow and infiltration. Since the sewer system tributary to the proposed Meadowbrook MHP Pumping Station would be owned and maintained by the MHP, and repairs needed to the system would be the responsibility of the MHP and not burden other Township sewer customers.

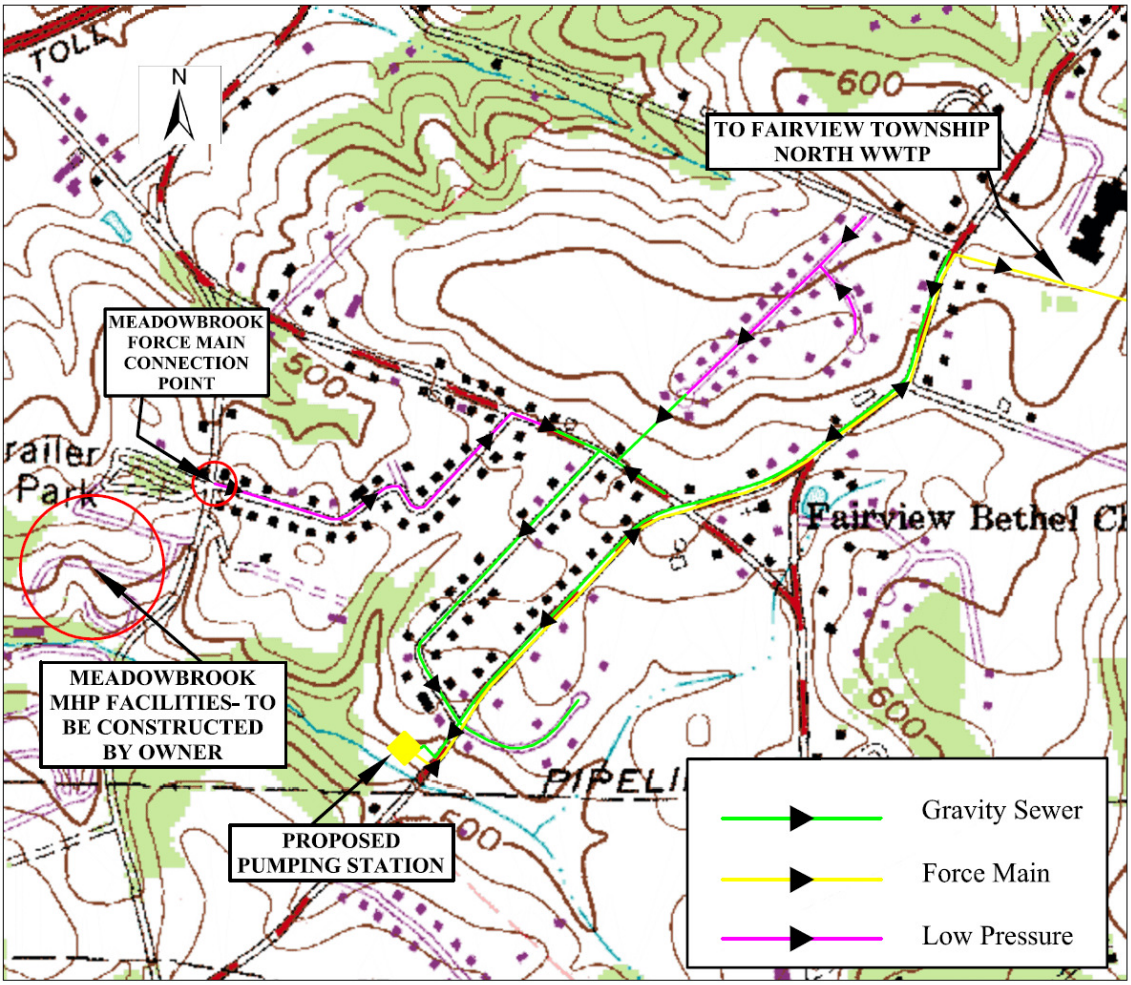


Figure 6-3
Proposed Layout- Fairview Farms Alternative 3

Alternative 4 would convey the collected wastewater to a proposed community WWTP to be located along Old Forge Road. Potential options for the treated wastewater were considered. The first option of land dispersal of the treated wastewater was eliminated from consideration due to the poor soil conditions in the area. The Fairview Farms area consists predominately of Cordous silt loam (Cm) and Lehigh channery silt loam (LhB), both of which are hydric soils and unsuitable for on-lot sewage disposal systems (refer to Table 1-1). The other option considered was stream discharge of the treated wastewater, The closest surface water to the area is an unnamed tributary of Yellow Breeches Creek that generally runs from the municipal park off Lewisberry Road to Old Forge Road, intersecting Shauffertown Road, under the Pennsylvania Turnpike, and then into Yellow Breeches Creek, a cold water fishery. A farm pond of approximately 4 acres is located approximately 3,150 feet downstream from the potential WWTP site off Old Forge Road. It is

expected that the discharge limits for a new WWTP immediately upstream of a farm pond would be more stringent than typical secondary treatment requirements and the resultant treatment facilities very expensive to construct, operate, and maintain.

Since the collection facilities for Alternative No. 4 would be similar to those needed for Alternative No. 2 and the cost for the community treatment system is much higher than the conveyance facilities needed for Alternatives 1, 2, and 3 to transport the wastewater to the existing North WWTP, a new community treatment plant was eliminated from consideration given the lack of suitable areas, and anticipated higher cost than alternatives 1, 2, and 3 and the availability of WWTP capacity. Appendix R provides additional information on the Fairview Farms alternatives, including a breakdown of estimated costs associated with each alternative.

Table 6-1 summarizes the estimated planning level project costs for the three Fairview Farms alternatives that rely on extensions from existing public sewage facilities. As demonstrated by the Table, the lowest cost alternative is Alternative 1. However, this alternative does not include serving the Meadowbrook MHP, as requested by PADEP. The planning level project cost for Alternative 2 assumed that the existing collection system serving the Meadowbrook MHP can be reused to some degree and would not have to be completely replaced. An additional contingency was added to this project cost to account for necessary internal television inspection and potential sewer rehabilitation. Without further investigation, it is not possible to determine the condition of the existing MHP private collection system. The estimated planning level project cost for Alternative 3 is approximately the same as Alternative 1, with an additional cost for the larger pumping station and larger pressure sewer main.

Table 6-1
Fairview Acres Public Sewage Facility Alternatives
Estimated Project Costs (1)

Alt No.	Description	Total Project Cost in 2010 Dollars	EDUs Served By Project	Probable Cost Per EDU
1	Construct sanitary sewer extension serving only Fairview Farms Area. Wastewater flows to North WWTP.	$3,213,000	135	$23,800
2	Construct sanitary sewer system serving the Fairview Farms and Meadowbrook MHP. Wastewater flows to North WWTP.	$4,285,000	235	$18,200
3	Construct sanitary sewer system serving the Fairview Farms area and allow connection of Meadowbrook MHP separate system. Wastewater flows to North WWTP.	$3,411,000(2)	235 (2)	$14,500 (2)
4	Construct a small community wastewater collection and treatment facility. Discharge to unnamed tributary to Yellow Breeches Creek.	Cost not evaluated: Township already owns and efficiently operates wastewater treatment and collection facilities nearby, project cost will be more than alternatives 1 and 2, and approval to discharge to tributary is unlikely.		

NOTES:

(1) Preliminary project cost for public sewage facilities. See Appendix R for an itemized breakdown of cost.
(2) Meadowbrook MHP owner will be responsible for constructing conveyance system from the MHP to one of the connection points shown on Figure 6-3. These private facility costs are not included in the total project costs given in the table.

Other potential options to address Fairview Farms would be to issue holding tank permits when on-lot systems are found to be failing and to promote other development in the area that would require a sanitary sewer extension to which the Fairview Farms area homes could connect. The holding tank option is an uneconomical long-term option, since the holding tanks must be pumped

out on a regular basis. Waiting for adjacent areas to be developed does not provide a definitive timeline for addressing the sewage disposal needs of the area and was eliminated from consideration.

While Alternative 1 is technically feasible, PADEP requested that the Meadowbrook MHP be served by the proposed sewer extension to serve the Fairview Farms area. Likewise, Alternative 2 is technically feasible, but would require the Township to acquire an aging sewage collection system as well as utility access easements. Based on the evaluation of alternatives, the selected approach is Alternative 3. Alternative 3 will require the owner of the Meadowbrook MHP to construct the sewage facilities to convey wastewater generated in the MHP to the Township's sewer system. The sewage facilities would include a pumping station and corresponding force main. The connection point for the Meadowbrook MHP force main is shown on Figure 6-3. A sewage flow meter should be installed near the connection point, and the meter should be calibrated annually and the MHP billed for sewer service based on the total metered flow from the MHP.

An evaluation of the potential funding mechanisms for this proposed sewer extension serving the Fairview Farms and Meadowbrook MHP is included in Section 6.4.

6.2.2 Timber Ridge Area

An evaluation of sewage management alternatives for the Timber Ridge area was performed and two potential alternatives were developed for consideration. Alternatives 1 and 2 propose the construction of a gravity/pressure sewer to connect the Timber Ridge area to the existing sewer system adjacent to the area. Since the Timber Ridge area is abutting existing sanitary sewer facilities tributary to the North WWTP, an evaluation of a community WWTP was not necessary.

Figure 6-4 presents a general layout of the new collection and conveyance facilities needed for Alternative 1. Alternative 1 would convey the collected wastewater via one pumping station, located along in the ROW near Timber Lane, to the existing manhole HH-9, located near Hemlock Drive. Gravity sewers would be installed on sections of Holly Drive, Tall Oaks Drive and Timber Lane. Six properties along Tall Oaks Drive and twelve properties along Pine Tree Drive would need to be served by grinder pumps and a low pressure sewer main due to the topography. The force main

from the proposed pumping station would discharge into a gravity sanitary sewer system at the intersection of Lewisberry Road and Timber Lane, and the five properties along Lewisberry Road would be required to connect to this gravity sanitary sewer system via private gravity laterals. Alternative 1 would convey the wastewater from the Timber Ridge area to the North WWTP. A total of 55 residential EDUs would be served in Alternative 1.

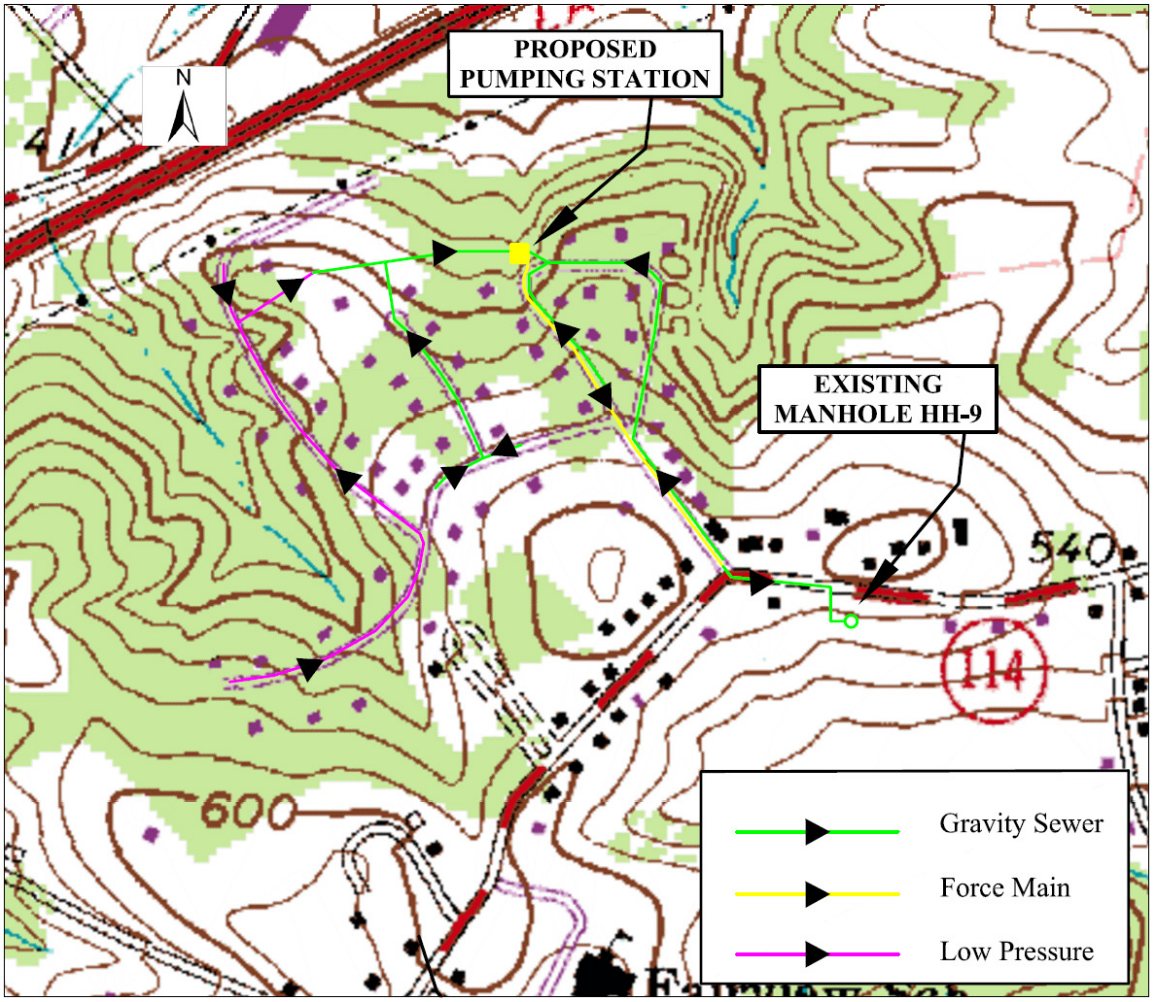


Figure 6-4
Proposed Layout- Timber Ridge Alternative 1

Figure 6-5 presents a general layout of the new collection and conveyance facilities needed for Alternative 2. Alternative 2 serves the same area as Alternative 1, but proposes the use of low pressure sewer rather than gravity and a pumping station. The low pressure system would discharge into a gravity sanitary sewer system at the intersection of Lewisberry Road and Timber Lane, and the

five properties along Lewisberry Road would be required to connect to this gravity sanitary sewer system via private gravity laterals. The gravity sanitary sewer system would connect at existing manhole HH-9, the same proposed connection point as Alternative 1. Alternative 2 would convey the wastewater from 55 residential EDUs in the Timber Ridge area to the North WWTP.

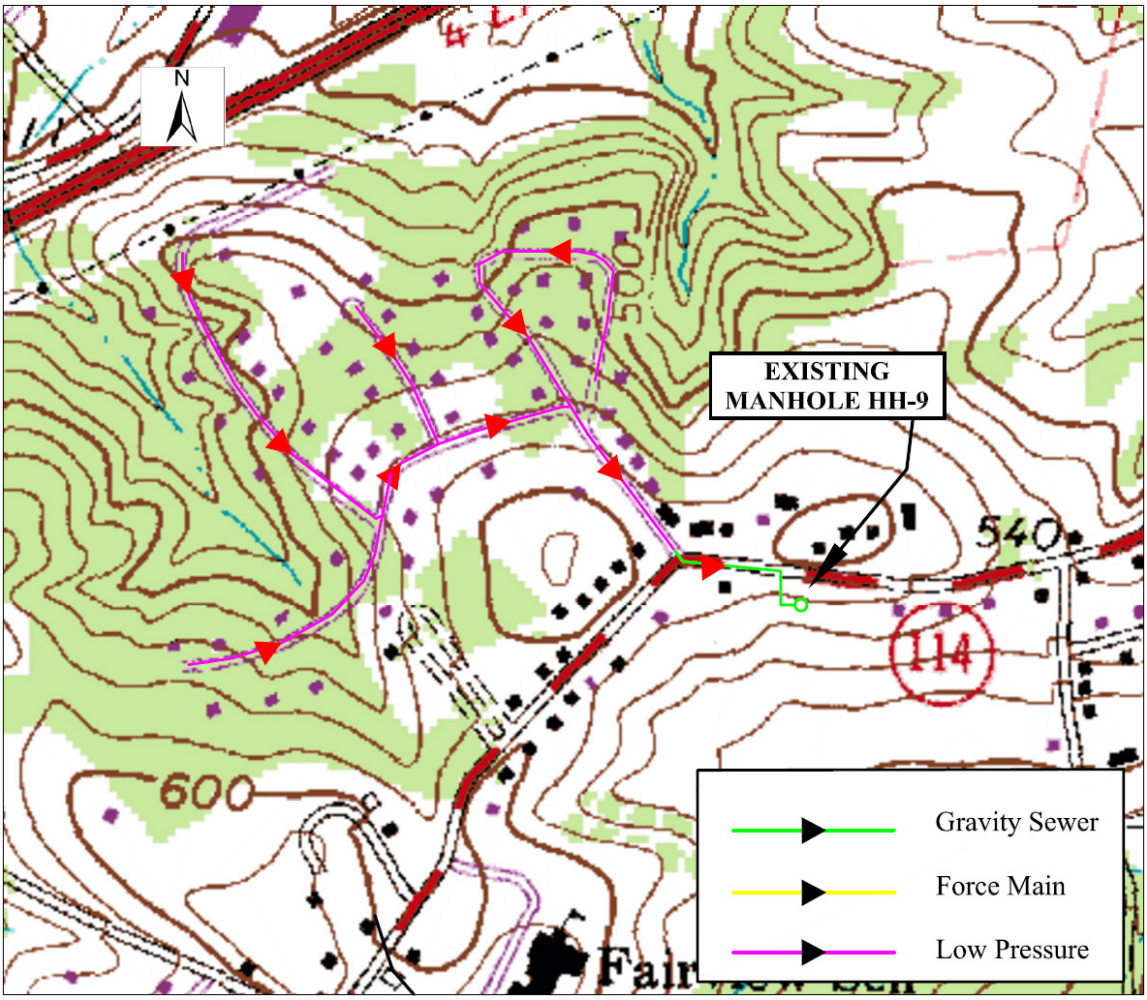


Figure 6-5
Proposed Layout- Timber Ridge Alternative 2

Table 6-2 summarizes the estimated planning level project costs for the two Timber Ridge alternatives that rely on extensions from existing public sewage facilities. While Alternative 2 has a lower total initial project cost, the expected lifetime operation and maintenance expense of Alternative 2 is expected to far exceed that of Alternative 1. Additionally, the Fairview Township Sewer Authority prefers the use of one public pumping station over numerous grinder pumping

stations that may be the responsibility of the homeowner. Appendix S provides additional information on the Timber Ridge alternatives, including a breakdown of estimated costs associated with each alternative.

Table 6-2
Timber Ridge Public Sewage Facility Alternatives
Estimated Project Costs (1)

Alt No.	Description	Probable Project Cost in 2010 Dollars	EDUs Served By Project	Probably Cost Per EDU
1	Construct gravity sanitary sewer extension serving the Timber Ridge area. Wastewater flows to North WWTP.	$1,614,000	55	$29,300
2	Construct low pressure sanitary sewer extension serving the Timber Ridge area. Wastewater flows to North WWTP.	$1,249,000	55	$22,700

NOTES:

(1) Preliminary project cost. See Appendix S for an itemized breakdown of cost.

Other potential options to address Timber Ridge area would be to issue holding tank permits when on-lot systems are found to be failing and to promote other development in the area that would require a sanitary sewer extension to which the Timber Ridge area homes could connect. The holding tank option is an uneconomical long-term approach, since the holding tanks must be pumped out on a regular basis. The selected approach to address the long-term wastewater needs of the Timber Ridge is therefore Alternative 1, connecting to the existing sewer system tributary to the North WWTP via a gravity sanitary sewer extension.

An evaluation of the potential funding mechanisms for this proposed sewer extension serving the Timber Ridge area is included in Section 6.4.

6.3 Treatment Facilities

Table 6-3 presents the wastewater treatment alternatives selected for further evaluation to meet the projected needs of Fairview Township for the planning period. The public WWTP improvement projects introduced in Table 6-3 were discussed in Chapter 5.2.1 and Appendix N.

Alternative 1 upgrades the North WWTP to provide the facility with the ability to reduce TN and TP down to 6.0 mg/L and 0.8 mg/L discharge levels, respectively. As noted in Chapter 5.2.1, the enhanced Modified Ludzack-Ettinger (eMLE) conversion is the selected approach.

This is approach N-2 from the Sterns and Wheler report. Alternative 1 also expands the South WWTP to 0.75 mgd capacity and provides enhanced TN removal capabilities to comply with the pending nutrient cap loads. Estimated project costs for construction of the WWTP facilities for Alternative 1 is $7,700,000.

Alternative 2 proposes the same improvements at the North WWTP as Alternative 1, but makes no improvements to the South WWTP. This approach will require the Township to secure nitrogen credits to offset the nitrogen discharge from the North and South WWTPs as flows to the facilities increase in the later years of the plan.

Table 6-3
Fairview Township
Wastewater Management Alternatives

Alt. No.	Description	Design Capacity (mgd)[1]		Purchase Nitrogen Credits	Estimated[2] Project Cost for WWTP Upgrades
		North WWTP	South WWTP		
1	Upgrade and expand WWTPs	0.60	0.75	No	$7,700,000
2	Upgrade North WWTP, rely on credits and developer funded facilities for southern basin	0.60	0.50	Yes	$3,700,000
3	Purchase nutrient credits and rely on developer funded facilities for southern basin	0.72	0.50	Yes	$0

Notes:
(1) See Appendix N for description of proposed WWTP upgrades
(2) Estimated project costs taken from Appendix N

Alternative 2 requires developers within the southern part of the Township that have not already secured capacity in the South WWTP to handle the wastewater from their developments by another method. These developers will need to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their developments with on-lot systems, a community wastewater system, or an extension to the public sewer system if the developer has financed all necessary improvements to the public conveyance and treatment facilities needed to serve his development. This could include extension of public sewers from the new development to the Newberry Township sewer system if the developer secures the necessary approvals from Newberry Township and the developer completely funds all needed facilities. This approach will be referred to as "Developer funded wastewater facilities" for the standpoint of this Plan. Estimated project costs for construction of the public WWTP facilities for Alternative 2 is $3,700,000. This cost excludes the cost for purchasing nutrient reduction credits or the cost of Developer funded wastewater facilities.

Alternative 3 relies completely on the purchased of nutrient reduction credits rather than WWTP upgrades to meet the pending nutrient cap loads. Alternative 3 also relies on Developer funded wastewater facilities, as does Alternative 2, to address the needs of future developments within the southern drainage area that are not identified in the Township's 2007 Wasteload Management Report for the South WWTP.

The amount of nutrient credits the Township will need to purchase under Alternatives 2 and 3 will depend on the rate of new growth within the North and South WWTPs service areas. Tables 6-4 and 6-5 calculate the amount of credits needed and the cost of the credit purchase under two growth scenarios. Scenario 1 assumes an increase in new public sewer customers of 50 EDUs per year (Table 6-4) and Scenario 2 assumes 110 new EDUs per year (Table 6-5). Scenario 1 is consistent with the growth projections developed for this Plan. Scenario 2 required that the South WWTP be expanded by 2015 to support the assumed growth rate within its service area. Scenario 1 keeps the South WWTP capacity at its current level of 0.5 mgd.

Fairview Township undertook negotiations with Red Barn Trading Company, a nutrient credit aggregator, for the purchase of nitrogen credits on a 15-year basis. Initial discussions with Red Barn Trading focused on the company's ability to sell nitrogen credits to Fairview Township at an initial price of $5.00 per pound and increasing annually thereafter at three percent. The annual costs for nitrogen credits given in Tables 6-4 and 6-5 are based on these initial price negotiations. Total nitrogen credits needed range from about 9,000 pounds per year to 14,500 pounds per year for growth Scenario 1 and 9,000 and 9,000 pounds per year to 20,000 pounds per year for growth Scenario 2.

Fairview Township finalized its negotiations with Red Barn Trading Company on April 10, 2008 with the execution of a 15-year nitrogen credit purchase agreement. A copy of the agreement is included in Appendix T.

Table 6-4
Growth Scenario 1 - Moderate Growth
Projected Annual Total Nitrogen Credit Purchase Costs

Year	North WWTP Flow (mgd)	North WWTP TN (ppy)	South WWTP Flow (mgd)	South WWTP TN (ppy)	Fairview Township Total Flow (mgd)	Fairview Township Total TN (ppy)	TN Credits Needed (ppy)	TN Credits Cost ($/year)
2007	0.370	19,147	0.375	9,361	0.745	28,508		
2008	0.384	19,872	0.392	9,785	0.776	29,657		
2009	0.394	20,389	0.407	10,159	0.801	30,549		
2010	0.404	20,907	0.420	10,484	0.824	31,391	8,999	$44,994
2011	0.408	21,114	0.433	10,808	0.841	31,922	9,530	$49,081
2012	0.412	21,321	0.445	11,108	0.857	32,429	10,037	$53,195
2013	0.414	21,441	0.454	11,341	0.869	32,782	10,390	$56,729
2014	0.417	21,562	0.464	11,573	0.880	33,135	10,743	$60,484
2015	0.419	21,683	0.473	11,806	0.892	33,488	11,096	$64,359
2016	0.421	21,803	0.482	12,038	0.904	33,842	11,450	$68,355
2017	0.424	21,924	0.492	12,271	0.915	34,195	11,803	$72,588
2018	0.455	23,552	0.500	12,481	0.955	36,032	13,640	$86,343
2019	0.457	23,672	0.500	12,481	0.957	36,153	13,761	$89,721
2020	0.460	23,793	0.500	12,481	0.960	36,274	13,882	$93,284
2021	0.462	23,913	0.500	12,481	0.962	36,394	14,002	$96,894
2022	0.464	24,034	0.500	12,481	0.964	36,515	14,123	$100,695
2023	0.467	24,154	0.500	12,481	0.967	36,635	14,243	$104,545
2024	0.469	24,275	0.500	12,481	0.969	36,756	14,364	$108,590
2025	0.471	24,396	0.500	12,481	0.971	36,876	14,484	$112,254

Assumptions

(1) TN discharge concentration from North WWTP and South WWTP equal to 2007 average of 17.0 mg/L and 8.2 mg/L, respectively.

(2) New EDUs to North WWTP and South WWTP from 2008 through 2012 based on projections included in 2007 Chapter 94 Report.

(3) New EDUs to North WWTP 2013 through 2025 based on 10 per year, except in 2018, when 135 existing homes from Fairview Farms area are expected to connected to system.

(4) New connections to South WWTP 2013 through 2025 based on 40 per year until existing permitted capacity of 0.50 mgd is reached.

(5) Based on $5/pound for TN Credits in 2010 and 50 new EDUs/year

Table 6-5
Growth Scenario 2 - High Growth
Projected Annual Total Nitrogen Credit Purchase Costs

Year	North WWTP Flow (mgd)	North WWTP TN (ppy)	South WWTP Flow (mgd)	South WWTP TN (ppy)	Fairview Township Total Flow (mgd)	Fairview Township Total TN (ppy)	TN Credits Needed (ppy)	TN Credits Cost ($/year)
2007	0.370	19,147	0.375	9,361	0.745	28,508		
2008	0.384	19,872	0.392	9,785	0.776	29,657		
2009	0.394	20,389	0.407	10,159	0.801	30,549		
2010	0.404	20,907	0.420	10,484	0.824	31,391	8,999	$44,994
2011	0.408	21,114	0.433	10,808	0.841	31,922	9,530	$49,081
2012	0.412	21,321	0.445	11,108	0.857	32,429	10,037	$53,195
2013	0.414	21,441	0.473	11,806	0.887	33,247	10,855	$59,270
2014	0.417	21,562	0.496	12,387	0.913	33,949	11,557	$65,069
2015	0.419	21,683	0.520	12,969	0.939	34,652	12,260	$71,106
2016	0.421	21,803	0.543	13,551	0.964	35,354	12,962	$77,382
2017	0.424	21,924	0.566	14,132	0.990	36,056	13,664	$84,034
2018	0.455	23,552	0.589	14,714	1.045	38,265	15,873	$100,479
2019	0.457	23,672	0.613	15,295	1.070	38,968	16,576	$108,073
2020	0.460	23,793	0.636	15,877	1.096	39,670	17,278	$116,107
2021	0.462	23,913	0.659	16,459	1.121	40,372	17,980	$124,421
2022	0.464	24,034	0.683	17,040	1.147	41,074	18,682	$133,204
2023	0.467	24,154	0.706	17,622	1.173	41,776	19,384	$142,281
2024	0.469	24,275	0.729	18,204	1.198	42,479	20,087	$151,854
2025	0.471	24,396	0.753	18,785	1.224	43,181	20,789	$161,112

Assumptions

(1). TN discharge concentration from North WWTP and South WWTP equal to 2007 average of 17.0 mg/L and 8.2 mg/L, respectively.

(2). New EDUs to North WWTP and South WWTP from 2008 through 2012 based on projections included in 2007 Chapter 94 Report.

(3). New EDUs to North WWTP 2013 through 2025 based on 10 per year, except in 2018, when 135 existing homes from Fairview Farms area are expected to connected to system.

(4). New connections to South WWTP 2013 through 2025 based on 100 per year until expanded WWTP capacity is reached.

(5) Based on $5/pound for TN Credits in 2010 and 50 new EDUs/year

Key provisions of the Agreement with Red Barn Trading Company are as follows:

- Fairview Township will begin purchasing 20,000 pounds of nitrogen credits each year from August 1, 2010 to August 1, 2024 for a total of 300,000 total pounds of credits.

- Fairview Township will pay $5/credit the first year with an inflationary clause of 3% per year.

- The agreement required that Fairview Township pay $375,000 in form of a deposit at the time of agreement execution. Half of this deposit ($187,500) will be kept into a segregated interest bearing account. Red Barn may withdraw the interest from this account as they wish.

- Fairview Township has requested that 1/15th of the remaining $187,500 deposit be applied to the annual purchase price for a refundable deposit amount of $12,500 per year. The other $187,500 of the deposit will be returned to Fairview Township in two equal payments toward the annual purchase price during the last 2 years of the agreement. (See Table 6-6)

- If PADEP makes a regulatory change or terminates the PADEP nutrient trading program, Fairview Township will have the right to terminate the agreement. At that time, Red Barn may retain all payments as liquidated damages. However, Red Barn would need to return $187,500 of the deposit to Fairview Township.

- Fairview Township can use the credits to meet requirements at any WWTP that serves its residents. They may also sell the credits to developers within the Township as long as written consent is obtained from Red Barn and the sale price is no more or less than the purchase price and a reasonable administrative fee.

Table 6-6
Nitrogen Credit Purchase Costs
Per April 10, 2008 Agreement (1)

Year	Nitrogen Credit Pounds	Annual Credit Price	Purchase Price	Less Refundable Deposit	Annual Purchase Price
2010	20,000	$5.00	$100,000.00	$12,500	$87,500.00
2011	20,000	$5.15	$103,000.00	$12,500	$90,500.00
2012	20,000	$5.30	$106,090.00	$12,500	$93,590.00
2013	20,000	$5.46	$109,272.70	$12,500	$96,772.70
2014	20,000	$5.63	$112,550.88	$12,500	$100,050.88
2015	20,000	$5.80	$115,927.41	$12,500	$103,427.41
2016	20,000	$5.97	$119,405.23	$12,500	$106,905.23
2017	20,000	$6.15	$122,987.39	$12,500	$110,487.39
2018	20,000	$6.33	$126,677.01	$12,500	$114,177.01
2019	20,000	$6.52	$130,477.32	$12,500	$117,977.32
2020	20,000	$6.72	$134,391.64	$12,500	$121,891.64
2021	20,000	$6.92	$138,423.39	$12,500	$125,923.39
2022	20,000	$7.13	$142,576.09	$12,500	$130,076.09
2023	20,000	$7.34	$146,853.37	$106,250	$40,603.37
2024	20,000	$7.56	$151,258.97	$106,250	$45,008.97

Notes:
(1) See Appendix T for Agreement provisions

Table 6-7 compares the estimated cost for upgrade of the North WWTP under Alternative 2 versus the cost for purchase of nitrogen credits under Alternative 3. As seen in Table 6-7, Alternative 3 results in a cost savings to Fairview Township sewer customers of about $221,696 per year in 2010. Based on this large cost savings, Fairview Township selected the purchase of nitrogen credits rather than upgrading the North WWTP.

Fairview Township also selected the Developer's funded wastewater facilities approach for meeting wastewater treatment needs of future developers in the southern drainage area rather than the Township funding an expansion of the South WWTP from 0.5 mgd to 0.75 mgd capacity. The Sterns and Wheler report, included in Appendix N, estimated the cost for the 0.25 mgd expansion at $4,000,000. Fairview Township held discussions with developers on the potential for the Township to undertake the expansion if adequate funding could be provided by the developers as a group. The Township was unable to garner sufficient interest from enough developers to proceed with the project in a manner that would not have existing users paying a high price for facilities that would only be needed by future users.

Table 6-7
Comparison of Cost
Purchasing Nitrogen Credits Versus Upgrading North WWTP

I. North Plant Upgrade (Alternative 2)	
Estimated Project Cost(1)	$3,700,000
Estimated Debt Service(2)	$280,896
Estimated increase O&M(3)	$40,800
Total Annual Project Cost	$321,696
II. Purchase Credits without upgrade (Alternative 3)	
2010 Nitrogen Credit Purchase Price(4)	$100,000
2024 Nitrogen Credit Purchase Price(4)	$151,259
III. Cost Savings from Purchase of Credits	
2010 Cost Savings	$221,696
2024 Cost Savings	$170,437

Notes:
(1) From Sterns & Wheler Report, see Appendix N
(2) Assumes a 20-year loan with a 4.5% annual interest rate
(3) From Sterns & Wheler Report, see Appendix N. Excludes cost for additional employee of $31,200/year
(4) Taken from Table 6-8, "Purchase Price" column

Table 4-8 of this Plan provided a projected number of EDUs if build-out of the Southern Drainage area were to occur. 1,191 EDUs were projected in residential zoning districts, while 82 EDUs were projected in nonresidential zoning districts. Since the development of the Sterns and Wheeler report, the Township's approach regarding future expansion of the South WWTP has changed. Future development in the South WWTP service area, as defined in the Plan, has the following options:

1.) Provide funding necessary for expansion of the South WWTP.
2.) Utilize an on-lot wastewater system for wastewater treatment and disposal. If on-lot wastewater systems are not permitted in the zoning district, the applicant would be required to obtain a variance from the Township.

Based on the information in the 2003 Rerate Evaluation, it appears that the hydraulic capacity of the South WWTP could be increased by 96,000 gpd with only minor improvements. Table 4-8 included 82 EDUs in the nonresidential zoning districts that are required to connect to the sewer

system tributary to the South WWTP. Based on 233 gpd/EDU and 82 EDUs, 19,106 gpd of capacity is required to serve these areas. The Township is currently updating its 2003 rerate evaluation prior to undertaking these process modifications. Future development of the other 1,191 EDUs identified on Table 4-8 would either be required to provide funding for expansion of the South WWTP, or utilize on-lot wastewater treatment and disposal.

6.4 Funding Methods

PADEP guidelines for preparation of Act 537 Plans specify that an analysis of funding methods available to finance the proposed improvements needed within the next 5 years must be undertaken. The selected wastewater treatment alternative is for Fairview Township to purchase nitrogen credits on an annual basis through 2024 rather than upgrade the North WWTP or the South WWTP for enhanced nitrogen removal. The selected wastewater alternative for the existing areas of the Township served by on-lot wastewater systems is the continued use of on-lot wastewater system for wastewater treatment and disposal, with the exception of the Fairview Farms and the Timber Ridge areas, where an on-lot wastewater approach is not a viable long-term approach. Public sewer service, via an extension from sewers tributary to the North WWTP, will be provided to these two areas, within 5-years of DEP's approval of this Plan. Accordingly, an evaluation of the potential funding vehicles for this area is included in this Section.

Fairview Township ultimately funds all improvements to its wastewater facilities through user fees and tapping fees. In the second quarter of 2008, Fairview Township imposed a $9/EDU/quarter surcharge for additional costs associated with the purchase of nitrogen credits. As of April 2008, the sewer use charge was increased from $138 to $147/quarter for a residential user.

Under the terms of its agreement with Red Barn Trading Company, Fairview Township paid a $375,000 deposit at execution of the agreement. The $375,000 was taken out of the Township's sewer account balance. Additional payments to Red Barn Trading Company were made starting in 2010, in accordance with Table 6-8. Appendix U contains a copy of Fairview Township's 2008 Overall Budget and backup worksheets for the "Wastewater Account", which is used to pay all costs associated with the public sanitary sewer system. The Fund Balance beginning January 2008 was

estimated by the Township as $235,000. The $9/quarter rate increase enacted by the Township in 2008 will result in about $103,000 per year in additional revenue. As seen in Table 6-7, this amount should be adequate over the next 5 years to cover the cost for nutrient credits.

Fairview Township will need to borrow funds in order to pay for the proposed wastewater system extensions to serve the Fairview Farms and Timber Ridge areas. Table 6-8 includes a breakdown of the project cost, the number of users for each system, and the projected tapping fee income to be used for project debt. Since the selected alternative in the Fairview Farms area is to allow a connection of the Meadowbrook MHP force main into the Fairview Farms sewer extension, a special purpose tapping fee would likely be established. While this fee has not yet been discussed, a minimum fee of the capacity portion of the tapping fee for the North WWTP ($2,348.64 per EDU) was used for this analysis for the Meadowbrook MHP.

Based on the current tapping fee for the North WWTP, the Total amount to be financed for the Fairview Farms and Timber Ridge projects is $2,634,000 and $1,393,000 respectively.

Table 6-8
Summary of Project Cost to be Financed

	Project Component		
	Fairview Farms	Timber Ridge	Total
Construction Cost	$2,527,000	$1,196,000	$3,723,000
Contingencies	$505,000	$249,000	$754,000
Other Project Cost	$379,000	$179,000	$558,000
Total Estimated Project Cost (1)	$3,411,000	$1,614,000	$5,035,000
Number of System Users(2)	235	55	290
Potential Tapping Fee Income(3)	$777,000	$221,000	$998,000
Net Amount to be Financed	$2,634,000	$1,393,000	$4,027,000

Notes:
(1) See Appendix R and S for a breakdown of estimated project cost.
(2) Taken from Tables 6-1 and 6-2.
(3) Based on the Township's tapping fee of $4014.59, as adopted in 2010. The $1,665.95 collection fee portion would not be applicable to 100 Meadowbrook MHP users since facilities are to be constructed by owner.

Sections 6.4.1 through 6.4.4 summarize the potential financing options for these proposed projects. Table 6-9 includes an evaluation of three selected financing approaches.

6.4.1 PENNVEST

PENNVEST was created by the Pennsylvania Legislature to provide financing for public water, wastewater, and storm water facilities. PENNVEST also provides loans to private individuals for repair of on-lot septic systems. Securing PENNVEST financing is a competitive process whereby the applicant competes against others for the limited available funds. Priority among eligible projects is established according to the applicant's accumulation of points for the following factors: public health and safety, environmental impact, economic development, compliance, and social impact. The projects with the highest accumulated points are awarded financing. Projects providing public sewer service to older communities with a very high percentage of documented septic system malfunctions and where the properties rely on private wells for drinking water, usually receive sufficient points to be awarded financing. Once financing is awarded, PENNVEST calculates the anticipated user fee (debt service and projected total system operation and maintenance costs), compares this fee to the community's median household income, then selects the resultant financing package.

PENNVEST primarily provides financing in the form of low-interest loans, but will provide some supplemental grant funding when the resultant user fee for the project exceeds a certain percentage of the municipality's median household income. PENNVEST also considers other available funding sources; such as state grant money, and the municipality's existing sewer system capital reserves, when awarding financing. Preparation of a PENNVEST financing application is a relatively lengthy and somewhat expensive process, and will require the Township to undertake certain environmental assessments not required for a normal bank loan. PENNVEST is typically a 20-year loan, with a reduced interest rate for the first 5 years.

In order to maintain PENNVEST funding eligibility, the applicant may not begin construction or obtain long term financing for its project without prior approval from PENNVEST. This request must be completed and provided to PENNVEST in order to be considered for a Letter of No Prejudice. The Township should consider applying for PENNVEST funding given the relative interest rate when compared to other financing sources. The maximum blended rate for York County

is currently 2.22% for a 20-year PENNVEST loan. However, if grant funding is not obtained, PENNVEST is likely not the best financing option, considering its relatively expensive administration cost.

6.4.2 United States Department of Agriculture (USDA): Rural Utilities Service (RUS)

The federal government provides a small amount of financing for water and wastewater projects through the USDA RUS Program. RUS loans are intended to provide funding for "rural" areas of the nation needing new and improved water and/or wastewater facilities. RUS loans can be used for the construction, repair or improvement of water, wastewater and storm water facilities in Cities, Towns, and Boroughs with up to 10,000 people and rural areas (outside incorporated Cities, Towns, and Boroughs) with no population limits. Public entities may apply for long-term fixed rate financing up to 40-years. While the interest rates are higher than PENNVEST, the 40-year financing period provided with an RUS loan is usually the longest financing period available, reducing the expense passed on to the user. RUS also provides grants up to 75% of eligible costs when they are determined necessary to reduce user costs to an affordable level. However, applicants are not considered for grants unless the minimum target user fee is reached. RUS computes the minimum target user fee based on the median household income and the affordability of the estimated user fees. Competition for RUS funding is typically more competitive than for PENNVEST funding and successful applicants must comply with additional program requirements not required by PENNVEST.

Given the demographics of the Township, the competition for limited RUS funding, and the type of project proposed compared to other RUS applicants; it is unlikely Fairview Township would be successful in receiving RUS funding if it goes through the expense of submitting a RUS application. Accordingly, this funding vehicle is eliminated from consideration.

6.4.3 Municipal Bond

Public bond issues allow a municipality or authority to receive cash payment at the time of the bond issuance in exchange for a guarantee to repay the bond holders over time. Interest rates are typically tax exempt for public infrastructure projects. The two types of bond issues are a stand along bond or participation in a bond pool.

Similar to a bank loan, bond issues are not subject to federal or state review of the project scope and specifications. A bond issue can usually be obtained much faster than PENNVEST funding and does not carry the high application, closing and ongoing administrative fees associated with a PENNVEST loan. However, bond issues typically carry a higher interest rate than PENNVEST loans.

6.4.4 Bank Loan

Most financial institutions offer commercial bank loans to state and local governments to finance a wide variety of capital purchases. Interest rates and payback periods are based on market conditions. Commercial bank loans require security collateral. Applying for a commercial bank loan is not as involved and does not require the same administrative fees as PENNVEST or RUS, making bank loans either a practicable short term financing option or longer term option if the principal amount is not too large. A bank loan is typically less expensive than a municipal bond and is usually advantageous for principal amounts below $10 million. However, the interest rate is less stable, and currently would be around 3.5%.

6.4.5 Selected Approach

Table 6-9 includes a summary of the financing options. The interest rate for PENNVEST was obtained by using the maximum blended rate for York County. The interest rates for the bank loan and the sewer revenue bonds reflect current market values. It should be noted that these are only preliminary estimates, as these interest rates can fluctuate daily.

Table 6-9

Comparison of Financing for Proposed Wastewater System Improvements

	PENNVEST		Bank Loan	Sewer Revenue Bond
	w/grant	w/o grant		
Amount to be Financed (1)	$1,027,000	$4,027,000	$4,027,000	$4,027,000
Grant Amount	$3,000,000	$0	$0	$0
Annual Interest Rate (%)	2.22 (2)	2.22 (2)	3.50	4.0
Payment Period (yrs)	20	20	20	20
Anticipated Debt Service ($/year)	$64,149	$251,538	$283,344	$302,910
Debt Service per Customer ($/year)(3)	$13	$56	$63	$68
Total Amount per Quarter ($/quarter)	$3.5	$14	$16	$17

Notes:

(1) Total project cost to be financed minus the tapping fee for project debt.
(2) Using the maximum blended interest rate for York County.
(3) Based on the total number of existing residential sewer customers plus.

Given the cost for preparation of a PENNVEST funding application, the long lead time until award and the uncertainty of receiving PENNVEST funding, the preferred approach is to obtain a municipal bond or bank loan, depending on the interest rates at that time. A bank loan is typically less expensive than a municipal bond and is usually advantages for principal amounts below 10 million dollars. However, the bond issue payment period can be extended if desired to make the project more affordable.

Operation, maintenance, and improvement of the Fairview Township wastewater system is supported primarily by quarterly user fee revenue and tapping fee revenue. Fairview Township's current user fee is $147 a quarter for residential customers. The current tapping fee is $4,014.59 per EDU in the northern basin, $932 per EDU in the Lower Allen basin, and $8,222.57 per EDU in the southern basin. This tapping fee was updated in 2010 in accordance with Pennsylvania Act 57 of 2003.

Sewer user rates will need to be adjusted to help fund Act 537 projects and to provide sufficient revenue to operate and maintain the Fairview Township sewage system. The expected quarterly user rate will need to be adjusted to approximately $165 per quarter, depending on the interest rate.

6.5 Implementation

There are no known critical public health hazards associated with wastewater within Fairview Township that need to be addressed other than the three potential needs areas defined in Section 5.1. The Township will extend public sanitary sewer facilities to serve the Fairview Farms and Timber Ridge areas. Additionally, the Township will issue repair notices to the residents with failing on-lot systems in the Sandspur area in the winter of 2010.

Properties outside of the current public sewer service areas of the Township will be subject to the Township's on-lot wastewater management program. The Township adopted an on-lot wastewater management ordinance at its June 28, 2010 Board of Supervisors meeting. Implementation of the program will commence in 2011. A copy of the adopted Ordinance (Ordinance# 2010-3), along with a map showing the four initial maintenance districts, is included in Appendix O.

Completion of the other activities described in the previous sections is necessary to enable continued orderly growth in Fairview Township and to ensure the long-term reliability of the existing public sewage system and private on-lot systems. It is the Township's objective to provide public sewer service to the Fairview Farms and Timber Ridge areas by the spring of 2016. An implementation schedule including the required activities for the selected alternatives is included in Section 7.

7.0 INSTITUTIONAL EVALUATION

7.1 Existing Wastewater Authorities

The existing public sanitary sewers serving Fairview Township and the North WWTP and South WWTP are owned by Fairview Municipal Authority and operated by Fairview Township staff. The Authority Board authorizes all improvements to its Sewer System. All sewer system staff report to the Board of Supervisors. The Authority has the ability to acquire, hold, construct, improve, maintain, and own its public sewage facilities.

The Authority Board and the Township Board of Supervisors receives support from its solicitors, engineer, and Township staff. The Authority meets monthly to review and act on matters within its purview. It is the duty of the Authority to advise and offer recommendations to the Board of Supervisors on matters involving the construction and improvement of the Township Sewer System.

The Township employs adequate staff to handle sanitary sewer collection, conveyance, treatment and administrative functions associated with the Sewer System. The employees operate and maintain the WWTP and perform routine service all of the wastewater pumping stations. The Township owns a high-pressure sewer flushing truck for cleaning lines and clearing blockages. Maintenance and repair activities requiring specialized equipment or services are routinely provided by outside contractors. The staff flushes known problem areas of the collection system on a regular basis for preventative maintenance purposes and to clear blockages. Township administrative staff provides the necessary resources to administer operation of the sewer system, collect fees, and conduct building inspections of new connections.

The Township contracts for SEO services associated with the permitting and inspection of privately owned on-lot systems and enforcement of Township and State regulations associated with these systems. Administration functions associated with implementation of the proposed on-lot management program will be handled by Township staff, with assistance from the Township solicitor and SEO on an as-needed basis.

Sanitary sewer rates, annual budgets, and policies and procedures of the sanitary sewer system are set by the Board of Supervisors with assistance from Township staff. The Board consists of five publicly elected officials. Formal actions are adopted or rejected by a vote of the elected officials, a majority vote of a quorum being required for passage.

Appendix U contains a copy of the Township's Wastewater Budget for 2008. These funds are used to pay all operation and maintenance costs associated with the sewer system, reimburse adjacent municipalities for sewer service provided to Fairview Township properties, and to finance capital improvements to the Sewer System.

Fairview Township has enacted several ordinances regulating the use of the Sewer System. The Township has developed standard specifications for extensions to its sewer system that requires air testing of the extensions before properties are permitted to connect to the extension. The Township is fully empowered to enforce all ordinances against violators, set user fees and take purchasing actions, raise capital for construction and operation and maintenance of facilities, and has the power to negotiate agreements with other parties. Based on a review of the Township agreements and ordinances, the Township and Authority have the legal authority to implement the developed wastewater management alternatives.

7.2 Institutional Alternatives Necessary to Implement Plan

No new municipal departments or municipal authorities are required to implement the proposed plan. The current arrangement of Township operation and Authority ownership has operated satisfactorily and is expected to meet the long-term needs of the Township. The functions of the Board of Supervisors, Township staff, and Authority Board are anticipated to remain the same for matters related to public sanitary sewers, however, the workload of Township staff is expected to increase in order to address implementation of the on-lot management program.

The Township administrative staff and Manager are available to administer the on-lot management program. The existing Township Administrative staff will be responsible for the following new activities:

- Develop and maintain a database of Township property owners with on-lot wastewater systems
- Send letters to appropriate Township property owners informing them of the need to have their septic system pumped and inspected during the calendar year.
- Record and review submission of completed pumping and inspection reports.
- Contact the Township SEO and have him conduct follow-up actions at any property where the completed pumping and inspection report indicates a potential problem.
- Send reminder notices to property owners that have not yet had their system pumped and inspected within 3 months of the end of the designated calendar year.
- Send a notice of violation letter to property owners that fail to have their system pumped and inspected during the designated calendar year.
- Keep track of costs to administer sewage management program.
- Submit annual request to PADEP for reimbursement of costs to administer the sewage management program
- Contact the Township solicitor to have him undertake any enforcement action needed on persons failing to comply with the provisions of the Ordinance.

7.3 Administrative and Legal Activities Necessary to Implement Plan

Several administrative and legal activities are needed to implement the proposed plan. Table 7-1 lists each action and provides a timetable for completion of the required actions through the year 2016.

The Authority currently assesses a tapping fee to new customers proposing to connect to the Fairview Township Sewer System. The tapping fee is meant to recover certain capital costs incurred by the Authority to construct its sewer system. Pennsylvania Act 57 of 2003 established the procedures for calculation and assessment of sewer system tapping fees. It is recommended that the Authority consider updating its tapping fee on a 3-year cycle to reflect inflation, improvements to the sewer system since the last update, and planned improvements. The Township recently updated its tapping fee.

The Township raised its sewer user rates effective second quarter 2008 to account finance purchase of nitrogen credits. An additional rate adjustment is proposed for the year 2015 in order to meet the sewer system needs. The rates should be increased from $147 per quarter to $165 per quarter.

The Township issued a letter to the Meadowbrook MHP owner dated July 16, 2010. The letter, included in Appendix R, provides the owner with a summary of the proposed components of an agreement between the Township and the owner. The letter was mailed with a confirmation receipt. Since issuance of the July 16, 2010 letter, the Township has met with the Owner of the MHP to initiate negotiations. The Township will need to coordinate the connection of the Meadowbrook MHP to the Fairview Farms sewer system.

In a separate letter, dated July 16, 2010, the Township initiated the planning process for the abandonment of the existing Fairview Elementary School WWTP. As described in the July 16th letter to the superintendent of the West Shore School District, the feasibility of the connection was evaluated in 2000.

The Township notified the property owners that will be required to connect to the public sewer system. It was the Township's intent to provide the residents with the information in order to allow for proper budgeting. The public discussion process will be on-going for the next three years in order to educate the homeowners of their requirements.

The activities to provide any necessary rights-of-way, easement and land transfers will be part of the design phase, to begin in 2014.

Table 7-1
Final Implementation Schedule

Action	Anticipated Time Frame
I. Public Sewer Service Areas	
Enter into Agreement with Red Barn Trading Company for the purchase of nitrogen credits needed to comply with the Township's nitrogen cap load from 2010 through 2025.	***Completed***
Adjust public sewer system user rates to provide sufficient funds to meet sewer system needs and secure nutrient credits (added $9/quarter for Chesapeake Bay costs).	***Completed***
Update Sewer System tapping fee to keep the rate current with market conditions.	At least every 3 years
Participate with Lower Allen Authority and Lewisberry Joint Authority on needed improvements to their WWTPs to comply with nutrient cap loads and adjust sewer rates as needed to meet facilities' financing needs	2010 Through 2015
Initiate public discussions with the Fairview Farms and Timber Ridge residents regarding public sewer service.	Ongoing 2010-2015
Initiate discussion with the Meadowbrook MHP owner to coordinate construction of the necessary private sanitary sewer facilities from the MHP into the proposed Fairview Farms sanitary sewer extension.	Ongoing 2010-2015
Design sanitary sewer extension from the Northern WWTP sewer system to the Fairview Farms and Timber Ridge areas to provide public sewer service to this area.	Summer 2014
Obtain necessary rights-of-way for the Fairview Farms and Timber Ridge area sewer extensions.	Fall 2014
Apply for Water Quality Management Permit application for construction of wastewater pumping stations needed to provide public sewer service to Fairview Farms and Timber Ridge areas.	Fall 2014
Adjust public sewer system user rates to provide sufficient funds to meet additional sewer service needs	Spring 2015
Secure funding for Fairview Farms and Timber Ridge sewer extensions.	Spring 2015
Construct Fairview Farms and Timber Ridge sewer extensions.	Summer 2015 to Spring 2016
Connect properties in Fairview Farms and Timber Ridge area to public sewer extension. Issue connection notice to Meadowbrook MHP.	Spring 2016
IV. Remainder of Township (On-lot Service Area)	
Adopt on-lot management ordinance requiring regular pumping and inspections of on-lot systems	Completed
Issue repair notices to the residents with failing on-lot systems in the Sandspur area	Spring 2011
Amend Subdivision and Land Development Ordinance to clarify requirement for preliminary hydrogeolgic evaluations.	Winter 2010
Implement on-lot management program	January 2011

8.0 SELECTED APPROACH

8.1 Selected Wastewater Management Approach

The selected approach to wastewater management in Fairview Township continues to rely on public sewer service for the majority of the developed parcels in along the Route 83 corridor. Use of the Lower Allen WWTP, the Lewisberry WWTP, the North WWTP, and the South WWTP will continue, with no immediate change to the service basin boundaries for these facilities within Fairview Township. Purchase of nitrogen credits from the Red Barn Trading Company is the selected method for meeting the pending nitrogen cap load associated with the Chesapeake Bay Tributary Strategy. No upgrades to the North and South WWTPs are anticipated, other than any needed repairs, for the next 5 years.

Public sewer service is proposed for the Fairview Farms and Timber Ridge areas of the Township to provide a long-term approach to wastewater treatment. The selected wastewater management alternative for Fairview Farms is Alternative 3, construction of a sanitary sewer system serving the Fairview Farms area. Implementation of Alternative 3 allows for the owner of the Meadowbrook MHP to construct the necessary conveyance facilities to convey wastewater to the extension serving the Fairview Farms area. The Township will work with the Meadowbrook MHP Owner to allow for the private sewer system serving the MHP to connect to the sanitary sewer extension to the Fairview Farms area. The preferred connection point, at the intersection of Shauffnertown and Diller roads, minimizes the distance of conveyance for the Meadowbrook MHP owner.

The selected wastewater management alternative for Timber Ridge is Alternative 1, to construct a gravity sanitary sewer extension serving Timber Ridge area, as defined in Section 5.1 of the Plan. The remainder of the Township outside the public sewered areas will continue to rely on on-lot systems. These areas are primarily zoned for low density development that is not conducive to extension of public water or sewage facilities. This combination of public sewer service for the Route 83 corridor, reliance on on-lot systems for the rural areas, and relying on developers to fully fund new facilities to serve their developments located outside of areas designated for public sewer

within the Established Primary Growth Areas, will meet the existing and projected 20-year needs of the Township.

Based on the analysis conducted as part of this Plan, the selected alternatives represent the most cost-effective long-term approach, while preserving Township water resources and abiding by the vision of the Township, including natural resource preservation, established by the County Comprehensive Plan. The selected alternatives will maximize use of the existing operation, maintenance, and administrative structure of the Township, while enhancing operation and maintenance through implementation of a sewage management program and an accelerated sewer system rehabilitation program.

The Township has selected the following approach to satisfy its existing and projected 20-year wastewater conveyance and treatment needs after an evaluation of available alternatives:

- Negotiate and execute an agreement for the long-term (15 years) purchase of nutrient credits to enable the Township to comply with its nutrient cap load. This task has been completed. The purchase of credits represents a savings of approximately 75% over the estimated cost to upgrade the North WWTP.

- Adjust sewer user rates and tapping fees to generate sufficient revenue to fund the operation and maintenance of the public sewer system and the purchase of nutrient credits. This task has been completed. Sewer user rates were increased in 2008 by $9.00/quarter for a residential customer.

- An additional sewer user rate adjustment will be necessary prior to construction of the sewer system extensions from the North WWTP, as recommended by this Plan. The rate should be increased from $147 per quarter to $165 per quarter.

- Tapping fees should be updated at least every 3 years to keep the rates current with market conditions. The tapping fee was last updated in 2010.

- Participate with Lower Allen Authority and the Lewisberry Joint Authority to upgrade their facilities, as needed, to comply with the Chesapeake Bay Tributary Strategy.

- Develop and implement an On-Lot Management Program to assure the regular maintenance and inspection of all on-lot systems.

- Construct a sanitary sewer extension from the North WWTP to the Fairview Farms area to provide public sewer service to this area by the spring of 2016.

- Construct a sanitary sewer extension from the North WWTP to the Timber Ridge area to provide public sewer service to this area by the spring of 2016

- Continue to rely on on-lot systems for properties outside the sewer service areas and the aforementioned areas to be served by sanitary sewer extensions.

- Require new developments not designated for public sewer within the Established Primary Growth Areas to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their development with either on-lot systems, a community wastewater system, or an extension to the public sewer system if the developer has financed all necessary improvements to the public conveyance and treatment facilities needed to serve his development. Developers proposing a community wastewater system or a new wastewater treatment system must provide documentation that the necessary administration, operation, and maintenance programs are fully established and funded to sustain the long-term operation of the proposed facilities.

- Promote the development of lands within the North WWTP service area where WWTP capacity is available rather than within the South WWTP service area, where all available capacity has been fully committed.

8.2 Selected Institutional Approach

The majority of the institutional arrangements necessary for the implementation of this Plan already exist. Fairview Township has already entered a 15-year agreement for the purchase of nitrogen credits needed through 2024. The Township will need to undertake an evaluation of available options for continued compliance with its nitrogen cap load near the end of its 2024 nutrient credit purchase agreement in order to determine the best approach for continued compliance with its cap load. The Township will need to assign responsibility for administration of the on-lot management program to its existing staff and Sewage Enforcement Officer.

The institutional structure currently in place appears adequate to implement the selected wastewater management alternatives; therefore, no institutional changes are required. The Township is capable of implementing capital improvements to its sewer system, setting and enforcing regulations, setting and collecting user fees, and negotiating agreement amendments with adjacent municipalities and private parties for purchase of nutrient credits. No new ordinances are needed to

implement the selected wastewater management approaches. The Township adopted an On-lot Management Ordinance in 2010. Additionally, the Township should consider amending its subdivision and land development ordinance to clarify the requirements for hydrogeological investigations associated with new on-lot systems.

8.3 Selected Financing Approach

The Township will need to borrow funds in order to pay for the proposed wastewater system extensions to serve the Fairview Farms and Timber Ridge areas. Obtaining either a municipal bond or a municipal bank loan is the preferred financing approach.

8.4 Implementation Schedule

As demonstrated on the implementation schedule included in Chapter 7.3, the Township anticipates undertaking both proposed sewer extensions simultaneously. There is no proposed phasing of construction. The implementation of the sewage management program will begin in 2011.

Appendix A

PADEP Act 537 Plan Checklist
Uniform Environmental Review

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER STANDARDS AND FACILITY REGULATION

Act 537 Plan Content and Environmental Assessment Checklist

PART 1 GENERAL INFORMATION

A. Project Information

1. Project Name Fairview Township Act 537 Plan Update

2. Brief Project Description Township wide Act 537 Plan Update.

B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
Fairview Township	York	☐	☐	☒

Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Smith	Steve			

Additional Individual Last Name	First Name	MI	Suffix	Title

Municipality Mailing Address Line 1	Mailing Address Line 2
599 Lewisberry Road	

Address Last Line -- City	State	ZIP+4
New Cumberland	PA	17070

Phone + Ext.	FAX (optional)	Email (optional)
717-901-5200		

C. Site Information

Site (or Project) Name	
Act 537 Plan Update	(Municipal Name) Act 537 Plan

Site Location Line 1	Site Location Line 2

D. Project Consultant Information

Last Name	First Name	MI	Suffix
Strauch	Joseph	A	

Title	Consulting Firm Name
Senior Project Manager	Gannett Fleming Inc.

Mailing Address Line 1	Mailing Address Line 2
P.O. Box 67100	

Address Last Line – City	State	ZIP+4	Country
Harrisburg	PA	17106	

Email	Phone + Ext.	FAX
jstrauch@gfnet.com	717-763-7211+2690	717-763-1808

PART 2 ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the plan, the plan must include items one through eight listed below to be accepted for formal review by the department. Incomplete Plans will be returned unless the municipality is clearly requesting an advisory review.
_____	i-iv	1. **Table of Contents**
		2. **Plan Summary**
_____	1-3	A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - Title 25, §71.21.a.7.i).
_____	4-6	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference Title 25 §71.21.a.7.ii).
_____	6	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference Title 25, §71.21.a.7.ii).
_____	5-7	D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii).
_____	3-8	E. Provide a schedule of implementation for the project that identifies the MAJOR milestones with dates necessary to accomplish the project to the point of operational status. (Reference Title 25, §71.21.a.7.iv).
_____	X	3. **Municipal Adoption: Original,** signed and sealed Resolution of Adoption by the municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference Title 25, §71.31.f) Section V.F. of the Planning Guide.
_____	Appdx V	4. **Planning Commission** / **County Health Department Comments**: Evidence that the municipality has requested, reviewed and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with area wide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference-Title 25, §71.31.b) Section V.E.1 of the Planning Guide.
_____	Appdx W	5. **Publication:** Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and conduct of a 30 day comment period. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	Appdx W	6. **Comments and Responses:** Copies of ALL written comments received and municipal response to EACH comment in relation to the proposed plan. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	7-5	7. **Implementation Schedule:** A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference-Title 25, §71.31.d) Section V.F. of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference Title 25, §71.21.c).
_____	6-1 – 6-8	8. **Consistency Documentation:** Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 71.21.(a)(5)(i-iii). (Reference-Title 25, §71.31.e). Appendix B of the Planning Guide.

PART 3 GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____		**I. Previous Wastewater Planning**
		A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
_____	2-1 – 2-2	1. Previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1).
_____	2-2	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference-Title 25, §71.21.a.5.i.A-D). Section V.F of the Planning Guide.
_____	N/A	3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference-Title 25, §71.21.a.5.i.A&B). Section V.D. of the Planning Guide.
_____	2-2 – 2-4	4. Through planning modules for new land development, planning "exemptions" and addenda. (Reference-Title 25, §71.21.a.5.i.A).
_____		**II. Physical and Demographic Analysis utilizing written description and mapping** (All items listed below require maps, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
_____	1-1 – 1-2 Plate 1	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
_____	1-2, Plate 1	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference-Title 25, §71.21.a.1.ii).
_____	1-6 – 1-9 Plate 3	C. Soils - Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems, and areas unsuitable for soil dependent systems. (Reference-Title 25, §71.21.a.1.iii). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference-Title 25, §71.21.a.1.iii).
_____	1-4 – 1-5 Plate 4	D. Geologic Features - (1) Identification through analysis, (2) mapping and (3) their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. (Reference-Title 25, §71.21.a.1.iii).
_____	1-7 – 1-9, Plate 3	E. Topography - Depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for onlot systems. (Reference-Title 25, §71.21.a.1.ii).
_____	1-3, 1-10 – 1-12, Plate 4	F. Potable Water Supplies - Identification through mapping, description and analysis. Include public water supply service areas and available public water supply capacity and aquifer yield for groundwater supplies. (Reference-Title 25 §71.21.a.1.vi). Section V.C. of the Planning Guide.

_____	1-2 – 1-3, Plate 1	G. Wetlands-Identify wetlands as defined in Title 25, Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per USDA, SCS mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference-Title 25, §71.21.a.1.v). Appendix B, Section II.I of the Planning Guide.
_____		**III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs**
		A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:
_____	3-1 – 3-32 Plate 2	1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference-Title 25, §71.21a.2.i.A).
_____	3-1–3-32	2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's NPDES permitted capacity, and the Clean Streams Law permit number. (Reference-Title 25, §71.21.a.2.i.A).
_____	3-1–3-32	3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under Title 25, Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP. (Reference-Title 25, §71.21.a.2.i.B).
_____	3-16–3-18, 3-23–3-24 3-26,3-29	4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.i & ii).
_____	5-14–5-15 5-37–3-39	5. A detailed description of the municipality's operation and maintenance requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs. (Reference-Title 25, §71.21.a.2.i.C).
_____	N/A	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii).
_____		B. Using DEP's publication titled *Sewage Disposal Needs Identification*, identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
_____	Appdx F 3-33–3-34	1. The types of onlot systems in use. (Reference-Title 25, §71.21.a.2.ii.A).
_____	Appdx F Plates 5&7	2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Sewage Facilities Act, the Clean Stream Law or regulations promulgated thereunder. (Reference-Title 25, §71.21.a.2.ii.B).
_____	Appdx F, Plate 3	3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and Title 25 Chapter 73 (relating to standards for sewage disposal facilities). (Reference-Title 25,

§71.21.a.2.ii.C).

_____	1-8–1-12 3-32, Appdx D	4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's *Sewage Disposal Needs Identification* publication. (Reference-Title 25 §71.21.a.2.ii.B).
_____	3-37 – 3-39 5-14 – 5-15	5. Detailed description of operation and maintenance requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs. (Reference-Title 25, §71.21.a.2.i.C).
_____		C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:
_____	5-14 Appdx F	1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71).
_____	3-37	2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).
_____	5-16 – 5-17 Appdx O	3. Present disposal methods, locations, capacities and transportation methods. (Reference-Title 25 §71.71).
_____		**IV. Future Growth and Land Development**
		A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
_____	2-5 – 2-7, Plate 5	1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference-Title 25, §71.21.a.3.iv).
_____	2-6	2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – Title 25§71.21.a.3.iv).
_____	2-5	3. All limitations and plans related to floodplain and stormwater management and special protection (Ch. 93) areas. (Reference-Title 25 §71.21.a.3.iv) Appendix B, Section II.F of the Planning Guide.
		B. Delineate and describe the following through map, text and analysis.
_____	4-3 – 4-8	1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of EDU's in development, total number of EDU's currently developed and total number of EDU's remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).
_____	4-8 – 4-12 Plate 5	2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference-Title 25,§71.21.a.3.ii). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference-Title 25, §71.21.a.3.iv).
_____	4-3 – 4-14 Plate 6	3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference-Title 25, §71.21.a.1.iv). (Reference-Title 25, §71.21.a.3.iii).

_____	2-2 – 2-5	4. Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference-Title 25, §71.21.a.3.iv). --public ground/surface water supplies --recreational water use areas --groundwater recharge areas --industrial water use --wetlands
_____	4-15–4-17	5. Sewage planning necessary to provide adequate wastewater treatment for five and ten year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference-Title 25, §71.21.a.3.v).
_____		**V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities**
		A. Conventional collection, conveyance, treatment and discharge alternatives including:
_____	5-10	1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).
_____	6-8 – 6-18 Appdx R&S	2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference-Title 25, §71.21.a.4.i).
_____	5-10	3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference-Title 25, §71.21.a.4.ii).
_____	5-12 – 5-13 Appdx N	a. Repair. (Reference-Title 25, §71.21.a.4.ii.A).
_____	5-12 – 5-13 Appdx N	b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B).
_____	5-12 – 5-13 Appdx N	c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71).
_____	5-12 – 5-13 Appdx N	d. Improved operation and maintenance. Reference-Title 25, §71.21.a.4.ii.C).
_____	5-12 – 5-13 Appdx N	e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).
_____	5-19	4. Repair or replacement of existing collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).
_____	5-15	5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference-Title 25, §71.21.a.4.iii).
_____	5-8 – 6-18	6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.ii.B).
_____		B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:
_____	5-14 – 5-15 Plate 3	1. Soil and slope suitability. (Reference-Title 25, §71.21.a.2.ii.C).
_____	1-12 – 1-13	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C).

§71.21.a.4).

_____ 5-18 3. Community economic conditions. (Reference-Title 25, §71.21.a.4).

_____ 5-18 4. Recreational opportunities. (Reference-Title 25, §71.21.a.4).

_____ 5.18 5. Drinking water sources. (Reference-Title 25, §71.21.a.4).

_____ 5.18 6. Other environmental concerns. (Reference-Title 25, §71.21.a.4).

_____ **VI. Evaluation of Alternatives**

A. Technically feasible alternatives identified in Section V of this check-list must be evaluated for consistency with respect to the following: (Reference-Title 25, §71.21.a.5.i.).

_____ 6-1–6-3 1. Applicable plans developed and approved under **Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act** (33 U.S.C.A. 1288). (Reference-Title 25, §71.21.a.5.i.A). Appendix B, Section II.A of the Planning Guide.

_____ 6-3 2. Municipal wasteload management **Corrective Action Plans or Annual Reports** developed under PA Code, Title 25, Chapter 94. (Reference-Title 25, §71.21.a.5.i.B). The municipality's recent Wasteload Management (Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.

_____ 6-3 3. Plans developed under **Title II of the Clean Water Act** (33 U.S.C.A. 1281-1299) or **Titles II and VI of the Water Quality Act of 1987** (33 U.S.C.A 1251-1376). (Reference-Title 25, §71.21.a.5.i.C). Appendix B, Section II.E of the Planning Guide.

_____ 6-4 4. **Comprehensive plans** developed under the Pennsylvania Municipalities Planning Code. (Reference-Title 25, §71.21.a.5.i.D). The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide.

_____ 6-4 5. **Antidegradation requirements** as contained in PA Code, Title 25, Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference-Title 25, §71.21.a.5.i.E). Appendix B, Section II.F of the Planning Guide.

_____ 6-4–6-5 6. **State Water Plans** developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference-Title 25, §71.21.a.5.i.F). Appendix B, Section II.C of the Planning Guide.

_____ 6-4 7. **Pennsylvania Prime Agricultural Land Policy** contained in Title 4 of the Pennsylvania Code, Chapter 7, Subchapter W. Provide narrative on local municipal policy and an overlay map on prime agricultural soils. (Reference-Title 25, §71.21.a.5.i.G). Appendix B, Section II.G of the Planning Guide.

_____	6-5	8. **County Stormwater Management Plans** approved by DEP under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference-Title 25, §71.21.a.5.i.H). Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the county Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide.
_____	6-6	9. **Wetland Protection.** Using wetland mapping developed under Checklist Section II.G, identify and discuss mitigative measures including the need to obtain permits for any encroachments on wetlands from the construction or operation of any proposed wastewater facilities. (Reference-Title 25, §71.21.a.5.i.I) Appendix B, Section II.I of the Planning Guide.
_____	6-7	10. **Protection of rare, endangered or threatened plant and animal species** as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference-Title 25, §71.21.a.5.i.J). Provide DEP with a copy of the completed Request For PNDI Search document. Also provide a copy of the response letter from the Department of Conservation and Natural Resources' Bureau of Forestry regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide.
_____	6-7	11. **Historical and archaeological resource protection** under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission. (Reference-Title 25, §71.21.a.5.i.K). Provide the department with a completed copy of a Cultural Resource Notice request of the Bureau of Historic Preservation (BHP) to provide a listing of known historical sites and potential impacts on known archaeological and historical sites. Also provide a copy of the response letter from the BHP. Appendix B, Section II.K of the Planning Guide.
_____	6-7	B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed and concurred with the resolution of identified inconsistencies. (Reference-Title 25, §71.21.a.5.ii). Appendix B of the Planning Guide.
_____	6-7	C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference-Title 25, §71.21.a.5.iii).
_____	6-13–6-15 6-17–6-18 Appdx R&S	D. Provide cost estimates using present worth analysis for construction, financing, on going administration, operation and maintenance and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within five years from the date of plan submission. (Reference-Title 25, §71.21.a.5.iv).
_____	6-27-6-33 Appdx R&S	E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within five years from the date of the plan submission. (Reference-Title 25, §71.21.a.5.v).
_____	6-33	F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference-Title 25, §71.21.a.5.vi).
_____	6-33	1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of

sewage management programs. (Reference-Title 25, §71.21.a.5.vi.A).

_____ 6-30 — 2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a sewage management program justifying time schedules for each phase. (Reference-Title 25, §71.21.a.5.vi.B).

_____ 6-30 – 7-4 — G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - Title 25, §71.21.a.5.vi.D.).

_____ **VII. Institutional Evaluation**

A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:

_____ 7-2, Appdx U — 1. Financial and debt status. (Reference-Title 25, §71.61.d.2).

_____ 7-1 – 7-2 — 2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)

_____ 7-1 – 7-2 — 3. Existing legal authority to:

_____ 7-1 – 7-2 — a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61.d.2).

_____ 7-1 – 7-2 — b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61.d.2).

_____ 7-1 – 7-2 — c. Set user fees and take purchasing actions. (Reference-Title 25, §71.61.d.2).

_____ 7-1 – 7-2 — d. Take enforcement actions against ordinance violators. (Reference-Title 25, §71.61.d.2).

_____ 7-1 — e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2).

_____ 7-1 — f. Raise capital for construction and operation and maintenance of facilities. (Reference-Title 25,§71.61.d.2).

_____ B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:

_____ 7-2 — 1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2).

_____ 7-2 — 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.2).

_____ 7-2 — 3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference-Title 25, §71.61.d.2).

_____ C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:

_____ N/A — 1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2).

_____ 7-2–7-3 — 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference-Title 25, §71.61.d.2).

_____ 7-4 — 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference-Title 25, §71.61.d.2).

_____ 7-3 — 4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2).

_____ 7-3 — 5. Any other legal documents. (Reference-Title 25, §71.61.d.2).

_____	7-5	6. Dates or timeframes for items 1-5 above on the project's implementation schedule.
_____	7-2 – 7-3	D. Identify the proposed institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference-Title 25, §71.61.d.2).
_____		**VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives**
		A. Identify the technical wastewater disposal alternative which best meets the wastewater treatment needs of each study area of the municipality. Justify the choice by providing documentation which shows that it is the best alternative based on:
_____	8-1	1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6).
_____	8-1	2. Future wastewater disposal needs. (five and ten years growth areas). (Reference-Title 25, §71.21.a.6).
_____	8-1	3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6).
_____	8-1 – 8-2	4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6).
_____	8-1 – 8-3	5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6).
_____	8-4	6. Available financing methods. (Reference-Title 25, §71.21.a.6).
_____	8-1–8-2	7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference-Title 25, §71.21.a.6).
_____	8-4	B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan. (Reference-Title 25, §71.21.a.6)
_____	8-4	C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a Sewage Management Program. (Reference – Title 25 §71.31d)
		IX. Environmental Report (ER) generated from the Uniform Environmental Review Process (UER)
_____	Appdx A	A. Complete an ER as required by the UER process and as described in the DEP Technical Guidance 381-5511-111. Include this document as "Appendix A" to the Act 537 Plan Update Revision. Note: *An ER is required only for Wastewater projects proposing funding through any of the funding sources identified in the UER.*

PENNVEST I.D. No. _____

ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS

Municipalities that propose to implement their official sewage facilities plan updates with PENNVEST funds must meet six additional requirements to be eligible for such funds. See A Guide for Preparing Act 537 Update Revisions (362-0300-003), Appendix N for greater detail or contact the DEP regional office serving your county listed in Appendix J of the same publication.

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	1	1. Environmental Impact Assessment. (Planning Phase) The Uniform Environment Review (UER) replaces the Environmental Impact Assessment that was a previous requirement for PENNVEST projects.
_____	3-8	2. Cost Effectiveness (Planning Phase) The cost-effectiveness analysis should be a present-worth (or equivalent uniform annual) cost evaluation of the principle alternatives using the interest rate that is published annually by the Water Resources Council. Normally, for PENNVEST projects the applicant should select the most cost-effective alternative based upon the above analysis. Once the alternative has been selected the user fee estimates should be developed based upon interest rates and loan terms of the selected funding method.
_____		3. Second Opinion Project Review. (Design Phase)
_____		4. Minority Business Enterprise/Women's Business Enterprise (Construction Phase)
_____		5. Civil Rights. (Construction Phase)
_____		6. Initiation of Operation/Performance Certification. (Post-construction Phase)

I/A TECHNOLOGIES
PARTIAL LISTING OF INNOVATIVE AND ALTERNATIVE TECHNOLOGIES

TREATMENT TECHNOLOGIES
Aquaculture
Aquifer Recharge
Biological Aerated Filters
Constructed Wetlands
Direct Reuse (NON-POTABLE)
Horticulture
Overland Flow
Rapid Infiltration
Silviculture
Microscreens
Controlled Release Lagoons
Swirl Concentrator

ENERGY RECOVERY TECHNOLOGIES
Anaerobic Digestion with more than 90 percent Methane Recovery
Cogeneration of Electricity
Self-Sustaining Incineration

SLUDGE TREATMENT TECHNOLOGIES

Aerated Static Pile Composting
Enclosed Mechanical Composting (In vessel)
Revegetation of Disturbed Land
Aerated Windrow Composting

INDIVIDUAL & SYSTEM-WIDE COLLECTION TECHNOLOGIES
Cluster Systems
Septage Treatment
Small Diameter Gravity Sewers
Step Pressure Sewers
Vacuum Sewers
Variable Grade Sewers
Septic Tank Effluent Pump with Pressure Sewers

FAIRVIEW TOWNSHIP
York County, Pennsylvania

Uniform Environmental Review

August 2010

Gannett Fleming

UNIFORM ENVIRONMENTAL REVIEW

FAIRVIEW TOWNSHIP

PROPOSED SEWAGE FACILITIES PROJECT

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose and Need for Project

The Fairview Township Sewer Authority (Authority) provides sanitary sewage collection, conveyance, and treatment service to properties within Fairview Township. Wastewater discharged to the Fairview Township sewer system is conveyed to one of four (4) treatment plants: the Lower Allen Township Authority Wastewater Treatment Plant (WWTP), the Lewisberry WWTP, the Fairview Township Authority North WWTP, or the Fairview Township Authority South WWTP.

Over 2,560 occupied properties in the Fairview Township are currently served by on-lot systems, with the majority of these properties also relying on private, on-site wells for drinking water supply. A large amount of those on-lot systems were constructed before 1972, when Pennsylvania established permitting and design standards for on-lot systems. The 2010 Fairview Township Act 537 Sewage Facilities Plan (the "Plan") included an evaluation of the ability of these on-lot systems to provide reliable, long-term service. Options to meet the long-term needs of these un-sewered areas were also evaluated. The Plan recommended that public sewer service be extended to the Fairview Farms and Timber Ridge areas, both of which are currently served by on-lot system.

1.2 Project Description

The proposed project includes the construction of two separate sanitary sewer extensions to the North Wastewater Treatment Plant (WWTP). The first extension would serve approximately 135 residential units in the Fairview Farms area. The Fairview Farms area is located in the northcentral area of the Township and includes residential development along Carriage, Northview, Old Forge, Sunset View, Diller and Ridge Streets. PADEP is requiring

that existing private WWTPs serving the Meadowbrook Mobile Home Park and the Fairview Elementary School be abandoned and connected to the sewer extension. With the addition of these two connections, the total number of EDUs served will be approximately 235. The extension will consist of a sewage pumping station, gravity sewer and low pressure sewer in areas where wastewater cannot be conveyed via gravity. The estimated amount of disturbance associated with the first sewer extension is 2.0 acres.

The second extension would serve approximately 55 residential units in the Timber Ridge area. The Timber Ridge area is located in the northern portion of the Township between Lewisberry Road and the Pennsylvania Turnpike. The extension will convey the collected wastewater via one pumping station, located along in the ROW near Timber Lane, to the existing manhole HH-9, located near Hemlock Drive. Gravity sewers will be installed on sections of Holly Drive, Tall Oaks Drive and Timber Lane. Six properties along Tall Oaks Drive and twelve properties along Pine Tree Drive would need to be served by grinder pumps and a low pressure sewer main. The force main from the proposed pumping station would discharge into a gravity sanitary sewer system at the intersection of Lewisberry Road and Timber Lane, and the five properties along Lewisberry Road would be required to connect to this gravity sanitary sewer system via private gravity laterals.

A project location map is included as Figure 1, showing the location of the aforementioned areas.

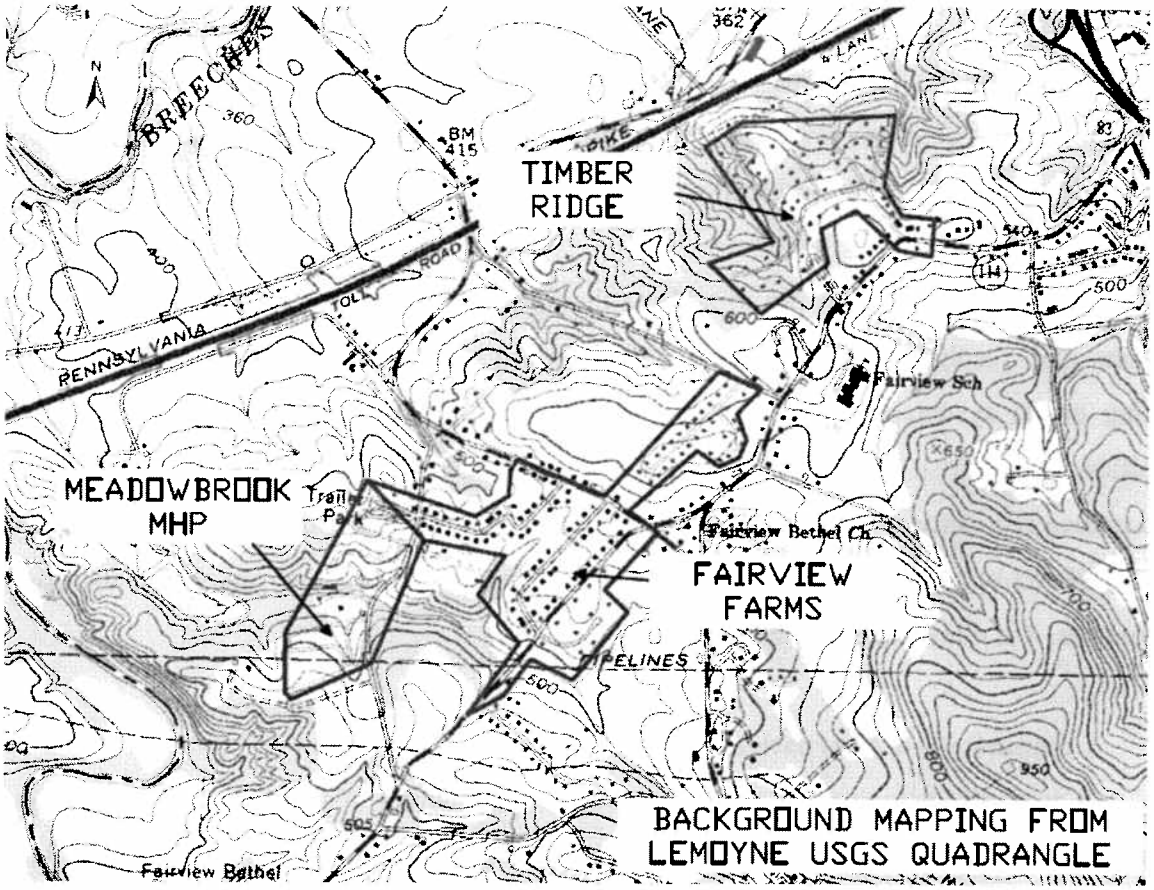


Figure 1
Project Location Map

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Alternatives Considered

A detailed evaluation of alternatives was completed during the preparation of the 2010 Fairview Act 537 Plan. An evaluation of sewage management alternatives for the Fairview Farms area was performed and three potential alternatives were developed for consideration. Fairview Farms Alternatives 1, 2 and 3 include the construction of a sanitary sewer extension to connect the Fairview Acres area to the existing public sewer systems tributary to the North WWTP. Fairview Farms Alternative 4 proposes a community treatment system for the area which would involve either a stream discharge or land dispersal of treated wastewater effluent.

An evaluation of sewage management alternatives for the Timber Ridge area was performed and two potential alternatives were developed for consideration. Timber Ridge

Alternatives 1 and 2 propose the construction of a gravity/pressure sewer to connect the Timber Ridge area to the existing sewer system adjacent to the area. Since the Timber Ridge area is abutting existing sanitary sewer facilities tributary to the North WWTP, an evaluation of a community WWTP was not necessary.

Failure of the Township to address the long-term operation and maintenance of on-lot systems may result in higher failure rates and more expensive wastewater treatment options. Failing on-lot systems may lead to the degradations of drinking water resources and are a significant health risk to the residents of the area of these failures. Water quality problems may also reduce recreational opportunities in the water bodies throughout the Township, decreasing the likelihood of future growth of the Township. Due to the negative impacts of the no-action alternative, it is eliminated from further consideration.

2.2 Comparison of Alternatives

Wastewater management alternatives developed as part of the Act 537 planning process were evaluated in terms of their relationship to the goals and objectives of various planning, environmental, and natural resource laws and policies of the Commonwealth of Pennsylvania. Chapter 71.21(a) (5) of PADEP's regulations requires that the Act 537 Plan address the consistency of each wastewater management alternative with twelve of the Commonwealth's goals and policies. If a recommended alternative is determined to conflict with or is inconsistent with one of the goals and objectives, the conflict and inconsistencies must be resolved before PADEP will approve the alternative. Chapter 6 of the Township's 2010 Act 537 Plan includes the consistency analysis.

Fairview Farms Alternative 1 would convey the collected wastewater via one pumping station, located along Route 114, to the existing manhole AB-6, located in the ROW near the Fairview Township Elementary School. Gravity sewers would be installed on Bradley Circle, Carriage Road (ROW), Route 114, Sunset View, and Shauffer Drive. Low pressure sewer would be used in areas where wastewater could not be conveyed via gravity, specifically Route 262, Diller Road and Carriage Road. Alternative 1 would convey the wastewater from the Fairview Farms area to the North WWTP. This alternative would require that the Fairview Township

Elementary School abandon their existing sewage facilities and connect to the Township's sewer system. A total of 135 EDUs would be served in Alternative 1.

Fairview Farms Alternative 2 is the same as Alternative 1, with the addition of the Meadowbrook MHP area. In order to serve this area, an additional pumping station will be required. One pumping station would be located near the existing privately owner WWTP serving the Meadowbrook MHP. Alternative 2 would serve the 135 occupied parcels included in Alternative 1, along with approximately 100 properties in the Meadowbrook MHP area, for a total of 235 properties served. The existing Meadowbrook MHP wastewater collection system would be reused in Alternative 2.

Fairview Farms Alternative 3 would require that the owner of the Meadowbrook MHP construct the necessary sewage facilities to convey wastewater to the Township's proposed system. The collection and conveyance system for the Fairview Farms portion of the area is the same as Alternative 1. However, a larger pumping station may be required, depending on Meadowbrook MHP's preferred connection point. A total of 235 properties would be served, with 100 connections coming from the Meadowbrook MHP separate system. Implementation of Alternative 3 would allow for metering of the wastewater flows from the Meadowbrook MHP. Due to its age and lack of maintenance and rehabilitation, it is likely that the existing Meadowbrook MHP collection system would be susceptible to inflow and infiltration.

Fairview Farms Alternative 4 would convey the collected wastewater to a proposed community WWTP to be located along Old Forge Road. Potential options for the treated wastewater were considered. The first option of land dispersal of the treated wastewater was eliminated from consideration due to the poor soil conditions in the area. The Fairview Farms area consists predominately of Cordous silt loam (Cm) and Lehigh channery silt loam (LhB), both of which are hydric soils and unsuitable for on-lot sewage disposal systems. The other option considered was stream discharge of the treated wastewater, The closest surface water to the area is an unnamed tributary of Yellow Breeches Creek that generally runs from the municipal park off Lewisberry Road to Old Forge Road, intersecting Shauffertown Road, under the Pennsylvania Turnpike, and then into Yellow Breeches Creek, a cold water fishery. A farm

pond of approximately 4 acres is located approximately 3,150 feet downstream from the potential WWTP site off Old Forge Road. It is expected that the discharge limits for a new WWTP immediately upstream of a farm pond would be more stringent than typical secondary treatment requirements and the resultant treatment facilities very expensive to construct, operate, and maintain.

Since the collection facilities for Alternative No. 4 would be similar to those needed for Alternative No. 2 and the cost for the community treatment system much higher than the conveyance lines needed for Alternatives the other alternatives, a new community treatment plant was eliminated from consideration given the lack of suitable areas, and anticipated higher cost than the other alternatives, and the availability of WWTP capacity. The Plan provides additional information on the Fairview Farms alternatives, along with mapping of the alternatives.

Table 1 summarizes the estimated planning level project costs for the three Fairview Farms alternatives that rely on extensions from existing public sewage facilities. While Alternative 1 is technically feasible, PADEP requested that the Meadowbrook MHP be served by the proposed sewer extension to serve the Fairview Farms area. Likewise, Alternative 2 is technically feasible, but would require the Township to take acquire an aging sewage collection system as well as potential utility easements. Based on the evaluation of alternatives, the selected approach is Alternative 3. Alternative 3 will require the owner of the Meadowbrook MHP to construct the sewage facilities to convey wastewater to the Township's sewer system. The sewage facilities would include a pumping station near the existing WWTP and corresponding force main.

Table 1
Fairview Acres Public Sewage Facility Alternatives
Estimated Project Costs

Alt No.	Description	Total Project Cost in 2010 Dollars	EDUs Served By Project	Probably Cost Per EDU
1	Construct sanitary sewer extension serving only Fairview Farms Area. Wastewater flows to North WWTP.	$3,213,000	135	$23,800
2	Construct sanitary sewer system serving the Fairview Farms and Meadowbrook MHP. Wastewater flows to North WWTP.	$4,285,000	235	$18,200
3	Construct sanitary sewer system serving the Fairview Farms area and allow connection of Meadowbrook MHP separate system. Wastewater flows to North WWTP.	$3,411,000	235	$14,500
4	Construct a small community wastewater collection and treatment facility. Discharge to unnamed tributary to Yellow Breeches Creek.	Cost not evaluated: Township already owns and efficiently operates wastewater treatment and collection facilities nearby, project cost will be more than alternatives 1 and 2, and approval to discharge to tributary is unlikely.		

Other potential options to address Fairview Farms would be to issue holding tank permits when on-lot systems are found to be failing and to promote other development in the area that would require a sanitary sewer extension to which the Fairview Farms area homes could connect. The holding tank option is an uneconomical long-term option, since the holding tanks must be pumped out on a regular basis. The selected approach was therefore Alternative 3, connecting to the existing sewer system tributary to the North WWTP, for addressing the long-term wastewater needs of the Fairview Farms area.

Timber Ridge Alternative 1 would convey the collected wastewater via one pumping station, located along in the ROW near Timber Lane, to the existing manhole HH-9, located near Hemlock Drive. Gravity sewers would be installed on sections of Pine Tree Drive, Holly Drive, Tall Oaks Drive and Timber Lane. Six properties along Tall Oaks Drive would need to be served by grinder pumps and a low pressure sewer main. The force main from the proposed pumping station would discharge into a gravity sanitary sewer system at the intersection of Lewisberry Road and Timber Lane, and the five properties along Lewisberry Road would be required to connect to this gravity sanitary sewer system via private gravity laterals. Timber Ridge Alternative 1 would convey the wastewater from the Timber Ridge area to the North WWTP. A total of 55 residential EDUs would be served in Timber Ridge Alternative 1.

Timber Ridge Alternative 2 serves the same area as Timber Ridge Alternative 1, but proposes the use of low pressure sewer rather than gravity and a pumping station. The low pressure system would discharge into a gravity sanitary sewer system at the intersection of Lewisberry Road and Timber Lane, and the five properties along Lewisberry Road would be required to connect to this gravity sanitary sewer system via private gravity laterals. The gravity sanitary sewer system would connect at existing manhole HH-9, the same proposed connection point as Timber Ridge Alternative 1. Timber Ridge Alternative 2 would convey the wastewater from 55 residential EDUs in the Timber Ridge area to the North WWTP.

Table 2 summarizes the estimated planning level project costs for the two Timber Ridge alternatives that rely on extensions from existing public sewage facilities. While Timber Alternative 2 has a lower total initial project cost by nearly $400,000, the lifetime operation and maintenance expense of Timber Alternative 2 is expected to far exceed that of Timber Ridge Alternative 1. Additionally, the Fairview Township Sewer Authority prefers the use of one public pumping station over numerous grinder pumping stations that may be the responsibility of the homeowner.

Table 2
Timber Ridge Public Sewage Facility Alternatives
Estimated Project Costs

Alt No.	Description	Probable Project Cost in 2010 Dollars	EDUs Served By Project	Probably Cost Per EDU
1	Construct gravity sanitary sewer extension serving the Timber Ridge area. Wastewater flows to North WWTP.	$1,614,000	55	$29,300
2	Construct low pressure sanitary sewer extension serving the Timber Ridge area. Wastewater flows to North WWTP.	$1,249,000	55	$22,700

Other potential options to address Timber Ridge area would be to issue holding tank permits when on-lot systems are found to be failing and to promote other development in the area that would require a sanitary sewer extension to which the Timber Ridge area homes could connect. The holding tank option is an uneconomical long-term approach, since the holding tanks must be pumped out on a regular basis. The selected approach to address the long-term wastewater needs of the Timber Ridge is therefore Alternative 1, connecting to the existing sewer system tributary to the North WWTP via a gravity sanitary sewer extension.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECT

Based on the evaluation of the alternatives, the selected wastewater management approach to meet the sewage facility needs of Fairview Township is to extend sanitary sewer service to the Fairview Farms and Timber Ridge areas. The continued use of on-lot wastewater systems is not a viable alternative in these areas.

The factors discussed below were evaluated with respect to potential environmental impacts.

3.1 Land Use/Important Farmland/Formally Classified Lands

Comprehensive land use plans have been prepared for Fairview Township and York County. Both planning efforts are discussed in detail in Chapter 2 of the Plan. It is crucial that the selected approach is consistent with the recommendations of a comprehensive land. The Fairview Farms and Timber Ridge areas are located in the northern portion of the Township, currently designated as an interim growth area by the County Comprehensive Plan. The established and interim growth areas defined in the County Plan were developed through cooperation between the County and Township representatives. The existing zoning classifications, availability of public sewer and water, and the potential impact on natural areas and preserved farmland were considered when developing these growth areas. Furthermore, the Township's comprehensive plan recommends the reliance on the North WWTP, where capacity is available. The sewer extensions proposed to serve the Fairview Farms and Timber Ridge areas will contribute wastewater to the North WWTP. As part of the review process of the Act 537 Plan, the Plan was reviewed by the County and Local Planning Commissions. Comments received from these planning agencies are included in the appendices of the Plan.

According to the Soil Survey for York County, Pennsylvania, prepared by the U.S. Department of Agriculture Soil Conservation Service (SCS), and the Prime Farmland Soils of Pennsylvania prepared by the SCS, prime agricultural soils exist throughout Fairview Township. Plate No. 1 of the Act 537 Plan, included as Exhibit 1 herein, shows the extent of land containing prime agricultural soils as identified by the SCS. While there are prime agricultural soils in the Fairview Farms area, these soils are not classified as farmland of statewide importance. Additionally, the Fairview Farms area is currently residential and no new development is proposed in conjunction with the proposed sewer extension. The alternatives of this Plan are consistent with the Prime Agricultural Land Policy, by not promoting public sewage facilities in designated agricultural areas.

The Township also encourages agricultural preservation through the York County Conservation Easement Program. The program allows a property owner with eligible farmland to enter into a perpetual deed restriction on the property which limits the future use of the property, ensuring future agricultural land use. The property owner is compensated for entering

the program. According to the Township's 2010 Comprehensive Plan, 35 properties totaling 1,218.6 acres are currently enrolled in an agricultural preservation program.

There are no national or state parks, forests and trails, national monuments, or landmarks within 1 mile of the project area. Therefore, there is no impact of the project on any formally classified lands.

3.2 Floodplains

Based on review of available Federal Emergency Management Agency (FEMA) Floodplain Insurance Studies maps, the project is not located within the 100-year flood plain or floodway. Therefore, there will be no impact on the 100-year floodplain and the associated floodway.

3.3 Wetlands

Areas classified as wetlands by the National Wetlands Inventory (NWI) are identified on the environmental features map included as Exhibit 1. Wetlands are defined by Pennsylvania Title 25, Chapter 105 as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions; including swamps, marshes, bogs and similar areas. The three essential characteristics possessed by wetlands are: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology, the driving force creating wetlands.

Much of the land located along stream corridors in the Township contains NWI wetlands or hydric soils. There are no areas classified as wetlands in the Fairview Farms or Timber Ridge areas. Therefore, no wetland impacts are anticipated from the selected wastewater management approach.

3.4 Historic Resources

Pennsylvania Title 37, Section 507 requires cooperation between public officials and the Pennsylvania Historical and Museum Commission. A cultural resource notice request to the

Bureau of Historic Preservation (BHP) for a list of known historical sites and potential impacts on known archeological and historic sites within Fairview Township by implementation of any of the wastewater alternatives is needed before proceeding with the alternative. A PHMC cultural resource notice request was submitted on March 24, 2010 for the proposed Fairview Farms and Timber Ridge sewer extension projects. A copy of the request is included in as Exhibit 2.

The PHMC BHP responded in a letter dated May 5, 2010, stating that the proposed construction activities should have no effect on historical buildings, structures, or archaeological resources located in the project area. A copy of the response letter from the PHMC-BHP is included in Exhibit 2.

3.5 Sensitive Biological Resources

The Pennsylvania Natural Heritage Program, formerly known as the Pennsylvania Natural Diversity Inventory (PNDI), maintains a database containing site information on regulated plant and animal species, outstanding geological features, and significant natural communities. A PNDI Project Planning Environmental Review was performed on March 12, 2010, for the Fairview Farms area and the Timber Ridge areas. The searches determine if any impacts are anticipated to federally listed, proposed, or candidate species if the construction project were to occur in the area. The Project Planning Environmental Review determined that no anticipated impacts exist for the areas. The results of the PNDI Project Planning Environmental Review are included in Exhibit 3.

No additional inquiries were made for the proposed project, as the PNDI searches concluded that no further review was required by state or federal agencies.

3.6 Water Quality Issues

There will be no short- or long-term impacts on surface and groundwater quality and quantity in the watershed. The Project provides a continuation of existing surface water use.

According to the Guidelines for the Uniform Environmental Review Process, this Project is not located within a sole-source aquifer area.

3.7 Coastal Resources

According to the Guidelines for the Uniform Environmental Review Process, this Project is not located in a coastal management zone.

3.8 Socio-Economic Issues

Measures will be taken so that no buildings or structures outside the Project area will be damaged during construction due to this Project. This Project will provide the lowest-cost means of wastewater treatment of the technically feasible alternatives evaluated. PADEP has requested that the project serve the Meadowbrook Mobile Home Park, which could represent a low-income or disadvantaged population. However, the Project is designed to serve the entire community, and there are no negative environmental impacts in any one geographic or demographic area nor will the Project adversely affect minority groups.

3.9 Air Quality

The construction activities will not generate dust emissions that need to be controlled. The proposed new pumping stations will be properly designed in order to minimize odor emissions. Additionally, the project will serve the residents currently served by the Meadowbrook Mobile Home Park WWTP, which is consistently failing to meet its effluent discharge limits.

3.10 Transportation

The Project will have no long-term impact on local or state roads. Short-term, temporary impact is anticipated due to the construction of the sewer mains in local and state road rights-of-way. These streets will be reconstructed to meet the current Township and State standards. Additionally, work will be scheduled so that construction does not occur during peak travel times.

3.11 Noise Abatement and Control

Temporary impact caused by construction machinery in developed areas is expected, however, after construction is completed, the impact will no longer exist. The proposed pumping stations located near residential areas will be designed to minimize noise.

3.12 Wild and Scenic Rivers

According to a website search, there are no rivers in the National Wild and Scenic Rivers system, the National Rivers Inventory, or on American Heritage Rivers located within 1 mile of the Project area. Accordingly, no additional inquiries were required.

3.13 Miscellaneous Environmental Considerations

(1) **Other Environmentally Sensitive Areas:** No other environmentally sensitive areas are expected to be impacted by this Project.

4.0 SUMMARY OF MITIGATION

The following are the identified potential environmental impacts and mitigation measures with respect to the proposed Project.

(1) **Wetlands**

There are no areas classified as wetlands in the Fairview Farms or Timber Ridge areas. Therefore, no wetland impacts are anticipated from the selected wastewater management approach.

(2) **Historic Resources**

The BHP indicated that the Project should have no effect historic or archaeological resources, therefore no further evaluation is required at this time.

(3) **Water Quality Issues**

The Project is not expected to have any negative impact on the water quality.

(4) **Air Quality**

The construction activities may generate temporary dust emissions, which will be controlled, as required by the Contract Specifications, by the contractors. Steps will be taken to comply with the fugitive emission requirements of Section 123.1 of Chapter 123 of the PADEP's Rules and Regulations.

(5) **Transportation**

The short-term temporary impact due to the sewer main construction in local and state road rights-of-way will be mitigated by the Contractor through traffic control and potential restriction on work hours.

(6) Noise Abatement and Control

A temporary noise impact caused by construction machinery in developed areas is expected. However, after construction is completed, the impact will no longer exist.

5.0 PUBLIC PARTICIPATION

This Project is included in the Township's 2010 Act 537 Update. As part of the approval process, a thirty (30) day public review period was completed during which time the public was invited, via an advertisement in the local newspaper, to review and comment on the 2010 Update and the projects contained in it. The Plan was also available for review on the Township's website. Additionally, the Project has been discussed at numerous public meetings where Township staff has been available to answer questions and respond to comments regarding the Project.

Exhibit 1

Environmental Features Map

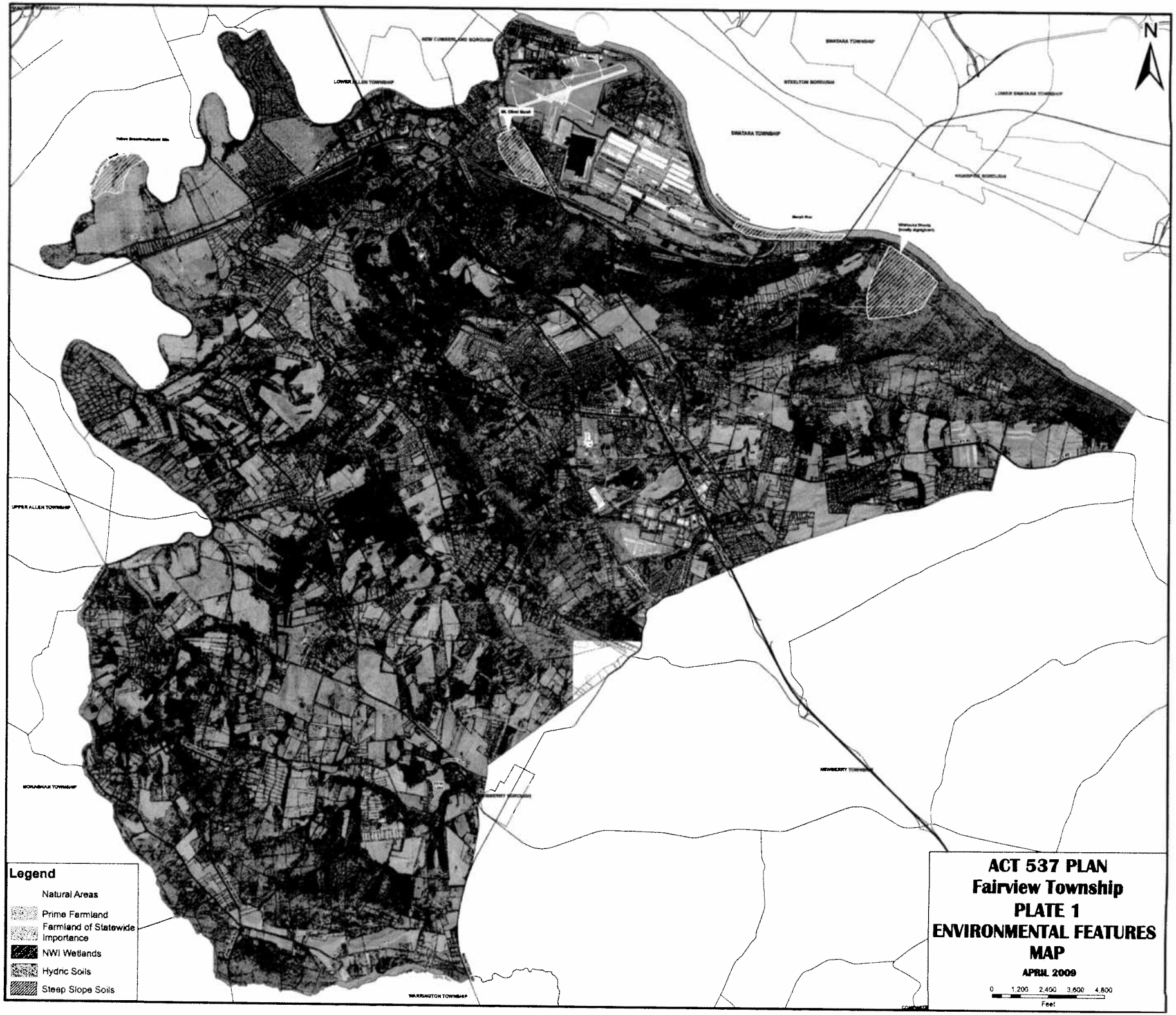

N
NEW CUMBERLAND BOROUGH
LOWER ALLEN TOWNSHIP
SINKTARA TOWNSHIP
STEELTON BOROUGH
LOWER SINKTARA TOWNSHIP
SINKTARA TOWNSHIP
HIGHSPIRE BOROUGH
UPPER ALLEN TOWNSHIP
MONROEVILLE TOWNSHIP
NEWBERRY TOWNSHIP
WARRINGTON TOWNSHIP
Legend
Natural Areas
Prime Farmland
Farmland of Statewide Importance
NWI Wetlands
Hydric Soils
Steep Slope Soils
ACT 537 PLAN
Fairview Township
PLATE 1
ENVIRONMENTAL FEATURES MAP
APRIL 2009
0 1,200 2,400 3,600 4,800
Feet

Exhibit 2

Historical Resources Correspondence

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

May 5, 2010

Joseph A. Strauch, P.E.
Gannett Fleming, Inc.
P.O. Box 67100
Harrisburg, PA 17106-7100

Re: File No. ER 2010-1285-133-A
PV: Act 537 Plan-Proposed Sewer Extensions, Wastewater Collection & Conveyance, Fairview Twp., York Co.

Dear Mr. Strauch:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

There may be historic buildings, structures, and/or archaeological resources located in the project area. In our opinion the activities described in your proposal should have no effect on these resources. Should you become aware, from any source, that unidentified historic buildings, structures, and or archaeological resources are located at the project site, or that the project activities will have an effect on these properties, the Bureau for Historic Preservation should immediately be contacted.

If you need further information regarding archaeological survey please contact Doug McLearen at (717) 772-0925. If you need further information concerning historic structures please consult Ann Safley at (717) 787-9121.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology & Protection

cc: DEP, Southcentral Regional Office

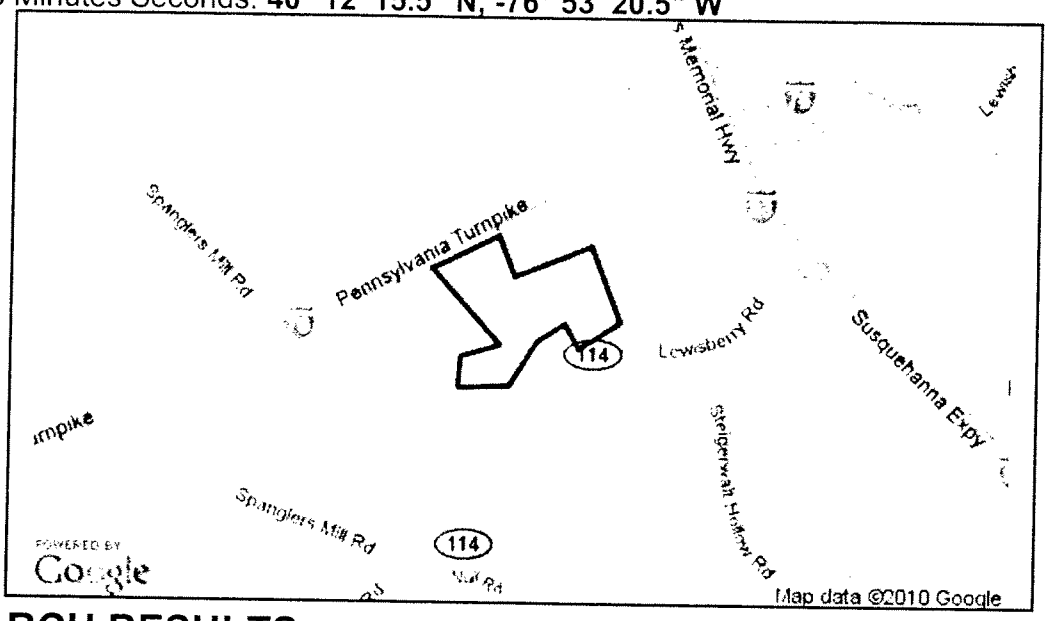
DCM/tmw

Exhibit 3

Sensitive Biological Resources Correspondence

1. PROJECT INFORMATION

Project Name: **Timber Ridge Area**
Date of review: **3/12/2010 2:42:33 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewer line (new - construction in new location)**
Project Area: **49.9** acres
County: **York** Township/Municipality: **Fairview**
Quadrangle Name: **LEMOYNE** ~ ZIP Code: **17070**
Decimal Degrees: **40.204312 N, -76.889019 W**
Degrees Minutes Seconds: **40° 12' 15.5" N, -76° 53' 20.5" W**



2. SEARCH RESULTS

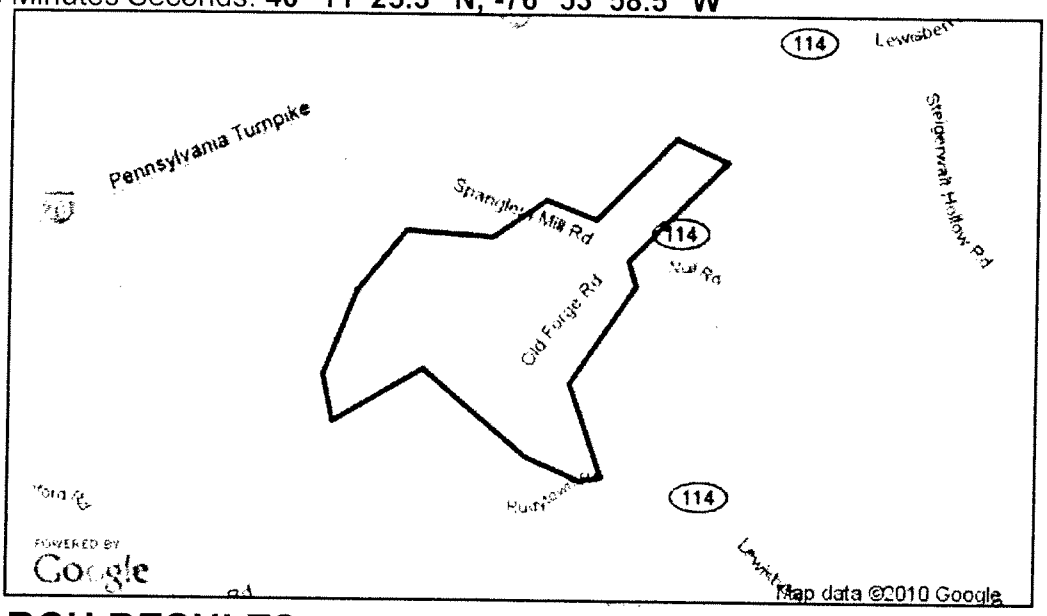
Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

1. PROJECT INFORMATION

Project Name: **Fairview Farms- Revised**
Date of review: **3/12/2010 3:10:42 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewer line (new - construction in new location)**
Project Area: **195.7** acres
County: **York** Township/Municipality: **Fairview**
Quadrangle Name: **LEMOYNE** ~ ZIP Code: **17070**
Decimal Degrees: **40.190348 N, -76.899576 W**
Degrees Minutes Seconds: **40° 11' 25.3" N, -76° 53' 58.5" W**



2. SEARCH RESULTS

Agency	Results	Response
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PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

Appendix B

On-Lot System Questionnaire

FAIRVIEW TOWNSHIP SEWAGE FACILITIES PLANNING STUDY
WELL WATER SAMPLING PROGRAM QUESTIONNAIRE

(Please circle or fill in as appropriate; add comments or sheets as needed and Return by _(INSERT DATE)_____, 2006 to Fairview Township by folding survey with business reply information showing and tape closed. Postage has been pre-paid for your convenience.)

NAME: _____ PROPERTY ADDRESS: _____

_____

DAY TIME PHONE: _____ HOME PHONE: _____

1. How large is your lot? _____ (acres)

2. What kind of drinking water system do you have? WELL SPRING PUBLIC

3. Do you treat your drinking water? YES or NO. If yes, circle all that apply
   Chlorine Disinfection UV Light Disinfection Carbon Filter
   Softener Other, Describe _____

4. If you have a well, is it DUG or DRILLED? How Deep? _____ ft. Cased? YES or NO.

5. What kind of sewage system do you have (Circle all that Apply)

Septic Tank	In Ground Drain Field	Pipe to Ditch	Seepage Pit
Cesspool	Elevated Sand Mound	Pipe to Stream	Other
Bore Hole	Aerobic Treatment Unit	Holding Tank	

6. What year was your sewage system installed? _____. Is your sewage system located in your FRONT, SIDE, or BACK yard (circle the appropriate location).

7. Have you noticed any of the following near your sewage system? (Circle all that apply)

Lush Green Grass	Wetness or Spongy Areas
Odors	Wastewater Backing Up Into The Home
Sluggish Drains	System Overflows

   Other _____

8. Was your sewage system ever pumped out? YES or NO. How often _____ Last time?_____

9. Are you willing to have the Township collect a sample of your drinking water? YES or NO

10. If you answered yes to Question 9, is there a faucet on the outside of the house? YES or NO. If yes, please describe location of faucet _____

_____

_____

Appendix C

Summary of On-Lot Questionnaire Results

APPENDIX C
Fairview Township Sewage Facilities Planning Study
Questionnaire Summary Results

Name	Address	Lot Size (acres)	System Type	Problems Listed
I. EXISTING PROBLEMS				
Marc & Greta Farrell	106 Bellows Court	1.70	Elevated Sand Mound	Odors
Connie Elias	322 Bethel Church Road	0.50	In Ground Drain Field	Lush Green Grass
Art & Robin Young	381 Big Spring Road	3.00	Elevated Sand Mound	Lush Green Grass
Dustin Kauffman	488 Big Spring Road	0.60	In Ground Drain Field Seepage Pit	Lush Green Grass
Samuel L. Whetstone	637 Billet Drive	1.00	Elevated Sand Mound	Lush Green Grass
David Ulsh	475 Brenneman Drive	6.50	Elevated Sand Mound	Lush Green Grass
Daniel P. McMillen	98 Bunker Hill Road	1.00	Septic Tank	Wetness or Spongy Areas
Dave Kline	104 Bunker Hill Road	0.25	Septic Tank	Lush Green Grass
John L. Cole Jr.	117 Bunker Hill Road	0.75	Septic Tank In Ground Drain Field	Scheduled Lawn Treatments, whole yard is Lush Green Grass
Jean & Todd Smithson	5 Carriage Road	0.46	Septic Tank In Ground Drain Field	Lush Green Grass Wetness or Spongy Areas
Robert Hals	9 Carriage Road	0.50	Septic Tank In Ground Drain Field Pipe to Ditch	
James Melhorn	911 Cedars Road	7.00	Septic Tank In Ground Drain Field	Lush Green Grass
Clark S. Baker	922 Cedars Road	1.50	Septic Tank	Lush Green Grass
Jeffrey D. Seagraves	103 Clydesdale Court	1+	Septic Tank In Ground Drain Field	Lush Green Grass
Ronald Roseberry	106 Clydesdale Court	1.03	Septic Tank In Ground Drain Field	Lush Green Grass
Dave & Priscilla Hooper	741 Collina Drive	0.79	Septic Tank	Lush Green Grass
Mark Treece	751 Collina Drive	314.00	Septic Tank	Lush Green Grass
Joseph Carroll	105 Diller Road	0.52	Septic Tank In Ground Drain Field	Lush Green Grass
Paul E. Slifko	107 Diller Road	0.34	Septic Tank In Ground Drain Field	Lush Green Grass
William Stump	115 Diller Road	0.33	Septic Tank	Wastewater Backing Up Into The Home Frequent need to pump

APPENDIX C
Fairview Township Sewage Facilities Planning Study
Questionnaire Summary Results

Name	Address	Lot Size (acres)	System Type	Problems Listed
David Peffer	197 Fisher Road	1.00	Elevated Sand Mound	Lush Green Grass Odors
Michael J. Halbfoerstm	664 Fishing Creek Road	1.00	Elevated Sand Mound	Odors from water holding tank, which access is above ground
Bill Leavens	112 Fox Fire Lane	1.80	Septic Tank	Lush Green Grass
Nelson Swarts	117 Fox Fire Lane	2.80	Elevated Sand Mound	Dry
Delbert Hazzard	424 Granite Quarry Road	2.50	Septic Tank	Lush Green Grass
Norman Zeigler	463 Granite Quarry Road	1.00	Septic Tank In Ground Drain Field Pipe to Ditch	
Gregory & Debra Miller	203 Heck Hill Road	0.55	Public Sewer	Odors - a round pump here in back yard
Stacy Hosteth	305 Heck Hill Road	0.83	Public Sewer	Lush Green Grass
Daniel B. Sorge	742 Heck Hill Road	1.80	Septic Tank	Sluggish Drains System Overflows
Angela Minnick	1129 Highland Drive	1.33	Septic Tank	Lush Green Grass
Leonard C. Morris III	694 Julie Court	1.25	Septic Tank	Water has a sewer smell
Howard Zeigler	885 King Street	0.33	0.33	Lush Green Grass Wetness or Spongy Areas Odors
Jo McPartland	890 King Street	?	Septic Tank	Lush Green Grass
Gary L. Wilkinson	651 Lewisberry Road	0.13	Septic Tank	Lush Green Grass
Duane Eby	793 Lewisberry Road	0.33	Septic Tank In Ground Drain Field	Wetness or Spongy Areas
Leota Negley	1067 Lewisberry Road	3.00	Septic Tank In Ground Drain Field Pipe to Ditch	Lush Green Grass
Marlet Hughes	1141 Lewisberry Road	40.00	Elevated Sand Mound	Weeds grow better
Paul Moffitt	974 Limekiln Road	1.50	Elevated Sand Mound	Lush Green Grass
Hal Dewittle	760 Markham Court	1.30	Elevated Sand Mound	Lush Green Grass
Bill & Melanie Davis	213 Myers Lane	1.00	Septic Tank In Ground Drain Field	Wetness or Spongy Areas
Richard L. Weisner	4 Northview Road	0.91	Septic Tank	Lush Green Grass Wetness or Spongy Areas
David J. Hiester	850 Old Forge Road	0.50	Septic Tank In Ground Drain Field	Lush Green Grass

APPENDIX C
Fairview Township Sewage Facilities Planning Study
Questionnaire Summary Results

Name	Address	Lot Size (acres)	System Type	Problems Listed
Dennis Shope	366 Old Stage Road	4.00	Elevated Sand Mound	Lush Green Grass
Tracy M. Atkins	373 Old Stage Road	1.70	Septic Tank	Lush Green Grass
Kristin & Michael Houle	423 Old Stage Road	10.00	In Ground Drain Field	Lush Green Grass
William & Tracey Hobart	567 Pleasant View Road	1.00	Septic Tank In Ground Drain Field	Lush Green Grass Wetness or Spongy Areas
Marlin & Sharon Schreffler	592 Pleasant View Road	1.00	Septic Tank Elevated Sand Mound	Odors
Rearick	184 Rose Hill Drive	1.00	Septic Tank	Lush Green Grass
Jeff Jaxheimer	190 Rose Hill Drive	2.14	Septic Tank In Ground Drain Field Pipe to Ditch	Lush Green Grass
Joseph P. & Mary Pat Strouse	675 Sand Spur Drive	1.25	Septic Tank Elevated Sand Mound	Lush Green Grass Odors Sluggish Drains System Overflows Wetness or Spongy Areas Had sewer pumped & also added several tons of top soil
S. Michael Black	683 Sand Spur Drive	1+	Septic Tank Sand Mound	Lush Green Grass
Ronald G. & Harriet E. Bretz	690 Sand Spur Drive	72.00	Septic Tank In Ground Drain Field	Had Drain Field Redug & Stoned
Kathleen S. Main	691 Sand Spur Drive	0.50	Septic Tank In Ground Drain Field	Lush Green Grass
Harry J Heilmeier	684 Sand Spur Drive	1.00	Septic Tank Elevated Sand Mound	Lush Green Grass (Depends on time of year)
Gerard Brandon	1140 Sassafras Lane	2.00	Septic Tank In Ground Drain Field	Wetness or Spongy Areas
Mark Loht	820 Schoolhouse Lane	0.75	Septic Tank	Lush Green Grass
Jay & Cheryl Depner	636 Southridge Drive	3.30	Septic Tank	Wastewater Backing Up Into The Home
Todd & Miki W. Hoynitski	648 Southridge Drive	4.45	Elevated Sand Mound	Lush Green Grass
Robert L. Fox	259 Stetler Road	2.00	Septic Tank Pipe to Ditch	
Amy & Whitney Young	814 Stony Brook Lane	2.00	Septic Tank In Ground Drain Field	Lush Green Grass

APPENDIX C
Fairview Township Sewage Facilities Planning Study
Questionnaire Summary Results

Name	Address	Lot Size (acres)	System Type	Problems Listed
James Chapman	101 Sunset View Drive	0.50	Septic Tank In Ground Drain Field	Lush Green Grass Odors Sluggish Drains System Overflows Wetness or Spongy Areas
Steven M. Kowalkowsi	358 Thorley Road	1.50	Septic Tank In Ground Drain Field	Lush Green Grass Wetness or Spongy Areas Field Dry during Dry Times, Slight After Heavy Rainfall
Catherine N. Raoth	12 Timber Lane	0.93	Septic Tank In Ground Drain Field	Lush Green Grass
Eric Martin	7 Valley Road	1.00	Septic Tank In Ground Drain Field Pipe to Ditch	
Thomas Conorasky	112 Wheatland Road	4.50	Septic Tank In Ground Drain Field	Odors
Frank H. Kreysar	251 Willis Road	1.20	Septic Tank In Ground Drain Field	Lush Green Grass
Tim Dinsmore	671 Winebary Circle	1.00	Elevated Sand Mound	Lush Green Grass
Miller	672 Woodburne Road	1.60	Septic Tank In Ground Drain Field	Lush Green Grass Odors
			TOTAL	**68**

APPENDIX C
Fairview Township Sewage Facilities Planning Study
Questionnaire Summary Results

Name	Address	Lot Size (acres)	System Type	Problems Listed
II. Corrected Problems				
Michael Murphy	643 Billet Drive	1.33	Septic Tank In Ground Drain Field	Prior to 1999: Odors Lush Green Grass Wetness or Spongy Areas
Kenneth & Joyce Kieffer	793 Scenic Circle	0.50	Septic Tank	Had problems in the past before occupancy decreased (children moved out), problems included: Lush Green Grass, Wetness or Spongy Areas Between neighbor and house, Odors & Sluggish Drains System Overflows previously occurred before occupancy decreased next door
Tad Berger	204 Tall Oak Drive	0.70	Septic Tank In Ground Drain Field Aerobic Treatment Unit Holding Tank	Recently replaced, old system had Wetness or Spongy Areas, and Lush Green Grass
Daniel Stoltz	1000 Old Rossville Road	0.50	Septic Tank Elevated Sand Mound	Had problems in the past before replaced
			TOTAL	**4**
III. Connected to Public Sewer				
Mark Coldren	430 Shuler Road	0.75	Other	
James Day	824 Silver Lake Road	0.33	Pipe to Ditch Other	
Carol Keller	662 Woodward Drive	0.75	Other	
			TOTAL	**3**

Appendix D

Well Water Sample Results Letter
Well Water Sampling Results

(Insert on Fairview Township Letterhead)

(Insert Date of Letter)

Dear Fairview Township Resident

Re: Sewage Facilities Planning Study
Residential Well Sampling - Analytical Results

Thank you for participating in the well water-sampling program conducted as part of Fairview Township's Sewage Facilities Planning Study. The Township is currently working to complete its Sewage Facilities Plan and will advertise for public comments once a draft of the plan is completed.

Enclosed for your information is a copy of the laboratory report presenting the results of the water sample collected from your well. Results are presented in the "Results" column. The "DL" column reports the Detection Limit for the sample. DL is the lowest level the instruments can reasonably detect and does not pertain to water quality limits. Please carefully review the results. The sample was analyzed for nitrate nitrogen, Total Coliform bacteria, and if Total Coliform bacteria were present, Escherichia coli (E.coli) bacteria. The United States Environmental Protection Agency has established a maximum allowable level for nitrate nitrogen of 10 milligrams per liter (mg/L) in drinking water. Total Coliform bacteria analyses are used as an indication of a potential pollution source in a well. For bacteria, the results for safe drinking water should be zero (Not Detected – ND on the lab report).

Drinking water with any Coliform bacteria is potentially harmful. If your analysis indicated the presence of Total Coliform bacteria, the sample was checked for the presence of Escherichia coli (E.coli) bacteria. E.coli bacteria are associated with the digestive system of humans and other warm-blooded animals and should not be present in potable water. The presence of either E. coli or Total Coliform bacteria raises a red flag that there could be disease-causing organisms present in the water. However, false positives or sampling errors can occur when water is sampled and analyzed for bacteria. For this reason, we suggest you consider contacting a laboratory to have additional tests taken of your well if the sample collected contained Total Coliform or E. coli bacteria. If the second test continues to have positive results for Coliform bacteria, then you should investigate some type of treatment system for your well. Additional information regarding private drinking water wells and water quality can be found on the Pennsylvania Department of Environmental Protection website at the following address: www.dep.state.pa.us/dep/deputate/watermgt/Wc/Subjects/SrceProt/Priv_wells.htm or by telephoning the Department's Harrisburg Regional Office at 717-705-4709.

Thank you again for your participation in this important planning study.

Sincerely,
Fairview Township Staff

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0058C0	1	751 LEWISBERRY RD	1950	3.1	ND	ND	2.14	
0063F0	2	749 LEWISBERRY RD	1990	5.2	ND	ND	0.36	
	2.6	868 LEXINGTON PL		ND	ND	ND	N/A	
004500	3	746 LEWISBERRY RD	1978	3.2	1	ND	2.77	
0053L0	4	679 LEWISBERRY RD	1950	5.1	1	ND	0.77	
006000	5	637 LEWISBERRY RD	1890	7.4	5	ND	1.76	
010300	6	633 LEWISBERRY RD	1930	3.9	ND	ND	0.10	
0046A0	7	600 LEWISBERRY RD	1900	3.1	ND	ND	0.44	
005200	8	606 LEWISBERRY RD	1945	3.8	ND	ND	2.68	
0236A0	9	570A LEWISBERRY RD	1987	0.3	3	ND	N/A	
0007Q0	10	570 LEWISBERRY RD	1900	1.5	4	ND	0.68	
0070X0	11	526 LEWISBERRY RD	1950	2.4	ND	ND	0.25	
0071C0	12	499 LEWISBERRY RD	1964	34.1	54	ND	1.40	
0001K0	13	469 LEWISBERRY RD	1960	10.9	2419	ND	0.41	
0054B0	14	443 LEWISBERRY RD	1972	0.5	ND	ND	0.47	
0050F0	15	442 LEWISBERRY RD	1961	3.9	4	ND	0.45	
0177P0	16	437 LEWISBERRY RD	1960	4.7	15	1	0.97	
0176F0	17	430 LEWISBERRY RD		0.6	ND	ND	0.69	
0177G0	18	717 LEWISBERRY RD	1970	4.8	1	ND	1.20	
004600	19	760 LEWISBERRY RD	1960	2.7	52	ND	0.74	
006700	20	793 LEWISBERRY RD	1988	1.1	ND	ND	1.02	
011800	21	835 LEWISBERRY RD	1845	0.3	2	ND	2.89	
0157A0	22	836 LEWISBERRY RD	1998	4.6	38	ND	1.68	
010100	23	920 LEWISBERRY RD	2003	1.5	2	ND	2.24	
000500	24	1011 LEWISBERRY RD	1985	2.2	ND	ND	3.16	
001000	25	1067 LEWISBERRY RD	1997	3.0	ND	ND	2.00	
005000	26	1141 LEWISBERRY RD	1970	3.1	173	ND	22.63	
014800	27	1254 LEWISBERRY RD	2004	4.5	108	1	1.10	
0156H0	28	1150 LEWISBERRY RD	1820	3.0	ND	ND	106.86	
0153F0	29	1186 LEWISBERRY RD	1970	3.1	162	ND	0.32	
003600	30	100 SPANGLERS MILL RD	2000	7.1	ND	ND	1.91	
0035A0	31	120 SPANGLERS MILL RD	2001	0.5	ND	ND	4.30	
0031A0	32	195 SPANGLERS MILL RD	2004	5.7	ND	ND	1.93	
002800	33	200 SPANGLERS MILL RD	1900	5.0	6	ND	1.01	
0030D0	34	239 SPANGLERS MILL RD	1950	4.7	ND	ND	0.42	
002900	35	240 SPANGLERS MILL RD	1825	4.4	16	ND	0.57	
0031D0	36	245 SPANGLERS MILL RD	1962	4.6	10	1	0.42	
0015F0	37	250 SPANGLERS MILL RD	1972	10.5	2	ND	24.35	
0050A0	38	257 SPANGLERS MILL RD	1939	16.0	50	ND	N/A	
001400	39	290 SPANGLERS MILL RD	1959	2.6	ND	ND	4.00	
0100C0	40	105 DILLER RD	1958	3.3	435	7	0.34	
0066H0	41	113 DILLER RD	1954	7.2	ND	ND	0.92	
0066R0	42	114 DILLER RD	1958	17.6	ND	ND	0.32	

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problem. Observed
				Nitrate	Total Coliform	Fecal Coliform		
0068B0	43	115 DILLER RD	1958	8.7	31	ND	0.34	Wastewater Backing Up Into The Home
001000	44	120 DILLER RD	1958	3.3	ND	ND	0.28	
0062B0	45	134 DILLER RD	1940	8.0	ND	ND	0.21	
000200	46	807 OLD FORGE RD	1960	3.3	8	ND	0.43	
000500	47	830 OLD FORGE RD	1990	5.4	ND	ND	0.47	
010300	48	841 OLD FORGE RD	1985	4.8	ND	ND	1.26	
0014D0	49	850 OLD FORGE RD	1957	2.1	ND	ND	1.67	
004800	50	940 OLD FORGE RD	1958	4.8	18	ND	0.25	
032400	51	1001 OLD FORGE RD	1969	5.8	ND	ND	0.30	Greywater Discharge
032500	52	1021 OLD FORGE RD	1957	1.9	10	ND	1.40	
001100	53	1025 OLD FORGE RD	1977	2.2	6	ND	2.01	
001500	54	1029 OLD FORGE RD	1989	6.5	13	ND	15.56	
0002J0	55	234 SHAUFFNERTOWN RD	1961	6.2	ND	ND	0.46	
0002H0	56	277 SHAUFFNERTOWN RD	1954	6.9	1	ND	0.80	
001400	57	290 BRADLEY CIR	1980	0.4	ND	ND	1.07	
001300	58	293 BRADLEY CIR	1987	6.3	240	ND	1.07	
0002L0	59	101 SUNSET VIEW DR	1959	4.4	ND	ND	0.34	System Overflows
000200	60	110 SUNSET VIEW DR	1974	4.7	ND	ND	0.68	
0002J0	61	118 SUNSET VIEW DR	1980	5.9	2	ND	0.51	
0002K0	62	119 SUNSET VIEW DR	1984	4.7	ND	ND	0.49	
0018A0	63	12 TIMBER LN	1978	4.0	21	ND	0.79	
0020C0	64	24 TIMBER LN	1998	16.2	10	1	1.18	
0008D0	65	36 TIMBER LN	1972	3.2	ND	ND	2.14	
0001L0	66	39 TIMBER LN	2004	4.2	ND	ND	1.56	
0002M0	67	104 TALL OAK DR	1980	4.6	ND	ND	0.66	
0002Q0	68	108 TALL OAK DR	1979	3.7	1	ND	1.22	
0002R0	69	200 TALL OAK DR	1978	5.5	ND	ND	18.39	
0001C0	70	204 TALL OAK DR	2004	3.8	ND	ND	10.63	
0071Q0	71	209 TALL OAK DR	1994	1.5	ND	ND	13.35	
0072A0	72	2 PINE TREE DR	1982	3.0	ND	ND	3.18	
015600	73	8 PINE TREE DR	1999	1.5	ND	ND	10.51	
0061A0	74	1 HOLLY DR	1977	5.0	ND	ND	10.69	
020300	75	599 LEWISBERRY RD		4.5	7	ND	N/A	
0025A0	76	211 MYERS LN	1999	8.6	4	ND	1.00	
008700	77	213 MYERS LN	2004	10.3	ND	ND	1.06	
023000	78	184 ROSE HILL DR	2004	5.0	10	ND	1.48	
022900	79	188 ROSE HILL DR	2003	4.1	ND	ND	1.67	
022400	80	190 ROSE HILL DR	2002	4.8	ND	ND	2.51	
022200	81	191 ROSE HILL DR	1995	3.7	2	ND	1.40	
022100	82	194 ROSE HILL DR	2003	5.1	ND	ND	2.17	
0002Q0	83	849 SHAFFER DR	1973	2.9	325	ND	0.89	
010000	84	1 CARRIAGE RD	1970	5.9	1	1	0.76	

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WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
004300	85	5 CARRIAGE RD	1970	5.2	1	ND	0.46	Active Malfunction, Raw Sewage Surfacing in Backyard
004600	86	9 CARRIAGE RD	1972	6.0	6	ND	0.46	Lush Green Grass in backyard
004800	87	13 CARRIAGE RD	1972	9.4	156	ND	0.46	
0027A0	88	14 CARRIAGE RD	1970	8.2	1	ND	0.46	Lush Green Grass in backyard
0067H0	89	17 CARRIAGE RD	1970	4.8	ND	ND	0.46	
0067G0	90	18 CARRIAGE RD	1974	8.8	ND	ND	0.52	Lush Green Grass in backyard
0067F0	91	20 CARRIAGE RD	1970	6.3	61	ND	0.55	
006700	92	22 CARRIAGE RD	1970	5.4	1	ND	0.82	
0026A0	93	23 CARRIAGE RD	1970	5.4	4	ND	1.19	
003100	94	791 SCENIC CR	1991	3.8	9	ND	14.14	
004700	95	793 SCENIC CR	1975	3.7	ND	ND	0.54	Lush Green Grass
004800	96	794 SCENIC CR	1975	3.2	9	ND	0.49	
0103H0	97	785 NULL RD	1997	3.7	ND	ND	2.98	Lush Green Grass
0105J0	98	792 NULL RD	1998	3.7	19	ND	2.24	
0172M0	99	10 TIMBER LN	1978	3.6	ND	ND	0.37	
0071G0	100	566 LEWISBERRY RD	1950	3.3	7	ND	2.33	Actual Malfunction
001200	101	98 BUNKER HILL RD	1971	2.5	12	ND	0.54	
003400	102	108 BUNKER HILL RD	1974	5.9	6	ND	0.49	
003500	103	111 BUNKER HILL RD	1972	3.4	ND	ND	0.75	
010500	104	116 BUNKER HILL RD	1972	4.7	ND	ND	0.71	
003800	105	117 BUNKER HILL RD	1972	5.2	260	ND	0.43	
021800	106	832 RUDYTOWN RD	1930	3.0	23	ND	1.00	
0001D0	107	824 RUDYTOWN RD	2004	ND	ND	ND	N/A	
020300	108	816 RUDYTOWN RD	1988	1.3	ND	ND	1.66	
001700	109	349 BETHEL CHURCH RD	1987	10.9	ND	ND	1.35	
002900	110	350 BETHEL CHURCH RD	1999	6.3	ND	ND	1.10	
010900	111	361 BETHAL CHURCH RD	1957	3.0	ND	ND	1.00	
011100	112	369 BETHAL CHURCH RD	1955	4.4	7	ND	0.66	
011300	113	322 BETHEL CHURCH RD	1991	1.6	ND	ND	0.56	
0068E0	115	3 NORTHVIEW RD	1978	11.0	ND	ND	4.46	
008000	116	259 STETLER RD	2004	5.2	ND	ND	1.09	
015800	117	248 STETLER RD	2001	11.5	ND	ND	4.04	Lush Green Grass
0161A0	118	238 STETLER RD	2004	2.5	ND	ND	2.74	
0068A0	119	799 NISSEL LN	1970	ND	ND	ND	0.75	
0176K0	120	756 IRONSTONE RD	2004	0.7	38	ND	1.52	
0176G0	121	744 IRONSTONE RD	2004	0.2	179	ND	0.79	
0007B0	122	309 STEIGERWALT HOLLOW RD	1975	0.9	ND	ND	3.14	
0010C0	123	313 STEIGERWALT HOLLOW RD	1975	2.3	ND	ND	3.14	
000900	124	366 STEIGERWALT HOLLOW RD	1975	2.2	ND	ND	3.14	
0003S0	125	386 STEIGERWALT HOLLOW RD	2002	6.9	ND	ND	1.63	
000700	126	390 STEIGERWALT HOLLOW RD	1972	2.8	ND	ND	1.13	

APPENDIX D
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WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
017300	127	398 STEIGERWALT HOLLOW RD	1994	2.8	ND	ND	1.27	
016300	128	403 STEIGERWALT HOLLOW RD	1979	5.2	ND	ND	2.31	
016200	129	404 STEIGERWALT HOLLOW RD	1966	4.4	1	ND	2.70	
011200	130	820a FISHING CREEK RD	1999	0.7	ND	ND	1.00	
000300	131	815 FISHING CREEK RD	1970	1.1	2	ND	2.01	
000700	132	807 FISHING CREEK RD	1986	1.6	ND	ND	0.55	Malfunction & Direct graywater discharge
001100	133	788 FISHING CREEK RD	1900	1.1	8	ND	50.50	
002100	134	786 FISHING CREEK RD	1900	0.5	32	ND	0.25	
002300	135	792 FISHING CREEK RD	1937	1.3	167	ND	0.37	
001000	136	794 FISHING CREEK RD	1970	1.5	308	1	1.51	
0087B0	137	784 FISHING CREEK RD	1987	ND	726	ND	3.63	
002000	138	766 FISHING CREEK RD	1988	0.6	ND	ND	1.00	
009300	139	759 FISHING CREEK RD	1968	4.8	ND	ND	3.53	
007500	140	756 FISHING CREEK RD	1950	0.9	ND	ND	1.03	
007400	141	736 FISHING CREEK RD	1977	4.5	ND	ND	1.09	
009700	142	715 FISHING CREEK RD	1967	1.1	ND	ND	3.61	
005600	143	714 FISHING CREEK RD	1980	0.4	ND	ND	1.00	
006600	144	709 FISHING CREEK RD	1974	4.5	ND	ND	13.12	
	145	700 FISHING CREEK RD	N/A	1.8	205	ND	N/A	
006500	146	676 FISHING CREEK RD	1975	2.9	ND	ND	1.96	
0061A0	147	670 FISHING CREEK RD	2003	3.3	ND	ND	3.96	
0021A0	148	669 FISHING CREEK RD	1997	2.6	ND	ND	1.02	
005700	149	664 FISHING CREEK RD	1989	3.1	ND	ND	1.41	
002400	150	255 OLD YORK RD	1880	2.1	ND	ND	8.41	
010700	151	378 OLD YORK RD	1951	3.4	ND	ND	0.95	
006100	152	430 OLD YORK RD	1996	6.5	ND	ND	0.47	
0051G0	153	426 OLD YORK RD	1978	6.3	187	1	1.64	
005200	154	596 OLD YORK RD	1986	5.4	ND	ND	12.43	
0077V0	155	647 OLD YORK RD	1942	2.1	2419	86	0.17	
0001P0	156	396 VALLEY RD	1997	4.6	5	ND	1.31	
0001Z0	157	393 VALLEY RD	1997	1.3	ND	ND	1.26	
0001Y0	158	270 VALLEY RD	1998	1.1	ND	ND	0.49	
0003M0	159	88 VALLEY RD	1985	4.6	ND	ND	0.95	
0003D0	160	86 VALLEY RD	1850	4.5	ND	ND	3.05	
0033F0	161	78 VALLEY RD	1980	4.6	345	ND	1.35	
0030A0	162	11 VALLEY RD	1962	4.2	2	ND	0.45	
002500	163	5 VALLEY RD	1994	10.7	ND	ND	0.45	
0081G0	164	516 MARSH RUN RD	1996	1.1	411	2	28.30	
0081K0	165	530 MARSH RUN RD	1996	ND	ND	ND	28.30	
002400	166	452 MARSH RUN RD	1976	0.8	ND	ND	1.35	
0075B0	167	430A MARSH RUN RD	1999	0.2	ND	ND	3.06	
0087E0	168	400 GRANITE QUARRY RD	1946	0.6	ND	ND	2.00	
	169	403 GRANITE QUARRY RD		0.3	ND	ND	N/A	
0119E0	170	439 GRANITE QUARRY RD	1960	2.1	ND	ND	1.80	
012400	171	444 GRANITE QUARRY RD	1945	0.9	3	ND	1.19	

APPENDIX D
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WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
016500	172	445 GRANITE QUARRY RD	1985	0.3	ND	ND	4.03	
012100	173	454 GRANITE QUARRY RD	2003	1.0	2	ND	0.79	
002400	174	459 GRANITE QUARRY RD	1970	1.0	276	ND	0.52	Greywater Discharge
0160A0	175	463 GRANITE QUARRY RD	1985	2.9	ND	ND	4.03	
000600	176	322 THORLEY RD	1992	1.2	ND	ND	4.68	
000800	177	331 THORLEY RD	1998	3.2	19	ND	1.10	
0070D0	178	333 THORLEY RD	1994	4.0	ND	ND	1.00	
001200	179	339 THORLEY RD	1950	3.8	ND	ND	1.28	
0172L0	180	357 THORLEY RD	1976	2.5	ND	ND	1.05	
0172T0	181	358 THORLEY RD	1971	4.2	ND	ND	0.38	Active Malfunction
002700	182	559 BIG SPRING RD	1968	7.0	2	ND	N/A	
	183	494 BIG SPRING RD	N/A	3.0	248	ND	N/A	
000400	184	488 BIG SPRING RD	1977	2.9	326	ND	0.54	Lush Green Grass
000500	185	480 BIG SPRING RD	1974	0.7	261	3	0.88	
000100	186	466 BIG SPRING RD	1970	1.3	345	ND	1.34	
003000	187	465 BIG SPRING RD	1976	0.4	ND	ND	10.00	
002600	188	422 BIG SPRING RD	1972	0.8	31	ND	0.52	
001900	189	381 BIG SPRING RD	1988	1.3	ND	ND	1.89	
0002G0	190	345 TIMBER RD	1986	0.6	26	ND	0.46	
001700	191	235 BIG SPRING RD	1978	2.0	ND	ND	7.74	
001900	192	194 BIG SPRING RD	1997	3.8	ND	ND	1.47	
008400	193	300 STONE ROW LN	2003	6.9	ND	ND	3.19	
008300	194	304 STONE ROW LN	2004	4.0	ND	ND	1.00	
002000	195	503 PARK RD	1990	8.3	141	ND	11.10	
0010C0	196	696 SAND SPUR DR	1984	4.3	ND	ND	2.08	Active Malfunction
0002R0	197	684 SAND SPUR DR	1986	5.4	ND	ND	0.46	
0010D0	198	691 SAND SPUR DR	1984	4.4	ND	ND	2.81	Active Malfunction
0070R0	199	690 SAND SPUR DR	1982	4.3	ND	ND	2.01	
0045A0	200	683 SAND SPUR DR	1986	5.2	ND	ND	0.54	Lush Green Grass
0053H0	201	680 SAND SPUR DR	1986	5.6	13	ND	0.46	
0050R0	202	679 SAND SPUR DR	1989	4.1	ND	ND	1.05	Active Malfunction
0050H0	203	675 SAND SPUR DR	1989	5.8	ND	ND	1.28	Active Malfunction
0050F0	204	678 SAND SPUR DR	1988	5.2	ND	ND	1.00	
0050K0	205	671 SAND SPUR DR	1988	5.3	ND	ND	1.01	
008000	206	103 CLYDESDALE CT	1988	3.7	ND	ND	1.01	
0078A0	207	106 CLYDESDALE CT	1988	6.5	ND	ND	1.02	
002800	208	102 APPALOOSA WAY	1988	5.2	ND	ND	1.00	
002900	209	104 APPALOOSA WAY	1988	7.8	ND	ND	1.00	
0029B0	210	106 APPALOOSA WAY	1988	3.3	ND	ND	1.01	
0029F0	211	105 APPALOOSA WAY	1988	4.3	ND	ND	1.00	
0029H0	212	588 BEINHOWER RD	1986	1.0	ND	ND	1.31	
0029C0	213	594 BEINHOWER RD	1990	1.6	ND	ND	1.00	
0001C0	214	598 BEINHOWER RD	1986	1.9	ND	ND	1.72	
020200	215	654 BEINHOWER RD	1961	2.8	18	1	2.28	
021500	216	226 WILLIS RD	1994	4.7	ND	ND	1.19	

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Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0226A0	217	237 WILLIS RD	1994	3.9	5	ND	1.00	
0227B0	218	241 WILLIS RD	1999	6.0	ND	ND	1.03	
021700	219	246 WILLIS RD	1993	3.4	ND	ND	1.81	
002200	220	250 WILLIS RD	1996	10.7	ND	ND	13.10	
0096V0	221	256 WILLIS RD	1994	2.9	ND	ND	1.07	
0095G0	222	255 WILLIS RD	1999	4.7	ND	ND	1.01	
018700	223	253 WILLIS RD	1992	5.8	22	1	1.72	
002300	224	251 WILLIS RD	2001	4.5	ND	ND	1.30	
0002F0	225	115 MOUNTAIN VIEW DR	1994	4.1	ND	ND	N/A	
000400	226	857 TRAVER DR	1920	4.9	ND	ND	0.45	
0026J0	227	800 WHITEFORD RD	1998	3.2	ND	ND	1.58	
0237J0	228	1000 OLD ROSSVILLE RD	1983	1.7	47	ND	2.64	
	229	903 OLD ROSSVILLE RD		2.7	25	ND	N/A	
0008H0	230	811 STONYBROOK LN	2004	2.4	ND	ND	4.79	
0010Y0	231	814 STONYBROOK LN	2003	2.6	1	1	1.37	
0007F0	232	817 STONYBROOK LN	2003	2.5	ND	ND	1.21	
0007E0	233	821 STONYBROOK LN	2003	6.1	ND	ND	1.15	
0007D0	234	829 STONYBROOK LN	2003	2.1	ND	ND	1.15	
0008F0	235	830 STONYBROOK LN	2004	1.7	17	2	1.00	
010700	236	833 STONYBROOK LN	1960	1.3	2419	ND	0.34	
011200	237	836 STONYBROOK LN	1985	1.6	47	ND	0.69	
010800	238	837 STONYBROOK RD	1957	1.2	2	ND	0.34	
010300	239	1003 SILVER LAKE RD	2004	0.7	ND	ND	3.52	
0071B0	240	976 SILVER LAKE RD	1990	1.5	14	ND	4.98	
030600	241	970 SILVER LAKE RD	1998	1.5	4	ND	3.38	
031400	242	964 SILVER LAKE RD	2001	0.5	ND	ND	3.64	
0065E0	243	925 SILVER LAKE RD	1822	2.1	75	2	18.76	
001100	244	917 SILVER LAKE RD	2004	1.8	ND	ND	N/A	
011300	245	906 SILVER LAKE RD	1983	1.5	105	1	5.89	
0077H0	246	903 SILVER LAKE RD	1983	1.2	ND	ND	6.35	
0001E0	247	96 WHEATLAND RD	1992	25.0	ND	ND	1.52	
0074Q0	248	98 WHEATLAND RD	1991	7.8	1	ND	1.42	
0074P0	249	102 WHEATLAND RD	1993	7.8	ND	ND	2.06	
0074E0	250	108 WHEATLAND RD	1994	5.6	ND	ND	3.93	
0074N0	251	109 WHEATLAND RD	1994	6.3	1	ND	2.25	
0074F0	252	111 WHEATLAND RD	1997	7.5	ND	ND	4.06	
0074G0	253	112 WHEATLAND RD	1993	7.1	1	ND	4.40	
0074H0	254	113 WHEATLAND RD	1994	7.8	23	ND	3.58	
0074J0	255	116 WHEATLAND RD	2001	2.6	1	ND	6.85	
0046M0	256	130 WHEATLAND RD	1995	5.6	18	ND	1.11	
0046U0	257	134 WHEATLAND RD	1980	3.2	29	ND	4.77	
0029A0	258	130 FOXFIRE LN	1968	7.9	15	ND	2.00	
0052P0	259	129 FOXFIRE LN	1994	4.2	10	ND	2.00	
0118D0	260	125 FOXFIRE LN	1999	13.6	13	ND	5.43	
0118C0	261	118 FOXFIRE LN	1993	5.6	1300	ND	3.84	

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Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0118A0	262	117 FOXFIRE LN	1998	10.4	ND	ND	1.11	
0085A0	263	112 FOXFIRE LN	1993	15.6	185	138	2.76	
0083B0	264	109 FOXFIRE LN	1989	5.2	29	2	1.00	
008100	265	107 FOXFIRE LN	1990	5.6	ND	ND	2.26	
0080A0	266	105 FOXFIRE LN	1992	7.3	ND	ND	1.39	
008000	267	101 FOXFIRE LN	1990	3.6	3	ND	1.10	
005600	268	86 FOXFIRE LN	2006	2.9	ND	ND	N/A	
0053G0	269	104 TURTLE HOLLOW DR	1975	2.8	ND	ND	1.73	
007100	270	102 BELLOWS CT	2005	2.1	ND	ND	1.18	
0069A0	271	106 BELLOWS CT	2005	1.9	ND	ND	1.70	
0070N0	272	103 BRAMBLEWOOD LN	1986	8.6	19	ND	1.10	
0070H0	273	104 BRAMBLEWOOD LN	1987	5.0	ND	ND	1.24	
0070G0	274	105 BRAMBLEWOOD LN	1988	16.6	3	ND	1.10	
0067C0	275	113 BRAMBLEWOOD LN	1988	7.0	ND	ND	1.10	
0084N0	276	117 BRAMBLEWOOD LN	2001	7.4	ND	ND	1.27	
0084V0	277	122 BRAMBLEWOOD LN	1995	4.4	32	ND	1.42	
002500	278	736 CAPRI CR	1978	5.1	ND	ND	0.46	
002600	279	737 CAPRI CR	1979	5.5	ND	ND	0.46	
0006D0	280	739 COLLINA DR	1978	5.9	3	ND	0.58	
0006E0	281	741 COLLINA DR	1978	5.0	ND	ND	0.58	
0052C0	282	751 COLLINA DR	1973	10.2	ND	ND	0.46	
0058N0	283	753 COLLINA DR	1976	9.1	1	ND	0.46	
0077B0	284	755 COLLINA DR	1812	5.4	ND	ND	114.00	
001900	285	481 SAN REMO PL	1983	6.3	ND	ND	N/A	
0051F0	286	484 SAN REMO PL	1989	7.0	7	ND	1.11	
0050G0	287	485 SAN REMO PL	1994	6.4	108	ND	1.16	
002800	288	473 RIDGE RD	1970	4.7	ND	ND	0.80	
0096T0	289	651 WINEBARY CR	1989	4.7	ND	ND	1.17	
0095M0	290	670 WINEBARY CR	1995	5.4	649	ND	1.66	
0095N0	291	671 WINEBARY CR	1991	2.0	ND	ND	1.19	
0096Q0	292	690 WINEBARY CR	1993	2.1	ND	ND	1.42	
0096N0	293	691 WINEBARY CR	1999	4.6	4	ND	1.00	
0095T0	294	702 WINEBARY CR	2000	3.9	ND	ND	1.00	
022900	295	703 WINEBARY CR	2001	2.0	ND	ND	1.00	
0062A0	296	619 RIDGE RD	1993	4.8	ND	ND	11.02	
022800	297	652 WOODBURNE RD	2004	5.7	17	ND	1.04	
0095G0	298	654 WOODBURNE RD	1998	3.8	ND	ND	N/A	
022100	299	655 WOODBURNE RD	1999	2.2	2	ND	2.40	
023700	300	671 WOODBURNE RD	1999	1.5	ND	ND	1.67	
0237N0	301	678 WOODBURNE RD	1978	2.0	ND	ND	0.48	
0083C0	302	635 RIDGE RD	1978	1.3	2	ND	3.64	
0018F0	303	686 CHURCHEY LN	2002	1.1	3	ND	5.17	
0020A0	304	650 CHURCHEY LN	1999	2.2	ND	ND	13.06	
002100	305	680 RIDGE RD	1986	1.7	ND	ND	3.42	Direct Discharge to Swale

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0041A0	306	698 RIDGE RD	1987	3.3	1	ND	3.87	
0100B0	307	707 RIDGE RD	1988	3.4	1	ND	4.36	
0234A0	308	711 RIDGE RD	2003	4.6	ND	ND	1.03	
023100	309	719 RIDGE RD	2002	2.1	ND	ND	1.40	
004900	310	811 SCHOOL HOUSE LN	1988	2.4	ND	ND	0.73	
002000	311	812 SCHOOL HOUSE LN	1981	4.7	ND	ND	0.46	
004200	312	814 SCHOOL HOUSE LN	1992	5.7	ND	ND	10.00	
004100	313	820 SCHOOL HOUSE LN	1993	5.6	ND	ND	10.00	Active Malfunction
001000	314	625 ELLIOT DR	1978	3.2	ND	ND	0.46	
0011D0	315	631 ELLIOT DR	1975	15.7	ND	ND	0.48	
0011Q0	316	636 ELLIOT DR	1979	15.6	ND	ND	0.54	
0075G0	317	651 ELLIOT DR	1996	0.6	5	ND	6.56	
000500	318	654 ELLIOT DR	1975	7.0	ND	ND	N/A	
002700	319	839 SCHOOL HOUSE LN	1996	0.9	ND	ND	8.29	
005600	320	889 SCHOOL HOUSE LN	1991	5.7	1	ND	0.86	
000800	321	904 SCHOOL HOUSE LN	1988	3.1	ND	ND	0.46	
001000	322	906 SCHOOL HOUSE LN	1985	3.6	1	ND	10.00	
0065Q0	323	852 LEXINGTON PL	1998	2.1	2	ND	9.91	
010300	324	854 LEXINGTON PL	1997	3.1	ND	ND	N/A	
010000	326	596 NAUVOO RD	1997	3.7	1	ND	0.29	
0098C0	327	565 NAUVOO RD	1972	2.2	ND	ND	1.00	
0092A0	328	512 NAUVOO RD	1966	4.5	29	ND	0.92	
0020H0	329	969 CEDARS RD	1827	3.1	ND	ND	2.90	
0086A0	330	911 CEDARS RD	1930	6.6	ND	ND	7.00	
004400	331	902 CEDARS RD	1958	2.7	ND	ND	N/A	
0001F0	332	896 CEDARS RD	1955	3.9	ND	ND	0.51	
0007C0	333	889 CEDARS RD	1950	5.1	ND	ND	0.88	Greywater Discharge
000900	334	883 CEDARS RD	1951	7.1	ND	ND	1.20	
000100	335	891 KING ST	1972	3.1	501	ND	N/A	
0050L0	336	890 KING ST	1972	1.9	4	ND	0.32	
004800	337	889 KING ST	1955	2.3	2	ND	0.28	
0050C0	338	885 KING ST	1958	4.0	38	ND	0.32	
0051T0	339	883 KING ST	1979	7.7	ND	ND	0.36	
0051A0	340	881 KING ST	1958	3.4	ND	ND	0.33	
0051R0	341	880 KING ST	1958	3.0	ND	ND	0.34	
0077N0	342	535 PAUL AVE	1980	2.2	ND	ND	0.59	
001000	343	575 PAUL AVE	1980	3.3	ND	ND	0.55	
0051Q0	344	877 KING ST	1955	3.0	59	ND	0.31	
0054C0	345	872 KING ST	1958	2.8	6	ND	0.30	
002600	346	821 OLD FORGE RD	1954	4.1	ND	ND	N/A	
001000	347	331 OLD STAGE RD		7.4	27	ND	N/A	
0080D0	348	340 OLD STAGE RD	1999	4.7	1	ND	1.00	
0080B0	349	349 OLD STAGE RD	1979	2.0	14	ND	2.10	
008600	350	351 OLD STAGE RD	1995	1.9	5	ND	5.88	
001600	351	357 OLD STAGE RD	1975	2.6	ND	ND	1.14	
0012A0	352	366 OLD STAGE RD	2001	3.0	ND	ND	2.36	

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0001K0	353	373 OLD STAGE RD	1961	2.3	19	ND	1.41	
0006B0	354	407 OLD STAGE RD	1962	5.6	ND	ND	10.77	
0025B0	355	424 OLD STAGE RD	1995	2.4	ND	ND	2.24	
0237M0	356	461a OLD STAGE RD	1977	3.0	ND	ND	5.10	
0021C0	357	467 OLD STAGE RD	1915	3.3	ND	ND	2.66	
001200	358	484 OLD STAGE RD	1900	3.8	ND	ND	3.23	
001100	359	486 OLD STAGE RD	1945	3.9	ND	ND	0.66	
012400	360	1016 OAK HILL RD	1990	2.3	4	ND	4.21	
0018G0	361	425 LISBURN HEIGHTS DR	1996	3.1	1	ND	12.33	
0008A0	362	407 LISBURN HEIGHTS DR	1996	2.2	ND	ND	4.41	
001200	363	405 LISBURN HEIGHTS DR	1994	1.3	10	ND	9.92	
012500	364	929 OAK HILL RD	1818	2.8	ND	ND	17.22	
011600	365	920 OAK HILL RD	1970	4.0	ND	ND	6.39	
0105A0	366	915 OAK HILL RD	1900	2.6	ND	ND	0.33	
000700	367	890 CEDARS RD	1955	10.8	ND	ND	0.29	
002700	368	920 LIMEKILN RD	1996	4.7	ND	ND	1.02	
003600	371	934 LIMEKILN RD	1996	5.2	ND	ND	1.40	
0015A0	373	972 LIMEKILN RD	1800	3.2	ND	ND	1.60	
0153L0	374	974 LIMEKILN RD	1987	2.7	ND	ND	9.84	
015000	375	739 SIDDONSBURG RD	1987	2.3	5	1	0.29	
014200	376	749 SIDDONSBURG RD	1960	2.8	ND	ND	0.19	
0001K0	377	836 WEST ST	1992	1.1	ND	ND	1.78	
014500	378	760 SIDDONSBURG RD	1884	1.9	ND	ND	8.01	
0052N0	379	805 EAST ST	1975	2.9	ND	ND	0.48	
0015Q0	380	782 SIDDONSBURG RD	1950	0.6	7	ND	1.80	
0045B0	381	827 SIDDONSBURG RD	2004	2.0	ND	ND	5.25	
0015E0	382	825 SIDDONSBURG RD	1995	2.2	ND	ND	1.23	
001500	383	857 SIDDONSBURG RD	1998	3.4	4	ND	0.53	
004200	384	875 SIDDONSBURG RD	2001	3.5	ND	ND	3.01	
0064K0	385	920 SIDDONSBURG RD	2004	1.6	ND	ND	N/A	
0045A0	386	854 SIDDONSBURG RD	1986	3.2	ND	ND	10.00	Active Malfunction
0043A0	387	1028 SIDDONSBURG RD	1987	2.8	ND	ND	0.35	
004200	388	855 SEITZ DR	1990	4.0	ND	ND	12.93	
0199A0	389	851 SEITZ DR	1961	3.8	ND	ND	3.66	
020100	390	740 SEITZ DR	1965	3.0	ND	ND	1.87	
0074E0	391	940 EMANUEL RD	1992	3.3	ND	ND	1.00	
0034B0	392	836 SILVER LAKE RD	1900	3.1	ND	ND	26.50	
003400	393	824 SILVER LAKE RD	2004	1.3	ND	ND	1.16	
0037A0	394	816 SILVER LAKE RD	1983	1.4	22	ND	0.36	
0084B0	395	513 BRENNEMAN DR	2003	2.8	ND	ND	20.90	
0084F0	396	475 BRENNEMAN DR	1997	2.0	ND	ND	6.41	
010700	397	600 SOUTHRIDGE DR	2000	3.0	ND	ND	4.45	
0042A0	398	609 SOUTHRIDGE DR	1900	4.9	ND	ND	77.84	
004100	399	628 SOUTHRIDGE DR	1989	4.0	22	ND	2.00	
010400	400	636 SOUTHRIDGE DR	2001	7.7	ND	ND	3.15	Wastewater Backing Up Into The Home

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0046E0	401	775 MARKHAM CT	1966	3.7	3	ND	1.80	
0046K0	402	760 MARKHAM CT	2001	2.0	ND	ND	22.76	
003600	403	745 MARKHAM CT	2003	4.1	ND	ND	1.31	
0037A0	404	740 MARKHAM CT	1996	3.1	ND	ND	3.50	
003100	405	750 MARKHAM CT	1995	3.3	ND	ND	1.63	
012000	406	626 OBSERVATORY DR	1988	4.4	ND	ND	11.89	
005100	407	634 OBSERVATORY DR	1986	4.1	ND	ND	1.01	
0062A0	408	635 OBSERVATORY DR	1986	3.1	ND	ND	1.05	
005900	409	650 OBSERVATORY DR	1986	3.6	ND	ND	12.36	
0001H0	410	653 OBSERVATORY DR	1991	3.0	ND	ND	2.19	
0026T0	411	666 OBSERVATORY DR	1960	5.1	ND	ND	1.95	
004700	412	668 OBSERVATORY DR	1986	6.9	ND	ND	0.46	
006600	413	747 GLEN ARDEN DR	1976	1.3	ND	ND	3.01	
0088E0	414	769 GLEN ARDEN DR	1958	1.1	ND	ND	6.00	
0050J0	415	700 JULIE CT	1950	2.1	ND	ND	0.53	Lush Green Grass
0075A0	416	698 JULIE CT	1980	2.2	ND	ND	0.40	
0074C0	417	694 JULIE CT	1980	3.1	ND	ND	1.25	
007900	418	693 JULIE CT	1982	3.3	ND	ND	1.12	
0075F0	419	730 MOORES MOUNTAIN RD	1965	1.5	ND	ND	27.09	
000800	420	731 MOORES MOUNTAIN RD	1999	1.0	ND	ND	1.00	
000700	421	787 MOORES MOUNTAIN RD	1900	1.5	ND	ND	15.98	
001000	422	817 MOORES MOUNTAIN RD	1978	2.0	ND	ND	3.41	
0072A0	423	819 MOORES MOUNTAIN RD	1982	0.7	51	ND	0.92	
0074A0	424	820 MOORES MOUNTAIN RD	1985	1.0	ND	ND	0.65	
006200	425	843 MOORES MOUNTAIN RD	1984	1.2	ND	ND	0.80	
	426	845 MOORES MOUNTAIN RD		1.2	2	ND	N/A	
007200	427	846 MOORES MOUNTAIN RD	1981	0.7	ND	ND	1.02	
0070B0	428	867 MOORES MOUNTAIN RD	1980	1.0	2	ND	1.25	
0073G0	429	875 MOORES MOUNTAIN RD	2000	0.6	ND	ND	19.13	
0062G0	430	882 MOORES MOUNTAIN RD	2003	0.8	ND	ND	1.96	
0062D0	431	886 MOORES MOUNTAIN RD	1998	0.8	ND	ND	1.96	
0073H0	432	878 MOORES MOUNTAIN RD	1994	1.1	ND	ND	4.99	
020300	433	541 SAW MILL RD	1964	2.4	ND	ND	0.54	
0190A0	434	573 SAW MILL RD	1963	1.8	ND	ND	0.41	
0212A0	435	1140 SASSAFRAS LN	1966	3.1	12	ND	0.45	
0017B0	436	1136 SASSAFRAS LN	1976	4.1	ND	ND	17.09	
0007P0	437	1134 SASSAFRAS LN	1987	4.4	ND	ND	6.09	
000700	438	103 JAMES LN	1989	6.1	ND	ND	1.08	
007300	439	105 JAMES LN	1995	4.2	ND	ND	4.69	
008500	440	107 JAMES LN	1988	4.6	ND	ND	1.01	
0079A0	441	108 JAMES LN	1984	3.7	ND	ND	0.92	
0240D0	442	101 JAMES LN	1988	3.8	ND	ND	1.00	
0025H0	443	487 OLD STAGE RD	1948	3.6	1	ND	2.00	
005100	444	1120 ANDERSONTOWN RD	1985	3.7	ND	ND	3.20	
005500	445	1130 ANDERSONTOWN RD	1993	2.8	ND	ND	1.00	

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0056A0	446	1140 ANDERSONTOWN RD	1959	2.7	16	1	3.90	
016700	447	1251 HIGHLAND DR	1970	2.7	2	ND	0.48	
0240B0	448	1185 HIGHLAND DR	1980	2.6	ND	ND	4.25	
0079A0	449	1164 HIGHLAND DR	1979	1.6	ND	ND	1.00	
0050A0	450	1145 HIGHLAND DR	1982	6.0	37	ND	2.75	
005100	451	1132 HIGHLAND DR	1970	3.4	12	ND	2.28	
005200	452	1129 HIGHLAND DR	1978	3.7	1	ND	1.03	
000100	453	1114 HIGHLAND DR	1978	3.0	ND	ND	1.01	
0096F0	454	1108 HIGHLAND DR	1980	4.1	23	1	1.01	
0098D0	455	1095 HIGHLAND DR	1984	4.1	5	ND	0.95	
0065H0	456	1080 HIGHLAND DR	1994	1.9	ND	ND	5.76	
0071J0	457	1047 HIGHLAND DR	1986	4.3	ND	ND	6.77	
0071D0	458	1032 HIGHLAND DR	1980	2.7	ND	ND	2.14	
005600	459	637 BILLET DR	1988	3.2	22	1	0.94	
0014A0	460	639 BILLET DR	1988	5.3	5	ND	1.05	
004400	461	641 BILLET DR	1981	5.0	73	ND	1.08	
0009A0	462	654 BILLET DR	1984	6.3	3	ND	1.05	
0014B0	463	643 BILLET DR	1981	5.5	ND	ND	1.43	
008500	464	700 PINETOWN RD	1980	1.4	ND	ND	1.01	
001600	465	876 CARDINAL LN	1956	1.3	ND	ND	0.17	
0017A0	466	870 CARDINAL LN	1970	1.7	46	ND	31.54	
032600	467	867 CARDINAL LN	1967	2.6	ND	ND	0.53	
0006A0	468	868 CARDINAL LN	1904	1.3	ND	ND	0.54	
0035E0	469	203 HECK HILL RD	1999	2.6	ND	ND	0.80	
011800	470	305 HECK HILL RD	1975	2.1	1	ND	1.00	
0066B0	471	814 HECK HILL RD	1981	1.9	ND	ND	5.30	
0051K0	472	790 HECK HILL RD	1987	2.2	31	ND	0.47	
0050F0	473	786 HECK HILL RD	2004	0.5	1	ND	1.30	
0051J0	474	779 HECK HILL RD	1994	3.3	ND	ND	1.94	
003200	475	776 HECK HILL RD	1992	2.4	ND	ND	1.27	
012400	476	775 HECK HILL RD	1998	2.8	ND	ND	1.83	
003400	477	742 HECK HILL RD	1984	5.9	2	ND	1.71	System Overflows
012100	478	729 HECK HILL RD	1972	2.8	ND	ND	1.88	
013900	479	725 HECK HILL RD	1978	3.6	ND	ND	1.00	
0020B0	480	621 CEEJAY DR	1977	1.5	ND	ND	0.70	
0077L0	481	660 CORN HILL RD	1980	4.1	23	ND	5.62	
	482	199 FISHER RD	N/A	3.5	ND	ND	N/A	
0071C0	483	197 FISHER RD	1991	4.4	1	ND	1.00	
0071B0	484	195 FISHER RD	1986	3.0	ND	ND	1.00	
007500	485	183 FISHER RD	1987	6.5	70	ND	1.00	
0077C0	486	175 FISHER RD	1900	6.3	1	ND	0.81	
0066D0	487	600 CEDAR HEIGHTS DR	2004	1.8	ND	ND	1.00	
017200	488	841 PINETOWN RD	1982	2.8	ND	ND	0.81	
017000	489	868 PINETOWN RD	1998	1.5	12	1	3.67	
0064K0	490	870 PINETOWN RD	1997	1.7	ND	ND	1.93	

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0024B0	491	911 MT AIRY RD	2000	1.2	ND	ND	1.41	
0169A0	492	915 PINETOWN RD	1991	2.0	ND	ND	16.32	
0086E0	493	935 PINETOWN RD	1990	1.3	ND	ND	6.92	
0071D0	494	940 PINETOWN RD	1987	0.8	ND	ND	3.33	
0075B0	495	974 PINETOWN RD	2000	0.9	ND	ND	10.58	
0052C0	496	1001 PINETOWN RD	2001	2.3	ND	ND	20.62	
005100	497	1023 PINETOWN RD	1890	5.8	ND	ND	18.24	
0050E0	498	1083 PINETOWN RD	1980	3.3	2	ND	1.11	
002200	499	1128 PINETOWN RD	1900	7.9	58	ND	31.53	
002500	500	1132 PINETOWN RD	1954	6.5	228	ND	0.36	
0239B0	501	666 PLEASANT VIEW RD	1996	0.9	ND	ND	7.50	
003800	502	619 PLEASANT VIEW RD	1953	0.5	ND	ND	0.66	
004500	503	617 PLEASANT VIEW RD	1957	0.5	ND	ND	0.57	
009300	504	592 PLEASANT VIEW RD	1989	1.7	2	ND	5.83	
0097F0	505	580 PLEASANT VIEW RD	1990	4.9	ND	ND	21.30	
002700	506	610 GAP RD	1985	4.1	ND	ND	0.66	
002500	507	616 GAP RD	1972	1.3	ND	ND	3.00	
0097G0	508	567 PLEASANT VIEW RD	1986	5.8	ND	ND	1.00	
008700	509	512 PLEASANT VIEW RD	1984	3.2	18	ND	0.46	
008400	510	419 PLEASANT VIEW RD	1983	1.9	ND	ND	1.19	
007900	511	390 PLEASANT VIEW RD	1964	3.2	ND	ND	0.75	
007700	512	378 PLEASANT VIEW RD	1986	1.9	ND	ND	0.46	
007600	513	376 PLEASANT VIEW RD	1980	2.8	7	ND	6.42	
002000	514	315 PLEASANT VIEW RD	1950	3.8	ND	ND	0.36	
006000	515	600 WYNDAMERE RD	1962	1.9	ND	ND	0.43	
0120F0	516	723 WYNDAMERE RD	1977	4.4	ND	ND	N/A	
0103F0	517	210 NEBINGER ST	2004	3.5	ND	ND	0.69	
0026H0	518	310 NEBINGER ST	1960	4.4	ND	ND	5.40	
0027A0	519	313 NEBINGER ST	1978	4.4	291	ND	0.98	
0023H0	520	789 OLD QUAKER RD	1985	3.4	ND	ND	0.53	
0011G0	521	706 OLD QUAKER RD	1990	0.5	ND	ND	3.55	
0065Z0	522	665 OLD QUAKER RD	1970	1.4	ND	ND	4.09	
0153B0	523	850 LEXINGTON PL	1997	4.2	ND	ND	1.27	
0052J0	524	104 BUNKER HILL RD	1970	4.2	3	ND	0.59	
003200	525	105 BUNKER HILL RD	1984	2.4	ND	ND	3.86	
003900	526	107 BUNKER HILL RD	1978	4.2	25	ND	0.77	
0084A0	527	119 BRAMBLEWOOD LN	1988	4.9	5	ND	1.55	
0007N0	528	835 OLD FORGE RD	1970	3.9	ND	ND	0.44	
0169C0	529	423 OLD STAGE RD	1998	2.1	ND	ND	1.00	
0064A0	530	665 POTTS HILL RD	1973	3.1	ND	ND	0.49	
0023J0	531	922 CEDARS RD	1960	2.7	ND	ND	0.78	
001600	532	435 LISBURN HEIGHTS DR	1995	4.3	ND	ND	1.21	
0103C0	533	598 NAUVOO RD	2002	4.2	2	ND	0.69	
001700	534	652 OBSERVATORY DR	1994	3.2	ND	ND	2.37	
010600	535	763 GLEN ARDEN DR	1978	2.2	2	ND	3.95	

APPENDIX D
FAIRVIEW TOWNSHIP ACT 537 PLAN
WELL WATER SAMPLE RESULTS

Parcel ID	Reponse No.	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	On-Lot Problems Observed
				Nitrate	Total Coliform	Fecal Coliform		
0023D0	536	130 MOUNTAIN VIEW DR	1900	3.2	ND	ND	3.32	
0002N0	537	120 MOUNTAIN VIEW DR	2000	3.5	ND	ND	N/A	
0060C0	538	108 MOUNTAIN VIEW DR	2000	3.3	ND	ND	1.71	
005700	539	107 MOUNTAIN VIEW DR	1997	6.4	ND	ND	1.71	
0079C0	540	611 RIDGE RD	1970	4.1	12	ND	N/A	
0025G0	541	609 RIDGE RD	1980	6.2	ND	ND	6.50	
0025U0	542	605 RIDGE RD	1999	10.5	50	ND	1.25	
0051D0	543	888 RUDYTOWN RD	1989	3.3	ND	ND	1.00	
000900	544	1015 LEWISBERRY RD	1880	1.6	52	ND	38.83	
011500	545	631 LEWISBERRY RD	1900	4.9	1	ND	0.33	Greywater Discharge
0007X0	546	560 LEWISBERRY RD	1950	3.6	ND	ND	1.70	
0070E0	547	208 TALL OAK DR	1996	2.8	ND	ND	6.32	
0007S0	548	838 OLD FORGE RD	1984	4.9	8	ND	0.49	
024000	549	759 IRONSTONE RD	1988	0.9	ND	ND	1.00	
0119A0	550	622 FISHING CREEK RD	1962	4.3	ND	ND	N/A	
0119A0	551	672 WOODBURNE RD	2000	2.7	ND	ND	1.02	
0237P0	552	680 WOODBURNE RD	1978	1.9	ND	ND	0.46	
0102G0	553	684 WOODBURNE RD	1958	1.4	ND	ND	1.17	
001000	554	6 HOLLY DR	1979	4.6	ND	ND	N/A	
002600	555	196 SPANGLERS MILL RD	1956	5.7	ND	ND	N/A	
003200	556	124 SPANGLERS MILL RD	1965	4.4	1	ND	0.31	
0079D0	557	212 MYERS LN	1960	5.3	ND	ND	1.80	
0066U0	558	107 DILLER RD	1956	4.0	157	ND	0.30	
0177Q0	559	765 FISHING CREEK RD	2006	1.5	ND	ND	N/A	
0002K0	599	958 LIMEKILN RD	1996	2.8	1	ND	N/A	
0065J0	369/370	900 LIMEKILN RD	1996	5/5.3	ND/ND	ND/ND	1.04	
			No.	**%**				
Parcels Surveyed (1):			**557**	**21.7**				
Parcels Built Before 1972:			**161**	**28.9**				
Parcels with Nitrate >10:			**28**	**5.0**				
Parcels with Nitrate >5:			**135**	**24.2**				
Parcels with Total Coliforms:			**196**	**35.2**				
Parcels with Fecal Coliforms:			**23**	**4.1**				
Average Lot Size:			**3.72**	**---**				
Lots < 1.0 Acres:			**162**	**29.1**				
Lots < 0.5 Acres:			**89**	**16.0**				

Notes
(1) Out of 2,565 total parcels served by on-lot septic systems.
ND = NOT DETECTABLE
N/A= NOT AVAILABLE

Appendix E

SEO Permit Records

APPENDIX E

SUMMARY OF SEO REPAIR PERMITS ISSUED

09-43	Z69967	1129	Andersontown Road	Mechanicsburg	PA	17055
07-25	Z002437	250	Big Spring Road	Etters	PA	17319
08-26	Z004246	472	Big Spring Road	New Cumberland	PA	17070
08-47	Z69916	497	Big Spring Road	New Cumberland	PA	17070
07-56	Z004218	551	Brenneman Drive	Lewisberry	PA	17339
05-92	T006419	112	Bunker Hill Road	New Cumberland	PA	17070
09-23	Z69941	113	Bunker Hill Road	New Cumberland	PA	17070
06-04	T006423	736	Capri Circle	Lewisberry	PA	17339
04-48	T102457	4	Carriage Road	New Cumberland	PA	17070
06-32	T006449	753	Collina Drive	Lewisberry	PA	17339
09-17	Z69934	755	Collina Drive	Lewisberry	PA	17339
05-85	T006412	111	Diller Road	New Cumberland	PA	17070
07-48	Z004211	195	Fisher Road	Etters	PA	17319
06-71	Z002392	835	Fishing Creek Road	New Cumberland	PA	17070
08-04	Z004224	844	Fishing Creek Road	New Cumberland	PA	17070
08-08	Z004228	108	Fox Fire Lane	Lewisberry	PA	17339
08-13	Z004233	130	Fox Fire Lane	Lewisberry	PA	17339
09-38	Z69960	105	Fox Fire Lane	Lewisberry	PA	17339
07-24	Z002436	622	Gap Road	Lewisberry	PA	17339
08-07	Z004227	742	Glen Arden Dr	Lewisberry	PA	17339
07-39	Z004201	742	Glen Arden Drive	Lewisberry	PA	17339
07-27	Z002439	475	Granite Quarry Road	New Cumberland	PA	17070
05-48	T003217	1083	Highland Drive	Mechanicsburg	PA	17055
05-89	T006417	1150	Highland Drive	Mechanicsburg	PA	17055
07-30	Z002442	1090	Highland Drive	Mechanisburg	PA	17055
09-30	Z69947	10	Holly Drive	New Cumberland	PA	17070
09-30	Z69947	10	Holly Drive	New Cumberland	PA	17070
09-46	Z69970	103	Iron Furnace Court	Lewisberry	PA	17339
08-43	Z69912	757	Ironstone Road	New Cumberland	PA	17070
06-07	T006428	694	Julie Court	Mechanicsburg	PA	17055
04-16	T102772	878	King Street	Lewisberry	PA	17339
04-36	T102794	881	King Street	Lewisberry	PA	17339
04-37	T102795	876	King Street	Lewisberry	PA	17339
06-17	T006437	745	Lewisberry Road	Lewisberry	PA	17339
07-02	Z002414	1040	Lewisberry Road	Lewisberry	PA	17339
07-50	Z004213	313	Lewisberry Road	New Cumberland	PA	17070
07-52	Z004215	768	Lewisberry Road	Lewisberry	PA	17339
08-35	Z69906	802	Lewisberry Road	Lewisberry	PA	17339
08-37	Z69908	447	Lewisberry Road	New Cumberland	PA	17070
09-01	Z69918	447	Lewisberry Road	New Cumberland	PA	17070
09-18	Z69935	594	Lewisberry Road	New Cumberland	PA	17070
09-31	Z69948	828	Lewisberry Road	Lewisberry	PA	17339
09-36	Z69958	639	Lewisberry Road	New Cumberland	PA	17070
04-20	T102776	900	Limekiln Road	New Cumberland	PA	17070
06-40	Z002357	972	Limekiln Road	New Cumberland	PA	17070
09-08	Z69925	954	Limekiln Road	New Cumberland	PA	17070
05-75	T003247	272	Lincoln Drive	New Cumberland	PA	17070
06-31	T006448	270	Marsh Run Road	New Cumberland	PA	17070
07-43	Z69901	390	Marsh Run Road	New Cumberland	PA	17070
06-65	Z002386	607	Moores Mountain Road	Lewisberry	PA	17339
09-10	Z69927	871	Moore's Mt Road	Lewisberry	PA	17339

APPENDIX E

SUMMARY OF SEO REPAIR PERMITS ISSUED

04-08	T102765	1009	Silver Lake Road	Lewisberry	PA	17339
05-51	T003223	1003	Silver Lake Road	Lewisberry	PA	17339
07-01	Z002413	1050	Silver Lake Road	Lewisberry	PA	17339
04-151A	T006906	291	Spangler Mill Road	New Cumberland	PA	17070
09-03	Z69920	240	Spangler Mill Road	New Cumberland	PA	17070
09-16	Z69933	256	Spangler Mill Road	New Cumberland	PA	17070
08-29	Z004249	240	Stet;er Road	New Cumberland	PA	17070
07-18	Z002428	214	Stetler Road	New Cumberland	PA	17070
09-45	Z69969	811	Stonybrook Lane	Lewisberry	PA	17339
06-35	Z002352	101	Sunset View Dr	New Cumberland	PA	17070
04-28	T102784	109	Sunset View Drive	New Cumberland	PA	17070
07-55	Z004205	120	Sunset View Drive	New Cumberland,	PA	17070
09-44	Z69968	106	Sunset View Drive	New Cumberland	PA	17070
08-36	Z69907	31	Timber Lane	New Cumberland	PA	17070
05-90	T006418	875	Traver Drive	Lewisberry	PA	17339
07-21	Z002427	892	Traver Drive	Lewisberry	PA	17339
08-48	Z69917	105	Turtle Hollow Drive	Lewisberry	PA	17339
05-16	T006932	21	Valley Road	Etters	PA	19319
05-21	T003207	74	Valley Road	Etters	PA	17319
08-28	Z004248	393	Valley Road	Etters	PA	17319
08-44	Z69913	393	Valley Road	Etters	PA	17319
09-27	Z69944	113	Wheatland Road	Lewisberry	PA	17339
05-50	T003219	678	Woodburne Rd	Lewisberry	PA	17339
07-53	Z004216	655	Woodburne Road	Lewisberry	PA	17339
BTG REPAIR PERMITS						
06-78	T006412	111	Diller Road	New Cumberland	PA	17070
05-53	T003225	204	Tall Oak Dr.	New Cumberland	PA	17070
06-55	Z002375	680	Lewisberry Road	New Cumberland	PA	17070
07-17	Z002430	789	Null Road	New Cumberland	PA	17070
08-14	Z004234	825	Old Forge Road	New Cumberland	PA	17070
09-29	Z69946	503	Park Road	New Cumberland	PA	17070

Appendix F

Sewage Disposal Needs Assessment

APPENDIX F
TABLE 1
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

Basin	Number of Properties (1)	Percentage of Properties	Lots Less than 1 acre	On-Lot System Status, Number of Each							
				Confirmed Malfunctions		Suspected Malfunctions		Potential Malfunctions		No Malfunctions	
				No.	%	No.	%	No.	%	No.	%
Southern Basin, Surveyed Properties	137	21.4%	27	7	5.1	7	5.1	36	26.3	87	63.5
Southern Basin, Non-Surveyed Properties	504	78.6%	161	0	0.0	0	0.0	220	43.7	284	56.3
Subtotal	**641**	---	**188**	**7**	**1.1**	**7**	**1.1**	**256**	**39.9**	**371**	**57.9**
Remaining Basins, Surveyed Properties	420	21.8%	135	12	2.9	24	5.7	149	35.5	235	56.0
Remaining Basins, Non-Surveyed Properties	1,504	78.2%	559	4	0.3	1	0.1	720	47.9	779	51.8
Subtotal	**1,924**	---	**694**	**16**	**0.8**	**25**	1.3	**869**	**45.2**	**1,014**	**52.7**
Total Surveyed Properties	557	21.7%	162	19	3.4	31	5.6	185	33.2	322	57.8
Total Non-Surveyed Properties	2,008	78.3%	720	4	0.2	1	0.0	940	46.8	1,063	52.9
TOTAL	**2,565**	---	**882**	**23**	**0.9**	**32**	**1.3**	**1,125**	**43.9**	**1,385**	**54.0**

Notes:
(1) Includes both occupied and vacant housing units.

Needs Assessment
Surveyed Properties

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
A. Southern Basin											
002800	102	APPALOOSA WAY	1988	5.2	ND	ND	1.00	YES		No Malfunction	
002900	104	APPALOOSA WAY	1988	7.8	ND	ND	1.00	YES		No Malfunction	
0029F0	105	APPALOOSA WAY	1988	4.3	ND	ND	1.00	YES		No Malfunction	
0029B0	106	APPALOOSA WAY	1988	3.3	ND	ND	1.01	YES		No Malfunction	
0029H0	588	BEINHOWER RD	1986	1.0	ND	ND	1.31	YES		No Malfunction	
0029C0	594	BEINHOWER RD	1990	1.6	ND	ND	1.00	YES		No Malfunction	
0001C0	598	BEINHOWER RD	1986	1.9	ND	ND	1.72	YES		No Malfunction	
020200	654	BEINHOWER RD	1961	2.8	18	1	2.28	YES		Suspected Malfunction	Fecal Coliform Present
	494	BIG SPRING RD	N/A	3.0	248	ND	N/A	YES		No Malfunction	
002700	559	BIG SPRING RD	1968	7.0	2	ND	N/A	YES		Potential Malfunction	Built Before 1972
001900	194	BIG SPRING RD	1997	3.8	ND	ND	1.47	YES		No Malfunction	
001700	235	BIG SPRING RD	1978	2.0	ND	ND	7.74	YES		No Malfunction	
001900	381	BIG SPRING RD	1988	1.3	ND	ND	1.89	YES		No Malfunction	
002600	422	BIG SPRING RD	1972	0.8	31	ND	0.52	YES		No Malfunction	
003000	465	BIG SPRING RD	1976	0.4	ND	ND	10.00	YES		No Malfunction	
000100	466	BIG SPRING RD	1970	1.3	345	ND	1.34	YES		Potential Malfunction	Built Before 1972
000500	480	BIG SPRING RD	1974	0.7	261	3	0.88	YES		Suspected Malfunction	Fecal Coliform Present
000400	488	BIG SPRING RD	1977	2.9	326	ND	0.54	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
002500	736	CAPRI CR	1978	5.1	ND	ND	0.46	NO		Potential Malfunction	Unsuitable Soils, SEO Repair Permit
002600	737	CAPRI CR	1979	5.5	ND	ND	0.46	NO		Potential Malfunction	Unsuitable Soils
0020B0	621	CEEJAY DR	1977	1.5	ND	ND	0.70	YES		No Malfunction	
0020A0	650	CHURCHEY LN	1999	2.2	ND	ND	13.06	YES		No Malfunction	
0018F0	686	CHURCHEY LN	2002	1.1	3	ND	5.17	YES		No Malfunction	
008000	103	CLYDESDALE CT	1988	3.7	ND	ND	1.01	YES		No Malfunction	
0078A0	106	CLYDESDALE CT	1988	6.5	ND	ND	1.02	YES		No Malfunction	
0077L0	660	CORN HILL RD	1980	4.1	23	ND	5.62	YES		No Malfunction	
007500	183	FISHER RD	1987	6.5	70	ND	1.00	YES		No Malfunction	
0071B0	195	FISHER RD	1986	3.0	ND	ND	1.00	YES		Potential Malfunction	SEO Repair Permit
0071C0	197	FISHER RD	1991	4.4	1	ND	1.00	YES		No Malfunction	
	199	FISHER RD	N/A	3.5	ND	ND	N/A	YES		No Malfunction	
0119A0	622	FISHING CREEK RD	1962	4.3	ND	ND	N/A	YES		Potential Malfunction	Built Before 1972
	700	FISHING CREEK RD	N/A	1.8	205	ND	N/A	YES		No Malfunction	
0177Q0	765	FISHING CREEK RD	2006	1.5	ND	ND	N/A	YES		No Malfunction	
011200	820a	FISHING CREEK RD	1999	0.7	ND	ND	1.00	YES		No Malfunction	
005700	664	FISHING CREEK RD	1989	3.1	ND	ND	1.41	YES		No Malfunction	
0021A0	669	FISHING CREEK RD	1997	2.6	ND	ND	1.02	YES		No Malfunction	
0061A0	670	FISHING CREEK RD	2003	3.3	ND	ND	3.96	YES		No Malfunction	
006500	676	FISHING CREEK RD	1975	2.9	ND	ND	1.96	YES		No Malfunction	

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
006600	709 FISHING CREEK RD	1974	4.5	ND	ND	13.12	YES		No Malfunction	
005600	714 FISHING CREEK RD	1980	0.4	ND	ND	1.00	YES		No Malfunction	
009700	715 FISHING CREEK RD	1967	1.1	ND	ND	3.61	YES		Potential Malfunction	Built Before 1972
007400	736 FISHING CREEK RD	1977	4.5	ND	ND	1.09	YES		No Malfunction	
007500	756 FISHING CREEK RD	1950	0.9	ND	ND	1.03	YES		Potential Malfunction	Built Before 1972
009300	759 FISHING CREEK RD	1968	4.8	ND	ND	3.53	YES		Potential Malfunction	Built Before 1972
002000	766 FISHING CREEK RD	1988	0.6	ND	ND	1.00	YES		No Malfunction	
002100	786 FISHING CREEK RD	1900	0.5	32	ND	0.25	YES		Potential Malfunction	Built Before 1972
001100	788 FISHING CREEK RD	1900	1.1	8	ND	50.50	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
002300	792 FISHING CREEK RD	1937	1.3	167	ND	0.37	YES		Potential Malfunction	Built Before 1972
001000	794 FISHING CREEK RD	1970	1.5	308	1	1.51	YES		Suspected Malfunction	Fecal Coliform Present; Well<100 ft from septic
000700	807 FISHING CREEK RD	1986	1.6	ND	ND	0.55	NO	Malfunction & Direct graywater discharge	Confirmed Malfunction	Observation of Sampler
000300	815 FISHING CREEK RD	1970	1.1	2	ND	2.01	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0087B0	784 FISHING CREEK RD	1987	ND	726	ND	3.63	YES		No Malfunction	
002700	610 GAP RD	1985	4.1	ND	ND	0.66	YES		No Malfunction	
002500	616 GAP RD	1972	1.3	ND	ND	3.00	YES		No Malfunction	
0002F0	115 MOUNTAIN VIEW DR	1994	4.1	ND	ND	N/A	YES		No Malfunction	
005700	107 MOUNTAIN VIEW DR	1997	6.4	ND	ND	1.71	YES		No Malfunction	
0060C0	108 MOUNTAIN VIEW DR	2000	3.3	ND	ND	1.71	YES		No Malfunction	
0002N0	120 MOUNTAIN VIEW DR	2000	3.5	ND	ND	N/A	YES		No Malfunction	
0023D0	130 MOUNTAIN VIEW DR	1900	3.2	ND	ND	3.32	YES		Potential Malfunction	Built Before 1972
002400	255 OLD YORK RD	1880	2.1	ND	ND	8.41	YES		Potential Malfunction	Built Before 1972
0051G0	426 OLD YORK RD	1978	6.3	187	1	1.64	YES		Suspected Malfunction	Fecal Coliform Present
006100	430 OLD YORK RD	1996	6.5	ND	ND	0.47	YES		No Malfunction	
005200	596 OLD YORK RD	1986	5.4	ND	ND	12.43	YES		No Malfunction	
0077V0	647 OLD YORK RD	1942	2.1	2419	86	0.17	YES		Potential Malfunction	Built Before 1972
002000	503 PARK RD	1990	8.3	141	ND	11.10	YES		Confirmed Malfunction	BTG Permit Z69946
002000	315 PLEASANT VIEW RD	1950	3.8	ND	ND	0.36	YES		Potential Malfunction	Built Before 1972
007600	376 PLEASANT VIEW RD	1980	2.8	7	ND	6.42	YES		No Malfunction	
007700	378 PLEASANT VIEW RD	1986	1.9	ND	ND	0.46	YES		No Malfunction	
007900	390 PLEASANT VIEW RD	1964	3.2	ND	ND	0.75	YES		Potential Malfunction	Built Before 1972
008400	419 PLEASANT VIEW RD	1983	1.9	ND	ND	1.19	NO		Potential Malfunction	Unsuitable Soils
008700	512 PLEASANT VIEW RD	1984	3.2	18	ND	0.46	YES		No Malfunction	
0097G0	567 PLEASANT VIEW RD	1986	5.8	ND	ND	1.00	YES		No Malfunction	
0097F0	580 PLEASANT VIEW RD	1990	4.9	ND	ND	21.30	YES		No Malfunction	
009300	592 PLEASANT VIEW RD	1989	1.7	2	ND	5.83	YES		No Malfunction	
004500	617 PLEASANT VIEW RD	1957	0.5	ND	ND	0.57	YES		Potential Malfunction	Built Before 1972
003800	619 PLEASANT VIEW RD	1953	0.5	ND	ND	0.66	YES		Potential Malfunction	Built Before 1972

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
0239B0	666 PLEASANT VIEW RD	1996	0.9	ND	ND	7.50	YES		No Malfunction	
0064A0	665 POTTS HILL RD	1973	3.1	ND	ND	0.49	YES		No Malfunction	
002800	473 RIDGE RD	1970	4.7	ND	ND	0.80	No		Potential Malfunction	Built Before 1972/Unsuitable Soils
0025U0	605 RIDGE RD	1999	10.5	50	ND	1.25	YES		Potential Malfunction	Nitrate Over 10
0025G0	609 RIDGE RD	1980	6.2	ND	ND	6.50	NO		Potential Malfunction	Unsuitable Soils
0079C0	611 RIDGE RD	1970	4.1	12	ND	N/A	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0062A0	619 RIDGE RD	1993	4.8	ND	ND	11.02	YES		No Malfunction	
0083C0	635 RIDGE RD	1978	1.3	2	ND	3.64	YES		No Malfunction	
002100	680 RIDGE RD	1986	1.7	ND	ND	3.42	YES	Direct Discharge to Swale	Confirmed Malfunction	Observation of Sampler
0041A0	698 RIDGE RD	1987	3.3	1	ND	3.87	YES		No Malfunction	
0100B0	707 RIDGE RD	1988	3.4	1	ND	4.36	YES		No Malfunction	
0234A0	711 RIDGE RD	2003	4.6	ND	ND	1.03	YES		No Malfunction	
023100	719 RIDGE RD	2002	2.1	ND	ND	1.40	YES		No Malfunction	
0050H0	675 SAND SPUR DR	1989	5.8	ND	ND	1.28	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
0050F0	678 SAND SPUR DR	1988	5.2	ND	ND	1.00	YES		No Malfunction	
0050R0	679 SAND SPUR DR	1989	4.1	ND	ND	1.05	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
0053H0	680 SAND SPUR DR	1986	5.6	13	ND	0.46	YES		No Malfunction	
0045A0	683 SAND SPUR DR	1986	5.2	ND	ND	0.54	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
0002R0	684 SAND SPUR DR	1986	5.4	ND	ND	0.46	YES		No Malfunction	
0070R0	690 SAND SPUR DR	1982	4.3	ND	ND	2.01	YES		No Malfunction	
0010D0	691 SAND SPUR DR	1984	4.4	ND	ND	2.81	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
0010C0	696 SAND SPUR DR	1984	4.3	ND	ND	2.08	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
0007B0	309 STEIGERWALT HOLLOW RD	1975	0.9	ND	ND	3.14	YES		No Malfunction	
0010C0	313 STEIGERWALT HOLLOW RD	1975	2.3	ND	ND	3.14	YES		No Malfunction	
000900	366 STEIGERWALT HOLLOW RD	1975	2.2	ND	ND	3.14	YES		No Malfunction	
0003S0	386 STEIGERWALT HOLLOW RD	2002	6.9	ND	ND	1.63	YES		No Malfunction	
000700	390 STEIGERWALT HOLLOW RD	1972	2.8	ND	ND	1.13	YES		No Malfunction	
017300	398 STEIGERWALT HOLLOW RD	1994	2.8	ND	ND	1.27	YES		No Malfunction	
016300	403 STEIGERWALT HOLLOW RD	1979	5.2	ND	ND	2.31	YES		No Malfunction	
016200	404 STEIGERWALT HOLLOW RD	1966	4.4	1	ND	2.70	YES		Potential Malfunction	Built Before 1972
008400	300 STONE ROW LN	2003	6.9	ND	ND	3.19	YES		No Malfunction	
008300	304 STONE ROW LN	2004	4.0	ND	ND	1.00	YES		No Malfunction	
0001Y0	270 VALLEY RD	1998	1.1	ND	ND	0.49	YES		No Malfunction	
0001Z0	393 VALLEY RD	1997	1.3	ND	ND	1.26	YES		Potential Malfunction	SEO Repair Permit
0001P0	396 VALLEY RD	1997	4.6	5	ND	1.31	YES		No Malfunction	
018700	253 WILLIS RD	1992	5.8	22	1	1.72	YES		Suspected Malfunction	Fecal Coliform Present
021500	226 WILLIS RD	1994	4.7	ND	ND	1.19	YES		No Malfunction	
0226A0	237 WILLIS RD	1994	3.9	5	ND	1.00	YES		No Malfunction	

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
0227B0	241	WILLIS RD	1999	6.0	ND	ND	1.03	YES		No Malfunction	
021700	246	WILLIS RD	1993	3.4	ND	ND	1.81	YES		No Malfunction	
002200	250	WILLIS RD	1996	10.7	ND	ND	13.10	YES		Potential Malfunction	Nitrate Over 10
002300	251	WILLIS RD	2001	4.5	ND	ND	1.30	YES		No Malfunction	
0095G0	255	WILLIS RD	1999	4.7	ND	ND	1.01	YES		No Malfunction	
0096V0	256	WILLIS RD	1994	2.9	ND	ND	1.07	YES		No Malfunction	
0096T0	651	WINEBARY CR	1989	4.7	ND	ND	1.17	NO		Potential Malfunction	Unsuitable Soils
0095M0	670	WINEBARY CR	1995	5.4	649	ND	1.66	YES		No Malfunction	
0095N0	671	WINEBARY CR	1991	2.0	ND	ND	1.19	No		Potential Malfunction	Unsuitable Soils
0096Q0	690	WINEBARY CR	1993	2.1	ND	ND	1.42	YES		No Malfunction	
0096N0	691	WINEBARY CR	1999	4.6	4	ND	1.00	YES		No Malfunction	
0095T0	702	WINEBARY CR	2000	3.9	ND	ND	1.00	YES		No Malfunction	
022900	703	WINEBARY CR	2001	2.0	ND	ND	1.00	NO		Potential Malfunction	Unsuitable Soils
022800	652	WOODBURNE RD	2004	5.7	17	ND	1.04	YES		No Malfunction	
0095G0	654	WOODBURNE RD	1998	3.8	ND	ND	N/A	YES		No Malfunction	
022100	655	WOODBURNE RD	1999	2.2	2	ND	2.40	YES		Potential Malfunction	SEO Repair Permit
023700	671	WOODBURNE RD	1999	1.5	ND	ND	1.67	YES		No Malfunction	
0119A0	672	WOODBURNE RD	2000	2.7	ND	ND	1.02	YES		No Malfunction	
0237N0	678	WOODBURNE RD	1978	2.0	ND	ND	0.48	YES		Potential Malfunction	SEO Repair Permit
0237P0	680	WOODBURNE RD	1978	1.9	ND	ND	0.46	YES		No Malfunction	
0102G0	684	WOODBURNE RD	1958	1.4	ND	ND	1.17	YES		Potential Malfunction	Built Before 1972
006000	600	WYNDAMERE RD	1962	1.9	ND	ND	0.43	YES		Potential Malfunction	Built Before 1972
0120F0	723	WYNDAMERE RD	1977	4.4	ND	ND	N/A	NO		Potential Malfunction	Unsuitable Soils
Number of Parcels In Southern Basin Surveyed:			**137**								
Number of Parcels Built Before 1972:			**24**								
Number of Parcels with Nitrate >10:			**3**								
Number of Parcels with Nitrate >5:			**29**								
Number of Parcels with Total Coliforms:			**35**								
Number of Parcels with Fecal Coliforms:			**6**								
Average Lot Size:			**2.89**								
Number of Lots < 0.5 Acres:			**16**								
B. Remaining Basins											
005100	1120	ANDERSONTOWN RD	1985	3.7	ND	ND	3.20	YES		No Malfunction	
005500	1130	ANDERSONTOWN RD	1993	2.8	ND	ND	1.00	YES		No Malfunction	
0056A0	1140	ANDERSONTOWN RD	1959	2.7	16	1	3.90	YES		Potential Malfunction	Built Before 1972
007100	102	BELLOWS CT	2005	2.1	ND	ND	1.18	YES		No Malfunction	
0069A0	106	BELLOWS CT	2005	1.9	ND	ND	1.70	YES		No Malfunction	
010900	361	BETHAL CHURCH RD	1957	3.0	ND	ND	1.00	YES		Potential Malfunction	Built Before 1972
011100	369	BETHAL CHURCH RD	1955	4.4	7	ND	0.66	No		Potential Malfunction	Built Before 1972/Unsuitable Soils
011300	322	BETHEL CHURCH RD	1991	1.6	ND	ND	0.56	YES		No Malfunction	

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
002900	350 BETHEL CHURCH RD	1999	6.3	ND	ND	1.10	NO		Potential Malfunction	Unsuitable Soils
001700	349 BETHEL CHURCH RD	1987	10.9	ND	ND	1.35	YES		Potential Malfunction	Nitrate Over 10
005600	637 BILLET DR	1988	3.2	22	1	0.94	YES		Suspected Malfunction	Fecal Coliform Present
0014A0	639 BILLET DR	1988	5.3	5	ND	1.05	YES		No Malfunction	
004400	641 BILLET DR	1981	5.0	73	ND	1.08	YES		No Malfunction	
0014B0	643 BILLET DR	1981	5.5	ND	ND	1.43	YES		No Malfunction	
0009A0	654 BILLET DR	1984	6.3	3	ND	1.05	YES		No Malfunction	
001400	290 BRADLEY CIR	1980	0.4	ND	ND	1.07	YES		No Malfunction	
001300	293 BRADLEY CIR	1987	6.3	240	ND	1.07	YES		No Malfunction	
0070N0	103 BRAMBLEWOOD LN	1986	8.6	19	ND	1.10	YES		No Malfunction	
0070H0	104 BRAMBLEWOOD LN	1987	5.0	ND	ND	1.24	YES		No Malfunction	
0070G0	105 BRAMBLEWOOD LN	1988	16.6	3	ND	1.10	YES		Potential Malfunction	Nitrate Over 10
0067C0	113 BRAMBLEWOOD LN	1988	7.0	ND	ND	1.10	YES		No Malfunction	
0084N0	117 BRAMBLEWOOD LN	2001	7.4	ND	ND	1.27	YES		No Malfunction	
0084A0	119 BRAMBLEWOOD LN	1988	4.9	5	ND	1.55	YES		No Malfunction	
0084V0	122 BRAMBLEWOOD LN	1995	4.4	32	ND	1.42	YES		No Malfunction	
0084F0	475 BRENNEMAN DR	1997	2.0	ND	ND	6.41	YES		No Malfunction	
0084B0	513 BRENNEMAN DR	2003	2.8	ND	ND	20.90	YES		No Malfunction	
001200	98 BUNKER HILL RD	1971	2.5	12	ND	0.54	YES		Potential Malfunction	Built Before 1972
0052J0	104 BUNKER HILL RD	1970	4.2	3	ND	0.59	YES		Potential Malfunction	Built Before 1972
003200	105 BUNKER HILL RD	1984	2.4	ND	ND	3.86	YES		No Malfunction	
003400	108 BUNKER HILL RD	1974	5.9	6	ND	0.49	YES		No Malfunction	
003500	111 BUNKER HILL RD	1972	3.4	ND	ND	0.75	YES		No Malfunction	
010500	116 BUNKER HILL RD	1972	4.7	ND	ND	0.71	YES		No Malfunction	
003800	117 BUNKER HILL RD	1972	5.2	260	ND	0.43	YES		No Malfunction	
003900	107 BUNKER HILL RD	1978	4.2	25	ND	0.77	YES		No Malfunction	
032600	867 CARDINAL LN	1967	2.6	ND	ND	0.53	NO		Potential Malfunction	Built Before 1972
0006A0	868 CARDINAL LN	1904	1.3	ND	ND	0.54	NO		Potential Malfunction	Built Before 1972
0017A0	870 CARDINAL LN	1970	1.7	46	ND	31.54	YES		Potential Malfunction	Built Before 1972
001600	876 CARDINAL LN	1956	1.3	ND	ND	0.17	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
010000	1 CARRIAGE RD	1970	5.9	1	1	0.76	YES		Suspected Malfunction	Fecal Coliform Present
004300	5 CARRIAGE RD	1970	5.2	1	ND	0.46	YES	Active Malfunction, Raw Sewage Surfacing in Backyard	Confirmed Malfunction	Observation of Sampler
004600	9 CARRIAGE RD	1972	6.0	6	ND	0.46	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler
004800	13 CARRIAGE RD	1972	9.4	156	ND	0.46	YES		No Malfunction	
0027A0	14 CARRIAGE RD	1970	8.2	1	ND	0.46	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler
0067H0	17 CARRIAGE RD	1970	4.8	ND	ND	0.46	YES		Potential Malfunction	Built Before 1972
0067G0	18 CARRIAGE RD	1974	8.8	ND	ND	0.52	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
0067F0	20 CARRIAGE RD	1970	6.3	61	ND	0.55	YES		Potential Malfunction	Built Before 1972
006700	22 CARRIAGE RD	1970	5.4	1	ND	0.82	YES		Potential Malfunction	Built Before 1972
0026A0	23 CARRIAGE RD	1970	5.4	4	ND	1.19	YES		Potential Malfunction	Built Before 1972
0066D0	600 CEDAR HEIGHTS DR	2004	1.8	ND	ND	1.00	YES		No Malfunction	
000900	883 CEDARS RD	1951	7.1	ND	ND	1.20	YES		Potential Malfunction	Built Before 1972
0007C0	889 CEDARS RD	1950	5.1	ND	ND	0.88	YES	Greywater Discharge	Confirmed Malfunction	Observation of Sampler
000700	890 CEDARS RD	1955	10.8	ND	ND	0.29	YES		Potential Malfunction	1972
0001F0	896 CEDARS RD	1955	3.9	ND	ND	0.51	YES		Potential Malfunction	Built Before 1972
004400	902 CEDARS RD	1958	2.7	ND	ND	N/A	YES		Potential Malfunction	Built Before 1972
0086A0	911 CEDARS RD	1930	6.6	ND	ND	7.00	YES		Potential Malfunction	Built Before 1972
0023J0	922 CEDARS RD	1960	2.7	ND	ND	0.78	YES		Potential Malfunction	Built Before 1972
0020H0	969 CEDARS RD	1827	3.1	ND	ND	2.90	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0006D0	739 COLLINA DR	1978	5.9	3	ND	0.58	YES		No Malfunction	
0006E0	741 COLLINA DR	1978	5.0	ND	ND	0.58	YES		No Malfunction	
0052C0	751 COLLINA DR	1973	10.2	ND	ND	0.46	NO		Potential Malfunction	Nitrate Over 10
0058N0	753 COLLINA DR	1976	9.1	1	ND	0.46	NO		Potential Malfunction	Unsuitable Soils, SEO Repair Permit
0077B0	755 COLLINA DR	1812	5.4	ND	ND	114.00	NO		Potential Malfunction	Built Before 1972, Unsuitable Soils, SEO Repair Permit
0100C0	105 DILLER RD	1958	3.3	435	7	0.34	NO		Suspected Malfunction	Fecal Coliform Present
0066U0	107 DILLER RD	1956	4.0	157	ND	0.30	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0066H0	113 DILLER RD	1954	7.2	ND	ND	0.92	No		Potential Malfunction	Built Before 1972/Unsuitable Soils
0066R0	114 DILLER RD	1958	17.6	ND	ND	0.32	YES		Potential Malfunction	1972
0068B0	115 DILLER RD	1958	8.7	31	ND	0.34	NO	Wastewater Backing Up Into The Home	Confirmed Malfunction	Homeowner Notification
001000	120 DILLER RD	1958	3.3	ND	ND	0.28	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0062B0	134 DILLER RD	1940	8.0	ND	ND	0.21	YES		Potential Malfunction	Built Before 1972
0052N0	805 EAST ST	1975	2.9	ND	ND	0.48	YES		No Malfunction	
001000	625 ELLIOT DR	1978	3.2	ND	ND	0.46	YES		No Malfunction	
0011D0	631 ELLIOT DR	1975	15.7	ND	ND	0.48	YES		Potential Malfunction	Nitrate Over 10
0011Q0	636 ELLIOT DR	1979	15.6	ND	ND	0.54	YES		Potential Malfunction	Nitrate Over 10
0075G0	651 ELLIOT DR	1996	0.6	5	ND	6.56	YES		No Malfunction	
000500	654 ELLIOT DR	1975	7.0	ND	ND	N/A	YES		No Malfunction	
0074E0	940 EMANUEL RD	1992	3.3	ND	ND	1.00	YES		No Malfunction	
0077C0	175 FISHER RD	1900	6.3	1	ND	0.81	YES		Potential Malfunction	Built Before 1972
005600	86 FOXFIRE LN	2006	2.9	ND	ND	N/A	YES		No Malfunction	
008000	101 FOXFIRE LN	1990	3.6	3	ND	1.10	YES		No Malfunction	
0080A0	105 FOXFIRE LN	1992	7.3	ND	ND	1.39	YES		Potential Malfunction	SEO Repair Permit
008100	107 FOXFIRE LN	1990	5.6	ND	ND	2.26	YES		No Malfunction	
0083B0	109 FOXFIRE LN	1989	5.2	29	2	1.00	YES		Suspected Malfunction	Fecal Coliform Present
0085A0	112 FOXFIRE LN	1993	15.6	185	138	2.76	YES		Suspected Malfunction	Fecal Coliform Present Nitrate Over 10

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
0118A0	117	FOXFIRE LN	1998	10.4	ND	ND	1.11	YES		Potential Malfunction	Nitrate Over 10
0118C0	118	FOXFIRE LN	1993	5.6	1300	ND	3.84	YES		No Malfunction	
0118D0	125	FOXFIRE LN	1999	13.6	13	ND	5.43	YES		Potential Malfunction	Nitrate Over 10
0052P0	129	FOXFIRE LN	1994	4.2	10	ND	2.00	YES		No Malfunction	
0029A0	130	FOXFIRE LN	1968	7.9	15	ND	2.00	YES		Potential Malfunction	Built Before 1972, SEO Repair Permi
006600	747	GLEN ARDEN DR	1976	1.3	ND	ND	3.01	YES		No Malfunction	
010600	763	GLEN ARDEN DR	1978	2.2	2	ND	3.95	YES		No Malfunction	
0088E0	769	GLEN ARDEN DR	1958	1.1	ND	ND	6.00	YES		Potential Malfunction	Built Before 1972
	403	GRANITE QUARRY RD		0.3	ND	ND	N/A	YES		No Malfunction	
0087E0	400	GRANITE QUARRY RD	1946	0.6	ND	ND	2.00	YES		Potential Malfunction	Built Before 1972
0119E0	439	GRANITE QUARRY RD	1960	2.1	ND	ND	1.80	YES		Potential Malfunction	Built Before 1972
012400	444	GRANITE QUARRY RD	1945	0.9	3	ND	1.19	YES		Potential Malfunction	Built Before 1972
012100	454	GRANITE QUARRY RD	2003	1.0	2	ND	0.79	YES		No Malfunction	
0160A0	463	GRANITE QUARRY RD	1985	2.9	ND	ND	4.03	YES		No Malfunction	
016500	445	GRANITE QUARRY RD	1985	0.3	ND	ND	4.03	YES		No Malfunction	
002400	459	GRANITE QUARRY RD	1970	1.0	276	ND	0.52	YES	Greywater Discharge	Confirmed Malfunction	Observation of Sampler
0035E0	203	HECK HILL RD	1999	2.6	ND	ND	0.80	YES		No Malfunction	
011800	305	HECK HILL RD	1975	2.1	1	ND	1.00	YES		No Malfunction	
013900	725	HECK HILL RD	1978	3.6	ND	ND	1.00	YES		No Malfunction	
012100	729	HECK HILL RD	1972	2.8	ND	ND	1.88	YES		No Malfunction	
003400	742	HECK HILL RD	1984	5.9	2	ND	1.71	YES	System Overflows	Confirmed Malfunction	Homeowner Notification
012400	775	HECK HILL RD	1998	2.8	ND	ND	1.83	YES		No Malfunction	
003200	776	HECK HILL RD	1992	2.4	ND	ND	1.27	YES		No Malfunction	
0051J0	779	HECK HILL RD	1994	3.3	ND	ND	1.94	YES		No Malfunction	
0050F0	786	HECK HILL RD	2004	0.5	1	ND	1.30	YES		No Malfunction	
0051K0	790	HECK HILL RD	1987	2.2	31	ND	0.47	YES		No Malfunction	
0066B0	814	HECK HILL RD	1981	1.9	ND	ND	5.30	YES		No Malfunction	
0071D0	1032	HIGHLAND DR	1980	2.7	ND	ND	2.14	YES		No Malfunction	
0071J0	1047	HIGHLAND DR	1986	4.3	ND	ND	6.77	YES		No Malfunction	
0065H0	1080	HIGHLAND DR	1994	1.9	ND	ND	5.76	YES		No Malfunction	
0098D0	1095	HIGHLAND DR	1984	4.1	5	ND	0.95	YES		No Malfunction	
0096F0	1108	HIGHLAND DR	1980	4.1	23	1	1.01	YES		Suspected Malfunction	Fecal Coliform Present
000100	1114	HIGHLAND DR	1978	3.0	ND	ND	1.01	YES		No Malfunction	
005200	1129	HIGHLAND DR	1978	3.7	1	ND	1.03	YES		No Malfunction	
005100	1132	HIGHLAND DR	1970	3.4	12	ND	2.28	YES		Potential Malfunction	Built Before 1972
0050A0	1145	HIGHLAND DR	1982	6.0	37	ND	2.75	YES		No Malfunction	
0079A0	1164	HIGHLAND DR	1979	1.6	ND	ND	1.00	YES		No Malfunction	
0240B0	1185	HIGHLAND DR	1980	2.6	ND	ND	4.25	YES		No Malfunction	
016700	1251	HIGHLAND DR	1970	2.7	2	ND	0.48	YES		Potential Malfunction	Built Before 1972

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
0061A0	1	HOLLY DR	1977	5.0	ND	ND	10.69	YES		No Malfunction	
001000	6	HOLLY DR	1979	4.6	ND	ND	N/A	YES		No Malfunction	
0176G0	744	IRONSTONE RD	2004	0.2	179	ND	0.79	YES		No Malfunction	
0176K0	756	IRONSTONE RD	2004	0.7	38	ND	1.52	YES		No Malfunction	
024000	759	IRONSTONE RD	1988	0.9	ND	ND	1.00	YES		No Malfunction	
0240D0	101	JAMES LN	1988	3.8	ND	ND	1.00	YES		No Malfunction	
000700	103	JAMES LN	1989	6.1	ND	ND	1.08	YES		No Malfunction	
007300	105	JAMES LN	1995	4.2	ND	ND	4.69	YES		No Malfunction	
008500	107	JAMES LN	1988	4.6	ND	ND	1.01	YES		No Malfunction	
0079A0	108	JAMES LN	1984	3.7	ND	ND	0.92	YES		No Malfunction	
007900	693	JULIE CT	1982	3.3	ND	ND	1.12	YES		No Malfunction	
0074C0	694	JULIE CT	1980	3.1	ND	ND	1.25	YES		Potential Malfunction	SEO Repair Permit
0075A0	698	JULIE CT	1980	2.2	ND	ND	0.40	YES		No Malfunction	
0050J0	700	JULIE CT	1950	2.1	ND	ND	0.53	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
0054C0	872	KING ST	1958	2.8	6	ND	0.30	YES		Potential Malfunction	Built Before 1972
0051Q0	877	KING ST	1955	3.0	59	ND	0.31	YES		Potential Malfunction	Built Before 1972
0051R0	880	KING ST	1958	3.0	ND	ND	0.34	YES		Potential Malfunction	Built Before 1972
0051A0	881	KING ST	1958	3.4	ND	ND	0.33	YES		Potential Malfunction	Built Before 1972, SEO Repair Permit
0051T0	883	KING ST	1979	7.7	ND	ND	0.36	YES		No Malfunction	
0050C0	885	KING ST	1958	4.0	38	ND	0.32	YES		Potential Malfunction	Built Before 1972
004800	889	KING ST	1955	2.3	2	ND	0.28	YES		Potential Malfunction	Built Before 1972
0050L0	890	KING ST	1972	1.9	4	ND	0.32	YES		No Malfunction	
000100	891	KING ST	1972	3.1	501	ND	N/A	YES		No Malfunction	
0176F0	430	LEWISBERRY RD		0.6	ND	ND	0.69	NO		Potential Malfunction	Unsuitable Soils
020300	599	LEWISBERRY RD		4.5	7	ND	N/A	YES		No Malfunction	
0236A0	570A	LEWISBERRY RD	1987	0.3	3	ND	N/A	YES		No Malfunction	
0177G0	717	LEWISBERRY RD	1970	4.8	1	ND	1.20	YES		Potential Malfunction	Built Before 1972
0177P0	437	LEWISBERRY RD	1960	4.7	15	1	0.97	YES		Suspected Malfunction	Fecal Coliform Present
0050F0	442	LEWISBERRY RD	1961	3.9	4	ND	0.45	YES		Potential Malfunction	Built Before 1972
0054B0	443	LEWISBERRY RD	1972	0.5	ND	ND	0.47	YES		No Malfunction	
0001K0	469	LEWISBERRY RD	1960	10.9	2419	ND	0.41	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0071C0	499	LEWISBERRY RD	1964	34.1	54	ND	1.40	YES		Potential Malfunction	Nitrate Over 10 and Built Before 1972
0070X0	526	LEWISBERRY RD	1950	2.4	ND	ND	0.25	YES		Potential Malfunction	Built Before 1972
0007X0	560	LEWISBERRY RD	1950	3.6	ND	ND	1.70	YES		Potential Malfunction	Built Before 1972
0071G0	566	LEWISBERRY RD	1950	3.3	7	ND	2.33	YES		Potential Malfunction	SEO Repair Permit
0007Q0	570	LEWISBERRY RD	1900	1.5	4	ND	0.68	YES		Potential Malfunction	Built Before 1972
0046A0	600	LEWISBERRY RD	1900	3.1	ND	ND	0.44	YES		Potential Malfunction	Built Before 1972
005200	606	LEWISBERRY RD	1945	3.8	ND	ND	2.68	YES		Potential Malfunction	Built Before 1972
011500	631	LEWISBERRY RD	1900	4.9	1	ND	0.33	YES	Greywater Discharge	Confirmed Malfunction	Observation of Sampler
010300	633	LEWISBERRY RD	1930	3.9	ND	ND	0.10	YES		Potential Malfunction	Built Before 1972

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
006000	637 LEWISBERRY RD	1890	7.4	5	ND	1.76	YES		Potential Malfunction	Built Before 1972
0053L0	679 LEWISBERRY RD	1950	5.1	1	ND	0.77	YES		Potential Malfunction	Built Before 1972
004500	746 LEWISBERRY RD	1978	3.2	1	ND	2.77	YES		No Malfunction	
0063F0	749 LEWISBERRY RD	1990	5.2	ND	ND	0.36	YES		No Malfunction	
0058C0	751 LEWISBERRY RD	1950	3.1	ND	ND	2.14	YES		Potential Malfunction	Built Before 1972
004600	760 LEWISBERRY RD	1960	2.7	52	ND	0.74	YES		Potential Malfunction	Built Before 1972
006700	793 LEWISBERRY RD	1988	1.1	ND	ND	1.02	YES		No Malfunction	
011800	835 LEWISBERRY RD	1845	0.3	2	ND	2.89	YES		Potential Malfunction	Built Before 1972
0157A0	836 LEWISBERRY RD	1998	4.6	38	ND	1.68	YES		No Malfunction	
010100	920 LEWISBERRY RD	2003	1.5	2	ND	2.24	YES		No Malfunction	
000500	1011 LEWISBERRY RD	1985	2.2	ND	ND	3.16	YES		No Malfunction	
000900	1015 LEWISBERRY RD	1880	1.6	52	ND	38.83	YES		Potential Malfunction	Built Before 1972
001000	1067 LEWISBERRY RD	1997	3.0	ND	ND	2.00	YES		No Malfunction	
005000	1141 LEWISBERRY RD	1970	3.1	173	ND	22.63	YES		Potential Malfunction	Built Before 1972
0156H0	1150 LEWISBERRY RD	1820	3.0	ND	ND	106.86	YES		Potential Malfunction	Built Before 1972
0153F0	1186 LEWISBERRY RD	1970	3.1	162	ND	0.32	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
014800	1254 LEWISBERRY RD	2004	4.5	108	1	1.10	NO		Suspected Malfunction	Fecal Coliform Present
0153B0	850 LEXINGTON PL	1997	4.2	ND	ND	1.27	YES		No Malfunction	
0065Q0	852 LEXINGTON PL	1998	2.1	2	ND	9.91	YES		No Malfunction	
010300	854 LEXINGTON PL	1997	3.1	ND	ND	N/A	YES		No Malfunction	
	868 LEXINGTON PL		ND	ND	ND	N/A	YES		No Malfunction	
0065J0	900 LIMEKILN RD	1996	5/5.3	ND/ND	ND/ND	1.04	YES		Potential Malfunction	SEO Repair Permit
002700	920 LIMEKILN RD	1996	4.7	ND	ND	1.02	YES		No Malfunction	
003600	934 LIMEKILN RD	1996	5.2	ND	ND	1.40	YES		No Malfunction	
0002K0	958 LIMEKILN RD	1996	2.8	1	ND	N/A	YES		No Malfunction	
0015A0	972 LIMEKILN RD	1800	3.2	ND	ND	1.60	YES		Potential Malfunction	Built Before 1972, SEO Repair Permit
0153L0	974 LIMEKILN RD	1987	2.7	ND	ND	9.84	YES		No Malfunction	
001200	405 LISBURN HEIGHTS DR	1994	1.3	10	ND	9.92	YES		No Malfunction	
0008A0	407 LISBURN HEIGHTS DR	1996	2.2	ND	ND	4.41	YES		No Malfunction	
0018G0	425 LISBURN HEIGHTS DR	1996	3.1	1	ND	12.33	YES		No Malfunction	
001600	435 LISBURN HEIGHTS DR	1995	4.3	ND	ND	1.21	YES		No Malfunction	
0037A0	740 MARKHAM CT	1996	3.1	ND	ND	3.50	YES		No Malfunction	
003600	745 MARKHAM CT	2003	4.1	ND	ND	1.31	YES		No Malfunction	
003100	750 MARKHAM CT	1995	3.3	ND	ND	1.63	YES		No Malfunction	
0046K0	760 MARKHAM CT	2001	2.0	ND	ND	22.76	YES		No Malfunction	
0046E0	775 MARKHAM CT	1966	3.7	3	ND	1.80	YES		Potential Malfunction	Built Before 1972
002400	452 MARSH RUN RD	1976	0.8	ND	ND	1.35	YES		No Malfunction	
0081G0	516 MARSH RUN RD	1996	1.1	411	2	28.30	YES		Suspected Malfunction	Fecal Coliform Present
0081K0	530 MARSH RUN RD	1996	ND	ND	ND	28.30	YES		No Malfunction	
0075B0	430A MARSH RUN RD	1999	0.2	ND	ND	3.06	YES		No Malfunction	
0075F0	730 MOORES MOUNTAIN RD	1965	1.5	ND	ND	27.09	YES		Potential Malfunction	Built Before 1972

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
000800	731	MOORES MOUNTAIN RD	1999	1.0	ND	ND	1.00	YES		No Malfunction	
000700	787	MOORES MOUNTAIN RD	1900	1.5	ND	ND	15.98	YES		Potential Malfunction	Built Before 1972
001000	817	MOORES MOUNTAIN RD	1978	2.0	ND	ND	3.41	YES		No Malfunction	
0072A0	819	MOORES MOUNTAIN RD	1982	0.7	51	ND	0.92	YES		No Malfunction	
0074A0	820	MOORES MOUNTAIN RD	1985	1.0	ND	ND	0.65	YES		Potential Malfunction	SEO Repair Permit
006200	843	MOORES MOUNTAIN RD	1984	1.2	ND	ND	0.80	YES		No Malfunction	
	845	MOORES MOUNTAIN RD		1.2	2	ND	N/A	YES		No Malfunction	
007200	846	MOORES MOUNTAIN RD	1981	0.7	ND	ND	1.02	YES		No Malfunction	
0070B0	867	MOORES MOUNTAIN RD	1980	1.0	2	ND	1.25	YES		No Malfunction	
0073G0	875	MOORES MOUNTAIN RD	2000	0.6	ND	ND	19.13	NO		Potential Malfunction	Unsuitable Soils
0073H0	878	MOORES MOUNTAIN RD	1994	1.1	ND	ND	4.99	YES		No Malfunction	
0062G0	882	MOORES MOUNTAIN RD	2003	0.8	ND	ND	1.96	YES		No Malfunction	
0062D0	886	MOORES MOUNTAIN RD	1998	0.8	ND	ND	1.96	YES		No Malfunction	
0024B0	911	MT AIRY RD	2000	1.2	ND	ND	1.41	YES		No Malfunction	
0025A0	211	MYERS LN	1999	8.6	4	ND	1.00	YES		No Malfunction	
0079D0	212	MYERS LN	1960	5.3	ND	ND	1.80	YES		Potential Malfunction	Built Before 1972
008700	213	MYERS LN	2004	10.3	ND	ND	1.06	YES		Potential Malfunction	Nitrate Over 10
0092A0	512	NAUVOO RD	1966	4.5	29	ND	0.92	YES		Potential Malfunction	Built Before 1972
0098C0	565	NAUVOO RD	1972	2.2	ND	ND	1.00	YES		No Malfunction	
010000	596	NAUVOO RD	1997	3.7	1	ND	0.29	YES		No Malfunction	
0103C0	598	NAUVOO RD	2002	4.2	2	ND	0.69	YES		No Malfunction	
0103F0	210	NEBINGER ST	2004	3.5	ND	ND	0.69	YES		No Malfunction	
0026H0	310	NEBINGER ST	1960	4.4	ND	ND	5.40	YES		Potential Malfunction	Built Before 1972
0027A0	313	NEBINGER ST	1978	4.4	291	ND	0.98	YES		No Malfunction	
0068A0	799	NISSEL LN	1970	ND	ND	ND	0.75	YES		Potential Malfunction	Built Before 1972
0068E0	3	NORTHVIEW RD	1978	11.0	ND	ND	4.46	YES		Potential Malfunction	Nitrate Over 10
0103H0	785	NULL RD	1997	3.7	ND	ND	2.98	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
0105J0	792	NULL RD	1998	3.7	19	ND	2.24	YES		No Malfunction	
0105A0	915	OAK HILL RD	1900	2.6	ND	ND	0.33	YES		Potential Malfunction	Built Before 1972
011600	920	OAK HILL RD	1970	4.0	ND	ND	6.39	YES		Potential Malfunction	Built Before 1972
012500	929	OAK HILL RD	1818	2.8	ND	ND	17.22	YES		Potential Malfunction	Built Before 1972
012400	1016	OAK HILL RD	1990	2.3	4	ND	4.21	YES		No Malfunction	
012000	626	OBSERVATORY DR	1988	4.4	ND	ND	11.89	YES		No Malfunction	
005100	634	OBSERVATORY DR	1986	4.1	ND	ND	1.01	YES		No Malfunction	
0062A0	635	OBSERVATORY DR	1986	3.1	ND	ND	1.05	YES		No Malfunction	
005900	650	OBSERVATORY DR	1986	3.6	ND	ND	12.36	YES		No Malfunction	
001700	652	OBSERVATORY DR	1994	3.2	ND	ND	2.37	YES		No Malfunction	
0001H0	653	OBSERVATORY DR	1991	3.0	ND	ND	2.19	YES		No Malfunction	
0026T0	666	OBSERVATORY DR	1960	5.1	ND	ND	1.95	YES		Potential Malfunction	Built Before 1972
004700	668	OBSERVATORY DR	1986	6.9	ND	ND	0.46	YES		No Malfunction	
000200	807	OLD FORGE RD	1960	3.3	8	ND	0.43	YES		Potential Malfunction	Built Before 1972

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
002600	821	OLD FORGE RD	1954	4.1	ND	ND	N/A	NO		Potential Malfunction	Unsuitable Soils
000500	830	OLD FORGE RD	1990	5.4	ND	ND	0.47	YES		Potential Malfunction	Built Before 1972
0007N0	835	OLD FORGE RD	1970	3.9	ND	ND	0.44	YES		Potential Malfunction	Built Before 1972
0007S0	838	OLD FORGE RD	1984	4.9	8	ND	0.49	YES		No Malfunction	
010300	841	OLD FORGE RD	1985	4.8	ND	ND	1.26	YES		No Malfunction	
0014D0	850	OLD FORGE RD	1957	2.1	ND	ND	1.67	YES		Potential Malfunction	Built Before 1972
004800	940	OLD FORGE RD	1958	4.8	18	ND	0.25	YES		Potential Malfunction	Built Before 1972
032400	1001	OLD FORGE RD	1969	5.8	ND	ND	0.30	YES	Greywater Discharge	Confirmed Malfunction	Observation of Sampler
032500	1021	OLD FORGE RD	1957	1.9	10	ND	1.40	YES		Potential Malfunction	Built Before 1972
001100	1025	OLD FORGE RD	1977	2.2	6	ND	2.01	YES		No Malfunction	
001500	1029	OLD FORGE RD	1989	6.5	13	ND	15.56	YES		No Malfunction	
0065Z0	665	OLD QUAKER RD	1970	1.4	ND	ND	4.09	YES		Potential Malfunction	Built Before 1972
0011G0	706	OLD QUAKER RD	1990	0.5	ND	ND	3.55	YES		No Malfunction	
0023H0	789	OLD QUAKER RD	1985	3.4	ND	ND	0.53	YES		No Malfunction	
	903	OLD ROSSVILLE RD		2.7	25	ND	N/A	YES		No Malfunction	
0237J0	1000	OLD ROSSVILLE RD	1983	1.7	47	ND	2.64	NO		Potential Malfunction	Unsuitable Soils
001000	331	OLD STAGE RD		7.4	27	ND	N/A	YES		No Malfunction	
0237M0	461a	OLD STAGE RD	1977	3.0	ND	ND	5.10	YES		No Malfunction	
0080D0	340	OLD STAGE RD	1999	4.7	1	ND	1.00	YES		No Malfunction	
0080B0	349	OLD STAGE RD	1979	2.0	14	ND	2.10	YES		No Malfunction	
008600	351	OLD STAGE RD	1995	1.9	5	ND	5.88	YES		No Malfunction	
001600	357	OLD STAGE RD	1975	2.6	ND	ND	1.14	YES		No Malfunction	
0012A0	366	OLD STAGE RD	2001	3.0	ND	ND	2.36	YES		No Malfunction	
0001K0	373	OLD STAGE RD	1961	2.3	19	ND	1.41	YES		Potential Malfunction	Built Before 1972
0006B0	407	OLD STAGE RD	1962	5.6	ND	ND	10.77	YES		Potential Malfunction	Built Before 1972
0169C0	423	OLD STAGE RD	1998	2.1	ND	ND	1.00	YES		No Malfunction	
0025B0	424	OLD STAGE RD	1995	2.4	ND	ND	2.24	YES		No Malfunction	
0021C0	467	OLD STAGE RD	1915	3.3	ND	ND	2.66	YES		Potential Malfunction	Built Before 1972
001200	484	OLD STAGE RD	1900	3.8	ND	ND	3.23	YES		Potential Malfunction	Built Before 1972
001100	486	OLD STAGE RD	1945	3.9	ND	ND	0.66	YES		Potential Malfunction	Built Before 1972
0025H0	487	OLD STAGE RD	1948	3.6	1	ND	2.00	YES		Potential Malfunction	Built Before 1972
010700	378	OLD YORK RD	1951	3.4	ND	ND	0.95	YES		Potential Malfunction	Built Before 1972
0077N0	535	PAUL AVE	1980	2.2	ND	ND	0.59	YES		No Malfunction	
001000	575	PAUL AVE	1980	3.3	ND	ND	0.55	YES		No Malfunction	
0072A0	2	PINE TREE DR	1982	3.0	ND	ND	3.18	YES		No Malfunction	
015600	8	PINE TREE DR	1999	1.5	ND	ND	10.51	YES		No Malfunction	
008500	700	PINETOWN RD	1980	1.4	ND	ND	1.01	YES		No Malfunction	
017200	841	PINETOWN RD	1982	2.8	ND	ND	0.81	NO		Potential Malfunction	Unsuitable Soils
017000	868	PINETOWN RD	1998	1.5	12	1	3.67	YES		Suspected Malfunction	Fecal Coliform Present

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
0064K0	870 PINETOWN RD	1997	1.7	ND	ND	1.93	YES		No Malfunction	
0169A0	915 PINETOWN RD	1991	2.0	ND	ND	16.32	YES		No Malfunction	
0086E0	935 PINETOWN RD	1990	1.3	ND	ND	6.92	YES		No Malfunction	
0071D0	940 PINETOWN RD	1987	0.8	ND	ND	3.33	YES		No Malfunction	
0075B0	974 PINETOWN RD	2000	0.9	ND	ND	10.58	YES		No Malfunction	
0052C0	1001 PINETOWN RD	2001	2.3	ND	ND	20.62	YES		No Malfunction	
005100	1023 PINETOWN RD	1890	5.8	ND	ND	18.24	YES		Potential Malfunction	Built Before 1972, SEO Repair Permit
0050E0	1083 PINETOWN RD	1980	3.3	2	ND	1.11	YES		No Malfunction	
002200	1128 PINETOWN RD	1900	7.9	58	ND	31.53	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
002500	1132 PINETOWN RD	1954	6.5	228	ND	0.36	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
023000	184 ROSE HILL DR	2004	5.0	10	ND	1.48	YES		No Malfunction	
022900	188 ROSE HILL DR	2003	4.1	ND	ND	1.67	YES		No Malfunction	
022400	190 ROSE HILL DR	2002	4.8	ND	ND	2.51	YES		No Malfunction	
022200	191 ROSE HILL DR	1995	3.7	2	ND	1.40	YES		No Malfunction	
022100	194 ROSE HILL DR	2003	5.1	ND	ND	2.17	YES		No Malfunction	
0001D0	824 RUDYTOWN RD	2004	ND	ND	ND	N/A	YES		No Malfunction	
021800	832 RUDYTOWN RD	1930	3.0	23	ND	1.00	YES		Potential Malfunction	Built Before 1972
020300	816 RUDYTOWN RD	1988	1.3	ND	ND	1.66	YES		No Malfunction	
0051D0	888 RUDYTOWN RD	1989	3.3	ND	ND	1.00	YES		No Malfunction	
001900	481 SAN REMO PL	1983	6.3	ND	ND	N/A	NO		Potential Malfunction	Unsuitable Soils
0051F0	484 SAN REMO PL	1989	7.0	7	ND	1.11	NO		Potential Malfunction	Unsuitable Soils
0050G0	485 SAN REMO PL	1994	6.4	108	ND	1.16	NO		Potential Malfunction	Unsuitable Soils
0050K0	671 SAND SPUR DR	1988	5.3	ND	ND	1.01	YES		No Malfunction	
0007P0	1134 SASSAFRAS LN	1987	4.4	ND	ND	6.09	YES		No Malfunction	
0017B0	1136 SASSAFRAS LN	1976	4.1	ND	ND	17.09	YES		No Malfunction	
0212A0	1140 SASSAFRAS LN	1966	3.1	12	ND	0.45	YES		Potential Malfunction	Built Before 1972, SEO Repair Permit
020300	541 SAW MILL RD	1964	2.4	ND	ND	0.54	YES		Potential Malfunction	Built Before 1972
0190A0	573 SAW MILL RD	1963	1.8	ND	ND	0.41	YES		Potential Malfunction	Built Before 1972
003100	791 SCENIC CR	1991	3.8	9	ND	14.14	YES		No Malfunction	
004700	793 SCENIC CR	1975	3.7	ND	ND	0.54	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
004800	794 SCENIC CR	1975	3.2	9	ND	0.49	YES		No Malfunction	
004900	811 SCHOOL HOUSE LN	1988	2.4	ND	ND	0.73	YES		No Malfunction	
002000	812 SCHOOL HOUSE LN	1981	4.7	ND	ND	0.46	YES		No Malfunction	
004200	814 SCHOOL HOUSE LN	1992	5.7	ND	ND	10.00	YES		No Malfunction	
004100	820 SCHOOL HOUSE LN	1993	5.6	ND	ND	10.00	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
002700	839 SCHOOL HOUSE LN	1996	0.9	ND	ND	8.29	YES		No Malfunction	
005600	889 SCHOOL HOUSE LN	1991	5.7	1	ND	0.86	YES		No Malfunction	
000800	904 SCHOOL HOUSE LN	1988	3.1	ND	ND	0.46	YES		No Malfunction	
001000	906 SCHOOL HOUSE LN	1985	3.6	1	ND	10.00	YES		No Malfunction	
020100	740 SEITZ DR	1965	3.0	ND	ND	1.87	YES		Potential Malfunction	Built Before 1972

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
0199A0	851 SEITZ DR	1961	3.8	ND	ND	3.66	YES		Potential Malfunction	Built Before 1972
004200	855 SEITZ DR	1990	4.0	ND	ND	12.93	YES		No Malfunction	
0002Q0	849 SHAFFER DR	1973	2.9	325	ND	0.89	YES		No Malfunction	
0002J0	234 SHAUFFNERTOWN RD	1961	6.2	ND	ND	0.46	YES		Potential Malfunction	Built Before 1972
0002H0	277 SHAUFFNERTOWN RD	1954	6.9	1	ND	0.80	YES		Potential Malfunction	Built Before 1972
001500	857 SIDDONSBURG RD	1998	3.4	4	ND	0.53	YES		No Malfunction	
015000	739 SIDDONSBURG RD	1987	2.3	5	1	0.29	NO		Suspected Malfunction	Fecal Coliform Present
014200	749 SIDDONSBURG RD	1960	2.8	ND	ND	0.19	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
014500	760 SIDDONSBURG RD	1884	1.9	ND	ND	8.01	YES		Potential Malfunction	Built Before 1972
0015Q0	782 SIDDONSBURG RD	1950	0.6	7	ND	1.80	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0015E0	825 SIDDONSBURG RD	1995	2.2	ND	ND	1.23	NO		Potential Malfunction	Unsuitable Soils
0045B0	827 SIDDONSBURG RD	2004	2.0	ND	ND	5.25	YES		No Malfunction	
0045A0	854 SIDDONSBURG RD	1986	3.2	ND	ND	10.00	YES	Active Malfunction	Confirmed Malfunction	Observation of Sampler
004200	875 SIDDONSBURG RD	2001	3.5	ND	ND	3.01	YES		No Malfunction	
0064K0	920 SIDDONSBURG RD	2004	1.6	ND	ND	N/A	YES		No Malfunction	
0043A0	1028 SIDDONSBURG RD	1987	2.8	ND	ND	0.35	YES		No Malfunction	
001100	917 SILVER LAKE RD	2004	1.8	ND	ND	N/A	YES		No Malfunction	
0037A0	816 SILVER LAKE RD	1983	1.4	22	ND	0.36	YES		No Malfunction	
003400	824 SILVER LAKE RD	2004	1.3	ND	ND	1.16	YES		No Malfunction	
0034B0	836 SILVER LAKE RD	1900	3.1	ND	ND	26.50	YES		Potential Malfunction	Built Before 1972
0077H0	903 SILVER LAKE RD	1983	1.2	ND	ND	6.35	YES		No Malfunction	
011300	906 SILVER LAKE RD	1983	1.5	105	1	5.89	YES		Suspected Malfunction	Fecal Coliform Present
0065E0	925 SILVER LAKE RD	1822	2.1	75	2	18.76	YES		Suspected Malfunction	Fecal Coliform Present
031400	964 SILVER LAKE RD	2001	0.5	ND	ND	3.64	YES		No Malfunction	
030600	970 SILVER LAKE RD	1998	1.5	4	ND	3.38	YES		No Malfunction	
0071B0	976 SILVER LAKE RD	1990	1.5	14	ND	4.98	YES		No Malfunction	
010300	1003 SILVER LAKE RD	2004	0.7	ND	ND	3.52	YES		Potential Malfunction	SEO Repair Permit
010700	600 SOUTHRIDGE DR	2000	3.0	ND	ND	4.45	YES		No Malfunction	
0042A0	609 SOUTHRIDGE DR	1900	4.9	ND	ND	77.84	YES		Potential Malfunction	Built Before 1972
004100	628 SOUTHRIDGE DR	1989	4.0	22	ND	2.00	YES		No Malfunction	
010400	636 SOUTHRIDGE DR	2001	7.7	ND	ND	3.15	YES	Wastewater Backing Up Into The Home	Confirmed Malfunction	Homeowner Notification
003600	100 SPANGLERS MILL RD	2000	7.1	ND	ND	1.91	YES		No Malfunction	
0035A0	120 SPANGLERS MILL RD	2001	0.5	ND	ND	4.30	YES		No Malfunction	
003200	124 SPANGLERS MILL RD	1965	4.4	1	ND	0.31	YES		Potential Malfunction	Built Before 1972
0031A0	195 SPANGLERS MILL RD	2004	5.7	ND	ND	1.93	YES		No Malfunction	
002600	196 SPANGLERS MILL RD	1956	5.7	ND	ND	N/A	YES		Potential Malfunction	Built Before 1972
002800	200 SPANGLERS MILL RD	1900	5.0	6	ND	1.01	YES		Potential Malfunction	Built Before 1972
0030D0	239 SPANGLERS MILL RD	1950	4.7	ND	ND	0.42	YES		Potential Malfunction	Built Before 1972
002900	240 SPANGLERS MILL RD	1825	4.4	16	ND	0.57	YES		Potential Malfunction	Built Before 1972, SEO Repair Permit

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
0031D0	245	SPANGLERS MILL RD	1962	4.6	10	1	0.42	YES		Suspected Malfunction	Fecal Coliform Present
0015F0	250	SPANGLERS MILL RD	1972	10.5	2	ND	24.35	YES		Potential Malfunction	Nitrate Over 10
0050A0	257	SPANGLERS MILL RD	1939	16.0	50	ND	N/A	YES		Potential Malfunction	Nitrate Over 10/Built Before 1972
001400	290	SPANGLERS MILL RD	1959	2.6	ND	ND	4.00	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0161A0	238	STETLER RD	2004	2.5	ND	ND	2.74	YES		No Malfunction	
015800	248	STETLER RD	2001	11.5	ND	ND	4.04	YES	Lush Green Grass	Suspected Malfunction	Observation of Sampler
008000	259	STETLER RD	2004	5.2	ND	ND	1.09	YES		No Malfunction	
0008H0	811	STONYBROOK LN	2004	2.4	ND	ND	4.79	YES		Potential Malfunction	SEO Repair Permit
0010Y0	814	STONYBROOK LN	2003	2.6	1	1	1.37	YES		Suspected Malfunction	Fecal Coliform Present
0007F0	817	STONYBROOK LN	2003	2.5	ND	ND	1.21	YES		No Malfunction	
0007E0	821	STONYBROOK LN	2003	6.1	ND	ND	1.15	YES		No Malfunction	
0007D0	829	STONYBROOK LN	2003	2.1	ND	ND	1.15	YES		No Malfunction	
0008F0	830	STONYBROOK LN	2004	1.7	17	2	1.00	YES		Suspected Malfunction	Fecal Coliform Present
010700	833	STONYBROOK LN	1960	1.3	2419	ND	0.34	YES		Potential Malfunction	Built Before 1972
011200	836	STONYBROOK LN	1985	1.6	47	ND	0.69	YES		No Malfunction	
010800	837	STONYBROOK RD	1957	1.2	2	ND	0.34	YES		Potential Malfunction	Built Before 1972
0002L0	101	SUNSET VIEW DR	1959	4.4	ND	ND	0.34	YES	System Overflows	Confirmed Malfunction	Homeowner Notification
000200	110	SUNSET VIEW DR	1974	4.7	ND	ND	0.68	NO		Potential Malfunction	Unsuitable Soils
0002J0	118	SUNSET VIEW DR	1980	5.9	2	ND	0.51	YES		No Malfunction	
0002K0	119	SUNSET VIEW DR	1984	4.7	ND	ND	0.49	YES		No Malfunction	
0002M0	104	TALL OAK DR	1980	4.6	ND	ND	0.66	YES		No Malfunction	
0002Q0	108	TALL OAK DR	1979	3.7	1	ND	1.22	YES		No Malfunction	
0002R0	200	TALL OAK DR	1978	5.5	ND	ND	18.39	YES		No Malfunction	
0001C0	204	TALL OAK DR	2004	3.8	ND	ND	10.63	YES		Potential Malfunction	SEO Repair Permit
0070E0	208	TALL OAK DR	1996	2.8	ND	ND	6.32	YES		No Malfunction	
0071Q0	209	TALL OAK DR	1994	1.5	ND	ND	13.35	YES		No Malfunction	
000600	322	THORLEY RD	1992	1.2	ND	ND	4.68	YES		No Malfunction	
000800	331	THORLEY RD	1998	3.2	19	ND	1.10	YES		No Malfunction	
0070D0	333	THORLEY RD	1994	4.0	ND	ND	1.00	YES		No Malfunction	
001200	339	THORLEY RD	1950	3.8	ND	ND	1.28	YES		Potential Malfunction	Built Before 1972
0172L0	357	THORLEY RD	1976	2.5	ND	ND	1.05	YES		No Malfunction	
0172T0	358	THORLEY RD	1971	4.2	ND	ND	0.38	NO	Active Malfunction	Confirmed Malfunction	Observation of Sampler
0172M0	10	TIMBER LN	1978	3.6	ND	ND	0.37	YES		No Malfunction	
0018A0	12	TIMBER LN	1978	4.0	21	ND	0.79	YES		No Malfunction	
0020C0	24	TIMBER LN	1998	16.2	10	1	1.18	YES		Suspected Malfunction	Fecal Coliform Present and Nitrate Over 10
0008D0	36	TIMBER LN	1972	3.2	ND	ND	2.14	YES		No Malfunction	
0001L0	39	TIMBER LN	2004	4.2	ND	ND	1.56	YES		No Malfunction	
0002G0	345	TIMBER RD	1986	0.6	26	ND	0.46	YES		No Malfunction	

APPENDIX F

FAIRVIEW TOWNSHIP ACT 537 PLAN

SEWAGE DISPOSAL NEEDS ASSESSMENT

I. Surveyed Properties

Parcel ID	Property Address	Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Site Observations	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform					
000400	857 TRAVER DR	1920	4.9	ND	ND	0.45	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
0053G0	104 TURTLE HOLLOW DR	1975	2.8	ND	ND	1.73	YES		No Malfunction	
002500	5 VALLEY RD	1994	10.7	ND	ND	0.45	YES		Potential Malfunction	Nitrate Over 10
0030A0	11 VALLEY RD	1962	4.2	2	ND	0.45	YES		Potential Malfunction	Built Before 1972
0033F0	78 VALLEY RD	1980	4.6	345	ND	1.35	YES		No Malfunction	
0003D0	86 VALLEY RD	1850	4.5	ND	ND	3.05	YES		Potential Malfunction	Built Before 1972
0003M0	88 VALLEY RD	1985	4.6	ND	ND	0.95	YES		No Malfunction	
0001K0	836 WEST ST	1992	1.1	ND	ND	1.78	NO		Potential Malfunction	Unsuitable Soils
0001E0	96 WHEATLAND RD	1992	25.0	ND	ND	1.52	YES		Potential Malfunction	Nitrate Over 10
0074Q0	98 WHEATLAND RD	1991	7.8	1	ND	1.42	YES		No Malfunction	
0074P0	102 WHEATLAND RD	1993	7.8	ND	ND	2.06	YES		No Malfunction	
0074E0	108 WHEATLAND RD	1994	5.6	ND	ND	3.93	YES		No Malfunction	
0074N0	109 WHEATLAND RD	1994	6.3	1	ND	2.25	YES		No Malfunction	
0074F0	111 WHEATLAND RD	1997	7.5	ND	ND	4.06	YES		No Malfunction	
0074G0	112 WHEATLAND RD	1993	7.1	1	ND	4.40	YES		No Malfunction	
0074H0	113 WHEATLAND RD	1994	7.8	23	ND	3.58	YES		Potential Malfunction	SEO Repair Permit
0074J0	116 WHEATLAND RD	2001	2.6	1	ND	6.85	YES		No Malfunction	
0046M0	130 WHEATLAND RD	1995	5.6	18	ND	1.11	YES		No Malfunction	
0046U0	134 WHEATLAND RD	1980	3.2	29	ND	4.77	YES		No Malfunction	
0026J0	800 WHITEFORD RD	1998	3.2	ND	ND	1.58	No		Potential Malfunction	Unsuitable Soils
Number of Parcels in Remaining Basins Surveyed:		**420**								
Number of Parcels Built Before 1972:		**137**								
Number of Parcels with Nitrate >10:		**25**								
Number of Parcels with Nitrate >5:		**106**								
Number of Parcels with Total Coliforms:		**161**								
Number of Parcels with Fecal Coliforms:		**17**								
Average Lot Size:		**3.98**								
Number of Lots < 0.5 Acres:		**73**								

Notes

TOTAL SAMPLES = 557

ND = NOT DETECTABLE

N/A= NOT AVAILABLE

Needs Assessment
Non-Surveyed Properties

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
Southern Basin							
002700	100	APPALOOSA WAY	1.01	1988	YES	No Malfunction	
002800	103	APPALOOSA WAY	1.00	1988	YES	No Malfunction	
0029E0	107	APPALOOSA WAY	1.24	1988	YES	No Malfunction	
0029D0	108	APPALOOSA WAY	1.00	1988	YES	No Malfunction	
0087A0	664	BAMBERGER RD	1.53	1978	YES	No Malfunction	
0029G0	558	BEINHOWER RD	17.00	1865	YES	Potential Malfunction	Built Before 1972
0029A0	593	BEINHOWER RD	1.25	1974	YES	No Malfunction	
0001B0	596	BEINHOWER RD	1.14	2001	YES	No Malfunction	
003200	609	BEINHOWER RD	2.50	1986	YES	No Malfunction	
003300	611	BEINHOWER RD	2.30	1985	YES	No Malfunction	
003400	613	BEINHOWER RD	2.19	1987	YES	No Malfunction	
0030A0	615	BEINHOWER RD	3.75	1986	YES	No Malfunction	
003900	621	BEINHOWER RD	6.67	1993	YES	No Malfunction	
000800	645	BEINHOWER RD	1.42	1981	YES	No Malfunction	
000900	649	BEINHOWER RD	1.50	1987	YES	No Malfunction	
020100	652	BEINHOWER RD	0.68	1963	YES	Potential Malfunction	Built Before 1972
002100	653	BEINHOWER RD	2.85	1956	YES	Potential Malfunction	Built Before 1972
002000	674	BEINHOWER RD	49.79	1900	YES	Potential Malfunction	Built Before 1972
002300	678	BEINHOWER RD	8.70	1865	YES	Potential Malfunction	Built Before 1972
001800	196	BIG SPRING RD	2.65	1967	YES	Potential Malfunction	Built Before 1972
011500	225	BIG SPRING RD	23.87	1978	YES	No Malfunction	
011600	240	BIG SPRING RD	1.40	1960	YES	Potential Malfunction	Built Before 1972
0001F0	242	BIG SPRING RD	1.00	2004	YES	No Malfunction	
0019B0	244	BIG SPRING RD	11.43	2003	NO	Potential Malfunction	Unsuitable Soils
0019D0	246	BIG SPRING RD	2.38	2005	YES	No Malfunction	
0019C0	263	BIG SPRING RD	3.04	2000	YES	No Malfunction	
0020A0	265	BIG SPRING RD	5.75	1976	YES	No Malfunction	
0020C0	269	BIG SPRING RD	4.73	1992	YES	No Malfunction	
0081K0	350	BIG SPRING RD	39.44	1850	YES	Potential Malfunction	Built Before 1972
0081C0	351	BIG SPRING RD	2.00		YES	No Malfunction	
0081F0	357	BIG SPRING RD	19.67	1900	YES	Potential Malfunction	Built Before 1972
001800	375	BIG SPRING RD	4.13	1969	YES	Potential Malfunction	Built Before 1972
002000	387	BIG SPRING RD	3.63	2006	YES	No Malfunction	
002200	389	BIG SPRING RD	3.19	1941	YES	Potential Malfunction	Built Before 1972
002300	398	BIG SPRING RD	1.00	1970	YES	Potential Malfunction	Built Before 1972

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
002400	415	BIG SPRING RD	5.21	1980	YES	No Malfunction	
002500	416	BIG SPRING RD	0.56	1976	YES	No Malfunction	
003200	420	BIG SPRING RD	0.52	1972	YES	No Malfunction	
003300	429	BIG SPRING RD	1.77	1900	YES	Potential Malfunction	Built Before 1972
002700	432	BIG SPRING RD	1.29	1986	YES	No Malfunction	
002800	435	BIG SPRING RD	3.40	1983	YES	Potential Malfunction	SEO Repair Permit
003500	439	BIG SPRING RD	0.34	1978	YES	No Malfunction	
003400	446	BIG SPRING RD	1.64	1981	YES	No Malfunction	
006300	464	BIG SPRING RD	4.60	1989	YES	No Malfunction	
000200	472	BIG SPRING RD	0.59	1980	YES	Potential Malfunction	SEO Repair Permit
002800	476	BIG SPRING RD	1.20	1974	YES	No Malfunction	
002100	484	BIG SPRING RD	0.54	1977	YES	No Malfunction	
002000	490	BIG SPRING RD	0.64	1977	YES	No Malfunction	
000500	493	BIG SPRING RD	0.88	1974	YES	No Malfunction	
001900	497	BIG SPRING RD	0.44	1970	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
000600	261	BIG SPRING RD	3.86	1964	YES	Potential Malfunction	Built Before 1972
001800	285	BIG SPRING RD	6.20	1958	YES	Potential Malfunction	Built Before 1972
0083A0	463	CAPRI CR	0.42	1978	NO	Potential Malfunction	Unsuitable Soils
0042B0	729	CAPRI CR	0.47	1978	NO	Potential Malfunction	Unsuitable Soils
0042A0	731	CAPRI CR	0.44	1986	NO	Potential Malfunction	Unsuitable Soils
0044A0	732	CAPRI CR	0.47	1976	YES	No Malfunction	
004200	733	CAPRI CR	0.46	1984	NO	Potential Malfunction	Unsuitable Soils
004100	734	CAPRI CR	0.48	1976	NO	Potential Malfunction	Unsuitable Soils
002400	735	CAPRI CR	0.46	1978	NO	Potential Malfunction	Unsuitable Soils
002700	739	CAPRI CR	0.50	1980	YES	No Malfunction	
002800	740	CAPRI CR	0.49	1978	NO	Potential Malfunction	Unsuitable Soils
002900	741	CAPRI CR	0.48	1975	YES	No Malfunction	
002000	742	CAPRI CR	1.26	1995	NO	Potential Malfunction	Unsuitable Soils
0020E0	619	CEEJAY DR	1.08	1992	YES	No Malfunction	
0020H0	673	CHURCHEY LN	2.90	1827	YES	Potential Malfunction	Built Before 1972
0020D0	661	CHURCHEY LN	0.72	1971	YES	Potential Malfunction	Built Before 1972
0020B0	663	CHURCHEY LN	0.70	1977	YES	No Malfunction	
002000	667	CHURCHEY LN	0.69	1970	YES	Potential Malfunction	Built Before 1972
0020C0	669	CHURCHEY LN	1.75	1980	YES	No Malfunction	
0020J0	671	CHURCHEY LN	1.30	1960	YES	Potential Malfunction	Built Before 1972
0019B0	680	CHURCHEY LN	5.02	2005	YES	No Malfunction	

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0019C0	683	CHURCHEY LN	1.26	1974	YES	No Malfunction	
0019D0	685	CHURCHEY LN	1.40	1971	YES	Potential Malfunction	Built Before 1972
0018L0	687	CHURCHEY LN	1.32	1970	YES	Potential Malfunction	Built Before 1972
0018J0	689	CHURCHEY LN	1.37	1997	YES	No Malfunction	
0018D0	691	CHURCHEY LN	4.25	1979	YES	No Malfunction	
0018Q0	693	CHURCHEY LN	0.84	1973	YES	No Malfunction	
0081A0	101	CLYDESDALE CT	1.01	1989	YES	No Malfunction	
0081G0	102	CLYDESDALE CT	1.05	1988	YES	No Malfunction	
0080A0	104	CLYDESDALE CT	1.05	1988	YES	No Malfunction	
007900	105	CLYDESDALE CT	1.02	1989	YES	No Malfunction	
0079A0	108	CLYDESDALE CT	1.07	1989	YES	No Malfunction	
0074D0	650	CORN HILL RD	1.64	1900	YES	Potential Malfunction	Built Before 1972
0077E0	673	CORNHILL RD	2.54	1972	YES	No Malfunction	
0087F0	675	CORNHILL RD	1.00	1900	YES	Potential Malfunction	Built Before 1972
0074C0	690	CORNHILL RD	0.91	2004	YES	No Malfunction	
0077F0	692	CORNHILL RD	1.06	2003	YES	No Malfunction	
002200	634	DANNER LN	1.54	1980	YES	No Malfunction	
002300	637	DANNER LN	1.06	2001	YES	No Malfunction	
0087M0	644	DANNER LN	0.41	1963	YES	Potential Malfunction	Built Before 1972
0096L0	648	DANNER LN	0.30	1958	YES	Potential Malfunction	Built Before 1972
0096J0	652	DANNER LN	5.60	1980	YES	No Malfunction	
010500	660	DANNER LN	53.60	1900	YES	Potential Malfunction	Built Before 1972
0078J0	80	FETROW LN	0.63	2004	YES	No Malfunction	
0075J0	79	FETROW LN	1.00	1972	YES	No Malfunction	
0077J0	155	FISHER RD	1.98	1961	YES	Potential Malfunction	Built Before 1972
007600	156	FISHER RD	1.51	1993	YES	No Malfunction	
007400	185	FISHER RD	2.15		YES	No Malfunction	
0074A0	193	FISHER RD	0.40	1957	YES	Potential Malfunction	Built Before 1972
0067B0	201	FISHER RD	1.10	1987	YES	No Malfunction	
0067A0	255	FISHER RD	9.09	1860	YES	Potential Malfunction	Built Before 1972
0067D0	275	FISHER RD	3.35	1995	YES	No Malfunction	
0067C0	281	FISHER RD	2.08	2003	YES	No Malfunction	
002000	644	FISHING CREEK RD	0.50	1955	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002100	602	FISHING CREEK RD	2.63	1985	YES	No Malfunction	
002200	606	FISHING CREEK RD	0.60	1950	YES	Potential Malfunction	Built Before 1972
0044A0	608	FISHING CREEK RD	0.67	1974	YES	No Malfunction	

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
000700	612	FISHING CREEK RD	0.40	1950	YES	Potential Malfunction	Built Before 1972
007800	614	FISHING CREEK RD	0.40	1954	YES	Potential Malfunction	Built Before 1972
009000	618	FISHING CREEK RD	0.40	1960	YES	Potential Malfunction	Built Before 1972
010100	620	FISHING CREEK RD	0.40	1969	YES	Potential Malfunction	Built Before 1972
0076F0	622	FISHING CREEK RD	3.71	1962	YES	Potential Malfunction	Built Before 1972
0089G0	646	FISHING CREEK RD	0.37	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0089F0	648	FISHING CREEK RD	0.47	1950	YES	Potential Malfunction	Built Before 1972
0116A0	650	FISHING CREEK RD	0.18		YES	No Malfunction	
0115E0	652	FISHING CREEK RD	2.65	1786	YES	Potential Malfunction	Built Before 1972
0019E0	652	FISHING CREEK RD	12.29	1900	YES	Potential Malfunction	Built Before 1972
011300	656	FISHING CREEK RD	1.02	1970	YES	Potential Malfunction	Built Before 1972
0112C0	658	FISHING CREEK RD	1.18	1950	YES	Potential Malfunction	Built Before 1972
0112A0	660	FISHING CREEK RD	0.96	1954	YES	Potential Malfunction	Built Before 1972
0021A0	670	FISHING CREEK RD	1.02	1997	YES	No Malfunction	
0050B0	684	FISHING CREEK RD	10.19	1988	YES	No Malfunction	
006000	686	FISHING CREEK RD	0.62	1946	YES	Potential Malfunction	Built Before 1972
005000	688	FISHING CREEK RD	2.01	1973	YES	No Malfunction	
005900	690	FISHING CREEK RD	1.29	1978	YES	No Malfunction	
005100	691	FISHING CREEK RD	1.10	1964	YES	Potential Malfunction	Built Before 1972
005800	694	FISHING CREEK RD	1.01	1970	YES	Potential Malfunction	Built Before 1972
005200	695	FISHING CREEK RD	1.17	2004	YES	No Malfunction	
005300	698	FISHING CREEK RD	6.00	1970	YES	Potential Malfunction	Built Before 1972
006300	704	FISHING CREEK RD	1.06	1970	YES	Potential Malfunction	Built Before 1972
005400	708	FISHING CREEK RD	1.03	1972	YES	No Malfunction	
005500	710	FISHING CREEK RD	1.03	1968	YES	Potential Malfunction	Built Before 1972
006700	718	FISHING CREEK RD	1.06	1977	YES	No Malfunction	
006800	719	FISHING CREEK RD	1.50	1986	YES	No Malfunction	
007000	723	FISHING CREEK RD	0.73	1950	YES	Potential Malfunction	Built Before 1972
009000	724	FISHING CREEK RD	2.00	1974	YES	No Malfunction	
0070A0	726	FISHING CREEK RD	4.31	1961	YES	Potential Malfunction	Built Before 1972
009100	727	FISHING CREEK RD	1.05	1979	YES	No Malfunction	
007100	729	FISHING CREEK RD	8.35	1939	YES	Potential Malfunction	Built Before 1972
009400	730	FISHING CREEK RD	2.60	1936	YES	Potential Malfunction	Built Before 1972
007200	733	FISHING CREEK RD	1.94	1945	YES	Potential Malfunction	Built Before 1972
007300	740	FISHING CREEK RD	2.52	1974	YES	No Malfunction	
007600	762	FISHING CREEK RD	1.24		YES	No Malfunction	

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
009800	763	FISHING CREEK RD	1.76	1987	YES	No Malfunction	
007900	764	FISHING CREEK RD	1.61	1968	YES	Potential Malfunction	Built Before 1972
009800	768	FISHING CREEK RD	4.00	1968	YES	Potential Malfunction	Built Before 1972
007700	770	FISHING CREEK RD	1.00	1976	YES	No Malfunction	
001500	772	FISHING CREEK RD	1.00	1968	YES	Potential Malfunction	Built Before 1972
001800	776	FISHING CREEK RD	1.16	1960	YES	Potential Malfunction	Built Before 1972
001400	779	FISHING CREEK RD	2.12	1950	YES	Potential Malfunction	Built Before 1972
001900	780	FISHING CREEK RD	1.09	1971	YES	Potential Malfunction	Built Before 1972
001300	783	FISHING CREEK RD	0.55	1950	YES	Potential Malfunction	Built Before 1972
001200	789	FISHING CREEK RD	0.51	1950	YES	Potential Malfunction	Built Before 1972
002400	808	FISHING CREEK RD	1.20	1990	NO	Potential Malfunction	Unsuitable Soils
000900	810	FISHING CREEK RD	5.77	2001	YES	No Malfunction	
000800	812	FISHING CREEK RD	0.90	1872	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002500	818	FISHING CREEK RD	1.68	2000	NO	Potential Malfunction	Unsuitable Soils
000600	819	FISHING CREEK RD	1.00	1953	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000500	822	FISHING CREEK RD	43.00	1999	YES	No Malfunction	
000400	823	FISHING CREEK RD	15.13	1984	YES	No Malfunction	
002600	824	FISHING CREEK RD	0.71	1995	NO	Potential Malfunction	Unsuitable Soils
0008C0	826	FISHING CREEK RD	1.52	1977	YES	No Malfunction	
002700	828	FISHING CREEK RD	0.85	1950	YES	Potential Malfunction	Built Before 1972
000100	829	FISHING CREEK RD	0.80	1950	YES	Potential Malfunction	Built Before 1972
0062A0	830	FISHING CREEK RD	2.36	1950	YES	Potential Malfunction	Built Before 1972
0060B0	831	FISHING CREEK RD	2.00	1952	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
006000	832	FISHING CREEK RD	0.57	1980	YES	No Malfunction	
0062C0	834	FISHING CREEK RD	0.57	1980	YES	No Malfunction	
006200	835	FISHING CREEK RD	3.13	1989	YES	Potential Malfunction	SEO Repair Permit
0062B0	843	FISHING CREEK RD	0.24	1945	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0062E0	845	FISHING CREEK RD	0.80	1958	YES	Potential Malfunction	Built Before 1972
008500	648	FISHING CREEK RD	0.72	1970	YES	Potential Malfunction	Built Before 1972
0086Y0	809	FISHING CREEK RD	0.59	1982	NO	Potential Malfunction	Unsuitable Soils
0052K0	571	GAP RD	1.00	1787	YES	Potential Malfunction	Built Before 1972
002700	572	GAP RD	0.62	1984	YES	No Malfunction	
002900	573	GAP RD	0.52	1985	YES	No Malfunction	
003000	574	GAP RD	1.00	1985	YES	No Malfunction	
0042A0	576	GAP RD	1.00	1985	YES	No Malfunction	
004100	581	GAP RD	0.51	1985	YES	No Malfunction	

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0038A0	603	GAP RD	0.51	1969	YES	Potential Malfunction	Built Before 1972
0029B0	607	GAP RD	0.56	1985	YES	No Malfunction	
003000	609	GAP RD	0.53	1985	YES	No Malfunction	
0029C0	612	GAP RD	0.57	1984	YES	No Malfunction	
002900	614	GAP RD	0.81	1985	YES	No Malfunction	
002800	615	GAP RD	11.87	1978	YES	No Malfunction	
0002A0	618	GAP RD	0.50	1985	YES	No Malfunction	
000200	619	GAP RD	1.40	1986	YES	No Malfunction	
0027D0	620	GAP RD	0.50	1985	YES	No Malfunction	
0027A0	621	GAP RD	1.00	1986	YES	No Malfunction	
002600	622	GAP RD	8.43	1987	YES	Potential Malfunction	SEO Repair Permit
0027C0	635	GAP RD	7.97	1996	YES	No Malfunction	
000300	645	GAP RD	8.33	1997	YES	No Malfunction	
0099B0	596	GRANDVIEW CIR	0.62	1956	YES	Potential Malfunction	Built Before 1972
0099D0	584	GRANDVIEW DR	1.26		YES	No Malfunction	
016600	398	GURTNER RD	1.72	1987	YES	No Malfunction	
0166A0	401	GURTNER RD	5.56	1983	YES	No Malfunction	
0166B0	411	GURTNER RD	5.56	1860	YES	Potential Malfunction	Built Before 1972
0066A0	99	MOUNTAIN VIEW DR	4.50	1998	YES	No Malfunction	
0055A0	100	MOUNTAIN VIEW DR	1.38	2003	YES	No Malfunction	
006200	104	MOUNTAIN VIEW DR	1.87	2000	YES	No Malfunction	
0057A0	111	MOUNTAIN VIEW DR	3.21	2001	YES	No Malfunction	
0060F0	112	MOUNTAIN VIEW DR	172.00	1999	YES	No Malfunction	
0062E0	115	MOUNTAIN VIEW DR	2.63	1994	YES	No Malfunction	
006000	116	MOUNTAIN VIEW DR	1.71	1996	YES	No Malfunction	
0060H0	119	MOUNTAIN VIEW DR	3.54	1994	YES	No Malfunction	
0060E0	123	MOUNTAIN VIEW DR	2.51	1996	YES	No Malfunction	
0060D0	124	MOUNTAIN VIEW DR	14.94	1994	NO	Potential Malfunction	Unsuitable Soils
0060B0	127	MOUNTAIN VIEW DR	1.24	2000	YES	No Malfunction	
0060A0	134	MOUNTAIN VIEW DR	1.64	1998	NO	Potential Malfunction	Unsuitable Soils
011300	389	OLD YORK RD	0.78	1947	YES	Potential Malfunction	Built Before 1972
010600	396	OLD YORK RD	0.51	1856	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
011100	486	OLD YORK RD	0.91	1962	YES	Potential Malfunction	Built Before 1972
011000	488	OLD YORK RD	1.00	1930	YES	Potential Malfunction	Built Before 1972
010900	488	OLD YORK RD	1.84	1962	YES	Potential Malfunction	Built Before 1972
010900	494	OLD YORK RD	1.84	1962	YES	Potential Malfunction	Built Before 1972

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010800	529	OLD YORK RD	1.30	1956	YES	Potential Malfunction	Built Before 1972
0077W0	535	OLD YORK RD	0.51	1952	YES	Potential Malfunction	Built Before 1972
0051H0	590	OLD YORK RD	2.59		YES	No Malfunction	
020900	658	OLD YORK RD	10.00	1974	YES	No Malfunction	
0051E0	662	OLD YORK RD	0.54	1984	YES	No Malfunction	
0077P0	505	PARK RD	1.05	1979	YES	Potential Malfunction	SEO Repair Permit
0077U0	507	PARK RD	0.65	1973	YES	Potential Malfunction	SEO Repair Permit
0077Q0	509	PARK RD	0.48	1978	NO	Potential Malfunction	Unsuitable Soils
0077T0	524	PARK RD	160.85	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0077R0	940	PARK RD	79.40	1999	YES	No Malfunction	
002100	377	PLEASANT VIEW RD	1.08	1980	YES	No Malfunction	
000500	625	PLEASANT VIEW RD	6.73	1996	YES	No Malfunction	
000400	317	PLEASANT VIEW RD	1.04	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002300	326	PLEASANT VIEW RD	2.12		NO	Potential Malfunction	Unsuitable Soils
000300	335	PLEASANT VIEW RD	1.40	1985	NO	Potential Malfunction	Unsuitable Soils
002400	340	PLEASANT VIEW RD	2.50		YES	No Malfunction	
000200	341	PLEASANT VIEW RD	0.24	1925	YES	Potential Malfunction	Built Before 1972
007500	345	PLEASANT VIEW RD	1.18	1967	YES	Potential Malfunction	Built Before 1972
000100	349	PLEASANT VIEW RD	45.48	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002600	355	PLEASANT VIEW RD	13.50	1900	YES	Potential Malfunction	Built Before 1972
0029A0	357	PLEASANT VIEW RD	0.43	1980	YES	No Malfunction	
020500	359	PLEASANT VIEW RD	0.43	1985	YES	No Malfunction	
0220B0	360	PLEASANT VIEW RD	9.05	1989	YES	No Malfunction	
0197A0	361	PLEASANT VIEW RD	1.14	1935	YES	Potential Malfunction	Built Before 1972
0197B0	362	PLEASANT VIEW RD	1.31	1992	YES	No Malfunction	
002000	364	PLEASANT VIEW RD	0.85	1950	YES	Potential Malfunction	Built Before 1972
0236A0	366	PLEASANT VIEW RD	0.87	1985	YES	No Malfunction	
0214C0	374	PLEASANT VIEW RD	4.50	1930	YES	Potential Malfunction	Built Before 1972
0031J0	375	PLEASANT VIEW RD	1.33	1980	YES	No Malfunction	
007800	501	PLEASANT VIEW RD	0.25		YES	No Malfunction	
008000	518	PLEASANT VIEW RD	1.40	1958	YES	Potential Malfunction	Built Before 1972
0097A0	539	PLEASANT VIEW RD	1.79	1900	YES	Potential Malfunction	Built Before 1972
008100	559	PLEASANT VIEW RD	5.28	1960	YES	Potential Malfunction	Built Before 1972
008200	565	PLEASANT VIEW RD	1.17	1986	YES	No Malfunction	
008400	567	PLEASANT VIEW RD	1.19	1983	YES	No Malfunction	
008500	572	PLEASANT VIEW RD	0.94	1984	YES	No Malfunction	

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008600	578	PLEASANT VIEW RD	0.96	1985	YES	No Malfunction	
0097H0	582	PLEASANT VIEW RD	0.46	1984	YES	No Malfunction	
008800	584	PLEASANT VIEW RD	0.46	1984	YES	No Malfunction	
008900	586	PLEASANT VIEW RD	0.48	1984	YES	No Malfunction	
0097D0	588	PLEASANT VIEW RD	0.49	1985	YES	No Malfunction	
009000	590	PLEASANT VIEW RD	0.48	1985	YES	No Malfunction	
0097B0	595	PLEASANT VIEW RD	1.45	1968	YES	Potential Malfunction	Built Before 1972
0091C0	597	PLEASANT VIEW RD	0.52	1969	YES	Potential Malfunction	Built Before 1972
0097C0	611	PLEASANT VIEW RD	7.00	1997	YES	No Malfunction	
0090A0	615	PLEASANT VIEW RD	5.83	1992	YES	No Malfunction	
0097E0	623	PLEASANT VIEW RD	0.44	1984	NO	Potential Malfunction	Unsuitable Soils
0097I0	625	PLEASANT VIEW RD	0.69	1945	YES	Potential Malfunction	Built Before 1972
0097K0	627	PLEASANT VIEW RD	1.00	1890	YES	Potential Malfunction	Built Before 1972
009400	635	PLEASANT VIEW RD	3.08	1980	YES	No Malfunction	
009500	641	PLEASANT VIEW RD	2.81	1870	YES	Potential Malfunction	Built Before 1972
0096B0	643	PLEASANT VIEW RD	1.26	1985	YES	No Malfunction	
0096A0	647	PLEASANT VIEW RD	0.56	1986	YES	No Malfunction	
024400	654	PLEASANT VIEW RD	0.20	1950	YES	Potential Malfunction	Built Before 1972
0239C0	665	PLEASANT VIEW RD	1.08	1993	YES	No Malfunction	
024300	666	PLEASANT VIEW RD	1.91	1954	YES	Potential Malfunction	Built Before 1972
0239B0	679	PLEASANT VIEW RD	7.50	1996	YES	No Malfunction	
0243B0	681	PLEASANT VIEW RD	0.52	1986	YES	No Malfunction	
024200	692	PLEASANT VIEW RD	4.15	1957	YES	Potential Malfunction	Built Before 1972
0242A0	695	PLEASANT VIEW RD	0.52	1945	YES	Potential Malfunction	Built Before 1972
024100	697	PLEASANT VIEW RD	8.33	2001	YES	No Malfunction	
024000	704	PLEASANT VIEW RD	3.57	2004	YES	No Malfunction	
0235A0	706	PLEASANT VIEW RD	0.79	1960	YES	Potential Malfunction	Built Before 1972
018600	719	PLEASANT VIEW RD	48.61	1829	YES	Potential Malfunction	Built Before 1972
0239H0	457	PLEASANT VIEW RD	2.30	1958	YES	Potential Malfunction	Built Before 1972
023800	567	PLEASANT VIEW RD	1.00		YES	No Malfunction	
0237L0	708	PLEASANT VIEW RD	0.92	1965	YES	Potential Malfunction	Built Before 1972
0237T0	637	PLEASENT VIEW RD	4.39	1975	YES	No Malfunction	
0237A0	649	PLEASENT VIEW RD	0.52	1986	YES	No Malfunction	
0237B0	683	PLEASENT VIEW RD	0.52	1986	YES	No Malfunction	
0237C0	687	PLEASENT VIEW RD	1.04	1986	YES	No Malfunction	
0052C0	650	RED FOX CT	1.01	1994	NO	Potential Malfunction	Unsuitable Soils

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0001C0	651	RED FOX CT	1.02	1994	YES	No Malfunction	
006100	652	RED FOX CT	1.01	1994	NO	Potential Malfunction	Unsuitable Soils, SEO Repair Permit
0060C0	653	RED FOX CT	1.01	1992	YES	No Malfunction	
0060A0	654	RED FOX CT	1.04	1997	NO	Potential Malfunction	Unsuitable Soils
001900	655	RED FOX CT	1.01	1992	YES	No Malfunction	
001600	657	RED FOX CT	1.06	1994	YES	No Malfunction	
001200	659	RED FOX CT	1.02	1992	YES	No Malfunction	
000600	555	RIDGE RD	3.39	1980	NO	Potential Malfunction	Unsuitable Soils
0177C0	560	RIDGE RD	1.05		YES	No Malfunction	
000300	586	RIDGE RD	1.01		NO	Potential Malfunction	Unsuitable Soils
0177B0	478	RIDGE RD	1.01	1984	NO	Potential Malfunction	Unsuitable Soils
000200	568	RIDGE RD	0.32	1986	YES	No Malfunction	
0180A0	568	RIDGE RD	1.00	1990	YES	No Malfunction	
000100	677	RIDGE RD	1.93	1986	YES	No Malfunction	
0180G0	118	RIDGE RD	0.37	1956	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0180B0	464	RIDGE RD	3.00	1980	NO	Potential Malfunction	Unsuitable Soils
0180H0	465	RIDGE RD	0.98	1976	YES	No Malfunction	
0180D0	467	RIDGE RD	0.51	1976	YES	Potential Malfunction	SEO Repair Permit
0180E0	469	RIDGE RD	0.47	1976	YES	Potential Malfunction	SEO Repair Permit
0180R0	470	RIDGE RD	1.00		NO	Potential Malfunction	Unsuitable Soils
0180Q0	475	RIDGE RD	0.47		NO	Potential Malfunction	Unsuitable Soils
0180P0	476	RIDGE RD	1.01	1984	NO	Potential Malfunction	Unsuitable Soils
0180N0	479	RIDGE RD	2.49	2002	YES	No Malfunction	
0180L0	483	RIDGE RD	0.50	1957	YES	Potential Malfunction	Built Before 1972
018000	485	RIDGE RD	0.50	2002	YES	No Malfunction	
0180F0	489	RIDGE RD	1.74	1978	YES	No Malfunction	
0180M0	495	RIDGE RD	2.99	1900	YES	Potential Malfunction	Built Before 1972
0064D0	504	RIDGE RD	3.60	1956	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0064G0	508	RIDGE RD	3.44	2000	NO	Potential Malfunction	Unsuitable Soils
000100	521	RIDGE RD	96.77	1800	YES	Potential Malfunction	Built Before 1972
001400	536	RIDGE RD	38.20	1980	YES	No Malfunction	
000300	556	RIDGE RD	7.85	1980	NO	Potential Malfunction	Unsuitable Soils
001600	559	RIDGE RD	1.28	1980	NO	Potential Malfunction	Unsuitable Soils
001700	560	RIDGE RD	2.48	2003	NO	Potential Malfunction	Unsuitable Soils
000500	564	RIDGE RD	0.71	1950	YES	Potential Malfunction	Built Before 1972
001800	566	RIDGE RD	1.60	2001	NO	Potential Malfunction	Unsuitable Soils

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000600	567	RIDGE RD	13.75	1988	YES	No Malfunction	
001900	568	RIDGE RD	4.17	1974	YES	No Malfunction	
000800	570	RIDGE RD	0.67	1962	YES	Potential Malfunction	Built Before 1972
001000	571	RIDGE RD	1.16	1972	YES	No Malfunction	
001100	575	RIDGE RD	0.68	1961	YES	Potential Malfunction	Built Before 1972
001200	579	RIDGE RD	0.97	1975	NO	Potential Malfunction	Unsuitable Soils
001300	580	RIDGE RD	0.46	1971	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000200	581	RIDGE RD	0.52	1970	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002900	582	RIDGE RD	1.00	2000	NO	Potential Malfunction	Unsuitable Soils
0030B0	585	RIDGE RD	0.77	1957	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
003000	589	RIDGE RD	0.45	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0030A0	591	RIDGE RD	2.30	1970	YES	Potential Malfunction	Built Before 1972
0029A0	593	RIDGE RD	2.00	1955	YES	Potential Malfunction	Built Before 1972
0025Q0	600	RIDGE RD	1.00	1997	YES	No Malfunction	
0028A0	601	RIDGE RD	0.60		YES	No Malfunction	
0025S0	611	RIDGE RD	0.80	1970	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0025T0	613	RIDGE RD	2.30	1952	YES	Potential Malfunction	Built Before 1972
002700	615	RIDGE RD	2.20	1935	YES	Potential Malfunction	Built Before 1972
002600	621	RIDGE RD	1.00	1935	YES	Potential Malfunction	Built Before 1972
0026E0	623	RIDGE RD	1.59	1976	YES	No Malfunction	
0026D0	627	RIDGE RD	1.25	1930	YES	Potential Malfunction	Built Before 1972
0025F0	645	RIDGE RD	1.00	2002	YES	No Malfunction	
007900	646	RIDGE RD	1.95	1975	YES	No Malfunction	
008000	649	RIDGE RD	1.22	1997	YES	No Malfunction	
0081A0	653	RIDGE RD	2.36	1980	YES	No Malfunction	
007800	654	RIDGE RD	0.68	1971	YES	Potential Malfunction	Built Before 1972
008100	655	RIDGE RD	7.09	1970	YES	Potential Malfunction	Built Before 1972
007700	658	RIDGE RD	0.98	1998	YES	No Malfunction	
008200	667	RIDGE RD	1.00	1987	NO	Potential Malfunction	Unsuitable Soils
0062B0	669	RIDGE RD	12.32	1991	YES	No Malfunction	
008300	671	RIDGE RD	1.97	1922	YES	Potential Malfunction	Built Before 1972
006200	690	RIDGE RD	16.38	2004	YES	No Malfunction	
0083A0	691	RIDGE RD	2.67	1986	YES	No Malfunction	
0083D0	694	RIDGE RD	2.67	2001	YES	No Malfunction	
006100	696	RIDGE RD	3.78	2001	YES	No Malfunction	
0083B0	697	RIDGE RD	2.58	1989	YES	No Malfunction	

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004900	701	RIDGE RD	3.38	1987	YES	No Malfunction	
0050A0	703	RIDGE RD	3.65	1987	YES	No Malfunction	
004800	704	RIDGE RD	3.64	1977	YES	No Malfunction	
002200	712	RIDGE RD	3.65	1980	YES	No Malfunction	
0044B0	715	RIDGE RD	3.66	1988	YES	No Malfunction	
004300	718	RIDGE RD	23.00	2004	YES	No Malfunction	
0110A0	720	RIDGE RD	8.79	1998	YES	Potential Malfunction	SEO Repair Permit
0108A0	723	RIDGE RD	4.02	1986	YES	No Malfunction	
010900	731	RIDGE RD	1.80	1975	YES	No Malfunction	
011000	737	RIDGE RD	1.02	1975	YES	No Malfunction	
010800	740	RIDGE RD	8.88	2004	YES	No Malfunction	
0172C0	741	RIDGE RD	1.00	1975	YES	No Malfunction	
0172F0	745	RIDGE RD	1.00	1980	YES	No Malfunction	
0171E0	760	RIDGE RD	1.02	1980	YES	No Malfunction	
0171D0	766	RIDGE RD	1.70	1981	YES	No Malfunction	
0171C0	775	RIDGE RD	0.58	1978	YES	No Malfunction	
0172J0	785	RIDGE RD	0.90	1975	YES	No Malfunction	
0171B0	791	RIDGE RD	0.45	1986	YES	No Malfunction	
0171A0	795	RIDGE RD	0.53	1970	YES	Potential Malfunction	Built Before 1972
0172B0	799	RIDGE RD	0.91	1968	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0172A0	803	RIDGE RD	0.76	1968	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0177R0	807	RIDGE RD	0.65	1978	YES	No Malfunction	
0172K0	811	RIDGE RD	1.12	1970	YES	Potential Malfunction	Built Before 1972
0051C0	673	SAND SPUR DR	1.02	1988	YES	No Malfunction	
0050D0	677	SAND SPUR DR	1.00	1989	YES	No Malfunction	
0050J0	681	SAND SPUR DR	1.00	1988	YES	No Malfunction	
0050M0	682	SAND SPUR DR	1.02	1989	YES	No Malfunction	
0050P0	685	SAND SPUR DR	1.00	1988	YES	No Malfunction	
0050E0	686	SAND SPUR DR	1.01	1989	YES	No Malfunction	
0053M0	687	SAND SPUR DR	0.81	1987	YES	No Malfunction	
0053P0	688	SAND SPUR DR	0.46	1987	YES	No Malfunction	
0053Q0	689	SAND SPUR DR	0.55	1987	YES	No Malfunction	
0045C0	692	SAND SPUR DR	0.46	1986	YES	No Malfunction	
0002V0	693	SAND SPUR DR	0.60	1986	YES	Potential Malfunction	SEO Repair Permit
0002S0	694	SAND SPUR DR	0.46	1986	YES	No Malfunction	
0001Q0	698	SAND SPUR DR	0.50	1986	YES	No Malfunction	

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000700	430	SHULER RD	15.00	1965	YES	Potential Malfunction	Built Before 1972
0002K0	432	SHULER RD	0.58	1940	YES	Potential Malfunction	Built Before 1972
0002L0	439	SHULER RD	0.46	1952	YES	Potential Malfunction	Built Before 1972
0002F0	440	SHULER RD	0.78	1967	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0002M0	454	SHULER RD	0.46	1957	YES	Potential Malfunction	Built Before 1972
003600	458	SHULER RD	1.24	1812	YES	Potential Malfunction	Built Before 1972
0002N0	459	SHULER RD	0.40	1954	YES	Potential Malfunction	Built Before 1972
000600	461	SHULER RD	0.30	1997	YES	No Malfunction	
0002P0	462	SHULER RD	0.61	1957	YES	Potential Malfunction	Built Before 1972
0015C0	376	STEIGERWALT HOLLOW RD	3.14	1979	YES	No Malfunction	
0015A0	382	STEIGERWALT HOLLOW RD	3.14	1980	YES	No Malfunction	
0010B0	387	STEIGERWALT HOLLOW RD	5.21	1986	YES	No Malfunction	
001000	399	STEIGERWALT HOLLOW RD	4.60	1961	YES	Potential Malfunction	Built Before 1972
0003E0	401	STEIGERWALT HOLLOW RD	2.61	1969	YES	Potential Malfunction	Built Before 1972
0003B0	402	STEIGERWALT HOLLOW RD	1.00	1975	YES	No Malfunction	
020100	374	STEIGERWALT HOLLOW RD	4.26	1983	YES	No Malfunction	
015900	305	STONE ROW LN	2.35	2002	YES	No Malfunction	
016000	307	STONE ROW LN	7.96	2004	YES	No Malfunction	
006700	308	STONE ROW LN	3.84	2002	YES	No Malfunction	
003200	217	VALLEY RD	6.80	1958	YES	Potential Malfunction	Built Before 1972
0033B0	255	VALLEY RD	1.02	1994	YES	No Malfunction	
0033A0	261	VALLEY RD	9.71	1989	YES	No Malfunction	
0033E0	268	VALLEY RD	4.26	2005	YES	No Malfunction	
003300	269	VALLEY RD	0.88	1982	YES	No Malfunction	
0034C0	276	VALLEY RD	1.39	1988	YES	No Malfunction	
0034B0	280	VALLEY RD	1.89	1980	YES	No Malfunction	
0011A0	281	VALLEY RD	8.00	1991	YES	No Malfunction	
0003Z0	293	VALLEY RD	3.08	1976	YES	No Malfunction	
0011B0	308	VALLEY RD	0.46	1969	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0003V0	330	VALLEY RD	0.34	1977	NO	Potential Malfunction	Unsuitable Soils
001100	357	VALLEY RD	2.90	1994	YES	No Malfunction	
0003K0	359	VALLEY RD	10.05	1854	YES	Potential Malfunction	Built Before 1972
0003A0	383	VALLEY RD	2.99	1850	YES	Potential Malfunction	Built Before 1972
0003W0	384	VALLEY RD	0.91	1955	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0003C0	391	VALLEY RD	0.57	1880	YES	Potential Malfunction	Built Before 1972
0003F0	394	VALLEY RD	0.93	1988	YES	No Malfunction	

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0003H0	402	VALLEY RD	18.19	1960	YES	Potential Malfunction	Built Before 1972
0003U0	415	VALLEY RD	0.78	1950	YES	Potential Malfunction	Built Before 1972
0003R0	426	VALLEY RD	0.92		YES	No Malfunction	
0003J0	428	VALLEY RD	2.06	1952	YES	Potential Malfunction	Built Before 1972
0003G0	233	WILLIS RD	1.07	1985	YES	No Malfunction	
0046L0	257	WILLIS RD	1.82	2002	YES	No Malfunction	
0046N0	214	WILLIS RD	18.04	1974	YES	No Malfunction	
0046J0	218	WILLIS RD	9.63	1973	YES	No Malfunction	
0046T0	221	WILLIS RD	1.60	1997	YES	No Malfunction	
0046W0	227	WILLIS RD	25.00	1985	YES	No Malfunction	
0026N0	228	WILLIS RD	1.27	2001	YES	No Malfunction	
0026A0	230	WILLIS RD	1.22	2003	YES	No Malfunction	
0026M0	236	WILLIS RD	1.48	1996	YES	No Malfunction	
0026L0	239	WILLIS RD	1.60	2000	YES	No Malfunction	
021600	244	WILLIS RD	1.04	1999	YES	No Malfunction	
022600	248	WILLIS RD	1.03	1995	YES	No Malfunction	
002700	259	WILLIS RD	1.38	2004	YES	No Malfunction	
0095K0	261	WILLIS RD	1.07	1990	YES	No Malfunction	
002600	263	WILLIS RD	1.19	1995	YES	No Malfunction	
002500	265	WILLIS RD	1.08	1994	YES	No Malfunction	
023700	267	WILLIS RD	1.01	1995	YES	No Malfunction	
0237S0	269	WILLIS RD	1.02	1994	YES	No Malfunction	
0096X0	660	WINEBARY CR	1.00	1993	YES	No Malfunction	
0096W0	661	WINEBARY CR	1.01	1992	NO	Potential Malfunction	Unsuitable Soils
0096U0	680	WINEBARY CR	1.46	1992	YES	No Malfunction	
0095L0	681	WINEBARY CR	1.25	1990	NO	Potential Malfunction	Unsuitable Soils
0096S0	700	WINEBARY CR	1.00	1991	YES	No Malfunction	
0096R0	701	WINEBARY CR	1.98	1990	YES	No Malfunction	
0095N0	702	WINEBARY CR	1.19	1991	YES	No Malfunction	
0096P0	650	WOODBURNE RD	1.00	1999	YES	No Malfunction	
0095Q0	651	WOODBURNE RD	1.25	2002	YES	No Malfunction	
0095Z0	653	WOODBURNE RD	1.00	2001	YES	No Malfunction	
0095S0	654	WOODBURNE RD	1.01	1998	YES	No Malfunction	
0095U0	657	WOODBURNE RD	1.00	2000	YES	No Malfunction	
0095V0	659	WOODBURNE RD	1.00	2002	YES	No Malfunction	
0095W0	660	WOODBURNE RD	1.01	2000	YES	No Malfunction	

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0095X0	661	WOODBURNE RD	1.12	1999	YES	No Malfunction	
0095Y0	662	WOODBURNE RD	1.00	2002	YES	No Malfunction	
010400	663	WOODBURNE RD	1.18	2000	YES	No Malfunction	
010800	664	WOODBURNE RD	1.82	2002	YES	No Malfunction	
010500	665	WOODBURNE RD	1.04	2001	YES	No Malfunction	
011000	667	WOODBURNE RD	1.01	1999	YES	No Malfunction	
011100	668	WOODBURNE RD	1.68	2002	YES	No Malfunction	
011200	669	WOODBURNE RD	1.01	1999	YES	No Malfunction	
022600	673	WOODBURNE RD	1.10	2001	YES	No Malfunction	
023600	675	WOODBURNE RD	1.35	2003	YES	No Malfunction	
022000	682	WOODBURNE RD	1.02	1999	YES	No Malfunction	
0119B0	686	WOODBURNE RD	1.01	1999	YES	No Malfunction	
0115B0	688	WOODBURNE RD	1.01	2002	YES	No Malfunction	
011900	690	WOODBURNE RD	1.22	2001	YES	No Malfunction	
0237H0	495	WOODWARD DR	0.54	1978	YES	No Malfunction	
0051B0	662	WOODWARD DR	19.09	1980	YES	No Malfunction	
0237G0	665	WOODWARD DR	0.55	1977	YES	No Malfunction	
0237D0	666	WOODWARD DR	0.45	1977	YES	No Malfunction	
0050G0	668	WOODWARD DR	3.00	1973	YES	No Malfunction	
0237R0	670	WOODWARD DR	0.47	1979	YES	No Malfunction	
0076A0	605	WYNDAMERE RD	1.58	1960	NO	Potential Malfunction	Built Before 1972,Unsuitable Soils, SEO Repair Permit
0075C0	607	WYNDAMERE RD	1.00	1980	NO	Potential Malfunction	Unsuitable Soils
0076B0	613	WYNDAMERE RD	0.60	1975	NO	Potential Malfunction	Unsuitable Soils
0076G0	624	WYNDAMERE RD	0.46	1955	YES	Potential Malfunction	Built Before 1972
0075A0	625	WYNDAMERE RD	2.00		YES	No Malfunction	
0076C0	626	WYNDAMERE RD	0.37	1950	YES	Potential Malfunction	Built Before 1972
007300	629	WYNDAMERE RD	0.46		YES	Potential Malfunction	SEO Repair Permit
010600	650	WYNDAMERE RD	0.35		NO	Potential Malfunction	Unsuitable Soils
011700	689	WYNDAMERE RD	0.64	1965	YES	Potential Malfunction	Built Before 1972
011600	691	WYNDAMERE RD	0.92	1947	YES	Potential Malfunction	Built Before 1972
0116A0	692	WYNDAMERE RD	11.00	1950	YES	Potential Malfunction	Built Before 1972
011500	693	WYNDAMERE RD	0.51	1957	YES	Potential Malfunction	Built Before 1972
011400	700	WYNDAMERE RD	0.29	1955	YES	Potential Malfunction	Built Before 1972
0240C0	702	WYNDAMERE RD	0.33	1957	YES	Potential Malfunction	Built Before 1972
0003E0	704	WYNDAMERE RD	0.60	1962	YES	Potential Malfunction	Built Before 1972
010300	708	WYNDAMERE RD	0.80	1948	YES	Potential Malfunction	Built Before 1972

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II. Non-surveyed Properties

Parcel ID	Property Address	Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0164B0	710 WYNDAMERE RD	1.17	1958	YES	Potential Malfunction	Built Before 1972
Number of Parcels In Southern Basin Not Surveyed:		**504**				

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SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
Remaining Basins							
0051B0	500	ANDERSONTOWN RD	19.09	1980	YES	No Malfunction	
0050G0	1100	ANDERSONTOWN RD	3.00	1973	YES	No Malfunction	
006000	1127	ANDERSONTOWN RD	0.43	1962	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
005400	1129	ANDERSONTOWN RD	0.46	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
007200	101	BELLOWS CT	1.68	2005	YES	No Malfunction	
010800	357	BETHAL CHURCH RD	1.00	1957	YES	Potential Malfunction	Built Before 1972
011000	351	BETHEL CHURCH RD	0.51	1947	YES	Potential Malfunction	Built Before 1972
011200	340	BETHEL CHURCH RD	1.13	1992	YES	No Malfunction	
002100	360	BETHEL CHURCH RD	5.35	1980	NO	Potential Malfunction	Unsuitable Soils
001600	376	BETHEL CHURCH RD	1.48	1915	YES	Potential Malfunction	Built Before 1972
001300	640	BILLET DR	1.00	1981	YES	No Malfunction	
0009Q0	648	BILLET DR	0.99	1986	YES	No Malfunction	
0009C0	650	BILLET DR	2.29	1985	YES	No Malfunction	
0014K0	652	BILLET DR	1.24	1979	YES	No Malfunction	
0066Q0	656	BILLET DR	1.02	1983	YES	No Malfunction	
000700	282	BRADLEY CIR	0.45	1980	YES	No Malfunction	
001700	284	BRADLEY CIR	0.33	1980	YES	No Malfunction	
000800	285	BRADLEY CIR	0.94	1983	YES	No Malfunction	
001600	286	BRADLEY CIR	0.49	1984	YES	No Malfunction	
000900	287	BRADLEY CIR	0.60	1980	YES	No Malfunction	
001500	288	BRADLEY CIR	0.57	1980	YES	No Malfunction	
001000	289	BRADLEY CIR	0.52	1998	YES	No Malfunction	
001100	291	BRADLEY CIR	0.51	1995	YES	No Malfunction	
007400	111	BRAMBLEWOOD LN	1.10	1988	YES	No Malfunction	
006900	100	BRAMBLEWOOD LN	1.32	2003	YES	No Malfunction	
006800	101	BRAMBLEWOOD LN	1.17	1996	YES	No Malfunction	
0070A0	102	BRAMBLEWOOD LN	1.24	1986	YES	No Malfunction	
0067D0	106	BRAMBLEWOOD LN	1.24	1986	YES	No Malfunction	
0067E0	108	BRAMBLEWOOD LN	1.39	1988	YES	No Malfunction	
0070B0	109	BRAMBLEWOOD LN	1.17	1987	YES	No Malfunction	
0067B0	110	BRAMBLEWOOD LN	1.41	1987	YES	No Malfunction	
0070F0	112	BRAMBLEWOOD LN	1.45	1987	YES	No Malfunction	
0067J0	114	BRAMBLEWOOD LN	1.34	1991	YES	No Malfunction	
002400	115	BRAMBLEWOOD LN	1.10	1988	YES	No Malfunction	
008400	116	BRAMBLEWOOD LN	1.82	1988	YES	No Malfunction	

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II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0084G0	123	BRAMBLEWOOD LN	2.02	1994	YES	No Malfunction	
0084H0	454	BRENNEMAN DR	104.08	1958	YES	Potential Malfunction	Built Before 1972
0084X0	491	BRENNEMAN DR	4.32	1833	YES	Potential Malfunction	Built Before 1972
0084Q0	501	BRENNEMAN DR	16.87	2002	YES	No Malfunction	
0084T0	503	BRENNEMAN DR	7.55	1854	YES	Potential Malfunction	Built Before 1972
0084E0	510	BRENNEMAN DR	1.80	1960	YES	Potential Malfunction	Built Before 1972
0084U0	511	BRENNEMAN DR	1.43	1993	YES	No Malfunction	
0084R0	521	BRENNEMAN DR	0.74	1951	YES	Potential Malfunction	Built Before 1972
0084K0	548	BRENNEMAN DR	3.59	1930	YES	Potential Malfunction	Built Before 1972
0084P0	551	BRENNEMAN DR	146.75	1840	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0084D0	574	BRENNEMAN DR	1.07	1985	YES	No Malfunction	
0084C0	586	BRENNEMAN DR	2.36	1986	YES	No Malfunction	
0084W0	594	BRENNEMAN DR	2.25	1985	YES	No Malfunction	
0084J0	605	BRENNEMAN DR	6.00	1986	YES	No Malfunction	
0084S0	607	BRENNEMAN DR	3.00	1758	YES	Potential Malfunction	Built Before 1972
0082D0	621	BRENNEMAN DR	2.12	1901	YES	Potential Malfunction	Built Before 1972
0082A0	646	BRENNEMAN DR	1.25	1979	YES	No Malfunction	
0082B0	650	BRENNEMAN DR	1.00	1996	YES	No Malfunction	
0083C0	658	BRENNEMAN DR	0.94	1976	YES	No Malfunction	
0083B0	666	BRENNEMAN DR	2.00	1950	YES	Potential Malfunction	Built Before 1972
0022T0	99	BUNKER HILL RD	0.43	1972	YES	No Malfunction	
006300	100	BUNKER HILL RD	0.57	1972	YES	Potential Malfunction	SEO Repair Permit
003600	101	BUNKER HILL RD	0.62	1972	YES	No Malfunction	
0052A0	102	BUNKER HILL RD	0.72	1973	YES	No Malfunction	
003300	106	BUNKER HILL RD	0.69	1972	YES	No Malfunction	
010800	109	BUNKER HILL RD	0.65	1972	YES	No Malfunction	
003600	112	BUNKER HILL RD	0.46	1972	YES	Potential Malfunction	SEO Repair Permit
010600	113	BUNKER HILL RD	0.46	1975	YES	Potential Malfunction	SEO Repair Permit
003700	115	BUNKER HILL RD	0.46	1970	YES	Potential Malfunction	Built Before 1972
010400	121	BUNKER HILL RD	0.55	1972	YES	No Malfunction	
010200	110	BUNKER HILL RD	0.47	1973	YES	No Malfunction	
004000	119	BUNKER HILL RD	0.45	1972	NO	Potential Malfunction	Unsuitable Soils
004100	103	BUNKER HILL RD	0.88	1985	YES	No Malfunction	
001900	874	CARDINAL LN	0.28	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
003000	850	CARDINAL LN	0.21	1999	YES	No Malfunction	
001800	840	CARDINAL LN	0.19	1939	YES	Potential Malfunction	Built Before 1972

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
003100	842	CARDINAL LN	0.17	1940	YES	Potential Malfunction	Built Before 1972
001700	844	CARDINAL LN	0.17	1940	YES	Potential Malfunction	Built Before 1972
003200	846	CARDINAL LN	0.14	2003	YES	No Malfunction	
001600	848	CARDINAL LN	0.17	1940	YES	Potential Malfunction	Built Before 1972
003300	850	CARDINAL LN	0.20	1920	YES	Potential Malfunction	Built Before 1972
001500	854	CARDINAL LN	0.43	1930	YES	Potential Malfunction	Built Before 1972
003400	856	CARDINAL LN	0.43	1940	YES	Potential Malfunction	Built Before 1972
003500	858	CARDINAL LN	0.16	1940	YES	Potential Malfunction	Built Before 1972
000200	859	CARDINAL LN	1.21	1939	YES	Potential Malfunction	Built Before 1972
000100	862	CARDINAL LN	0.15	1964	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0204A0	863	CARDINAL LN	0.85	1950	YES	Potential Malfunction	Built Before 1972
020500	864	CARDINAL LN	0.14	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0045A0	866	CARDINAL LN	0.34	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
004200	3	CARRIAGE RD	0.49	1970	YES	Potential Malfunction	Built Before 1972
006200	4	CARRIAGE RD	0.51	1969	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
004400	6	CARRIAGE RD	0.51	1972	YES	No Malfunction	
0063A0	7	CARRIAGE RD	0.46	1970	YES	Potential Malfunction	Built Before 1972
004500	8	CARRIAGE RD	0.46	1972	YES	No Malfunction	
006400	10	CARRIAGE RD	0.47	1972	YES	No Malfunction	
0087F0	11	CARRIAGE RD	0.46	1972	YES	No Malfunction	
006500	12	CARRIAGE RD	0.48	1975	YES	No Malfunction	
006600	15	CARRIAGE RD	0.46	1970	YES	Potential Malfunction	Built Before 1972
002700	16	CARRIAGE RD	0.50	1973	YES	No Malfunction	
0027A0	19	CARRIAGE RD	0.46	1970	YES	Potential Malfunction	Built Before 1972
0067K0	21	CARRIAGE RD	0.78	1970	YES	Potential Malfunction	Built Before 1972
001500	901	CEDARS RD	0.79	1984	YES	No Malfunction	
0016A0	900	CEDARS RD	11.96	1850	YES	Potential Malfunction	Built Before 1972
0015A0	853	CEDARS RD	0.65	1986	YES	No Malfunction	
0015B0	867	CEDARS RD	0.79	1983	YES	No Malfunction	
001400	878	CEDARS RD	0.64	1972	YES	No Malfunction	
001200	880	CEDARS RD	0.28	1950	YES	Potential Malfunction	Built Before 1972
0006B0	882	CEDARS RD	0.28	1957	YES	Potential Malfunction	Built Before 1972
000800	884	CEDARS RD	0.28	1955	YES	Potential Malfunction	Built Before 1972
0008A0	886	CEDARS RD	0.31	1952	YES	Potential Malfunction	Built Before 1972
0007A0	887	CEDARS RD	0.59	1952	YES	Potential Malfunction	Built Before 1972
0007B0	888	CEDARS RD	0.34	1955	YES	Potential Malfunction	Built Before 1972

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0071P0	891	CEDARS RD	0.88	1950	YES	Potential Malfunction	Built Before 1972
000600	892	CEDARS RD	0.34	1955	YES	Potential Malfunction	Built Before 1972
0001J0	893	CEDARS RD	0.59	1950	YES	Potential Malfunction	Built Before 1972
008400	894	CEDARS RD	0.51	1950	YES	Potential Malfunction	Built Before 1972
0001G0	897	CEDARS RD	0.87	1963	YES	Potential Malfunction	Built Before 1972
0164C0	898	CEDARS RD	0.34	1955	YES	Potential Malfunction	Built Before 1972
0081B0	899	CEDARS RD	0.75	1932	YES	Potential Malfunction	Built Before 1972
0081A0	900	CEDARS RD	0.47	1955	YES	Potential Malfunction	Built Before 1972
0164D0	903	CEDARS RD	0.56	1960	YES	Potential Malfunction	Built Before 1972
0165D0	904	CEDARS RD	0.49	1955	YES	Potential Malfunction	Built Before 1972
009900	906	CEDARS RD	0.34	1954	YES	Potential Malfunction	Built Before 1972
0086E0	907	CEDARS RD	0.36	1930	YES	Potential Malfunction	Built Before 1972
0086F0	909	CEDARS RD	11.19	1900	YES	Potential Malfunction	Built Before 1972
0086A0	914	CEDARS RD	1.74	1950	YES	Potential Malfunction	Built Before 1972
0023G0	935	CEDARS RD	1.78	1949	YES	Potential Malfunction	Built Before 1972
0023F0	938	CEDARS RD	2.48	1940	YES	Potential Malfunction	Built Before 1972
0023E0	939	CEDARS RD	4.30	1980	YES	No Malfunction	
0022C0	941	CEDARS RD	3.23	1980	YES	No Malfunction	
0022F0	944	CEDARS RD	1.53	1950	YES	Potential Malfunction	Built Before 1972
0023H0	947	CEDARS RD	4.57	1978	YES	No Malfunction	
0022A0	951	CEDARS RD	1.73	1983	YES	No Malfunction	
0023K0	953	CEDARS RD	2.87	1955	YES	Potential Malfunction	Built Before 1972
0022E0	956	CEDARS RD	1.10	1900	YES	Potential Malfunction	Built Before 1972
002200	968	CEDARS RD	2.64	1999	YES	No Malfunction	
002100	969	CEDARS RD	0.36	1936	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0018M0	736	COLLINA DR	0.46	1977	YES	No Malfunction	
0018P0	737	COLLINA DR	0.46	1978	YES	No Malfunction	
0018B0	738	COLLINA DR	0.46	1977	YES	No Malfunction	
0018E0	744	COLLINA DR	0.46	1976	YES	No Malfunction	
0022G0	745	COLLINA DR	0.46	1978	NO	Potential Malfunction	Unsuitable Soils
001900	747	COLLINA DR	0.46	1978	NO	Potential Malfunction	Unsuitable Soils
0052P0	748	COLLINA DR	0.48	1977	NO	Potential Malfunction	Unsuitable Soils
0052U0	749	COLLINA DR	0.46	1975	NO	Potential Malfunction	Unsuitable Soils
0052R0	750	COLLINA DR	0.46	1977	NO	Potential Malfunction	Unsuitable Soils
006200	752	COLLINA DR	0.51	1989	NO	Potential Malfunction	Unsuitable Soils
0058D0	754	COLLINA DR	0.48	1980	NO	Potential Malfunction	Unsuitable Soils

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II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0058G0	757	COLLINA DR	5.85	1991	YES	No Malfunction	
005800	740	COLLINA RD	0.46	1977	YES	No Malfunction	
0096H0	109	DILLER RD	0.32	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096K0	130	DILLER RD	1.88	1959	YES	Potential Malfunction	Built Before 1972
0096F0	101	DILLER RD	0.34	1956	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096E0	102	DILLER RD	0.48	1959	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096D0	103	DILLER RD	0.34	1964	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0100D0	104	DILLER RD	0.43	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096M0	106	DILLER RD	0.55	1955	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096C0	108	DILLER RD	0.55	1997	NO	Potential Malfunction	Unsuitable Soils
0096B0	110	DILLER RD	0.54	1957	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0096A0	111	DILLER RD	0.49	1953	NO	Confirmed Malfunction	BTG Repair Permit T006412
0098A0	112	DILLER RD	0.62	1956	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0066C0	116	DILLER RD	0.49	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0066Z0	117	DILLER RD	0.34	1972	NO	Potential Malfunction	Unsuitable Soils
0066F0	119	DILLER RD	0.28	1956	YES	Potential Malfunction	Built Before 1972
000500	121	DILLER RD	0.35	1958	YES	Potential Malfunction	Built Before 1972
003000	122	DILLER RD	0.56	1959	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000600	123	DILLER RD	0.32	1958	YES	Potential Malfunction	Built Before 1972
002900	124	DILLER RD	0.37	1967	YES	Potential Malfunction	Built Before 1972
002800	125	DILLER RD	0.38	1958	YES	Potential Malfunction	Built Before 1972
000800	126	DILLER RD	0.32	1958	YES	Potential Malfunction	Built Before 1972
002700	127	DILLER RD	0.63	1958	YES	Potential Malfunction	Built Before 1972
002600	128	DILLER RD	0.32	1956	YES	Potential Malfunction	Built Before 1972
000900	130	DILLER RD	0.32	1956	YES	Potential Malfunction	Built Before 1972
002500	132	DILLER RD	0.32	1958	YES	Potential Malfunction	Built Before 1972
002400	136	DILLER RD	0.31	1958	YES	Potential Malfunction	Built Before 1972
0058B0	804	EAST ST	0.26	1900	YES	Potential Malfunction	Built Before 1972
002600	810	EAST ST	0.39	1940	YES	Potential Malfunction	Built Before 1972
0026B0	814	EAST ST	0.18	1952	YES	Potential Malfunction	Built Before 1972
0052A0	622	ELLIOT DR	0.54	1978	YES	No Malfunction	
0052W0	626	ELLIOT DR	0.54	1985	YES	No Malfunction	
0052S0	629	ELLIOT DR	0.46	1978	YES	No Malfunction	
008500	630	ELLIOT DR	0.46	1986	YES	No Malfunction	
0011N0	633	ELLIOT DR	0.69	1987	YES	No Malfunction	
0011K0	634	ELLIOT DR	0.46	1986	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0011H0	637	ELLIOT DR	0.74	1987	YES	No Malfunction	
0011U0	638	ELLIOT DR	0.50	1975	YES	No Malfunction	
0011T0	639	ELLIOT DR	0.51	1992	YES	No Malfunction	
0011G0	640	ELLIOT DR	0.53	1986	YES	No Malfunction	
0011J0	644	ELLIOT DR	0.68	1978	YES	No Malfunction	
0011L0	648	ELLIOT DR	1.20	1975	YES	No Malfunction	
0011P0	652	ELLIOT DR	0.99	1975	YES	No Malfunction	
0011E0	658	ELLIOT DR	0.48	1979	YES	No Malfunction	
0011F0	659	ELLIOT DR	0.42	1986	YES	No Malfunction	
0011A0	660	ELLIOT DR	0.56	1986	YES	No Malfunction	
007600	663	ELLIOT DR	0.47	1986	YES	No Malfunction	
007700	666	ELLIOT DR	1.07	1978	YES	No Malfunction	
0075D0	852	EMANUEL RD	9.00		YES	No Malfunction	
0078C0	854	EMANUEL RD	0.67	1979	YES	No Malfunction	
0078B0	890	EMANUEL RD	98.40	1750	YES	Potential Malfunction	Built Before 1972
0078F0	910	EMANUEL RD	13.03	1992	YES	No Malfunction	
0075F0	923	EMANUEL RD	10.44	1850	YES	Potential Malfunction	Built Before 1972
0075E0	925	EMANUEL RD	2.43	1989	NO	Potential Malfunction	Unsuitable Soils
0087E0	100	FOXFIRE LN	1.10	1995	YES	No Malfunction	
007900	102	FOXFIRE LN	1.16	1989	YES	No Malfunction	
0087D0	103	FOXFIRE LN	2.82	1987	YES	No Malfunction	
0087A0	104	FOXFIRE LN	2.41	1986	YES	No Malfunction	
009000	106	FOXFIRE LN	1.07	1997	YES	No Malfunction	
0083A0	110	FOXFIRE LN	1.65	1989	YES	No Malfunction	
008200	111	FOXFIRE LN	1.50	1990	YES	No Malfunction	
0052H0	113	FOXFIRE LN	1.55	1988	YES	No Malfunction	
0052C0	114	FOXFIRE LN	1.27	1989	YES	No Malfunction	
008400	115	FOXFIRE LN	1.87	1990	YES	No Malfunction	
0052B0	121	FOXFIRE LN	2.46	1993	YES	No Malfunction	
0052Q0	126	FOXFIRE LN	1.18	1992	YES	No Malfunction	
0052L0	133	FOXFIRE LN	1.71	1992	YES	No Malfunction	
0118B0	782	FRONT ST	0.24	1880	No	Potential Malfunction	Built Before 1972/Unsuitable Soils
011000	781	FRONT ST	2.18	1900	No	Potential Malfunction	Built Before 1972/Unsuitable Soils
000400	742	GLEN ARDEN DR	4.94	1987	NO	Potential Malfunction	Unsuitable Soils, SEO Repair Permit
000500	746	GLEN ARDEN DR	5.12	1988	NO	Potential Malfunction	Unsuitable Soils
0006A0	748	GLEN ARDEN DR	3.28	1986	NO	Potential Malfunction	Unsuitable Soils

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0061F0	750	GLEN ARDEN DR	3.00	1978	YES	No Malfunction	
000700	756	GLEN ARDEN DR	3.01	1988	YES	No Malfunction	
006400	757	GLEN ARDEN DR	3.01	1980	YES	No Malfunction	
006500	762	GLEN ARDEN DR	3.81	1986	YES	No Malfunction	
010400	770	GLEN ARDEN DR	3.06	1971	YES	Potential Malfunction	Built Before 1972
0020C0	773	GLEN ARDEN DR	11.75	1976	YES	No Malfunction	
0019B0	776	GLEN ARDEN DR	3.06	1985	YES	No Malfunction	
024200	777	GLEN ARDEN DR	4.97	1986	YES	No Malfunction	
0083B0	431	GRANITE QUARRY RD	1.28		YES	No Malfunction	
0086A0	418	GRANITE QUARRY RD	1.30	1950	YES	Potential Malfunction	Built Before 1972
0086B0	423	GRANITE QUARRY RD	60.00	1974	YES	No Malfunction	
0089B0	424	GRANITE QUARRY RD	0.30	1982	YES	No Malfunction	
0087B0	428	GRANITE QUARRY RD	0.34	1962	YES	Potential Malfunction	Built Before 1972
0087C0	433	GRANITE QUARRY RD	1.89	1940	YES	Potential Malfunction	Built Before 1972
0087D0	434	GRANITE QUARRY RD	0.40	1962	YES	Potential Malfunction	Built Before 1972
016200	436	GRANITE QUARRY RD	1.09	1976	NO	Potential Malfunction	Unsuitable Soils
0089A0	438	GRANITE QUARRY RD	0.47	1964	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0089J0	439	GRANITE QUARRY RD	1.89	1950	YES	Potential Malfunction	Built Before 1972
0022A0	446	GRANITE QUARRY RD	2.37	1980	YES	No Malfunction	
0119E0	452	GRANITE QUARRY RD	1.80	1960	YES	Potential Malfunction	Built Before 1972
012300	453	GRANITE QUARRY RD	1.01	1980	YES	No Malfunction	
012200	456	GRANITE QUARRY RD	1.09	1994	YES	No Malfunction	
012000	470	GRANITE QUARRY RD	1.92	1979	YES	No Malfunction	
011900	480	GRANITE QUARRY RD	4.57	1982	YES	No Malfunction	
0119A0	483	GRANITE QUARRY RD	6.31	1977	YES	No Malfunction	
016300	484	GRANITE QUARRY RD	13.20	1970	YES	Potential Malfunction	Built Before 1972
002400	600	HARKINS CT	1.26	2004	YES	No Malfunction	
0023A0	602	HARKINS CT	1.18	2005	YES	No Malfunction	
002300	605	HARKINS CT	1.30	2004	YES	No Malfunction	
0035F0	719	HECK HILL RD	5.45	1975	YES	No Malfunction	
0035D0	720	HECK HILL RD	0.70	1972	YES	No Malfunction	
0016B0	722	HECK HILL RD	1.63	1972	YES	No Malfunction	
0016C0	724	HECK HILL RD	2.39	1985	YES	No Malfunction	
011900	737	HECK HILL RD	13.79	1900	YES	Potential Malfunction	Built Before 1972
012000	738	HECK HILL RD	1.12	1972	YES	No Malfunction	
003600	751	HECK HILL RD	1.22	1974	YES	No Malfunction	

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012200	755	HECK HILL RD	32.04	1975	YES	No Malfunction	
013500	756	HECK HILL RD	1.79	1975	YES	No Malfunction	
0026R0	760	HECK HILL RD	1.12		YES	No Malfunction	
012300	772	HECK HILL RD	14.43	1900	YES	Potential Malfunction	Built Before 1972
003100	781	HECK HILL RD	16.13	1900	YES	Potential Malfunction	Built Before 1972
0022N0	782	HECK HILL RD	2.07	1997	YES	No Malfunction	
005600	790	HECK HILL RD	1.00	1988	YES	No Malfunction	
0056F0	793	HECK HILL RD	2.24	1955	YES	Potential Malfunction	Built Before 1972
0051K0	799	HECK HILL RD	0.47	1987	YES	No Malfunction	
0022M0	804	HECK HILL RD	10.68	1972	YES	No Malfunction	
0022F0	812	HECK HILL RD	1.30	2004	YES	No Malfunction	
0050H0	826	HECK HILL RD	1.50	1965	YES	Potential Malfunction	Built Before 1972
0050C0	845	HECK HILL RD	0.51	1970	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0050G0	847	HECK HILL RD	0.46	1979	NO	Potential Malfunction	Unsuitable Soils
0050A0	849	HECK HILL RD	0.46	1988	NO	Potential Malfunction	Unsuitable Soils
0066G0	550	HIGHLAND DR	0.53	1982	YES	No Malfunction	
0065W0	1030	HIGHLAND DR	1.00	1982	YES	No Malfunction	
0066J0	1034	HIGHLAND DR	0.62	1982	YES	No Malfunction	
0065X0	1038	HIGHLAND DR	1.94	1987	YES	No Malfunction	
0065Y0	1040	HIGHLAND DR	0.65	1979	YES	No Malfunction	
006900	1043	HIGHLAND DR	2.05	1999	YES	No Malfunction	
0066A0	1050	HIGHLAND DR	78.14	1900	YES	Potential Malfunction	Built Before 1972
0071H0	1065	HIGHLAND DR	22.50	1996	YES	No Malfunction	
0071C0	1087	HIGHLAND DR	10.60	1978	YES	Potential Malfunction	SEO Repair Permit
0065J0	1090	HIGHLAND DR	7.23	1810	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0065K0	1092	HIGHLAND DR	1.33	1986	YES	No Malfunction	
0065B0	1094	HIGHLAND DR	1.29	1986	YES	No Malfunction	
0065L0	1105	HIGHLAND DR	1.24	1982	YES	No Malfunction	
0098E0	1107	HIGHLAND DR	1.03	1988	YES	No Malfunction	
0097A0	1109	HIGHLAND DR	1.00	1979	YES	No Malfunction	
0098C0	1111	HIGHLAND DR	1.00	2001	YES	No Malfunction	
009600	1116	HIGHLAND DR	1.10	1974	YES	No Malfunction	
006800	1122	HIGHLAND DR	1.01	1979	YES	No Malfunction	
000400	1124	HIGHLAND DR	1.02	1978	YES	No Malfunction	
003400	1128	HIGHLAND DR	1.02	1979	YES	No Malfunction	
005400	1144	HIGHLAND DR	1.21	1983	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
005500	1145	HIGHLAND DR	1.38	1980	YES	No Malfunction	
0050B0	1148	HIGHLAND DR	6.23	1998	YES	No Malfunction	
0050A0	1149	HIGHLAND DR	2.75	1982	YES	No Malfunction	
0053A0	1155	HIGHLAND DR	1.53	1982	YES	No Malfunction	
005300	1159	HIGHLAND DR	1.15	1983	YES	No Malfunction	
021000	1160	HIGHLAND DR	2.99	2003	YES	No Malfunction	
0080F0	1180	HIGHLAND DR	6.19	1981	YES	No Malfunction	
0004B0	1194	HIGHLAND DR	1.00	1920	YES	Potential Malfunction	Built Before 1972
0005A0	1205	HIGHLAND DR	1.00	1971	YES	Potential Malfunction	Built Before 1972
0079B0	1220	HIGHLAND DR	1.00	1996	YES	No Malfunction	
0138Q0	2	HOLLY DR	0.58	1980	YES	No Malfunction	
0138L0	3	HOLLY DR	0.60	1976	YES	No Malfunction	
0138N0	4	HOLLY DR	0.48	1975	YES	No Malfunction	
0138P0	6	HOLLY DR	0.46	1979	YES	No Malfunction	
0168C0	7	HOLLY DR	0.54	1979	YES	No Malfunction	
016900	736	IRON STONE RD	2.84	1930	YES	Potential Malfunction	Built Before 1972
0168B0	753	IRON STONE RD	2.07	1980	YES	No Malfunction	
0138H0	754	IRON STONE RD	1.63	2002	YES	No Malfunction	
0169B0	755	IRON STONE RD	1.70	2004	YES	No Malfunction	
0176J0	735	IRONSTONE RD	7.90		YES	No Malfunction	
0138G0	735	IRONSTONE RD	2.03	1969	YES	Potential Malfunction	Built Before 1972
0169A0	741	IRONSTONE RD	2.13	1800	YES	Potential Malfunction	Built Before 1972
0176H0	755	IRONSTONE RD	2.14	1900	YES	Potential Malfunction	Built Before 1972
024000	102	JAMES LN	1.08	1989	YES	No Malfunction	
0007B0	104	JAMES LN	1.05	1988	YES	No Malfunction	
0007A0	106	JAMES LN	1.00	1989	YES	No Malfunction	
008500	108	JAMES LN	1.01	1988	YES	No Malfunction	
008400	110	JAMES LN	1.31	1995	YES	No Malfunction	
0086B0	112	JAMES LN	1.80	1988	YES	No Malfunction	
0086A0	114	JAMES LN	5.23	1992	YES	No Malfunction	
0073B0	695	JULIE CT	0.51	1980	YES	No Malfunction	
0076B0	696	JULIE CT	0.95	1982	YES	No Malfunction	
0074A0	697	JULIE CT	0.59	1982	YES	No Malfunction	
0074B0	699	JULIE CT	0.89	1980	YES	No Malfunction	
007400	701	JULIE CT	0.88	1980	YES	No Malfunction	
007500	703	JULIE CT	0.47	1980	YES	No Malfunction	

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005400	870	KING ST	0.69	1958	YES	Potential Malfunction	Built Before 1972
005500	873	KING ST	0.31	1968	YES	Potential Malfunction	Built Before 1972
0056B0	874	KING ST	0.78	1957	YES	Potential Malfunction	Built Before 1972
005600	875	KING ST	0.26	1959	YES	Potential Malfunction	Built Before 1972
005800	876	KING ST	0.63	1956	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0054B0	878	KING ST	0.56	1950	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0054A0	882	KING ST	0.54	1955	YES	Potential Malfunction	Built Before 1972
0051B0	884	KING ST	0.51	1956	YES	Potential Malfunction	Built Before 1972
0051U0	886	KING ST	0.44	1955	YES	Potential Malfunction	Built Before 1972
004900	887	KING ST	0.33	1970	YES	Potential Malfunction	Built Before 1972
0051L0	888	KING ST	0.35	1955	YES	Potential Malfunction	Built Before 1972
0050Q0	892	KING ST	0.28	1962	YES	Potential Malfunction	Built Before 1972
017500	531	LEWISBERRY RD	0.63	1910	YES	Potential Malfunction	Built Before 1972
0176D0	539	LEWISBERRY RD	1.83		YES	No Malfunction	
0177B0	570	LEWISBERRY RD	5.08	1987	YES	No Malfunction	
017600	602	LEWISBERRY RD	0.55	1995	YES	No Malfunction	
0173A0	624	LEWISBERRY RD	0.92	1900	YES	Potential Malfunction	Built Before 1972
017400	725	LEWISBERRY RD	1.04	1994	YES	No Malfunction	
017300	802	LEWISBERRY RD	1.00	1991	YES	No Malfunction	
0175A0	892	LEWISBERRY RD	40.30	1870	YES	Potential Malfunction	Built Before 1972
0177C0	423	LEWISBERRY RD	15.19	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0177D0	429	LEWISBERRY RD	1.58	1955	YES	Potential Malfunction	Built Before 1972
017800	431	LEWISBERRY RD	1.40	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0177H0	433	LEWISBERRY RD	1.21	1960	YES	Potential Malfunction	Built Before 1972
0177L0	435	LEWISBERRY RD	1.45	1950	YES	Potential Malfunction	Built Before 1972
0177M0	441	LEWISBERRY RD	1.00	1971	YES	Potential Malfunction	Built Before 1972
0177N0	443	LEWISBERRY RD	1.20	1956	YES	Potential Malfunction	Built Before 1972
0177K0	445	LEWISBERRY RD	1.40	1949	YES	Potential Malfunction	Built Before 1972
0176C0	447	LEWISBERRY RD	0.72		YES	Potential Malfunction	SEO Repair Permit
0176E0	451	LEWISBERRY RD	1.28	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0058B0	453	LEWISBERRY RD	1.10	1950	YES	Potential Malfunction	Built Before 1972
0058A0	455	LEWISBERRY RD	1.18	1938	YES	Potential Malfunction	Built Before 1972
005500	456	LEWISBERRY RD	1.00	1964	YES	Potential Malfunction	Built Before 1972
0058C0	457	LEWISBERRY RD	1.00	1951	YES	Potential Malfunction	Built Before 1972
005600	459	LEWISBERRY RD	1.00	1949	YES	Potential Malfunction	Built Before 1972
0059C0	460	LEWISBERRY RD	0.42	1957	YES	Potential Malfunction	Built Before 1972

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0059A0	461	LEWISBERRY RD	0.36	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
005700	462	LEWISBERRY RD	0.42	1964	YES	Potential Malfunction	Built Before 1972
006100	464	LEWISBERRY RD	0.42	1959	YES	Potential Malfunction	Built Before 1972
0059B0	465	LEWISBERRY RD	0.23	1941	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
005400	466	LEWISBERRY RD	0.42	1959	YES	Potential Malfunction	Built Before 1972
0001H0	469	LEWISBERRY RD	0.27	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001K0	470	LEWISBERRY RD	0.41	1960	YES	Potential Malfunction	Built Before 1972
0001F0	471	LEWISBERRY RD	4.50	1900	YES	Potential Malfunction	Built Before 1972
0054A0	472	LEWISBERRY RD	0.41	1960	YES	Potential Malfunction	Built Before 1972
0001E0	474	LEWISBERRY RD	0.73	1970	YES	Potential Malfunction	Built Before 1972
0053A0	486	LEWISBERRY RD	3.16	1880	YES	Potential Malfunction	Built Before 1972
004400	487	LEWISBERRY RD	8.39	1900	YES	Potential Malfunction	Built Before 1972
005300	489	LEWISBERRY RD	0.97	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001G0	495	LEWISBERRY RD	1.16	1952	YES	Potential Malfunction	Built Before 1972
004800	501	LEWISBERRY RD	0.88	1940	YES	Potential Malfunction	Built Before 1972
005100	503	LEWISBERRY RD	0.34	1967	YES	Potential Malfunction	Built Before 1972
004700	504	LEWISBERRY RD	1.06	1950	YES	Potential Malfunction	Built Before 1972
0179C0	505	LEWISBERRY RD	0.34	1965	YES	Potential Malfunction	Built Before 1972
0045F0	506	LEWISBERRY RD	6.80	1988	YES	No Malfunction	
0045E0	508	LEWISBERRY RD	1.20	1955	YES	Potential Malfunction	Built Before 1972
0045A0	510	LEWISBERRY RD	1.00	1963	YES	Potential Malfunction	Built Before 1972
0179B0	512	LEWISBERRY RD	0.40	1950	YES	Potential Malfunction	Built Before 1972
017900	514	LEWISBERRY RD	0.76	1950	YES	Potential Malfunction	Built Before 1972
011400	518	LEWISBERRY RD	8.81	1900	YES	Potential Malfunction	Built Before 1972
005800	522	LEWISBERRY RD	114.91	1974	YES	No Malfunction	
0115A0	527	LEWISBERRY RD	1.00	1836	YES	Potential Malfunction	Built Before 1972
0071H0	528	LEWISBERRY RD	0.39	1970	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0070Y0	536	LEWISBERRY RD	1.90	1940	YES	Potential Malfunction	Built Before 1972
0071B0	550	LEWISBERRY RD	1.43	1959	YES	Potential Malfunction	Built Before 1972
0070Z0	556	LEWISBERRY RD	1.20	1960	YES	Potential Malfunction	Built Before 1972
0070V0	566	LEWISBERRY RD	6.02	1991	YES	No Malfunction	
0071G0	568	LEWISBERRY RD	2.33	1950	YES	Potential Malfunction	Built Before 1972
0010Q0	572	LEWISBERRY RD	1.38	1950	YES	Potential Malfunction	Built Before 1972
0010T0	572	LEWISBERRY RD	4.44	1953	YES	Potential Malfunction	Built Before 1972
0010Q0	574	LEWISBERRY RD	1.38	1950	YES	Potential Malfunction	Built Before 1972
0010R0	576	LEWISBERRY RD	1.75	1950	YES	Potential Malfunction	Built Before 1972

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0010P0	578	LEWISBERRY RD	2.44	1900	YES	Potential Malfunction	Built Before 1972
0010H0	582	LEWISBERRY RD	0.32	1978	YES	No Malfunction	
0010N0	584	LEWISBERRY RD	1.78	1955	YES	Potential Malfunction	Built Before 1972
0010U0	586	LEWISBERRY RD	1.00	1955	YES	Potential Malfunction	Built Before 1972
0007U0	588	LEWISBERRY RD	0.40	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0007S0	592	LEWISBERRY RD	0.50	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0007V0	594	LEWISBERRY RD	0.40	1960	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0007W0	596	LEWISBERRY RD	0.72	1950	YES	Potential Malfunction	Built Before 1972
0007M0	599	LEWISBERRY RD	15.94		YES	No Malfunction	
0007N0	610	LEWISBERRY RD	1.00	1960	YES	Potential Malfunction	Built Before 1972
004600	616	LEWISBERRY RD	1.17	1988	YES	No Malfunction	
004500	620	LEWISBERRY RD	0.25	1950	YES	Potential Malfunction	Built Before 1972
004400	622	LEWISBERRY RD	0.92	1960	YES	Potential Malfunction	Built Before 1972
000300	628	LEWISBERRY RD	0.67	1960	YES	Potential Malfunction	Built Before 1972
000200	629	LEWISBERRY RD	0.45	1945	YES	Potential Malfunction	Built Before 1972
000100	630	LEWISBERRY RD	0.18	1920	YES	Potential Malfunction	Built Before 1972
0068D0	634	LEWISBERRY RD	1.19	1900	YES	Potential Malfunction	Built Before 1972
010500	635	LEWISBERRY RD	0.44	1890	YES	Potential Malfunction	Built Before 1972
011400	636	LEWISBERRY RD	0.37	1900	YES	Potential Malfunction	Built Before 1972
011300	638	LEWISBERRY RD	0.35	1900	YES	Potential Malfunction	Built Before 1972
011600	647	LEWISBERRY RD	3.50	1930	YES	Potential Malfunction	Built Before 1972
0053J0	651	LEWISBERRY RD	0.89	1978	YES	No Malfunction	
011700	652	LEWISBERRY RD	5.64	1980	YES	No Malfunction	
005300	655	LEWISBERRY RD	4.94	1900	YES	Potential Malfunction	Built Before 1972
005600	657	LEWISBERRY RD	0.36	1900	YES	Potential Malfunction	Built Before 1972
005800	659	LEWISBERRY RD	1.00	1945	YES	Potential Malfunction	Built Before 1972
010600	664	LEWISBERRY RD	4.80	1900	YES	Potential Malfunction	Built Before 1972
005900	670	LEWISBERRY RD	21.00	1900	YES	Potential Malfunction	Built Before 1972
011800	680	LEWISBERRY RD	1.00	1974	YES	Confirmed Malfunction	BTG Permit Z002375
006100	684	LEWISBERRY RD	0.88	1990	YES	No Malfunction	
012000	689	LEWISBERRY RD	5.01	1915	YES	Potential Malfunction	Built Before 1972
0147M0	698	LEWISBERRY RD	6.00	1953	YES	Potential Malfunction	Built Before 1972
0105Q0	700	LEWISBERRY RD	1.36	1970	YES	Potential Malfunction	Built Before 1972
0105C0	710	LEWISBERRY RD	3.65	1947	YES	Potential Malfunction	Built Before 1972
0065V0	711	LEWISBERRY RD	2.64	1990	YES	No Malfunction	
005000	730	LEWISBERRY RD	0.25	1958	YES	Potential Malfunction	Built Before 1972

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0050N0	738	LEWISBERRY RD	13.37	1900	YES	Potential Malfunction	Built Before 1972
005300	741	LEWISBERRY RD	2.48	1960	YES	Potential Malfunction	Built Before 1972
0053R0	745	LEWISBERRY RD	0.45	1960	YES	Potential Malfunction	Built Before 1972
0053S0	750	LEWISBERRY RD	0.81	1978	YES	No Malfunction	
0055L0	753	LEWISBERRY RD	0.46	1970	YES	Potential Malfunction	Built Before 1972
0055H0	755	LEWISBERRY RD	1.20	1960	YES	Potential Malfunction	Built Before 1972
0053B0	756	LEWISBERRY RD	0.80	1973	YES	No Malfunction	
0046F0	758	LEWISBERRY RD	0.89	1978	YES	No Malfunction	
0046G0	760	LEWISBERRY RD	1.72	1980	YES	No Malfunction	
004600	767	LEWISBERRY RD	0.74	1960	YES	Potential Malfunction	Built Before 1972
0042B0	768	LEWISBERRY RD	0.74		YES	Potential Malfunction	SEO Repair Permit
0072L0	771	LEWISBERRY RD	0.50	1935	YES	Potential Malfunction	Built Before 1972
0046H0	773	LEWISBERRY RD	14.50	1978	YES	No Malfunction	
0072H0	774	LEWISBERRY RD	3.98	1976	YES	No Malfunction	
007200	775	LEWISBERRY RD	0.79	1953	YES	Potential Malfunction	Built Before 1972
0072J0	780	LEWISBERRY RD	2.88	1990	YES	No Malfunction	
0063A0	789	LEWISBERRY RD	0.94	1962	YES	Potential Malfunction	Built Before 1972
0063J0	793	LEWISBERRY RD	0.50	1960	YES	Potential Malfunction	Built Before 1972
0058B0	795	LEWISBERRY RD	0.95	1940	YES	Potential Malfunction	Built Before 1972
006700	802	LEWISBERRY RD	1.02	1988	YES	Potential Malfunction	SEO Repair Permit
0063H0	804	LEWISBERRY RD	1.07	1987	YES	No Malfunction	
0063G0	806	LEWISBERRY RD	19.10	1960	YES	Potential Malfunction	Built Before 1972
0063E0	806	LEWISBERRY RD	1.02	1986	YES	No Malfunction	
0063G0	807	LEWISBERRY RD	19.10	1960	YES	Potential Malfunction	Built Before 1972
005400	808	LEWISBERRY RD	6.82	1989	YES	No Malfunction	
0056E0	810	LEWISBERRY RD	5.18	1974	YES	No Malfunction	
0056B0	816	LEWISBERRY RD	1.04	1974	YES	No Malfunction	
006300	823	LEWISBERRY RD	0.46	1950	YES	Potential Malfunction	Built Before 1972
0063B0	826	LEWISBERRY RD	1.17	1987	YES	No Malfunction	
005700	827	LEWISBERRY RD	1.77	1950	YES	Potential Malfunction	Built Before 1972
0063D0	828	LEWISBERRY RD	1.15	1982	YES	Potential Malfunction	SEO Repair Permit
005800	832	LEWISBERRY RD	3.46	1979	YES	No Malfunction	
006100	834	LEWISBERRY RD	1.35	1940	YES	Potential Malfunction	Built Before 1972
0058A0	841	LEWISBERRY RD	1.57	1948	YES	Potential Malfunction	Built Before 1972
0059B0	847	LEWISBERRY RD	0.70	1960	YES	Potential Malfunction	Built Before 1972
0125B0	851	LEWISBERRY RD	7.03	1969	YES	Potential Malfunction	Built Before 1972

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0156K0	863	LEWISBERRY RD	3.09		YES	No Malfunction	
011200	866	LEWISBERRY RD	6.22	1975	YES	No Malfunction	
0112A0	870	LEWISBERRY RD	2.96	1959	YES	Potential Malfunction	Built Before 1972
011600	895	LEWISBERRY RD	4.75	1900	YES	Potential Malfunction	Built Before 1972
011700	900	LEWISBERRY RD	3.02	1987	YES	No Malfunction	
0044A0	910	LEWISBERRY RD	5.00	1990	YES	No Malfunction	
011900	922	LEWISBERRY RD	4.98	1986	YES	No Malfunction	
011400	924	LEWISBERRY RD	27.87	1978	YES	No Malfunction	
012000	924	LEWISBERRY RD	27.87	1978	YES	No Malfunction	
0120A0	924	LEWISBERRY RD	27.87	1978	YES	No Malfunction	
0120B0	925	LEWISBERRY RD	1.40		YES	No Malfunction	
0122D0	935	LEWISBERRY RD	10.86	1978	YES	No Malfunction	
012100	940	LEWISBERRY RD	1.49	1994	YES	No Malfunction	
0122B0	945	LEWISBERRY RD	0.34	1972	YES	No Malfunction	
012200	955	LEWISBERRY RD	5.52	1900	YES	Potential Malfunction	Built Before 1972
0122C0	958	LEWISBERRY RD	36.26	1900	YES	Potential Malfunction	Built Before 1972
012300	965	LEWISBERRY RD	1.75	1973	YES	No Malfunction	
0125A0	973	LEWISBERRY RD	2.01	1968	YES	Potential Malfunction	Built Before 1972
0124A0	975	LEWISBERRY RD	0.44	1987	YES	No Malfunction	
012400	977	LEWISBERRY RD	0.74	1972	YES	No Malfunction	
0126A0	981	LEWISBERRY RD	0.70	1979	YES	No Malfunction	
0001L0	994	LEWISBERRY RD	1.26	1945	YES	Potential Malfunction	Built Before 1972
012600	1005	LEWISBERRY RD	1.65	2002	YES	No Malfunction	
016100	1006	LEWISBERRY RD	0.25		YES	No Malfunction	
0158A0	1007	LEWISBERRY RD	1.36	2002	YES	No Malfunction	
0158B0	1010	LEWISBERRY RD	1.00	1840	YES	Potential Malfunction	Built Before 1972
010200	1013	LEWISBERRY RD	1.96	2003	YES	No Malfunction	
000100	1040	LEWISBERRY RD	21.59	1973	YES	Potential Malfunction	SEO Repair Permit
000300	1065	LEWISBERRY RD	1.00	1805	YES	Potential Malfunction	Built Before 1972
000600	1081	LEWISBERRY RD	13.16	1961	YES	Potential Malfunction	Built Before 1972
000700	1099	LEWISBERRY RD	126.71	1836	YES	Potential Malfunction	Built Before 1972
000800	1099	LEWISBERRY RD	126.71	1836	YES	Potential Malfunction	Built Before 1972
004900	1166	LEWISBERRY RD	102.11	1900	YES	Potential Malfunction	Built Before 1972
0156A0	1200	LEWISBERRY RD	0.91	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0154B0	1216	LEWISBERRY RD	25.49	1985	YES	No Malfunction	
0156J0	1218	LEWISBERRY RD	1.09	1960	YES	Potential Malfunction	Built Before 1972

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0147F0	1235	LEWISBERRY RD	0.57	1930	YES	Potential Malfunction	Built Before 1972
0156B0	1237	LEWISBERRY RD	0.35	1940	YES	Potential Malfunction	Built Before 1972
0153C0	1291	LEWISBERRY RD	0.54	1885	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0153A0	1293	LEWISBERRY RD	26.51	1764	YES	Potential Malfunction	Built Before 1972
0153G0	1295	LEWISBERRY RD	1.24	1998	NO	Potential Malfunction	Unsuitable Soils
0153K0	868	LEXINGTON PL	1.63	1994	YES	No Malfunction	
015400	857	LEXINGTON PL	1.65	2004	YES	No Malfunction	
0153J0	858	LEXINGTON PL	1.57	2004	YES	No Malfunction	
015000	861	LEXINGTON PL	3.31	1995	YES	No Malfunction	
0152B0	862	LEXINGTON PL	2.10	1994	YES	No Malfunction	
0152A0	863	LEXINGTON PL	1.76	2000	YES	No Malfunction	
0150A0	865	LEXINGTON PL	1.44	2003	YES	No Malfunction	
0150B0	867	LEXINGTON PL	1.05	1999	YES	No Malfunction	
015100	869	LEXINGTON PL	1.49	1995	YES	No Malfunction	
012500	870	LEXINGTON PL	1.77	1995	YES	No Malfunction	
0065U0	960	LIMEKILN RD	1.01	1997	YES	No Malfunction	
0065H0	753	LIMEKILN RD	109.00	1870	YES	Potential Malfunction	Built Before 1972
0065S0	814	LIMEKILN RD	0.46	1985	YES	No Malfunction	
0065L0	831	LIMEKILN RD	0.68	1965	YES	Potential Malfunction	Built Before 1972
0065P0	938	LIMEKILN RD	1.02	1996	YES	No Malfunction	
0065G0	941	LIMEKILN RD	10.60	1948	YES	Potential Malfunction	Built Before 1972
0065M0	942	LIMEKILN RD	1.03	1996	YES	No Malfunction	
0065C0	946	LIMEKILN RD	1.05	1996	YES	No Malfunction	
0065E0	950	LIMEKILN RD	1.25	1996	YES	No Malfunction	
0065D0	952	LIMEKILN RD	1.08	1996	YES	No Malfunction	
0065R0	954	LIMEKILN RD	1.07	1997	YES	Potential Malfunction	SEO Repair Permit
0035A0	956	LIMEKILN RD	1.60	1996	YES	No Malfunction	
0127L0	958	LIMEKILN RD	1.01	1996	YES	No Malfunction	
003200	962	LIMEKILN RD	1.03	1997	YES	No Malfunction	
002500	966	LIMEKILN RD	1.63	1997	YES	No Malfunction	
003700	968	LIMEKILN RD	1.74	1996	YES	No Malfunction	
003000	970	LIMEKILN RD	1.48	1997	YES	No Malfunction	
003300	976	LIMEKILN RD	1.70	1996	YES	No Malfunction	
003500	978	LIMEKILN RD	1.55	1996	YES	No Malfunction	
003400	982	LIMEKILN RD	1.60	1974	YES	No Malfunction	
0042B0	986	LIMEKILN RD	2.96	1920	YES	Potential Malfunction	Built Before 1972

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0057B0	990	LIMEKILN RD	1.42	1980	YES	No Malfunction	
0015G0	1060	LIMEKILN RD	2.18	1900	YES	Potential Malfunction	Built Before 1972
0153M0	1079	LIMEKILN RD	9.97	1993	YES	No Malfunction	
002200	400	LISBURN HEIGHTS DR	4.49	1985	YES	No Malfunction	
0150C0	401	LISBURN HEIGHTS DR	21.01	1971	YES	Potential Malfunction	Built Before 1972
0153D0	402	LISBURN HEIGHTS DR	8.19	1978	YES	No Malfunction	
0153N0	404	LISBURN HEIGHTS DR	5.04	2000	YES	No Malfunction	
0011A0	413	LISBURN HEIGHTS DR	5.00	1977	YES	No Malfunction	
001100	419	LISBURN HEIGHTS DR	6.99	1995	YES	No Malfunction	
0012A0	800	MARIE AVE	0.15	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000800	802	MARIE AVE	0.16	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0018H0	804	MARIE AVE	0.20	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0018K0	806	MARIE AVE	0.20	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000700	808	MARIE AVE	0.30	1926	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0007A0	810	MARIE AVE	0.21	1930	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001300	812	MARIE AVE	0.21	1930	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001400	814	MARIE AVE	0.44	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001700	735	MARKHAM CT	19.43	1997	YES	No Malfunction	
003700	755	MARKHAM CT	1.05	2004	YES	No Malfunction	
003500	765	MARKHAM CT	1.31	1997	YES	No Malfunction	
003900	770	MARKHAM CT	1.64	1997	YES	No Malfunction	
003200	780	MARKHAM CT	1.47	1995	YES	No Malfunction	
0010A0	785	MARKHAM CT	1.06	1999	YES	No Malfunction	
005100	790	MARKHAM CT	1.20	1996	YES	No Malfunction	
0046A0	306	MARSH RUN RD	4.66		YES	No Malfunction	
005600	256	MARSH RUN RD	2.86	1984	YES	No Malfunction	
0052A0	270	MARSH RUN RD	4.71	1940	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0052C0	276	MARSH RUN RD	0.95	1952	YES	Potential Malfunction	Built Before 1972
0057A0	284	MARSH RUN RD	0.70	1900	YES	Potential Malfunction	Built Before 1972
005500	288	MARSH RUN RD	7.43	1996	YES	No Malfunction	
0052B0	288	MARSH RUN RD	7.43	1996	YES	No Malfunction	
0058A0	302	MARSH RUN RD	1.61	1900	YES	Potential Malfunction	Built Before 1972
0075C0	305	MARSH RUN RD	0.19		YES	No Malfunction	
0057C0	352	MARSH RUN RD	0.66		YES	No Malfunction	
0057C0	354	MARSH RUN RD	0.13	1948	YES	Potential Malfunction	Built Before 1972
0126D0	358	MARSH RUN RD	0.10	1910	YES	Potential Malfunction	Built Before 1972

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0126F0	370	MARSH RUN RD	2.06	1910	YES	Potential Malfunction	Built Before 1972
0126J0	390	MARSH RUN RD	1.00	1954	YES	Potential Malfunction	Built Before 1972. SEO Repair Permit
0081F0	410	MARSH RUN RD	10.20	1900	YES	Potential Malfunction	Built Before 1972
0022H0	436	MARSH RUN RD	2.88		YES	No Malfunction	
0046B0	440	MARSH RUN RD	0.57	1969	YES	Potential Malfunction	Built Before 1972
0046C0	441	MARSH RUN RD	0.50	1972	YES	No Malfunction	
0046D0	446	MARSH RUN RD	1.14	1968	YES	Potential Malfunction	Built Before 1972
0046F0	456	MARSH RUN RD	0.58	1975	YES	No Malfunction	
0046G0	460	MARSH RUN RD	0.58	1975	YES	No Malfunction	
0046V0	462	MARSH RUN RD	0.82	1970	YES	Potential Malfunction	Built Before 1972
0165A0	464	MARSH RUN RD	0.82	1965	YES	Potential Malfunction	Built Before 1972
0022D0	464	MARSH RUN RD	2.00	1966	YES	Potential Malfunction	Built Before 1972
0022D0	476	MARSH RUN RD	2.00	1966	YES	Potential Malfunction	Built Before 1972
0022B0	482	MARSH RUN RD	1.23	1966	YES	Potential Malfunction	Built Before 1972
0022H0	516	MARSH RUN RD	2.88		YES	No Malfunction	
0165B0	520	MARSH RUN RD	0.36	1977	YES	No Malfunction	
0165C0	522	MARSH RUN RD	0.31	1953	YES	Potential Malfunction	Built Before 1972
0023A0	535	MARSH RUN RD	2.00	1947	YES	Potential Malfunction	Built Before 1972
0075K0	430B	MARSH RUN RD	1.59	1998	YES	No Malfunction	
0075B0	615	MARTIN DR	1.06	1988	YES	No Malfunction	
0074E0	616	MARTIN DR	0.98	1984	YES	No Malfunction	
006200	617	MARTIN DR	1.00	1988	YES	No Malfunction	
0058B0	618	MARTIN DR	1.10	1988	YES	No Malfunction	
0062A0	619	MARTIN DR	1.01	1988	YES	No Malfunction	
0062B0	620	MARTIN DR	0.97	1988	YES	No Malfunction	
0062C0	621	MARTIN DR	1.00	1991	YES	No Malfunction	
012400	622	MARTIN DR	1.00	1989	YES	No Malfunction	
012500	624	MARTIN DR	1.00	1989	YES	No Malfunction	
012600	625	MARTIN DR	1.01	1989	YES	No Malfunction	
012700	626	MARTIN DR	1.02	1989	YES	No Malfunction	
006000	627	MARTIN DR	1.00	1990	YES	No Malfunction	
005900	631	MARTIN DR	6.61	1992	YES	No Malfunction	
0007C0	450	MOORES MOUNTAIN RD	0.76	1960	YES	Potential Malfunction	Built Before 1972
000800	510	MOORES MOUNTAIN RD	10.00	1900	YES	Potential Malfunction	Built Before 1972
004600	520	MOORES MOUNTAIN RD	3.24	1989	YES	No Malfunction	
004500	522	MOORES MOUNTAIN RD	7.14	1990	YES	No Malfunction	

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003500	559	MOORES MOUNTAIN RD	2.70	1972	YES	No Malfunction	
004400	598	MOORES MOUNTAIN RD	5.33	1900	YES	Potential Malfunction	Built Before 1972
004300	607	MOORES MOUNTAIN RD	3.18	1890	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0037A0	617	MOORES MOUNTAIN RD	3.01	1985	YES	No Malfunction	
003800	621	MOORES MOUNTAIN RD	4.00	1980	YES	No Malfunction	
003900	624	MOORES MOUNTAIN RD	1.42	1962	YES	Potential Malfunction	Built Before 1972
004000	625	MOORES MOUNTAIN RD	3.85	1991	YES	No Malfunction	
004100	643	MOORES MOUNTAIN RD	4.95	1960	YES	Potential Malfunction	Built Before 1972
001400	649	MOORES MOUNTAIN RD	1.00	1972	YES	No Malfunction	
001300	652	MOORES MOUNTAIN RD	5.95		YES	No Malfunction	
000500	659	MOORES MOUNTAIN RD	10.46	1976	YES	No Malfunction	
001200	660	MOORES MOUNTAIN RD	1.28	1968	YES	Potential Malfunction	Built Before 1972
000600	668	MOORES MOUNTAIN RD	1.04	1994	YES	No Malfunction	
001100	685	MOORES MOUNTAIN RD	1.02	1982	YES	No Malfunction	
000700	687	MOORES MOUNTAIN RD	0.51	1982	YES	No Malfunction	
001000	689	MOORES MOUNTAIN RD	0.51	1982	YES	No Malfunction	
000800	690	MOORES MOUNTAIN RD	24.39	1992	YES	No Malfunction	
000900	691	MOORES MOUNTAIN RD	0.51	1982	YES	No Malfunction	
0010M0	693	MOORES MOUNTAIN RD	0.50	1982	YES	No Malfunction	
0071D0	699	MOORES MOUNTAIN RD	0.74	1962	YES	Potential Malfunction	Built Before 1972
0071E0	700	MOORES MOUNTAIN RD	1.54	1996	YES	No Malfunction	
0070S0	703	MOORES MOUNTAIN RD	1.00	1980	YES	No Malfunction	
0070T0	706	MOORES MOUNTAIN RD	8.69	1979	YES	No Malfunction	
0070U0	718	MOORES MOUNTAIN RD	1.20	1968	YES	Potential Malfunction	Built Before 1972
0071A0	719	MOORES MOUNTAIN RD	9.85	1862	YES	Potential Malfunction	Built Before 1972
0075H0	747	MOORES MOUNTAIN RD	2.00	1994	YES	No Malfunction	
0075C0	748	MOORES MOUNTAIN RD	1.00	1976	YES	No Malfunction	
0075G0	749	MOORES MOUNTAIN RD	2.00	1991	YES	No Malfunction	
0075L0	751	MOORES MOUNTAIN RD	1.25	1990	YES	No Malfunction	
0075E0	784	MOORES MOUNTAIN RD	11.55	1970	YES	Potential Malfunction	Built Before 1972
000400	810	MOORES MOUNTAIN RD	3.86	1990	YES	No Malfunction	
000500	812	MOORES MOUNTAIN RD	2.56	1992	YES	No Malfunction	
000600	814	MOORES MOUNTAIN RD	2.24	1976	YES	No Malfunction	
000900	840	MOORES MOUNTAIN RD	21.00	1885	YES	Potential Malfunction	Built Before 1972
001200	841	MOORES MOUNTAIN RD	0.52	1980	YES	No Malfunction	
001100	842	MOORES MOUNTAIN RD	0.46	1983	YES	No Malfunction	

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0078A0	844	MOORES MOUNTAIN RD	0.50	1982	YES	No Malfunction	
0075D0	845	MOORES MOUNTAIN RD	1.71	1981	YES	No Malfunction	
0098H0	848	MOORES MOUNTAIN RD	0.73	1984	YES	No Malfunction	
0108A0	849	MOORES MOUNTAIN RD	1.01	1969	YES	Potential Malfunction	Built Before 1972
006900	851	MOORES MOUNTAIN RD	1.00	1972	YES	No Malfunction	
006000	852	MOORES MOUNTAIN RD	23.00	1988	YES	No Malfunction	
0001C0	854	MOORES MOUNTAIN RD	4.70	1887	YES	Potential Malfunction	Built Before 1972
000100	855	MOORES MOUNTAIN RD	0.53	1978	YES	No Malfunction	
000200	857	MOORES MOUNTAIN RD	0.53	1969	YES	Potential Malfunction	Built Before 1972
0050C0	858	MOORES MOUNTAIN RD	5.00	1970	YES	Potential Malfunction	Built Before 1972
000300	861	MOORES MOUNTAIN RD	1.12	1986	NO	Potential Malfunction	Unsuitable Soils
000400	862	MOORES MOUNTAIN RD	1.50	1981	YES	No Malfunction	
0050B0	865	MOORES MOUNTAIN RD	0.80	1981	YES	No Malfunction	
006300	868	MOORES MOUNTAIN RD	1.55	1980	YES	No Malfunction	
0064D0	869	MOORES MOUNTAIN RD	0.80	1980	YES	No Malfunction	
006400	871	MOORES MOUNTAIN RD	0.80	1980	YES	Potential Malfunction	SEO Repair Permit
006500	872	MOORES MOUNTAIN RD	1.05	1980	YES	Potential Malfunction	SEO Repair Permit
006600	873	MOORES MOUNTAIN RD	0.80	1984	YES	No Malfunction	
0073A0	884	MOORES MOUNTAIN RD	1.55	1980	YES	No Malfunction	
007800	911	MOORES MOUNTAIN RD	1.98	1992	YES	No Malfunction	
0109A0	931	MOORES MOUNTAIN RD	8.48	1986	YES	No Malfunction	
0073F0	937	MOORES MOUNTAIN RD	1.01	2002	YES	No Malfunction	
0108B0	905	MT AIRY RD	23.73	1991	YES	No Malfunction	
007400	912	MT AIRY RD	2.12	1970	YES	Potential Malfunction	Built Before 1972
0073E0	915	MT AIRY RD	2.17	1991	YES	No Malfunction	
0073D0	937	MT AIRY RD	1.38	1988	YES	No Malfunction	
0026C0	214	MYERS LN	1.57	2001	YES	No Malfunction	
002600	215	MYERS LN	1.00	2000	YES	No Malfunction	
0025B0	216	MYERS LN	1.55	2000	YES	No Malfunction	
0026D0	218	MYERS LN	1.52	2000	YES	Potential Malfunction	SEO Repair Permit
0025C0	219	MYERS LN	1.08	2000	YES	No Malfunction	
0073B0	467	NAUVOO RD	0.36	1950	YES	Potential Malfunction	Built Before 1972
0075A0	481	NAUVOO RD	0.91	1958	YES	Potential Malfunction	Built Before 1972
0073C0	485	NAUVOO RD	0.34	1960	YES	Potential Malfunction	Built Before 1972
0075J0	487	NAUVOO RD	0.50	1950	YES	Potential Malfunction	Built Before 1972
007600	488	NAUVOO RD	1.00	1998	YES	No Malfunction	

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007700	490	NAUVOO RD	2.43	1957	YES	Potential Malfunction	Built Before 1972
007300	491	NAUVOO RD	1.22	1955	YES	Potential Malfunction	Built Before 1972
0080A0	495	NAUVOO RD	0.69	1941	YES	Potential Malfunction	Built Before 1972
0095F0	506	NAUVOO RD	0.55	1966	YES	Potential Malfunction	Built Before 1972
0079B0	508	NAUVOO RD	0.86	1965	YES	Potential Malfunction	Built Before 1972
007900	531	NAUVOO RD	55.22	1876	YES	Potential Malfunction	Built Before 1972
0079C0	545	NAUVOO RD	3.72	1989	YES	No Malfunction	
0087A0	567	NAUVOO RD	1.20	2003	YES	No Malfunction	
008800	568	NAUVOO RD	15.55	1900	YES	Potential Malfunction	Built Before 1972
008900	569	NAUVOO RD	1.09	1997	YES	No Malfunction	
009000	580	NAUVOO RD	1.96	1979	YES	No Malfunction	
009100	585	NAUVOO RD	2.60		YES	No Malfunction	
0091A0	586	NAUVOO RD	1.87	1960	YES	Potential Malfunction	Built Before 1972
0092B0	591	NAUVOO RD	6.84	1980	YES	No Malfunction	
009700	592	NAUVOO RD	2.74	1975	YES	No Malfunction	
0095A0	593	NAUVOO RD	0.69	1980	YES	No Malfunction	
009200	600	NAUVOO RD	0.89	1984	YES	No Malfunction	
0098B0	606	NAUVOO RD	0.64	1974	YES	No Malfunction	
0098J0	608	NAUVOO RD	0.80	1960	YES	Potential Malfunction	Built Before 1972
009800	612	NAUVOO RD	0.70		YES	No Malfunction	
0098G0	617	NAUVOO RD	1.04	1984	NO	Potential Malfunction	Unsuitable Soils
0098E0	621	NAUVOO RD	0.51	1994	NO	Potential Malfunction	Unsuitable Soils
0100B0	625	NAUVOO RD	1.21	1975	YES	No Malfunction	
0103A0	108	NEBINGER ST	0.29	1998	YES	No Malfunction	
0100A0	110	NEBINGER ST	0.28	1997	YES	No Malfunction	
0103G0	302	NEBINGER ST	0.43	1998	YES	No Malfunction	
0102B0	304	NEBINGER ST	0.46	1999	YES	No Malfunction	
0103B0	306	NEBINGER ST	0.49	2000	YES	No Malfunction	
0103E0	308	NEBINGER ST	0.69	2000	YES	No Malfunction	
010200	309	NEBINGER ST	0.69	2003	YES	No Malfunction	
0103D0	311	NEBINGER ST	0.79	2003	YES	No Malfunction	
0102A0	312	NEBINGER ST	0.69	2001	YES	No Malfunction	
002500	778	NISSEL LN	21.80	1970	YES	Potential Malfunction	Built Before 1972
0051B0	788	NISSEL LN	0.72	1972	NO	Potential Malfunction	Unsuitable Soils
0026G0	794	NISSEL LN	5.00	1900	YES	Potential Malfunction	Built Before 1972
0026F0	795	NISSEL LN	8.20	1978	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
002700	797	NISSEL LN	0.24	1980	YES	No Malfunction	
0026E0	800	NISSEL LN	1.19	1900	YES	Potential Malfunction	Built Before 1972
002900	1	NORTHVIEW RD	0.55	1972	YES	No Malfunction	
0029A0	2	NORTHVIEW RD	0.67	1970	YES	Potential Malfunction	Built Before 1972
0077K0	4	NORTHVIEW RD	1.27	1970	YES	Suspected Malfunction	Lush Green Grass-Observation of Sampler
0068B0	6	NORTHVIEW RD	0.58	1972	YES	No Malfunction	
0014E0	786	NULL RD	0.70	1969	YES	Potential Malfunction	Built Before 1972
007700	787	NULL RD	0.40	1960	YES	Potential Malfunction	Built Before 1972
0077A0	789	NULL RD	0.34	1960	NO	Confirmed Malfunction	BTG Permit Z002430
0077G0	791	NULL RD	0.32	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0077D0	793	NULL RD	0.32	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
007800	795	NULL RD	0.35	1960	YES	Potential Malfunction	Built Before 1972
015500	907	OAK HILL RD	2.50	1983	YES	No Malfunction	
0103K0	910	OAK HILL RD	2.12	2004	YES	No Malfunction	
0105R0	911	OAK HILL RD	1.84	1998	YES	No Malfunction	
0105K0	923	OAK HILL RD	4.26	1999	YES	No Malfunction	
0105L0	933	OAK HILL RD	0.47	1975	YES	No Malfunction	
0105M0	935	OAK HILL RD	2.00	1975	YES	No Malfunction	
0105P0	936	OAK HILL RD	1.42	1979	YES	No Malfunction	
0105H0	937	OAK HILL RD	67.00	1900	YES	Potential Malfunction	Built Before 1972
0151B0	942	OAK HILL RD	2.72	1900	YES	Potential Malfunction	Built Before 1972
0151D0	954	OAK HILL RD	17.20	1952	YES	Potential Malfunction	Built Before 1972
0151C0	981	OAK HILL RD	6.73	1826	YES	Potential Malfunction	Built Before 1972
0010E0	986	OAK HILL RD	4.58	1975	YES	No Malfunction	
0010D0	987	OAK HILL RD	6.99	1978	YES	Potential Malfunction	SEO Repair Permit
0010C0	993	OAK HILL RD	4.73	1972	YES	No Malfunction	
0010G0	994	OAK HILL RD	4.46	1970	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0010B0	1000	OAK HILL RD	4.53	1976	YES	No Malfunction	
0050A0	1001	OAK HILL RD	8.30	1976	YES	No Malfunction	
012900	1002	OAK HILL RD	9.32	1980	YES	No Malfunction	
012800	1011	OAK HILL RD	13.37	1971	YES	Potential Malfunction	Built Before 1972
012700	1024	OAK HILL RD	10.41	1975	YES	No Malfunction	
011700	1029	OAK HILL RD	2.56	1900	YES	Potential Malfunction	Built Before 1972
012600	632	OBSERVATORY DR	1.72	1991	YES	No Malfunction	
011800	646	OBSERVATORY DR	4.53	1986	YES	No Malfunction	
011900	633	OBSERVATORY DR	1.01	1987	YES	No Malfunction	

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012300	636	OBSERVATORY DR	1.01	1992	YES	No Malfunction	
012100	637	OBSERVATORY DR	1.10	1987	YES	No Malfunction	
0058A0	638	OBSERVATORY DR	1.01	1985	YES	No Malfunction	
0058K0	639	OBSERVATORY DR	1.01	1986	YES	No Malfunction	
005900	640	OBSERVATORY DR	5.25	1987	YES	No Malfunction	
005900	641	OBSERVATORY DR	1.01	1987	YES	No Malfunction	
0052B0	642	OBSERVATORY DR	1.01	1985	YES	No Malfunction	
0052T0	643	OBSERVATORY DR	10.50	1988	YES	No Malfunction	
005100	644	OBSERVATORY DR	1.01	1986	YES	No Malfunction	
0026A0	645	OBSERVATORY DR	1.12	1986	YES	No Malfunction	
003000	647	OBSERVATORY DR	1.01	1986	YES	No Malfunction	
003000	648	OBSERVATORY DR	1.01	1987	YES	No Malfunction	
002500	651	OBSERVATORY DR	1.01	1987	YES	No Malfunction	
0052J0	654	OBSERVATORY DR	1.11	2004	YES	No Malfunction	
0052F0	656	OBSERVATORY DR	1.24	1978	YES	No Malfunction	
0046B0	658	OBSERVATORY DR	2.36	1984	YES	No Malfunction	
0001J0	670	OBSERVATORY DR	3.14		YES	Potential Malfunction	SEO Repair Permit
0075C0	797	OLD FORGE RD	0.41	1972	YES	No Malfunction	
0075A0	799	OLD FORGE RD	0.41	1960	YES	Potential Malfunction	Built Before 1972
0075D0	800	OLD FORGE RD	1.08		NO	Potential Malfunction	Unsuitable Soils
0026U0	803	OLD FORGE RD	1.61	1921	YES	Potential Malfunction	Built Before 1972
0001G0	817	OLD FORGE RD	0.38	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001D0	819	OLD FORGE RD	0.44	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001C0	821	OLD FORGE RD	0.44	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001A0	825	OLD FORGE RD	0.44	1951	NO	Confirmed Malfunction	BTG Permit Z004234
004800	827	OLD FORGE RD	0.44	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001300	829	OLD FORGE RD	0.44	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001200	832	OLD FORGE RD	0.46	1984	YES	No Malfunction	
001100	833	OLD FORGE RD	0.44	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000100	834	OLD FORGE RD	0.46	1989	YES	No Malfunction	
000300	836	OLD FORGE RD	0.46	1981	YES	No Malfunction	
000400	837	OLD FORGE RD	0.43	1957	YES	Potential Malfunction	Built Before 1972
000700	839	OLD FORGE RD	0.43	1955	YES	Potential Malfunction	Built Before 1972
000600	840	OLD FORGE RD	0.49	1984	YES	No Malfunction	
010100	847	OLD FORGE RD	0.39	1962	YES	Potential Malfunction	Built Before 1972
010200	852	OLD FORGE RD	0.62	1983	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0014C0	854	OLD FORGE RD	1.66	1968	YES	Potential Malfunction	Built Before 1972
0014F0	856	OLD FORGE RD	3.01	1976	YES	No Malfunction	
0011C0	867	OLD FORGE RD	5.27	1872	YES	Potential Malfunction	Built Before 1972
0011B0	868	OLD FORGE RD	2.00	2001	YES	No Malfunction	
0011E0	906	OLD FORGE RD	2.10	1886	YES	Potential Malfunction	Built Before 1972
0014J0	916	OLD FORGE RD	0.70	1970	YES	Potential Malfunction	Built Before 1972
0016A0	925	OLD FORGE RD	1.60	1950	YES	Potential Malfunction	Built Before 1972
010300	931	OLD FORGE RD	1.31	1983	YES	No Malfunction	
0001D0	949	OLD FORGE RD	0.66	1945	YES	Potential Malfunction	Built Before 1972
0046A0	971	OLD FORGE RD	8.48	1900	YES	Potential Malfunction	Built Before 1972
005000	1007	OLD FORGE RD	0.69	1958	YES	Potential Malfunction	Built Before 1972
0050C0	1013	OLD FORGE RD	0.12	1958	YES	Potential Malfunction	Built Before 1972
030200	1017	OLD FORGE RD	1.00	1900	YES	Potential Malfunction	Built Before 1972
0047A0	1050	OLD FORGE RD	5.47	1900	YES	Potential Malfunction	Built Before 1972
004700	619	OLD QUAKER RD	44.61		YES	No Malfunction	
0017B0	536	OLD QUAKER RD	1.14	1850	YES	Potential Malfunction	Built Before 1972
001900	558	OLD QUAKER RD	1.00	1990	YES	No Malfunction	
001800	560	OLD QUAKER RD	1.94	1737	YES	Potential Malfunction	Built Before 1972
0066P0	566	OLD QUAKER RD	6.16	1998	YES	No Malfunction	
001900	570	OLD QUAKER RD	8.35	1978	YES	No Malfunction	
001200	605	OLD QUAKER RD	3.45	1850	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
001800	630	OLD QUAKER RD	55.58	1978	YES	No Malfunction	
001300	640	OLD QUAKER RD	1.00	1978	YES	No Malfunction	
001700	642	OLD QUAKER RD	1.00	1981	YES	No Malfunction	
001600	645	OLD QUAKER RD	1.00	1979	YES	No Malfunction	
0068C0	666	OLD QUAKER RD	1.00	1975	YES	No Malfunction	
0066M0	670	OLD QUAKER RD	0.86	1980	YES	No Malfunction	
0066X0	672	OLD QUAKER RD	0.89	1978	YES	Potential Malfunction	SEO Repair Permit
0066W0	698	OLD QUAKER RD	120.00	1900	YES	Potential Malfunction	Built Before 1972
0068D0	698	OLD QUAKER RD	120.00	1900	YES	Potential Malfunction	Built Before 1972
0066Y0	707	OLD QUAKER RD	3.30	1890	YES	Potential Malfunction	Built Before 1972
0066N0	712	OLD QUAKER RD	7.00	1948	YES	Potential Malfunction	Built Before 1972
0066V0	718	OLD QUAKER RD	5.48	1978	YES	No Malfunction	
0066K0	719	OLD QUAKER RD	1.89	1964	YES	Potential Malfunction	Built Before 1972
0068E0	723	OLD QUAKER RD	0.80	1977	YES	No Malfunction	
0066L0	724	OLD QUAKER RD	4.50	1969	YES	Potential Malfunction	Built Before 1972

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0066S0	727	OLD QUAKER RD	1.70	1961	YES	Potential Malfunction	Built Before 1972
0023K0	728	OLD QUAKER RD	4.09	1970	YES	Potential Malfunction	Built Before 1972
0065U0	731	OLD QUAKER RD	3.25	1945	YES	Potential Malfunction	Built Before 1972
0065T0	732	OLD QUAKER RD	1.00	1958	YES	Potential Malfunction	SEO Repair Permit
0065Q0	738	OLD QUAKER RD	2.00	1958	YES	Potential Malfunction	Built Before 1972
0065N0	741	OLD QUAKER RD	3.07	1966	YES	Potential Malfunction	Built Before 1972
0065M0	743	OLD QUAKER RD	3.94	1995	YES	No Malfunction	
0065P0	745	OLD QUAKER RD	10.00	1985	YES	No Malfunction	
0065R0	746	OLD QUAKER RD	0.75	1965	YES	Potential Malfunction	Built Before 1972
0065S0	748	OLD QUAKER RD	2.70	1965	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0065V0	756	OLD QUAKER RD	8.27	1969	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0026H0	761	OLD QUAKER RD	10.50	1876	YES	Potential Malfunction	Built Before 1972
0026J0	771	OLD QUAKER RD	38.21	1970	YES	Potential Malfunction	Built Before 1972
0026E0	772	OLD QUAKER RD	1.00	1989	YES	No Malfunction	
0026F0	774	OLD QUAKER RD	15.06	1970	YES	Potential Malfunction	Built Before 1972
0010A0	776	OLD QUAKER RD	1.01	1985	YES	No Malfunction	
0011A0	780	OLD QUAKER RD	1.01	1987	YES	No Malfunction	
0011F0	783	OLD QUAKER RD	11.56	1975	YES	No Malfunction	
0011K0	791	OLD QUAKER RD	3.57	1978	YES	No Malfunction	
0011D0	795	OLD QUAKER RD	3.58	1999	YES	No Malfunction	
0015A0	797	OLD QUAKER RD	1.06	1987	YES	No Malfunction	
001500	799	OLD QUAKER RD	1.56	1988	YES	Potential Malfunction	SEO Repair Permit
0007R0	802	OLD QUAKER RD	1.71	1974	YES	No Malfunction	
0007K0	804	OLD QUAKER RD	1.51	1987	NO	Potential Malfunction	Unsuitable Soils
0026G0	1550	OLD QUAKER RD	2.46	1980	YES	No Malfunction	
0026V0	729	OLD QUAKER RD	1.63	1984	YES	No Malfunction	
002600	794	OLD QUAKER RD	10.00	1900	YES	Potential Malfunction	Built Before 1972
002300	993	OLD ROSSTOWN RD	0.72	1975	NO	Potential Malfunction	Unsuitable Soils
0023D0	995	OLD ROSSTOWN RD	0.51	1975	NO	Potential Malfunction	Unsuitable Soils
0023F0	1004	OLD ROSSTOWN RD	0.51	1975	NO	Potential Malfunction	Unsuitable Soils
0023C0	1008	OLD ROSSTOWN RD	0.97	1987	NO	Potential Malfunction	Unsuitable Soils
0023B0	801	OLD ROSSVILLE RD	26.41	1900	YES	Potential Malfunction	Built Before 1972
0021A0	901	OLD ROSSVILLE RD	1.72		YES	No Malfunction	
0007P0	989	OLD ROSSVILLE RD	0.85	1975	NO	Potential Malfunction	Unsuitable Soils
0024B0	991	OLD ROSSVILLE RD	0.89	1975	NO	Potential Malfunction	Unsuitable Soils
0237K0	331	OLD STAGE RD	82.12	1810	YES	Potential Malfunction	Built Before 1972
0237F0	349	OLD STAGE RD	5.82	1980	YES	No Malfunction	

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0080B0	352	OLD STAGE RD	2.10	1979	YES	No Malfunction	
0080C0	355	OLD STAGE RD	1.67	1900	YES	Potential Malfunction	Built Before 1972
0086B0	358	OLD STAGE RD	2.02	1979	YES	No Malfunction	
0086D0	362	OLD STAGE RD	2.07	1979	YES	Potential Malfunction	SEO Repair Permit
0086C0	363	OLD STAGE RD	6.51	1994	YES	No Malfunction	
008000	368	OLD STAGE RD	5.26	1989	YES	No Malfunction	
008100	369	OLD STAGE RD	1.71	1977	YES	No Malfunction	
001700	370	OLD STAGE RD	3.00	1978	YES	Potential Malfunction	SEO Repair Permit
0001C0	376	OLD STAGE RD	10.00	1972	YES	No Malfunction	
0001B0	390	OLD STAGE RD	3.00	1948	YES	Potential Malfunction	Built Before 1972
0001D0	406	OLD STAGE RD	10.65	1900	YES	Potential Malfunction	Built Before 1972
003200	410	OLD STAGE RD	0.53	1932	YES	Potential Malfunction	Built Before 1972
003100	412	OLD STAGE RD	3.54	1967	YES	Potential Malfunction	Built Before 1972
003000	420	OLD STAGE RD	6.70	1999	YES	No Malfunction	
002800	421	OLD STAGE RD	2.19	2003	YES	No Malfunction	
0001L0	423	OLD STAGE RD	10.03	1999	YES	No Malfunction	
0007A0	427	OLD STAGE RD	2.86	1998	YES	No Malfunction	
0003Q0	429	OLD STAGE RD	24.78	1988	YES	No Malfunction	
0002A0	433	OLD STAGE RD	0.50	1959	YES	Potential Malfunction	Built Before 1972
005200	434	OLD STAGE RD	1.27	1950	YES	Potential Malfunction	Built Before 1972
0003L0	437	OLD STAGE RD	0.50	1966	YES	Potential Malfunction	Built Before 1972
0002B0	440	OLD STAGE RD	11.96	1991	YES	No Malfunction	
000200	442	OLD STAGE RD	2.11	1986	YES	No Malfunction	
0002C0	445	OLD STAGE RD	0.50	1962	YES	Potential Malfunction	Built Before 1972
006100	447	OLD STAGE RD	0.50	1955	YES	Potential Malfunction	Built Before 1972
0061A0	448	OLD STAGE RD	2.30	1890	YES	Potential Malfunction	Built Before 1972
0061B0	453	OLD STAGE RD	0.46	1987	YES	Potential Malfunction	SEO Repair Permit
000300	454	OLD STAGE RD	1.00	1940	YES	Potential Malfunction	Built Before 1972
000200	455	OLD STAGE RD	0.98	1932	YES	Potential Malfunction	Built Before 1972
000100	456	OLD STAGE RD	1.93	1983	YES	No Malfunction	
0001B0	458	OLD STAGE RD	5.83	1986	YES	No Malfunction	
0080E0	459	OLD STAGE RD	0.72	1950	YES	Potential Malfunction	Built Before 1972
008300	461	OLD STAGE RD	0.56	1952	YES	Potential Malfunction	Built Before 1972
0169E0	463	OLD STAGE RD	0.60	1900	YES	Potential Malfunction	Built Before 1972
0169F0	464	OLD STAGE RD	0.76	1983	YES	Potential Malfunction	SEO Repair Permit
0169B0	468	OLD STAGE RD	2.57	1983	YES	No Malfunction	
0086B0	469	OLD STAGE RD	1.00	1994	YES	No Malfunction	

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008600	470	OLD STAGE RD	0.63	1983	YES	No Malfunction	
0086D0	474	OLD STAGE RD	2.41	1983	YES	No Malfunction	
0169D0	476	OLD STAGE RD	0.53	1983	YES	No Malfunction	
0169G0	480	OLD STAGE RD	2.30	1982	YES	No Malfunction	
013000	481	OLD STAGE RD	1.00	1954	YES	Potential Malfunction	Built Before 1972
0025E0	482	OLD STAGE RD	0.51	1988	YES	No Malfunction	
0025A0	485	OLD STAGE RD	1.00	1946	YES	Potential Malfunction	Built Before 1972
0025K0	487	OLD STAGE RD	1.72	1987	YES	No Malfunction	
0025H0	489	OLD STAGE RD	2.00	1948	YES	Potential Malfunction	Built Before 1972
0025J0	490	OLD STAGE RD	0.85	1983	YES	No Malfunction	
0022A0	868	OLD STAGE RD	0.25	1957	YES	Potential Malfunction	Built Before 1972
002200	872	OLD STAGE RD	0.46	1972	YES	No Malfunction	
002300	874	OLD STAGE RD	0.51	1969	YES	Potential Malfunction	Built Before 1972
010400	260	OLD YORK RD	8.00		NO	Potential Malfunction	Unsuitable Soils, SEO Repair Permit
011200	268	OLD YORK RD	3.10	1976	NO	Potential Malfunction	Unsuitable Soils
001000	328	OLD YORK RD	1.12	1900	YES	Potential Malfunction	Built Before 1972
010600	330	OLD YORK RD	1.63	1930	YES	Potential Malfunction	Built Before 1972
0177J0	332	OLD YORK RD	0.32	1900	YES	Potential Malfunction	Built Before 1972
0180B0	334	OLD YORK RD	0.21	1959	YES	Potential Malfunction	Built Before 1972
0172L0	336	OLD YORK RD	0.51	1900	YES	Potential Malfunction	Built Before 1972
0181B0	337	OLD YORK RD	2.80	1935	YES	Potential Malfunction	Built Before 1972
0181A0	345	OLD YORK RD	17.71	1920	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0182A0	348	OLD YORK RD	1.02	1976	YES	No Malfunction	
018200	360	OLD YORK RD	10.50	1980	YES	No Malfunction	
017700	363	OLD YORK RD	1.00	1900	YES	Potential Malfunction	Built Before 1972
018100	369	OLD YORK RD	3.99	1970	YES	Potential Malfunction	Built Before 1972
0181D0	371	OLD YORK RD	6.00	1930	YES	Potential Malfunction	Built Before 1972
0181C0	372	OLD YORK RD	1.18	1995	YES	No Malfunction	
011400	384	OLD YORK RD	0.50	1920	YES	Potential Malfunction	Built Before 1972
002500	386	OLD YORK RD	0.28	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0024A0	2	PARTHMORE CR	3.16	1991	YES	No Malfunction	
002400	3	PARTHMORE CR	2.83	1994	YES	No Malfunction	
000500	4	PARTHMORE CR	4.01	1994	YES	No Malfunction	
0005A0	510	PAUL AVE	10.00	1974	YES	No Malfunction	
020500	515	PAUL AVE	10.16	1979	YES	No Malfunction	
020400	525	PAUL AVE	10.45	1979	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
020300	545	PAUL AVE	11.14	1978	YES	No Malfunction	
0077S0	1	PINE TREE DR	0.57	1980	YES	No Malfunction	
0077M0	3	PINE TREE DR	0.59	1980	YES	No Malfunction	
001400	5	PINE TREE DR	0.48	1980	YES	No Malfunction	
001200	7	PINE TREE DR	0.43	1980	YES	No Malfunction	
001500	9	PINE TREE DR	0.46	1980	YES	No Malfunction	
002800	10	PINE TREE DR	0.54	1980	YES	No Malfunction	
001600	11	PINE TREE DR	0.51	1980	YES	No Malfunction	
000800	12	PINE TREE DR	0.49	1980	YES	No Malfunction	
001700	15	PINE TREE DR	0.81	1980	YES	No Malfunction	
001800	16	PINE TREE DR	1.47	1980	YES	No Malfunction	
000600	18	PINE TREE DR	0.82	1980	YES	No Malfunction	
001900	693	PINETOWN RD	1.00	2005	YES	No Malfunction	
017400	854	PINETOWN RD	0.46	1987	YES	No Malfunction	
021500	854	PINETOWN RD	6.70	1989	YES	No Malfunction	
021600	1117	PINETOWN RD	7.60	2004	YES	No Malfunction	
001600	1118	PINETOWN RD	2.56	1971	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
007000	695	PINETOWN RD	1.00	1996	YES	No Malfunction	
0072B0	696	PINETOWN RD	3.29	1992	YES	No Malfunction	
007300	699	PINETOWN RD	1.41	1972	YES	No Malfunction	
007400	701	PINETOWN RD	4.03	1850	YES	Potential Malfunction	Built Before 1972
007500	703	PINETOWN RD	2.85	1987	YES	No Malfunction	
007600	719	PINETOWN RD	1.07	1971	YES	Potential Malfunction	Built Before 1972
0160A0	720	PINETOWN RD	4.45	1982	NO	Potential Malfunction	Unsuitable Soils, SEO Repair Permit
009900	767	PINETOWN RD	130.04	1850	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010200	789	PINETOWN RD	47.07	1734	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
009700	799	PINETOWN RD	0.75	1900	YES	Potential Malfunction	Built Before 1972
010300	810	PINETOWN RD	18.43	1976	NO	Potential Malfunction	Unsuitable Soils
010400	819	PINETOWN RD	2.37	1830	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010500	825	PINETOWN RD	62.09	1980	NO	Potential Malfunction	Unsuitable Soils
0155A0	826	PINETOWN RD	1.00	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
015700	827	PINETOWN RD	5.30	1994	NO	Potential Malfunction	Unsuitable Soils
015500	844	PINETOWN RD	2.32	1989	YES	No Malfunction	
0155C0	845	PINETOWN RD	1.46	1970	YES	Potential Malfunction	Built Before 1972
0155B0	847	PINETOWN RD	10.13	1997	NO	Potential Malfunction	Unsuitable Soils
017500	848	PINETOWN RD	0.51	1988	NO	Potential Malfunction	Unsuitable Soils

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
008700	858	PINETOWN RD	0.46	1991	NO	Potential Malfunction	Unsuitable Soils
0172A0	859	PINETOWN RD	3.00	1973	NO	Potential Malfunction	Unsuitable Soils
0177A0	860	PINETOWN RD	0.46	1991	NO	Potential Malfunction	Unsuitable Soils
017600	866	PINETOWN RD	1.01	1994	NO	Potential Malfunction	Unsuitable Soils
0172E0	867	PINETOWN RD	7.80	1875	YES	Potential Malfunction	Built Before 1972
0172G0	876	PINETOWN RD	5.60	1987	YES	No Malfunction	
0172C0	880	PINETOWN RD	0.76	1981	NO	Potential Malfunction	Unsuitable Soils
0172H0	881	PINETOWN RD	6.41	1836	YES	Potential Malfunction	Built Before 1972
017100	925	PINETOWN RD	14.41	2001	YES	No Malfunction	
016900	930	PINETOWN RD	23.27	1991	YES	No Malfunction	
0086A0	941	PINETOWN RD	8.75	1979	YES	No Malfunction	
0086C0	976	PINETOWN RD	6.91	1979	YES	No Malfunction	
0065N0	978	PINETOWN RD	1.85	1971	YES	Potential Malfunction	Built Before 1972
0065A0	981	PINETOWN RD	1.93	1983	YES	No Malfunction	
0065K0	987	PINETOWN RD	1.34	1994	YES	No Malfunction	
0065W0	989	PINETOWN RD	18.00	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0071A0	991	PINETOWN RD	3.00	2004	NO	Potential Malfunction	Unsuitable Soils
0073A0	997	PINETOWN RD	10.00	2003	YES	No Malfunction	
0071G0	1008	PINETOWN RD	22.08	1977	YES	No Malfunction	
0071H0	1014	PINETOWN RD	178.00	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0052B0	1076	PINETOWN RD	52.30	1960	YES	Potential Malfunction	Built Before 1972
005200	1093	PINETOWN RD	1.00	1999	YES	No Malfunction	
0052D0	1094	PINETOWN RD	1.63	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0053A0	1095	PINETOWN RD	1.84	2000	YES	No Malfunction	
0052A0	1100	PINETOWN RD	1.09	1995	NO	Potential Malfunction	Unsuitable Soils
006900	1107	PINETOWN RD	10.28	2000	YES	No Malfunction	
005300	1109	PINETOWN RD	0.92	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0053B0	1113	PINETOWN RD	0.78	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
005100	1115	PINETOWN RD	1.00	1975	NO	Potential Malfunction	Unsuitable Soils
0022A0	1130	PINETOWN RD	2.09	1976	NO	Potential Malfunction	Unsuitable Soils
0050D0	1131	PINETOWN RD	1.60	1985	NO	Potential Malfunction	Unsuitable Soils
0022D0	1138	PINETOWN RD	3.23	1992	NO	Potential Malfunction	Unsuitable Soils
0022L0	1144	PINETOWN RD	8.10	1957	YES	Potential Malfunction	Built Before 1972
0022E0	1147	PINETOWN RD	3.39	1981	YES	No Malfunction	
0022K0	1149	PINETOWN RD	3.46	1900	YES	Potential Malfunction	Built Before 1972
0022C0	1153	PINETOWN RD	1.83	1968	YES	Potential Malfunction	Built Before 1972

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0022J0	1166	PINETOWN RD	3.69	1965	YES	Potential Malfunction	Built Before 1972
0022B0	2360	PINETOWN RD	124.00	2001	NO	Potential Malfunction	Unsuitable Soils
0022G0	609	POTTS HILL RD	3.43	1964	YES	Potential Malfunction	Built Before 1972
0022H0	619	POTTS HILL RD	3.10	1976	YES	No Malfunction	
0064B0	629	POTTS HILL RD	3.00	1956	YES	Potential Malfunction	Built Before 1972
004900	633	POTTS HILL RD	5.74	1963	YES	Potential Malfunction	Built Before 1972
006500	633	POTTS HILL RD	5.51	1992	YES	No Malfunction	
006400	640	POTTS HILL RD	18.74	1964	YES	Potential Malfunction	Built Before 1972
0061A0	641	POTTS HILL RD	3.86	1979	YES	No Malfunction	
006100	643	POTTS HILL RD	2.39	1979	YES	No Malfunction	
004600	656	POTTS HILL RD	24.27	2000	YES	No Malfunction	
0060A0	660	POTTS HILL RD	10.05	2001	YES	No Malfunction	
005900	661	POTTS HILL RD	1.00	1960	YES	Potential Malfunction	Built Before 1972
005800	671	POTTS HILL RD	1.01	1957	YES	Potential Malfunction	Built Before 1972
004300	679	POTTS HILL RD	2.62	1978	YES	No Malfunction	
004200	683	POTTS HILL RD	0.34	1957	YES	Potential Malfunction	Built Before 1972
005600	717	POTTS HILL RD	0.42	1900	YES	Potential Malfunction	Built Before 1972
004100	719	POTTS HILL RD	0.88	1956	YES	Potential Malfunction	Built Before 1972
005500	721	POTTS HILL RD	0.60	1954	YES	Potential Malfunction	Built Before 1972
0025R0	723	POTTS HILL RD	0.80	1971	YES	Potential Malfunction	Built Before 1972
005400	740	POTTS HILL RD	54.90	1845	YES	Potential Malfunction	Built Before 1972
003700	751	POTTS HILL RD	0.51	1940	YES	Potential Malfunction	Built Before 1972
005300	757	POTTS HILL RD	0.96	1942	YES	Potential Malfunction	Built Before 1972
005200	601	POTTS HILL RD	7.08	2000	YES	No Malfunction	
005100	501	QUEEN ST	0.47	1976	YES	No Malfunction	
017800	657	REVERE CR	0.81	1984	YES	No Malfunction	
001800	658	REVERE CR	0.76	1985	YES	No Malfunction	
001400	659	REVERE CR	1.26	1984	YES	Potential Malfunction	SEO Repair Permit
001300	661	REVERE CR	0.67	1989	YES	No Malfunction	
001500	662	REVERE CR	0.60	1985	YES	No Malfunction	
001100	665	REVERE CR	0.51	1986	YES	No Malfunction	
001000	666	REVERE CR	0.47	1987	YES	Potential Malfunction	SEO Repair Permit
000700	669	REVERE CR	1.76	1987	YES	No Malfunction	
0178A0	670	REVERE CR	1.61	1987	YES	No Malfunction	
022700	181	ROSE HILL DR	1.03	2002	YES	No Malfunction	
023600	183	ROSE HILL DR	1.00	2004	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
022800	185	ROSE HILL DR	1.18	2004	YES	No Malfunction	
023300	186	ROSE HILL DR	1.05	2002	YES	No Malfunction	
023200	187	ROSE HILL DR	1.31	2002	YES	No Malfunction	
0230A0	189	ROSE HILL DR	1.41	2002	YES	No Malfunction	
022300	195	ROSE HILL DR	2.57	2003	YES	No Malfunction	
022500	198	ROSE HILL DR	5.90	2005	YES	No Malfunction	
0038J0	920	ROSSTOWN RD	49.50	1812	YES	Potential Malfunction	Built Before 1972
0172H0	920	ROSSTOWN RD	49.50	1812	YES	Potential Malfunction	Built Before 1972
0031B0	998	ROSSTOWN RD	0.50	1976	NO	Potential Malfunction	Unsuitable Soils
003600	1000	ROSSTOWN RD	0.60	1974	NO	Potential Malfunction	Unsuitable Soils
0038C0	1055	ROSSTOWN RD	21.59	1980	NO	Potential Malfunction	Unsuitable Soils
0038L0	1055	ROSSTOWN RD	21.59	1980	NO	Potential Malfunction	Unsuitable Soils
0038E0	903	ROSSVILLE RD	4.83	1981	YES	No Malfunction	
0038M0	985	ROSSVILLE RD	4.33	1978	YES	No Malfunction	
003800	997	ROSSVILLE RD	2.00	1978	NO	Potential Malfunction	Unsuitable Soils
0040C0	1001	ROSSVILLE RD	0.94	1976	NO	Potential Malfunction	Unsuitable Soils
022100	816	RUDYTOWN RD	2.17	2003	YES	No Malfunction	
022000	818	RUDYTOWN RD	1.93	2004	YES	No Malfunction	
0220A0	820	RUDYTOWN RD	1.58	1992	YES	No Malfunction	
021900	824	RUDYTOWN RD	1.39	2004	YES	No Malfunction	
0040K0	830	RUDYTOWN RD	0.56	1980	YES	No Malfunction	
021400	834	RUDYTOWN RD	0.54	2004	YES	No Malfunction	
0214A0	836	RUDYTOWN RD	0.58	2000	YES	Potential Malfunction	SEO Repair Permit
021100	838	RUDYTOWN RD	0.61	1998	YES	No Malfunction	
021300	839	RUDYTOWN RD	0.56	1972	YES	No Malfunction	
0209B0	846	RUDYTOWN RD	2.87	1977	YES	No Malfunction	
020900	851	RUDYTOWN RD	0.50	1974	YES	No Malfunction	
021200	853	RUDYTOWN RD	0.44	1965	YES	Potential Malfunction	Built Before 1972
020800	860	RUDYTOWN RD	1.00	2002	YES	No Malfunction	
020800	866	RUDYTOWN RD	5.14	1941	YES	Potential Malfunction	Built Before 1972
0212B0	886	RUDYTOWN RD	1.55	1988	YES	No Malfunction	
020700	890	RUDYTOWN RD	0.46	1900	YES	Potential Malfunction	Built Before 1972
020700	892	RUDYTOWN RD	0.22	1930	YES	Potential Malfunction	Built Before 1972
0040H0	480	SAN REMO PL	0.56	1977	NO	Potential Malfunction	Unsuitable Soils
0040G0	481	SAN REMO PL	0.59	1983	NO	Potential Malfunction	Unsuitable Soils
0040F0	482	SAN REMO PL	0.55	1977	NO	Potential Malfunction	Unsuitable Soils

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0040B0	483	SAN REMO PL	0.61	1980	NO	Potential Malfunction	Unsuitable Soils
0040A0	485	SAN REMO PL	0.63	1980	NO	Potential Malfunction	Unsuitable Soils
0239A0	487	SAN REMO PL	0.99	1992	NO	Potential Malfunction	Unsuitable Soils
0022F0	488	SAN REMO PL	0.82	1988	NO	Potential Malfunction	Unsuitable Soils, SEO Repair Permit
0010B0	1138	SASSAFRAS LN	2.00	1988	YES	No Malfunction	
0010E0	596	SAW MILL RD	25.08	1900	YES	Potential Malfunction	Built Before 1972
0010G0	517	SAW MILL RD	5.91	1963	YES	Potential Malfunction	Built Before 1972
0010V0	518	SAW MILL RD	1.49	1966	YES	Potential Malfunction	Built Before 1972
0010F0	524	SAW MILL RD	4.06	1983	YES	Potential Malfunction	SEO Repair Permit
0010J0	525	SAW MILL RD	3.24	1986	YES	No Malfunction	
0010S0	531	SAW MILL RD	2.93	1900	YES	Potential Malfunction	Built Before 1972
0010L0	532	SAW MILL RD	0.50	1978	YES	No Malfunction	
0010A0	534	SAW MILL RD	0.92	1952	YES	Potential Malfunction	Built Before 1972
001600	553	SAW MILL RD	6.47	1990	YES	No Malfunction	
0017D0	555	SAW MILL RD	0.94	1986	YES	No Malfunction	
0016B0	556	SAW MILL RD	1.02	1980	YES	No Malfunction	
0017E0	559	SAW MILL RD	1.22	1985	YES	No Malfunction	
001700	561	SAW MILL RD	1.75	1970	YES	Potential Malfunction	Built Before 1972
0017A0	565	SAW MILL RD	1.78	1976	YES	No Malfunction	
0017C0	596	SAW MILL RD	15.99	1900	YES	Potential Malfunction	Built Before 1972
001800	601	SAW MILL RD	2.13	1976	YES	No Malfunction	
0020B0	605	SAW MILL RD	0.82	1982	YES	No Malfunction	
002000	606	SAW MILL RD	1.63	1976	YES	No Malfunction	
002000	628	SAW MILL RD	2.86	1975	YES	No Malfunction	
0020D0	636	SAW MILL RD	10.50	1828	YES	Potential Malfunction	Built Before 1972
0081H0	645	SAW MILL RD	39.54	1979	YES	No Malfunction	
0081D0	645	SAW MILL RD	4.29	1979	YES	No Malfunction	
0081E0	647	SAW MILL RD	22.40	2003	YES	No Malfunction	
0081B0	659	SAW MILL RD	4.27	1980	YES	Potential Malfunction	SEO Repair Permit
008200	670	SAW MILL RD	13.85	1969	YES	Potential Malfunction	Built Before 1972
0168B0	710	SAW MILL RD	0.92	1980	YES	No Malfunction	
016800	713	SAW MILL RD	9.01	1880	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0168A0	713	SAW MILL RD	9.01	1880	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0168D0	713	SAW MILL RD	9.01	1880	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
032200	551	SAW MILL RD	5.03	1984	YES	No Malfunction	
030100	628	SAW MILL RD	1.06	1975	YES	No Malfunction	

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020400	792	SCENIC CR	0.40	1965	YES	Potential Malfunction	Built Before 1972
020000	795	SCENIC CR	0.41	1965	YES	Potential Malfunction	Built Before 1972
0022A0	645	SCHOOL HOUSE LN	3.23	1985	YES	No Malfunction	
002200	647	SCHOOL HOUSE LN	2.53	1992	YES	No Malfunction	
0022E0	649	SCHOOL HOUSE LN	1.09	1986	YES	No Malfunction	
001700	649	SCHOOL HOUSE LN	1.00	1993	YES	No Malfunction	
0022B0	732	SCHOOL HOUSE LN	1.03	1972	YES	No Malfunction	
0022D0	736	SCHOOL HOUSE LN	1.00	1971	YES	Potential Malfunction	Built Before 1972
003900	740	SCHOOL HOUSE LN	1.17	1974	YES	No Malfunction	
004100	744	SCHOOL HOUSE LN	29.28	1900	YES	Potential Malfunction	Built Before 1972
003600	777	SCHOOL HOUSE LN	53.32	1900	YES	Potential Malfunction	Built Before 1972
004200	784	SCHOOL HOUSE LN	13.02	1964	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
003500	794	SCHOOL HOUSE LN	0.46	1975	YES	No Malfunction	
004300	796	SCHOOL HOUSE LN	0.51	1975	YES	No Malfunction	
003300	801	SCHOOL HOUSE LN	1.42	1950	YES	Potential Malfunction	Built Before 1972
004500	805	SCHOOL HOUSE LN	1.79	1970	YES	Potential Malfunction	Built Before 1972
003200	808	SCHOOL HOUSE LN	0.81	1950	YES	Potential Malfunction	Built Before 1972
002900	816	SCHOOL HOUSE LN	0.82	1988	YES	No Malfunction	
005000	830	SCHOOL HOUSE LN	1.23	1995	YES	No Malfunction	
002700	839	SCHOOL HOUSE LN	8.29	1996	YES	No Malfunction	
005100	844	SCHOOL HOUSE LN	1.03	2005	YES	No Malfunction	
002600	845	SCHOOL HOUSE LN	1.49	1994	YES	No Malfunction	
005200	865	SCHOOL HOUSE LN	3.42	1974	YES	No Malfunction	
004600	872	SCHOOL HOUSE LN	0.92	1986	YES	No Malfunction	
002500	873	SCHOOL HOUSE LN	1.15	1990	YES	No Malfunction	
005300	876	SCHOOL HOUSE LN	0.92	1986	YES	No Malfunction	
005400	877	SCHOOL HOUSE LN	6.04	1987	YES	No Malfunction	
001600	880	SCHOOL HOUSE LN	0.92	1985	YES	No Malfunction	
004500	884	SCHOOL HOUSE LN	0.92	1986	YES	No Malfunction	
002300	885	SCHOOL HOUSE LN	1.04	1950	YES	Potential Malfunction	Built Before 1972
005500	887	SCHOOL HOUSE LN	0.86	1986	YES	No Malfunction	
001500	888	SCHOOL HOUSE LN	0.92	1986	YES	No Malfunction	
005600	889	SCHOOL HOUSE LN	0.86	1991	YES	No Malfunction	
002100	892	SCHOOL HOUSE LN	1.70	1986	YES	No Malfunction	
005700	898	SCHOOL HOUSE LN	1.77	1985	YES	No Malfunction	
002000	900	SCHOOL HOUSE LN	1.78	1979	YES	Potential Malfunction	SEO Repair Permit

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000900	902	SCHOOL HOUSE LN	1.01	1988	YES	No Malfunction	
000800	904	SCHOOL HOUSE LN	0.46	1988	YES	No Malfunction	
001900	908	SCHOOL HOUSE LN	0.05	1985	YES	No Malfunction	
004700	1001	SCHOOL HOUSE LN	62.77	1900	YES	Potential Malfunction	Built Before 1972
004400	709	SEITZ DR	67.31	1900	YES	Potential Malfunction	Built Before 1972
003800	720	SEITZ DR	4.44	1988	YES	No Malfunction	
001200	774	SEITZ DR	9.44	1987	YES	No Malfunction	
004000	780	SEITZ DR	10.00	1990	YES	No Malfunction	
003900	851	SEITZ DR	10.00	1988	YES	No Malfunction	
000900	730	SEITZ RD	10.06	1989	YES	No Malfunction	
003700	760	SEITZ RD	10.72	2000	YES	No Malfunction	
020200	852	SHAFFER DR	0.87	1965	YES	Potential Malfunction	Built Before 1972
0191A0	851	SHAFFER DR	1.03	1965	YES	Potential Malfunction	Built Before 1972
019200	855	SHAFFER DR	2.75	1960	YES	Potential Malfunction	Built Before 1972
019500	205	SHAUFFNERTOWN RD	2.01	1990	YES	No Malfunction	
019400	216	SHAUFFNERTOWN RD	0.56	1980	YES	No Malfunction	
019800	217	SHAUFFNERTOWN RD	0.46	1969	YES	Potential Malfunction	Built Before 1972
019300	220	SHAUFFNERTOWN RD	0.65	1837	YES	Potential Malfunction	Built Before 1972
0180A0	222	SHAUFFNERTOWN RD	1.10	1850	YES	Potential Malfunction	Built Before 1972
018000	223	SHAUFFNERTOWN RD	0.70	1996	YES	No Malfunction	
019700	227	SHAUFFNERTOWN RD	1.16	1968	YES	Potential Malfunction	Built Before 1972
004600	229	SHAUFFNERTOWN RD	0.40	1800	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
004300	275	SHAUFFNERTOWN RD	2.91	1900	YES	Potential Malfunction	Built Before 1972
	763	SIDDONSBURG RD	N/A	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000500	750	SIDDONSBURG RD	0.28	1930	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000400	751	SIDDONSBURG RD	0.55	1942	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
000300	752	SIDDONSBURG RD	0.30	1940	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001300	754	SIDDONSBURG RD	0.30	2001	NO	Potential Malfunction	Unsuitable Soils
001600	763	SIDDONSBURG RD	0.50	1950	YES	Potential Malfunction	Built Before 1972
017000	766	SIDDONSBURG RD	0.62	1996	YES	No Malfunction	
015100	770	SIDDONSBURG RD	0.79	1949	YES	Potential Malfunction	Built Before 1972
0051A0	778	SIDDONSBURG RD	14.77	1850	YES	Potential Malfunction	Built Before 1972
014900	780	SIDDONSBURG RD	0.35	1900	YES	Potential Malfunction	Built Before 1972
014800	784	SIDDONSBURG RD	0.20	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001A0	800	SIDDONSBURG RD	4.45	1980	NO	Potential Malfunction	Unsuitable Soils
0046A0	803	SIDDONSBURG RD	3.80	1944	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils

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004400	807	SIDDONSBURG RD	1.00	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0015R0	826	SIDDONSBURG RD	27.14	2003	YES	No Malfunction	
001500	848	SIDDONSBURG RD	0.62	1948	YES	Potential Malfunction	Built Before 1972
0015X0	865	SIDDONSBURG RD	0.45	1950	YES	Potential Malfunction	Built Before 1972
0015S0	868	SIDDONSBURG RD	0.79	1975	YES	No Malfunction	
0015U0	870	SIDDONSBURG RD	0.70	1960	YES	Potential Malfunction	Built Before 1972
0015W0	883	SIDDONSBURG RD	7.46	1950	NO	Potential Malfunction	SEO Repair Permit
0015V0	886	SIDDONSBURG RD	4.72	1992	YES	No Malfunction	
004600	889	SIDDONSBURG RD	1.28	2004	YES	No Malfunction	
0015K0	890	SIDDONSBURG RD	7.28	1900	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0015N0	891	SIDDONSBURG RD	1.13	2004	YES	No Malfunction	
0015H0	893	SIDDONSBURG RD	5.35	1958	YES	Potential Malfunction	Built Before 1972
005100	897	SIDDONSBURG RD	14.00	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0015J0	915	SIDDONSBURG RD	9.49	1991	YES	No Malfunction	
0015P0	927	SIDDONSBURG RD	0.58	1900	YES	Potential Malfunction	Built Before 1972
004500	939	SIDDONSBURG RD	4.33	1984	YES	No Malfunction	
0015F0	945	SIDDONSBURG RD	10.00	1986	YES	No Malfunction	
002700	949	SIDDONSBURG RD	0.19	1994	YES	No Malfunction	
004400	988	SIDDONSBURG RD	4.65	1989	YES	No Malfunction	
0015C0	1024	SIDDONSBURG RD	15.97	1990	YES	No Malfunction	
004300	1025	SIDDONSBURG RD	2.96	1910	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
004000	1026	SIDDONSBURG RD	1.45	2003	YES	No Malfunction	
0042A0	1037	SIDDONSBURG RD	3.18	1953	YES	Potential Malfunction	Built Before 1972
001900	1042	SIDDONSBURG RD	1.53	1998	YES	No Malfunction	
001800	1045	SIDDONSBURG RD	1.60	1998	YES	No Malfunction	
001700	1047	SIDDONSBURG RD	1.59	1999	YES	No Malfunction	
0015A0	1092	SIDDONSBURG RD	4.00	1978	YES	No Malfunction	
002000	1095	SIDDONSBURG RD	0.93	1978	YES	No Malfunction	
002100	1096	SIDDONSBURG RD	1.00	1975	YES	No Malfunction	
002200	1103	SIDDONSBURG RD	53.00	1974	YES	No Malfunction	
0010A0	1108	SIDDONSBURG RD	2.00	1984	YES	No Malfunction	
002300	1110	SIDDONSBURG RD	4.69	1974	YES	No Malfunction	
002400	1111	SIDDONSBURG RD	1.00	1900	YES	Potential Malfunction	Built Before 1972
002500	1112	SIDDONSBURG RD	5.43	1973	YES	No Malfunction	
010100	1122	SIDDONSBURG RD	10.20	1954	YES	Potential Malfunction	Built Before 1972
008200	1124	SIDDONSBURG RD	6.13	1975	YES	No Malfunction	

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Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
004900	1133	SIDDONSBURG RD	16.69	1910	YES	Potential Malfunction	Built Before 1972
0049B0	1133	SIDDONSBURG RD	16.69	1910	YES	Potential Malfunction	Built Before 1972
032300	1149	SIDDONSBURG RD	1.01	1994	YES	No Malfunction	
030300	1150	SIDDONSBURG RD	3.16	1983	YES	No Malfunction	
032100	1152	SIDDONSBURG RD	2.57	1985	YES	No Malfunction	
032000	1153	SIDDONSBURG RD	1.08	2001	YES	No Malfunction	
020400	1156	SIDDONSBURG RD	1.18	1996	YES	No Malfunction	
031900	1157	SIDDONSBURG RD	1.24	1998	YES	No Malfunction	
031800	1160	SIDDONSBURG RD	1.00	1992	YES	No Malfunction	
030700	1161	SIDDONSBURG RD	1.47	1991	YES	No Malfunction	
030800	1162	SIDDONSBURG RD	1.00	1995	YES	No Malfunction	
031600	1167	SIDDONSBURG RD	1.00	1997	YES	No Malfunction	
030900	1169	SIDDONSBURG RD	1.00	1992	YES	No Malfunction	
031000	1173	SIDDONSBURG RD	1.42	1998	YES	No Malfunction	
004000	844	SILVER LAKE RD	0.58	1971	YES	Potential Malfunction	Built Before 1972
0049A0	988	SILVER LAKE RD	6.67	1983	YES	No Malfunction	
008000	770	SILVER LAKE RD	1.15	1993	YES	No Malfunction	
0080A0	775	SILVER LAKE RD	0.21	1950	YES	Potential Malfunction	Built Before 1972
0052G0	776	SILVER LAKE RD	0.56	1980	YES	No Malfunction	
0052E0	778	SILVER LAKE RD	0.63	1980	YES	No Malfunction	
0053A0	786	SILVER LAKE RD	0.45	1986	YES	No Malfunction	
005300	793	SILVER LAKE RD	0.03	1920	YES	Potential Malfunction	Built Before 1972
005300	796	SILVER LAKE RD	0.04	1900	YES	Potential Malfunction	Built Before 1972
0056J0	800	SILVER LAKE RD	0.54	1996	YES	No Malfunction	
0056D0	801	SILVER LAKE RD	0.08	1940	YES	Potential Malfunction	Built Before 1972
0056G0	802	SILVER LAKE RD	1.07	1950	YES	Potential Malfunction	Built Before 1972
0056C0	805	SILVER LAKE RD	0.05	1930	YES	Potential Malfunction	Built Before 1972
0067C0	809	SILVER LAKE RD	0.09	1930	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
003800	817	SILVER LAKE RD	0.06	1930	YES	Potential Malfunction	Built Before 1972
0043B0	820	SILVER LAKE RD	0.37	1960	YES	Potential Malfunction	Built Before 1972
0043C0	823	SILVER LAKE RD	0.06	1930	YES	Potential Malfunction	Built Before 1972
003900	825	SILVER LAKE RD	0.18	1950	YES	Potential Malfunction	Built Before 1972
004200	828	SILVER LAKE RD	0.39	1960	YES	Potential Malfunction	Built Before 1972
004100	832	SILVER LAKE RD	0.20	1955	YES	Potential Malfunction	Built Before 1972
008100	842	SILVER LAKE RD	1.28	2004	YES	No Malfunction	
0037B0	846	SILVER LAKE RD	0.69	1995	YES	No Malfunction	

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003700	853	SILVER LAKE RD	5.98	1948	YES	Potential Malfunction	Built Before 1972
003600	856	SILVER LAKE RD	1.30	1965	YES	Potential Malfunction	Built Before 1972
003800	860	SILVER LAKE RD	0.87	1957	YES	Potential Malfunction	Built Before 1972
0035A0	901	SILVER LAKE RD	4.57	1969	YES	Potential Malfunction	Built Before 1972
0034D0	905	SILVER LAKE RD	1.07	2004	YES	No Malfunction	
0034C0	907	SILVER LAKE RD	4.57	2005	YES	No Malfunction	
0034A0	909	SILVER LAKE RD	1.09	2004	YES	No Malfunction	
002900	911	SILVER LAKE RD	1.18	2004	YES	No Malfunction	
0083A0	915	SILVER LAKE RD	1.00	2005	YES	No Malfunction	
008300	917	SILVER LAKE RD	1.01	2004	YES	No Malfunction	
008200	919	SILVER LAKE RD	1.12	2003	YES	No Malfunction	
0080E0	926	SILVER LAKE RD	3.97	2004	YES	No Malfunction	
0077A0	927	SILVER LAKE RD	1.46	2003	YES	No Malfunction	
0080X0	930	SILVER LAKE RD	12.91	1994	YES	No Malfunction	
0080A0	933	SILVER LAKE RD	1.19	2004	YES	No Malfunction	
0077F0	935	SILVER LAKE RD	3.62	2004	YES	No Malfunction	
0077J0	937	SILVER LAKE RD	1.04	2004	YES	No Malfunction	
0077G0	940	SILVER LAKE RD	1.92	1986	YES	No Malfunction	
0077L0	960	SILVER LAKE RD	5.68	1987	YES	No Malfunction	
020600	968	SILVER LAKE RD	6.22	1988	YES	No Malfunction	
0071B0	976	SILVER LAKE RD	4.98	1990	YES	No Malfunction	
0071E0	981	SILVER LAKE RD	2.05	1985	YES	No Malfunction	
006600	985	SILVER LAKE RD	1.07	1987	YES	No Malfunction	
006700	986	SILVER LAKE RD	6.02	1994	YES	No Malfunction	
0065F0	991	SILVER LAKE RD	1.04	1987	YES	No Malfunction	
0065A0	993	SILVER LAKE RD	1.15	1987	YES	No Malfunction	
0065D0	1005	SILVER LAKE RD	14.81	1985	YES	No Malfunction	
006200	1007	SILVER LAKE RD	13.48	1990	YES	No Malfunction	
006400	1008	SILVER LAKE RD	0.85	1815	YES	Potential Malfunction	Built Before 1972
0058A0	1009	SILVER LAKE RD	9.76	1986	YES	Potential Malfunction	SEO Repair Permit
006000	1020	SILVER LAKE RD	10.10	1998	YES	No Malfunction	
009600	1050	SILVER LAKE RD	9.55		YES	Potential Malfunction	SEO Repair Permit
031100	601	SOUTHRIDGE DR	3.51	2001	YES	No Malfunction	
031300	608	SOUTHRIDGE DR	3.61	1995	YES	No Malfunction	
031700	613	SOUTHRIDGE DR	4.12	1999	YES	No Malfunction	
031200	616	SOUTHRIDGE DR	5.15	1996	YES	No Malfunction	

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030400	617	SOUTHRIDGE DR	3.87	1998	YES	No Malfunction	
010200	620	SOUTHRIDGE DR	4.12	2004	YES	No Malfunction	
010100	621	SOUTHRIDGE DR	3.77	2002	YES	No Malfunction	
010400	636	SOUTHRIDGE DR	3.15	2001	YES	No Malfunction	
010500	640	SOUTHRIDGE DR	3.04	2001	YES	No Malfunction	
010600	644	SOUTHRIDGE DR	3.59	2004	YES	No Malfunction	
0043D0	648	SOUTHRIDGE DR	0.45	1958	YES	Potential Malfunction	Built Before 1972
0043B0	101	SPANGLERS MILL RD	25.64	1795	YES	Potential Malfunction	Built Before 1972
004000	126	SPANGLERS MILL RD	0.45	1947	YES	Potential Malfunction	Built Before 1972
0037A0	157	SPANGLERS MILL RD	0.66		YES	No Malfunction	
0040A0	183	SPANGLERS MILL RD	2.28	2000	YES	No Malfunction	
003900	186	SPANGLERS MILL RD	0.48	1969	YES	Potential Malfunction	Built Before 1972
0043C0	187	SPANGLERS MILL RD	1.26	2004	YES	No Malfunction	
0043E0	190	SPANGLERS MILL RD	6.43	1958	YES	Potential Malfunction	Built Before 1972
0043F0	191	SPANGLERS MILL RD	1.55	2000	YES	No Malfunction	
0037B0	193	SPANGLERS MILL RD	1.73	2003	YES	No Malfunction	
003800	194	SPANGLERS MILL RD	0.55	1957	YES	Potential Malfunction	Built Before 1972
0034C0	196	SPANGLERS MILL RD	0.85	1956	YES	Potential Malfunction	Built Before 1972
0035B0	210	SPANGLERS MILL RD	3.94	1999	YES	No Malfunction	
003500	221	SPANGLERS MILL RD	0.59	1989	YES	No Malfunction	
0034E0	222	SPANGLERS MILL RD	0.54	1975	YES	No Malfunction	
0034A0	224	SPANGLERS MILL RD	0.53	1959	YES	Potential Malfunction	Built Before 1972
0034B0	230	SPANGLERS MILL RD	0.42	1963	YES	Potential Malfunction	Built Before 1972
0031G0	232	SPANGLERS MILL RD	0.62	1945	YES	Potential Malfunction	Built Before 1972
0031F0	233	SPANGLERS MILL RD	1.39	1949	YES	Potential Malfunction	Built Before 1972
0031E0	236	SPANGLERS MILL RD	0.55	1965	YES	Potential Malfunction	Built Before 1972
0030B0	241	SPANGLERS MILL RD	0.33	1967	YES	Potential Malfunction	Built Before 1972
0030E0	244	SPANGLERS MILL RD	1.25	1950	YES	Potential Malfunction	Built Before 1972
0030C0	247	SPANGLERS MILL RD	0.64	1964	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
002700	248	SPANGLERS MILL RD	0.44	1959	YES	Potential Malfunction	Built Before 1972
0030A0	251	SPANGLERS MILL RD	0.28	1964	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
003000	252	SPANGLERS MILL RD	0.41	1955	YES	Potential Malfunction	Built Before 1972
0015B0	256	SPANGLERS MILL RD	0.65	1900	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
002500	257	SPANGLERS MILL RD	0.56	1939	YES	Potential Malfunction	Built Before 1972
0025A0	262	SPANGLERS MILL RD	0.69	1869	YES	Potential Malfunction	SEO Repair Permit
002300	269	SPANGLERS MILL RD	0.33	1954	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils

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002400	270	SPANGLERS MILL RD	1.80	1830	YES	Potential Malfunction	Built Before 1972
001900	271	SPANGLERS MILL RD	0.33	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0031B0	292	SPANGLERS MILL RD	0.80		YES	No Malfunction	
006800	471	SPRUCE RD	0.86	1994	NO	Potential Malfunction	Unsuitable Soils
001600	306	STEIGERWALT HOLLOW RD	4.42	2003	YES	No Malfunction	
0015E0	310	STEIGERWALT HOLLOW RD	2.16	1976	YES	No Malfunction	
0015D0	321	STEIGERWALT HOLLOW RD	0.18	1950	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
001400	326	STEIGERWALT HOLLOW RD	7.06	1950	YES	Potential Malfunction	Built Before 1972
001400	370	STEIGERWALT HOLLOW RD	4.00	1980	YES	No Malfunction	
000400	201	STETLER RD	0.76	1980	YES	No Malfunction	
0201A0	202	STETLER RD	2.60	1967	YES	Potential Malfunction	Built Before 1972
000500	206	STETLER RD	0.88	1950	YES	Potential Malfunction	Built Before 1972
020200	210	STETLER RD	2.04	2003	YES	No Malfunction	
020300	213	STETLER RD	2.20	1960	YES	Potential Malfunction	Built Before 1972
020400	214	STETLER RD	1.40	1946	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit,
0084B0	217	STETLER RD	0.49	1900	YES	Potential Malfunction	Built Before 1972
016700	218	STETLER RD	6.00	1973	YES	No Malfunction	
0167B0	220	STETLER RD	5.94	1978	YES	No Malfunction	
0166A0	222	STETLER RD	9.98		YES	No Malfunction	
016600	223	STETLER RD	0.79	1930	YES	Potential Malfunction	Built Before 1972
016600	225	STETLER RD	1.11	1968	YES	Potential Malfunction	Built Before 1972
0166B0	240	STETLER RD	1.81	1990	YES	Potential Malfunction	SEO Repair Permit
016400	242	STETLER RD	1.72	1900	YES	Potential Malfunction	Built Before 1972
016400	246	STETLER RD	1.83	1993	YES	No Malfunction	
016300	252	STETLER RD	1.10	1995	YES	No Malfunction	
016100	260	STETLER RD	1.00	1960	YES	Potential Malfunction	Built Before 1972
0001B0	309	STONE ROW LN	3.64	2001	YES	No Malfunction	
009000	801	STONYBROOK LN	1.08	2004	YES	No Malfunction	
009500	803	STONYBROOK LN	1.24	2003	YES	No Malfunction	
008900	804	STONYBROOK LN	1.05	2004	YES	No Malfunction	
009400	805	STONYBROOK LN	3.17	2004	YES	No Malfunction	
008800	806	STONYBROOK LN	1.06	2003	YES	No Malfunction	
008700	807	STONYBROOK LN	2.38	2003	YES	No Malfunction	
008600	810	STONYBROOK LN	8.26	2004	YES	No Malfunction	
008500	812	STONYBROOK LN	3.40	2003	YES	No Malfunction	
008200	815	STONYBROOK LN	1.05	2004	YES	No Malfunction	

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0074A0	818	STONYBROOK LN	1.33	2004	YES	No Malfunction	
0008J0	819	STONYBROOK LN	3.56	2003	YES	No Malfunction	
0071L0	822	STONYBROOK LN	1.53	2003	YES	No Malfunction	
0071J0	823	STONYBROOK LN	1.23	2003	YES	No Malfunction	
0007H0	824	STONYBROOK LN	1.30	2004	YES	No Malfunction	
0071K0	825	STONYBROOK LN	1.02	2003	YES	No Malfunction	
0010X0	826	STONYBROOK LN	1.38	2004	YES	No Malfunction	
0007G0	827	STONYBROOK LN	1.15	2002	YES	No Malfunction	
0010W0	831	STONYBROOK LN	4.05	2004	YES	No Malfunction	
0010Z0	834	STONYBROOK LN	1.09	2003	YES	No Malfunction	
0008G0	835	STONYBROOK LN	2.35	2003	YES	No Malfunction	
0007D0	836	STONYBROOK LN	1.15	2003	YES	No Malfunction	
0008K0	838	STONYBROOK LN	1.04	2004	YES	No Malfunction	
006800	100	SUNSET VIEW DR	0.36	1958	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010100	102	SUNSET VIEW DR	0.38	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010200	103	SUNSET VIEW DR	0.34	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010300	104	SUNSET VIEW DR	0.34	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
011400	105	SUNSET VIEW DR	0.34	1967	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010500	106	SUNSET VIEW DR	0.34	1960	NO	Potential Malfunction	Built Before 1972,Unsuitable Soils, SEO Repair Permit
011300	107	SUNSET VIEW DR	0.34	1957	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010600	108	SUNSET VIEW DR	0.34	1969	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
011100	114	SUNSET VIEW DR	0.34	1960	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
011000	115	SUNSET VIEW DR	0.34	1968	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
010900	116	SUNSET VIEW DR	0.34	1957	YES	Potential Malfunction	Built Before 1972
000100	120	SUNSET VIEW DR	0.34	1957	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0033C0	121	SUNSET VIEW DR	1.96	1956	YES	Potential Malfunction	Built Before 1972
0031L0	122	SUNSET VIEW DR	0.45	1958	YES	Potential Malfunction	Built Before 1972
0025N0	123	SUNSET VIEW DR	2.06	1950	YES	Potential Malfunction	Built Before 1972
0002C0	124	SUNSET VIEW DR	0.29	1900	YES	Potential Malfunction	Built Before 1972
0002D0	125	SUNSET VIEW DR	1.70	1956	YES	Potential Malfunction	Built Before 1972
0001B0	127	SUNSET VIEW DR	1.35	1957	YES	Potential Malfunction	Built Before 1972
0002E0	129	SUNSET VIEW DR	0.85	1956	YES	Potential Malfunction	Built Before 1972
0002F0	131	SUNSET VIEW DR	0.48	1956	YES	Potential Malfunction	Built Before 1972
0002G0	100	TALL OAK DR	0.99	1974	YES	No Malfunction	
0002H0	106	TALL OAK DR	0.54	1975	YES	No Malfunction	
0002N0	206	TALL OAK DR	0.80	1976	YES	No Malfunction	

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0002P0	207	TALL OAK DR	0.73	1976	YES	No Malfunction	
0002S0	210	TALL OAK DR	0.88	1980	YES	No Malfunction	
0002T0	211	TALL OAK DR	0.51	1983	NO	Potential Malfunction	Unsuitable Soils
0002U0	213	TALL OAK DR	0.77	1981	NO	Potential Malfunction	Unsuitable Soils
0003B0	315	THORLEY RD	2.75	1993	YES	No Malfunction	
0003A0	348	THORLEY RD	1.90	1991	YES	No Malfunction	
0003C0	290	THORLEY RD	164.07	1900	YES	Potential Malfunction	Built Before 1972
0001D0	304	THORLEY RD	2.14	1978	YES	No Malfunction	
0070K0	325	THORLEY RD	3.40	1994	YES	No Malfunction	
0070P0	332	THORLEY RD	2.57	2002	YES	No Malfunction	
0070D0	333	THORLEY RD	1.00	1994	YES	No Malfunction	
0070W0	335	THORLEY RD	1.00	1994	YES	No Malfunction	
0070C0	338	THORLEY RD	11.26	1996	YES	No Malfunction	
0071Q0	339	THORLEY RD	13.35	1994	YES	No Malfunction	
0070M0	341	THORLEY RD	1.01	1990	YES	No Malfunction	
0070L0	345	THORLEY RD	1.08	1989	YES	No Malfunction	
0071R0	348	THORLEY RD	1.10	1957	YES	Potential Malfunction	Built Before 1972
000400	351	THORLEY RD	1.15	1996	YES	No Malfunction	
000500	352	THORLEY RD	5.10	1986	YES	No Malfunction	
000700	361	THORLEY RD	1.89	1979	YES	No Malfunction	
001000	362	THORLEY RD	1.87	1970	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0020E0	364	THORLEY RD	0.32	1971	YES	Potential Malfunction	Built Before 1972
001400	365	THORLEY RD	2.82	1969	YES	Potential Malfunction	Built Before 1972
0172R0	366	THORLEY RD	1.60	1953	YES	Potential Malfunction	Built Before 1972
0172J0	369	THORLEY RD	7.80	1972	YES	No Malfunction	
0172Q0	370	THORLEY RD	1.20	1948	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0172S0	372	THORLEY RD	0.63	1968	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0172P0	3	TIMBER LN	0.70	1975	YES	No Malfunction	
0172K0	5	TIMBER LN	0.32	1978	YES	No Malfunction	
0172N0	7	TIMBER LN	0.58	1976	YES	No Malfunction	
001800	9	TIMBER LN	0.36	1974	YES	No Malfunction	
0172M0	10	TIMBER LN	0.37	1978	YES	No Malfunction	
0172F0	14	TIMBER LN	0.44	1978	YES	No Malfunction	
0172B0	21	TIMBER LN	0.51	1978	YES	No Malfunction	
0017B0	26	TIMBER LN	0.40	1975	YES	No Malfunction	
0017D0	315	TIMBER RD	51.40	2001	YES	No Malfunction	

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0017A0	339	TIMBER RD	6.20	2000	YES	No Malfunction	
0017A0	343	TIMBER RD	1.00	1999	YES	No Malfunction	
0020A0	353	TIMBER RD	7.77	1985	YES	No Malfunction	
0021A0	355	TIMBER RD	6.18	1978	YES	No Malfunction	
0008E0	856	TRAVER DR	6.00	1974	YES	No Malfunction	
0008C0	861	TRAVER DR	2.00	1991	NO	Potential Malfunction	Unsuitable Soils
0007Z0	875	TRAVER DR	17.84	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils, SEO Repair Permit
0008B0	875	TRAVER DR	17.84	1900	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils, SEO Repair Permit
0052K0	880	TRAVER DR	1.10	1976	NO	Potential Malfunction	Unsuitable Soils
0052H0	880	TRAVER DR	4.98	1989	NO	Potential Malfunction	Unsuitable Soils
0052D0	885	TRAVER DR	1.96	1972	NO	Potential Malfunction	Unsuitable Soils
0002D0	886	TRAVER DR	3.07	1985	NO	Potential Malfunction	Unsuitable Soils
0052Q0	891	TRAVER DR	1.06	1979	NO	Potential Malfunction	Unsuitable Soils
0052L0	898	TRAVER DR	1.00	1991	NO	Potential Malfunction	Unsuitable Soils
0001N0	109	TURTLE HOLLOW DR	1.09	2005	YES	No Malfunction	
000100	3	VALLEY RD	0.46	1980	YES	No Malfunction	
002900	7	VALLEY RD	0.90	1972	YES	No Malfunction	
0044A0	15	VALLEY RD	1.70	1940	YES	Potential Malfunction	Built Before 1972
0053F0	21	VALLEY RD	2.50	1962	YES	Potential Malfunction	Built Before 1972 ,SEO Repair Permit
0045B0	25	VALLEY RD	2.00	1978	YES	No Malfunction	
0025M0	31	VALLEY RD	2.50	1960	YES	Potential Malfunction	Built Before 1972
0025V0	33	VALLEY RD	1.71	1978	YES	No Malfunction	
0026A0	35	VALLEY RD	0.89	1920	YES	Potential Malfunction	Built Before 1972
0025W0	36	VALLEY RD	49.50	1900	YES	Potential Malfunction	Built Before 1972
0026B0	37	VALLEY RD	2.30		YES	No Malfunction	
0025X0	41	VALLEY RD	1.50	1970	YES	Potential Malfunction	Built Before 1972
0025Y0	74	VALLEY RD	58.50	1900	YES	Potential Malfunction	Built Before 1972, SEO Repair Permit
0026C0	76	VALLEY RD	0.57	1970	YES	Potential Malfunction	Built Before 1972
003000	109	VALLEY RD	139.66	1760	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0028A0	155	VALLEY RD	0.83	1900	YES	Potential Malfunction	Built Before 1972
002800	159	VALLEY RD	1.40	1900	YES	Potential Malfunction	Built Before 1972
003100	183	VALLEY RD	146.20	1814	YES	Potential Malfunction	Built Before 1972
000500	800	WEST ST	0.38	1937	YES	Potential Malfunction	Built Before 1972
007900	803	WEST ST	0.08	1900	YES	Potential Malfunction	Built Before 1972
0004C0	804	WEST ST	0.18	1940	YES	Potential Malfunction	Built Before 1972

APPENDIX F
FAIRVIEW TOWNSHIP ACT 537 PLAN
SEWAGE DISPOSAL NEEDS ASSESSMENT SUMMARY

II. Non-surveyed Properties

Parcel ID	Property Address		Lot Size (Acres)	Year Initially	Potential Soil Suitability	On-Lot System Status	Reason for Classification
0001C0	805	WEST ST	0.09	1992	YES	No Malfunction	
0004A0	807	WEST ST	0.10	1900	YES	Potential Malfunction	Built Before 1972
0002B0	809	WEST ST	0.21	1900	YES	Potential Malfunction	Built Before 1972
0002C0	811	WEST ST	0.28	1900	YES	Potential Malfunction	Built Before 1972
0001U0	815	WEST ST	0.15	1930	YES	Potential Malfunction	Built Before 1972
0001S0	818	WEST ST	0.14	1960	YES	Potential Malfunction	Built Before 1972
0001R0	819	WEST ST	0.27	1920	YES	Potential Malfunction	Built Before 1972
0001D0	821	WEST ST	0.10	1928	YES	Potential Malfunction	Built Before 1972
0001W0	824	WEST ST	0.44	1950	YES	Potential Malfunction	Built Before 1972
0001X0	825	WEST ST	0.17	1930	NO	Potential Malfunction	Built Before 1972/Unsuitable Soils
0001M0	100	WHEATLAND RD	3.17	1993	YES	No Malfunction	
000200	101	WHEATLAND RD	1.40	1996	YES	No Malfunction	
0001J0	103	WHEATLAND RD	1.15	1995	YES	No Malfunction	
0001H0	105	WHEATLAND RD	1.28	1991	YES	No Malfunction	
0001G0	106	WHEATLAND RD	4.03	1995	YES	No Malfunction	
0001F0	107	WHEATLAND RD	1.32	1992	YES	No Malfunction	
0074D0	110	WHEATLAND RD	4.36	2005	YES	No Malfunction	
0074M0	118	WHEATLAND RD	4.09	1996	YES	No Malfunction	
0096Y0	122	WHEATLAND RD	0.46	1973	YES	No Malfunction	
0074L0	126	WHEATLAND RD	3.05	1995	YES	No Malfunction	
0074K0	133	WHEATLAND RD	3.04	1994	YES	No Malfunction	
0074B0	798	WHITEFORD DR	0.70	1972	NO	Potential Malfunction	Unsuitable Soils
0095E0	799	WHITEFORD DR	0.52	1976	NO	Potential Malfunction	Unsuitable Soils
0096Z0	801	WHITEFORD DR	0.50	1975	NO	Potential Malfunction	Unsuitable Soils
009500	802	WHITEFORD DR	0.47	1975	NO	Potential Malfunction	Unsuitable Soils
0023A0	703	YMCA DR	1.72	1986	YES	No Malfunction	
002300	670	YMCA DR	1.00	1983	NO	Potential Malfunction	Unsuitable Soils
002400	688	YMCA DR	2.70	1930	YES	Potential Malfunction	Built Before 1972
Number of Parcels in Remaining Basins Not Surveyed:			**1504.00**				

Appendix G

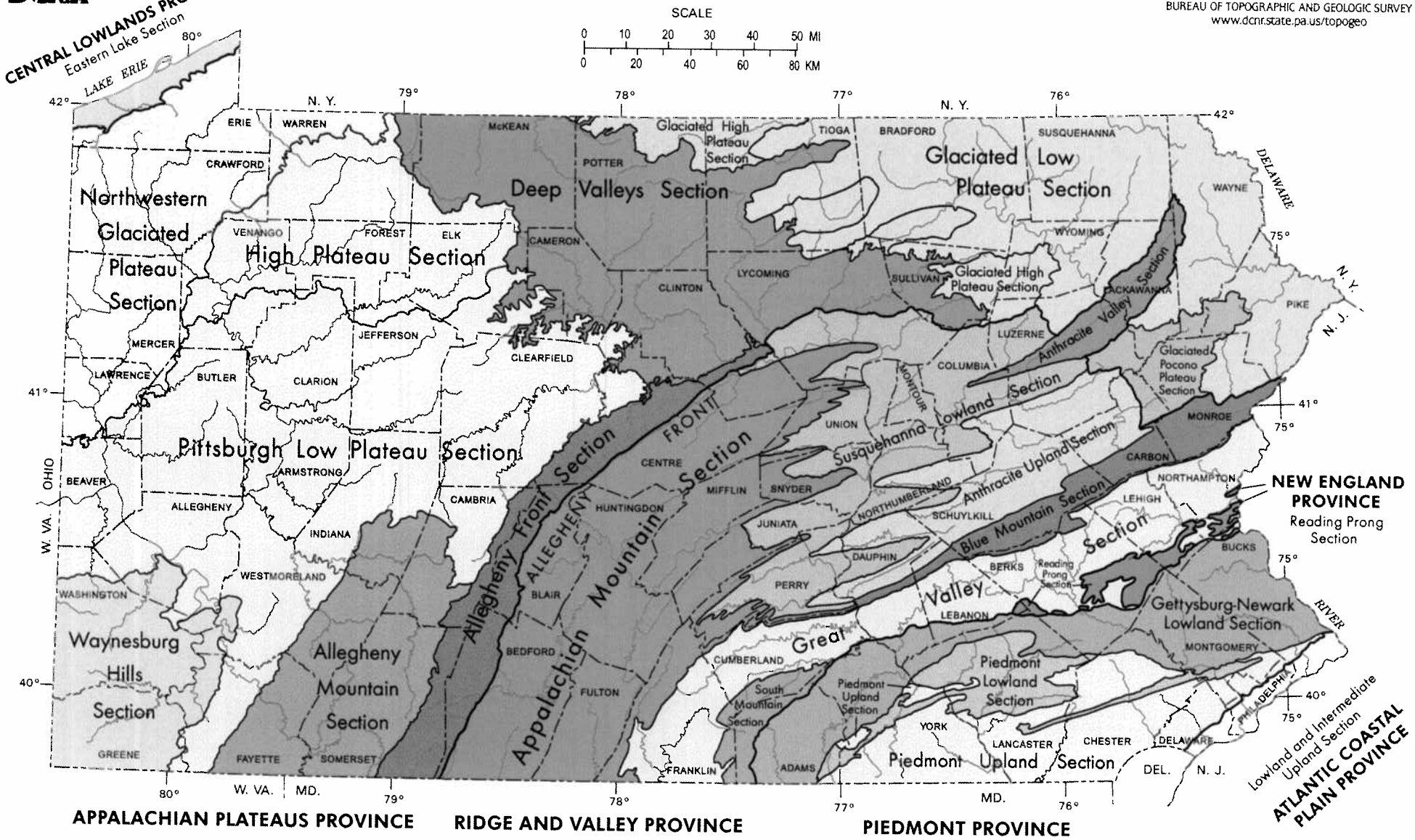
Comprehensive Plan Mapping

MAP 13

DCNR

PHYSIOGRAPHIC PROVINCES OF PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF
CONSERVATION AND NATURAL RESOURCES
BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY
www.dcnr.state.pa.us/topogeo



EXPLANATION

CENTRAL LOWLANDS PROVINCE: Eastern Lake Section

APPALACHIAN PLATEAUS PROVINCE: Northwestern Glaciated Plateau Section; High Plateau Section; Pittsburgh Low Plateau Section; Waynesburg Hills Section; Allegheny Mountain Section; Allegheny Front Section; Deep Valleys Section; Glaciated High Plateau Section; Glaciated Low Plateau Section; Glaciated Pocono Plateau Section

RIDGE AND VALLEY PROVINCE: Appalachian Mountain Section; Susquehanna Lowland Section; Anthracite Valley Section; Anthracite Upland Section; Blue Mountain Section; Great Valley Section; South Mountain Section

NEW ENGLAND PROVINCE: Reading Prong Section

PIEDMONT PROVINCE: Gettysburg-Newark Lowland Section; Piedmont Lowland Section; Piedmont Upland Section

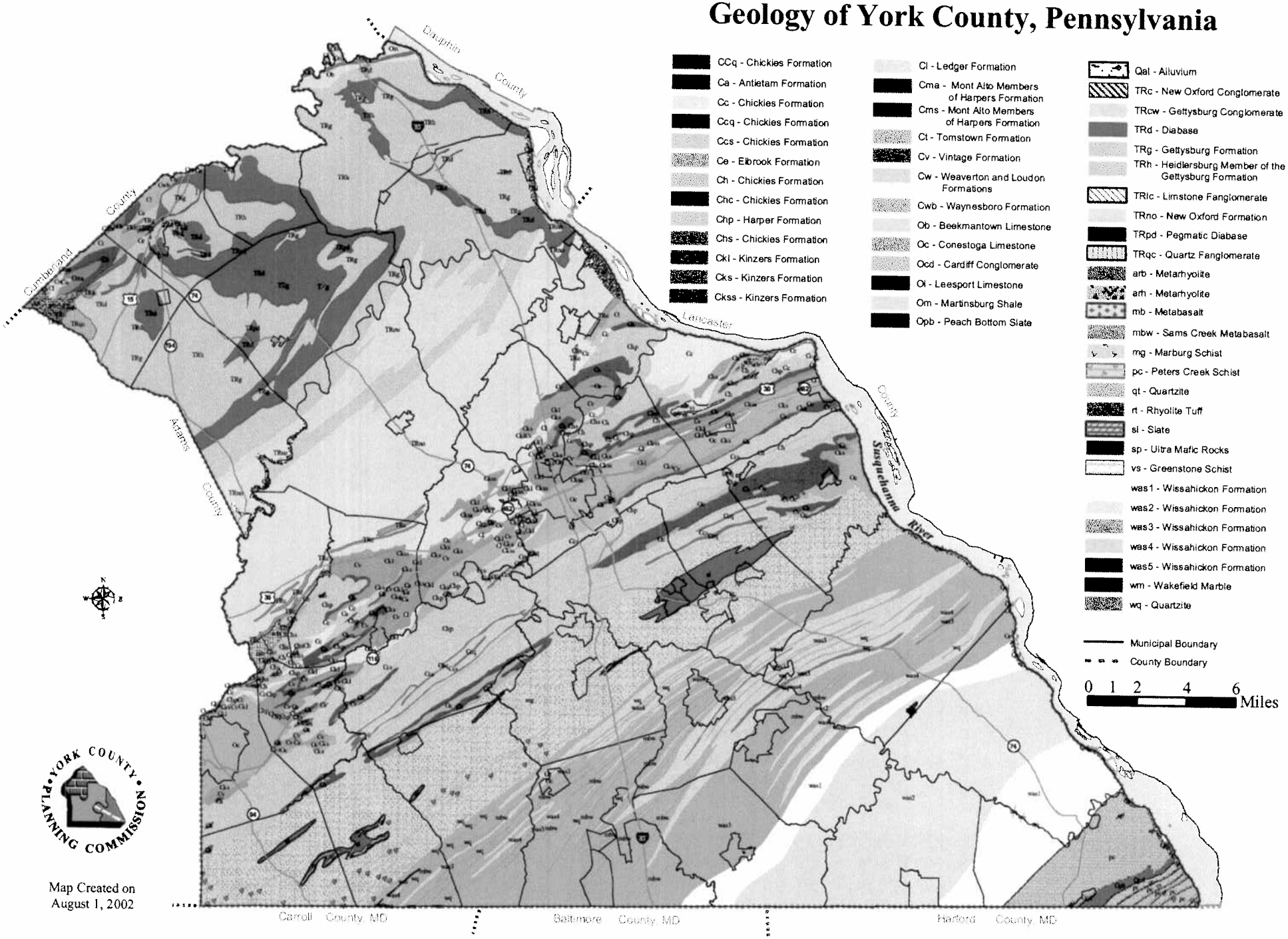
ATLANTIC COASTAL PLAIN PROVINCE: Lowland and Intermediate Upland Section

SYMBOLS: Approximate boundary between physiographic provinces; Approximate boundary between physiographic sections

Compiled by W. D. Sevon. Fourth Edition, 2000.

Map 6

Geology of York County, Pennsylvania



Map Created on
August 1, 2002

Source: - Pennsylvania Geologic Survey - Map 67
- The Geologic Map of York County, Pennsylvania by George W. Stose & Anna Jones 1939

Map 8

York County Growth Management Map

December 10, 2008

County Boundary

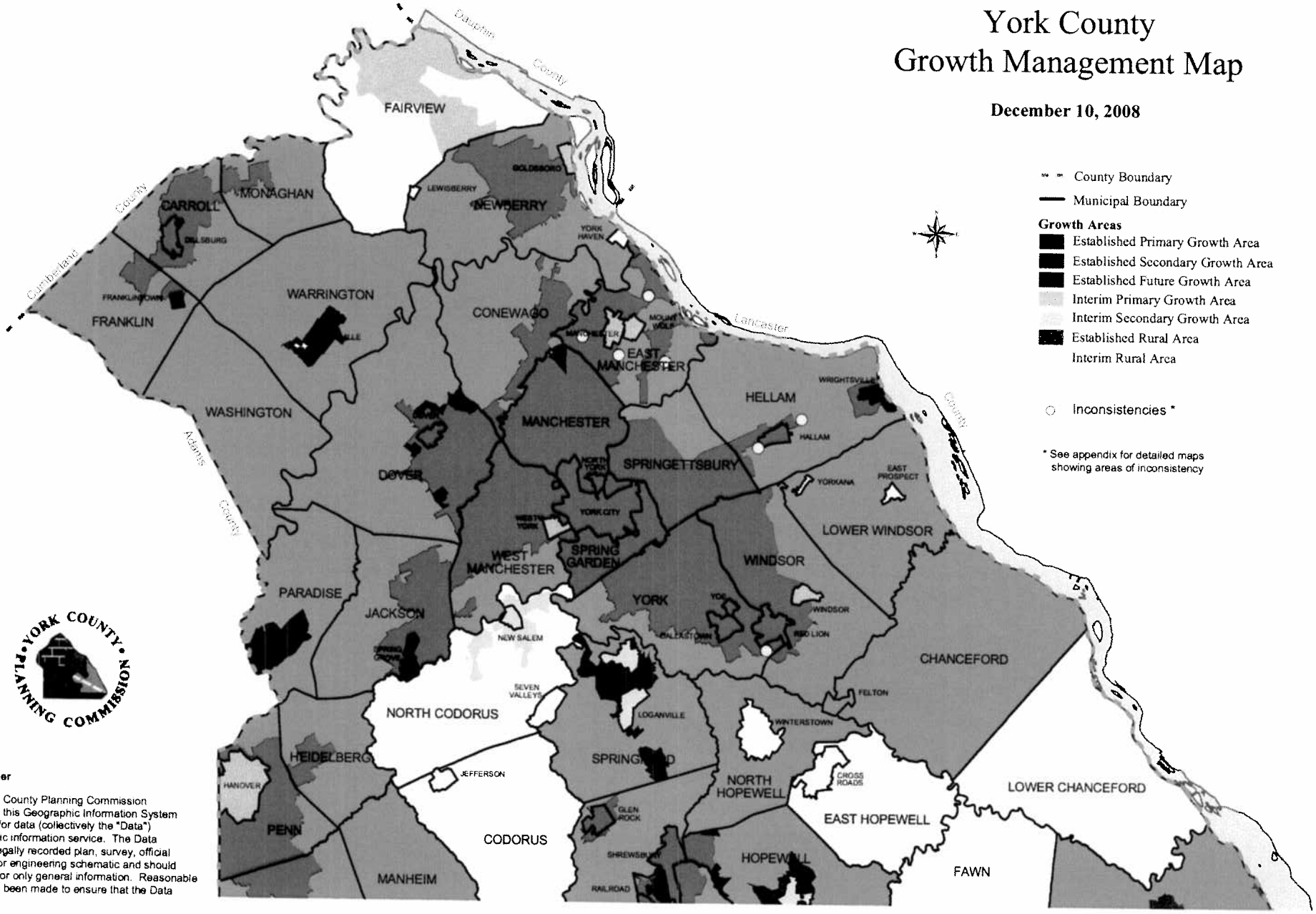
Municipal Boundary

Growth Areas

- Established Primary Growth Area
- Established Secondary Growth Area
- Established Future Growth Area
- Interim Primary Growth Area
- Interim Secondary Growth Area
- Established Rural Area
- Interim Rural Area

Inconsistencies *

* See appendix for detailed maps showing areas of inconsistency



YORK COUNTY PLANNING COMMISSION

Disclaimer

The York County Planning Commission provides this Geographic Information System map and/or data (collectively the "Data") as a public information service. The Data is not a legally recorded plan, survey, official tax map,or engineering schematic and should be used for only general information. Reasonable effort has been made to ensure that the Data

Appendix H

Summary of Sewer Agreements with Adjacent Municipalities

APPENDIX H.
Summary of Fairview Township Agreements
With Adjacent Municipalities Regarding Sanitary Sewer Service

Agreement with:	Date:	Details
Lewisberry Borough	May 2, 1945	Provides sewage treatment for a portion of Fairview Twp and Newberry Twp at the Lewisberry Facility
		Forms a Joint Authority named Lewisberry Area Joint Authority
Lewisberry Borough	July 23, 1985	Area served by the Lewisberry Area Joint Authority is detailed in Appendix A, designated as Exhibit 3
		Have 2 members appointed to the Lewisberry Area Joint Authority by Fairview Township. Total of 8 Board Members
		Fairview Township allocated not less than 27%, minimum guaranteed percentage for the municipality any future changes in the percentages of capacity must be negotiated and agreed upon between the Authority and the municipalities that would be affected by any such change. Fairview Township's capacity equal to 27,000 gpd.
Lower Allen Township Authority	October 11, 1965	Outfall Agreement
		Fairview Authority allowed to connect its12" outfall line at MH 10 on the outfall line of Lower Allen. Inspection and any engineering expenses incurred by Lower Allen will be paid by Fairview Authority.
		Fairview agrees to only send treated effluent to MH 10, and Lower Allen agrees to accept only treated effluent.
		Fairview agrees to pay $600 per calendar quarter for average daily flows of 240,000 gallons, if exceeded, Fairview will pay $2.50 for ever 1,000 gallons or portion thereof that exceed 240,000 gallons per quarter.
		Fairview peak instantaneous flows of 480,000 gpd or greater occurring more than 3 times per quarter and notified by Lower Allen, will have 3 months from notification date to correct the issue, or the contract will be renegotiated and allowance made for the excess capacity.
		The payment for a surcharge will be calculated as "the fractional portion of $600 obtained from multiplying $600 times a fraction wherein the numerator shall be computed by dividing the total gallonage by which the flows have exceeded the ceiling rate of 480,000 gpd by the number of times in the quarter on which the ceiling rate was exceeded and the denominator of the fraction shall be 480,000 gallons. The surcharge will be paid for that quarter in addition to all other obligations of Fairview from the agreement.
		Fairview agrees to furnish Lower Allen its flow records, which shall be taken from its meter records of sewage discharged from its plant into the line for connections with MH 10. Lower Allen also has the right to read the Fairview Authority meters with reasonable notice and reasonable hours.
		Fairview agrees that it will pay its pro rata share of the cost of construction according to design flow allocation in the event of the outfall line becoming overloaded and a new line is required.
Lower Allen Township Authority	June 6, 1994	1st Amendment to Outfall Agreement
		Increases outfall capacity from 240,000 to 500,000 gpd with an adjustment of the quarterly fee from $600 to $1,200.
Lower Allen Township Authority	March 13, 2000	2nd Amendment to Outfall Agreement
		Additional outfall capacity to 726,000 gpd.
		Quarterly fee from $1,200 per quarter to $1,815 per quarter.
		$7.50 for each additional 1,000 gallons that exceed 726,000 gpd
		Lower Allen is not obligated to receive any effluent flow with a peak instantaneous rate of 1,206,000 gpd
		The payment for a surcharge will be calculated as "the fractional portion of $1,815 obtained from multiplying $1,815 times a fraction wherein the numerator shall be computed by dividing the total gallonage by which the flows have exceeded the ceiling rate of 1,206,000 gpd by the number of times in the quarter on which the ceiling rate was exceeded and the denominator of the fraction shall be 1,206,000 gallons. The surcharge will be paid for that quarter in addition to all other obligations of Fairview from the agreement.

APPENDIX H.
Summary of Fairview Township Agreements
With Adjacent Municipalities Regarding Sanitary Sewer Service

Agreement with:	Date:	Details
Lower Allen Township Authority	December 28, 1976	Connects the Green Lane Farms development in Fairview Township to the Lower Allen sewer system.
		Fairview has a reserve capacity of 0.4 mgd at the Lower Allen STP
		Fairview shall pay annually pay a portion of annual lease rental costs of Lower Allen Township, which portion shall be determined as follows: A share of the annual lease rental under the Agreement of Lease dated 2/1/1963 attributable to Project 1957, shall be calculated by determining the percentage of construction costs of the jointly used portion thereof, ($863,000) to actual construction costs for all of Project 1957($3,566,000), which percentage is 24.20%, and applying said percentage to the annual lease rental for Project 1957 for the ear in which Fairview connected its sewer system to the Lower Allen system and in fact generates sewage flow from and said lease rental for each fiscal year thereafter that Fairview is connected. Said annual lease rental is, $311,600. Accordingly for 1977 and ever year thereafter, said share so calculated is $75,400.
		The ratio of initial reserve of Fairview Township (0.14 mgd) to total capacity of Lower Allen (5.95 mgd) shall be calculated by 0.14\5.95, the said ratio is 0.0235. The portion of annual lease rental for Project 1957 which Fairview Township shall pay Lower Allen Township as provided below is calculated by multiplying 0.0235 by $75,400 and the portion is $1,771.91
		A share of the annual lease rental under the Agreement of Lease dated February 1, 1972, attributed to Project 1971 and Project 1972 or any annual lease rental resulting under an refinancing bond issue, shall be calculated as follows: From date of connection to 9/14/87, Fairview's share shall be calculated by taking 84% of such annual lease rental times 0.14 over 4.40. From 9/15/87to 9/14/93, Fairview share will be calculated by taking 84% of such annual lease rental times 0.25 over 4.40. From 9/15/93 for the duration of the annual lease rental, Fairview's share shall be calculated by taking 84% of such annual lease rental for Projects 1971 and 1972 times 0.4 over 4.40. When the adf exceeds the allocated flow for any 1 quarter of any fiscal year, then the portion payable to Lower Allen by Fairview will be increased by changing the ratios set forth above so that the Project 1957 will be the adf and the denominator will be 5.95 mgd.
		For Projects 1971 and 1972 or any annual lease rental resulting under a re-financing bond issue, the numerator will be the actual average daily flow and the denominator will be 4.4 mgd.
		In addition to the payments above, if Lower Allen decides to re-finance their bond issue for Projects 1971 and 1972 and should the aggregate principal amount of the re-financing bond issue be less than the aggregate principal amount of the bond issue for Projects 1971 and 1972, then Fairview shall be required to make a proportionate contribution towards said difference by either making a lump-sum payment or by making the same contribution on an installment basis.
		It is recognized that Fairview has a continual right to make additional connections which may result in a combined flow in excess of 0.4 mgd, but in no event shall additional connection producing a combined flow in excess of 0.4 mgd be allowed, or cause the total amount of sewage treated at the plant to exceed the design capacity of the Lower Allen STP or other jointly used facilities.
		In addition to the foregoing, Fairview shall pay Lower Allen for the fiscal year beginning 9/15 and ending 9/14 in which Fairview connects to the Lower Allen system and is a portion of the annual cost of operation. Lower Allen has an ordinance imposing a surcharge on certain industrial sewage, should Fairview impose a surcharge pursuant to the provisions of said ordinance, 100% of the said surcharge, less the expenses of Fairview, shall be paid to Lower Allen The volume of water consumed by each residential dwelling unit in Fairview Township connected to Lower Allen under consideration shall include any and all metered water purchased by users in Fairview.

APPENDIX H.
Summary of Fairview Township Agreements
With Adjacent Municipalities Regarding Sanitary Sewer Service

Agreement with:	Date:	Details
Lower Allen Township Authority	12/28/1976 (Continued)	In determining the adjusted total gallons of water consumed by all residential and non-residential users in Fairview for the purpose of annual billing, there shall be added to the total gallons of water consumed by such residential units and non-residential users during the fiscal year an additional number of gallons of water to take into consideration infiltration into the sewer lines of Fairview Township hereinafter Lower Allen my periodically test manholes in Fairview selected by its employees between the hours of 2 and 5 a.m. If the flow is >5,000 gpd, Lowe Allen may give written notice thereof to Fairview Township.
		In the event that an increase in the quality of treatment, or a change in the nature of treatment, is required, Fairview agrees to make a capital contribution to the cost of construction thereof, and said contribution shall be determined as follows: The cost of construction of said improvement or change; The ratio of reserve (0.14, 0.25, 0.4) to total capacity of Lower Allen Township STP shall be calculated; The percentage figure determined from the ratio shall be applied to the cost of construction and the product shall equal the capital contribution from Fairview Twp.
		In the event that additional interceptor or outfall sewer lines cnanot transport the volume of sewage bing discharged therein, or that the Lower Allen STP is not treating sewage to requirements for a period of 30 consecutive days, Lower Allen shall give written notice to Fairview and the parties shall immediately proceed with a joint investigation to determine the cause thereof.
		Fairview agrees to enact and enforce all ordinances, resolutions, rules and regulations of Lower Allen Township.
		Fairview Township agrees to enact and enforce additional ordinances, resolutions, rules and regulations to be as restrictive as future ordinacnes, resolutions, rules and regulations adopted by Lower Allen are applicable.
Lower Allen Township Authority	May 4, 1988	Providing inter alia, Fairview agrees to pay $172,157 for the collection, transportation, treatment and discharge of sewage and waste emanating from portions of the Township of Fairview.
Lower Allen Township Authority	September 4, 1997	Provide the purchase of capcity of 150,000 gpd being its remaining reserve capacity out of the original 400,000 gpd in the sum of $180,864. Total STP capacity for Fairview Township equal to 400,000 gpd.
		Capital contribution percent to reflect Fairview to the Lower Allen STP be a 6.72 percent allocation
Lower Allen Township Authority	August 6, 2001	Fairview Township's capacity at 6.72% of total WWTP capacity, increased to 420,000 gpd as a result of a rerate

Appendix I

Pumping Station Flows

Appendix I, Table 1.
Fairview Township South WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

	Month	Deer Run Estates	Beinhower	Fairmont	Cornhill	Ceejay	Pleasant View
2002	January	17,025	291,561	18,999	54,087	13,510	19,909
	February	18,154	327,150	21,497	63,924	13,371	26,663
	March	15,097	261,077	19,045	54,176	9,948	21,571
	April	16,488	266,000	21,384	60,076	11,320	23,475
	May	17,652	375,561	24,132	72,472	12,194	22,914
	June	14,448	271,600	20,520	53,038	9,960	18,495
	July	16,095	301,452	23,760	52,752	13,587	20,533
	August	18,023	328,955	25,897	58,583	15,058	22,957
	September	16,608	338,800	23,520	52,578	15,280	24,705
	October	15,561	299,690	25,200	54,132	12,465	28,118
	November	23,136	332,780	37,416	71,576	15,760	50,768
	December	21,902	318,387	31,285	75,366	14,323	47,729
Annual Average		**17,516**	**309,418**	**24,388**	**60,230**	**13,065**	**27,320**
2003	January	18,070	306,329	23,110	75,544	10,142	28,640
	February	17,794	348,900	23,811	68,901	10,029	32,513
	March	20,880	370,142	31,494	71,805	13,277	48,629
	April	19,320	338,660	30,048	66,516	11,680	30,945
	May	17,582	356,458	29,450	61,343	10,877	33,830
	June	19,728	384,720	32,448	89,746	17,120	44,490
	July	19,417	299,690	33,840	55,111	13,471	30,375
	August	18,720	321,910	32,772	68,421	15,058	29,381
	September	20,064	328,300	37,896	68,494	15,320	35,550
	October	21,205	334,510	33,724	68,421	15,987	30,585
	November	21,648	343,560	35,928	70,058	12,920	28,920
	December	21,623	406,045	34,421	79,728	13,858	22,834
Annual Average		**19,671**	**344,935**	**31,578**	**70,341**	**13,312**	**33,058**
2004	January	19,695	349,684	30,147	67,887	12,813	16,991
	February	23,313	381,041	26,764	66,526	14,897	19,373
	March	20,206	404,419	32,075	74,609	12,890	22,602
	April	18,528	417,480	28,008	48,898	16,320	18,855
	May	19,115	328,413	29,055	48,345	16,994	14,023
	June	19,296	361,900	28,656	46,368	15,280	18,038
	July	17,582	404,826	26,315	50,837	16,297	18,719
	August	21,135	364,316	36,650	52,262	16,065	19,227
	September	20,400	413,140	37,416	60,076	18,560	25,748
	October	20,485	318,523	35,303	49,368	18,155	14,560
	November	18,144	396,200	33,384	51,428	21,240	16,223
	December	20,044	357,271	35,094	55,200	21,406	18,370
Annual Average		**19,829**	**374,768**	**31,572**	**55,984**	**16,743**	**18,561**
2005	January	18,255	367,026	32,237	51,149	20,090	23,458
	February	18,386	304,500	29,983	46,969	22,371	12,704
	March	18,279	338,981	29,985	54,221	22,065	19,677
	April	18,312	381,360	29,448	57,822	20,360	19,125
	May	18,325	289,123	28,103	49,146	21,794	12,165
	June	17,383	285,880	29,928	47,840	19,856	12,225
	July	20,757	283,297	32,191	47,098	17,868	13,123
	August	20,276	283,026	31,610	47,543	17,845	13,362
	September	26,688	312,060	44,232	50,324	18,880	15,038
	October	19,881	322,452	31,308	49,012	16,335	17,855
	November	24,336	308,420	32,496	50,140	15,400	14,663
	December	22,575	304,432	32,539	54,933	16,761	16,817
Annual Average		**20,288**	**315,046**	**32,005**	**50,516**	**19,136**	**15,851**
	January	13,008	256,742	33,886	57,203	17,884	23,458
	February	9,847	316,950	35,949	56,383	17,657	12,704
	March	13,982	282,213	34,839	48,968	18,503	19,677
	April	19,584	289,940	34,224	51,060	19,200	19,125

Appendix I, Table 1.
Fairview Township South WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

Month		Deer Run Estates	Beinhower	Fairmont	Cornhill	Ceejay	Pleasant View
2006	May	20,601	289,258	32,586	49,279	19,006	12,165
	June	21,192	370,860	35,928	60,444	23,280	12,225
	July	21,228	290,206	38,787	53,865	18,194	13,123
	August	20,230	292,781	36,232	45,273	15,639	13,362
	September	21,384	318,780	39,696	54,280	17,360	15,038
	October	20,810	346,297	41,551	56,669	18,310	17,855
	November	20,952	363,720	39,864	63,204	18,320	14,663
	December	22,575	347,516	40,970	54,844	15,174	16,817
Annual Average		**18,783**	**313,772**	**37,043**	**54,289**	**18,211**	**15,851 [2]**
2007	January	14,535	343,587	42,735	57,292	18,194	22,827
	February	8,058	340,200	39,009	55,249	17,829	10,704
	March	21,391	412,819	46,568	67,130	21,290	22,609
	April	22,512	327,880	39,408	56,120	16,840	15,818
	May	19,881	296,710	37,510	54,710	17,961	13,384
	June	22,536	287,560	36,624	51,704	16,080	14,625
	July	22,088	299,148	36,348	51,060	16,529	14,037
	August	21,646	319,606	39,252	54,933	16,839	15,460
	September	22,416	308,700	36,456	60,766	19,280	11,933
	October	22,645	313,645	34,305	58,227	19,239	13,906
	November	23,352	316,400	32,376	61,824	20,200	14,100
	December	23,992	331,258	34,769	69,534	21,600	16,352
Annual Average		**20,421**	**324,793**	**37,947**	**58,213**	**18,490**	**15,479**

Notes:

[1] Values are calculated from the pump run times obtained by Township staff and pump drawdown test results.

[2] Values are the same as 2005.

Appendix I, Table 2
Fairveiw Township North WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

Month		Meadowbrook Avenue [2]	New Market	Springer's Lane	Ann Drive
2002	January		113,477	5,458	10,094
	February		117,386	7,534	9,108
	March		144,135	4,668	11,652
	April		150,700	5,568	11,861
	May		162,445	5,830	13,373
	June		155,100	4,872	10,649
	July		122,632	5,365	12,047
	August		134,555	5,667	14,235
	September		152,460	4,800	14,218
	October		168,619	6,294	13,127
	November		205,480	10,176	16,692
	December		201,619	9,732	16,184
Annual Average			**152,384**	**6,330**	**12,770**
2003	January		165,639	6,132	11,592
	February		191,871	8,177	8,967
	March		164,361	9,128	13,334
	April		205,700	8,304	12,871
	May		161,594	6,550	12,786
	June		295,680	8,520	12,787
	July	150,039	176,284	6,387	12,993
	August	130,839	165,852	5,528	13,092
	September	138,800	213,620	8,520	15,514
	October	134,361	162,232	8,245	12,024
	November	124,720	229,460	6,960	13,747
	December	160,723	215,671	9,708	20,676
Annual Average		**139,914**	**195,664**	**7,680**	**13,365**
2004	January	140,981	246,329	7,246	13,520
	February	143,172	144,062	6,257	10,619
	March	121,548	120,077	7,688	13,287
	April	144,120	168,960	6,984	12,034
	May	118,568	176,071	6,735	11,871
	June	123,000	175,560	7,296	11,321
	July	140,865	207,581	6,898	13,457
	August	176,245	198,426	4,901	10,459
	September	231,640	280,940	8,784	11,688
	October	149,806	207,794	6,364	11,690
	November	125,440	214,500	7,344	12,953
	December	144,232	143,923	7,966	13,125
Annual Average		**146,635**	**190,352**	**7,039**	**12,168**
2005	January	155,845	211,200	8,686	11,525
	February	126,000	168,064	7,431	12,330
	March	142,452	246,116	10,916	11,655
	April	191,600	189,420	9,768	11,549
	May	106,877	150,948	6,735	11,434
	June	100,400	147,180	5,856	11,856
	July	99,948	173,942	6,132	12,273
	August	83,845	131,787	6,387	11,766
	September	80,720	157,740	7,776	12,946

Appendix I, Table 2
Fairveiw Township North WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

Month		Meadowbrook Avenue [2]	New Market	Springer's Lane	Ann Drive
	October	99,329	137,110	5,435	11,827
	November	93,720	135,300	6,504	12,502
	December	166,297	149,671	5,458	12,907
Annual Average		**120,586**	**166,540**	**7,257**	**12,047**
2006 [3]	January	155,845	211,200	8,686	11,525
	February	126,000	168,064	7,431	12,330
	March	142,452	246,116	10,916	11,655
	April	191,600	189,420	9,768	11,549
	May	106,877	150,948	6,735	11,434
	June	100,400	147,180	5,856	11,856
	July	99,948	173,942	6,132	12,273
	August	83,845	131,787	6,387	11,766
	September	80,720	157,740	7,776	12,946
	October	99,329	137,110	5,435	11,827
	November	93,720	135,300	6,504	12,502
	December	166,297	149,671	5,458	12,907
Annual Average		**120,586**	**166,540**	**7,257**	**12,047**
2007	January	121,510	152,013	16,421	11,492
	February	107,786	127,993	12,086	9,792
	March	163,974	198,852	21,205	11,104
	April	122,320	169,400	28,944	9,780
	May	97,858	130,935	22,018	9,311
	June	91,320	140,580	15,240	9,278
	July	93,910	124,335	20,299	9,627
	August	105,987	182,458	19,835	10,979
	September	101,640	138,820	19,752	7,918
	October	122,748	151,374	21,879	9,376
	November	147,520	155,100	20,712	10,226
	December	135,871	185,652	19,695	10,261
Annual Average		**117,704**	**154,793**	**19,840**	**9,929**

Notes:

[1] Values are calculated from the pump run times obtained by Township staff and pump drawdown test results.

[2] Started operation in July 2003.

[3] Values are the same as 2005.

Appendix I, Table 3.
Fairveiw Township Facilities Tributary to Lower Allen WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

Month		Buttonwood Estates	Limekiln [2]
2002	January	4,739	7,869
	February	5,958	7,553
	March	4,682	6,279
	April	3,935	6,846
	May	4,329	6,699
	June	3,259	5,378
	July	3,808	6,614
	August	4,540	6,088
	September	4,397	5,325
	October	4,849	5,048
	November	5,153	4,286
	December	5,028	4,540
Annual Average		**4,557**	**6,044**
2003	January	5,430	6,073
	February	6,057	8,845
	March	4,755	6,011
	April	5,762	5,019
	May	5,320	4,272
	June	5,615	4,264
	July	6,186	4,401
	August	5,101	3,872
	September	6,460	4,004
	October	5,877	3,694
	November	5,817	3,399
	December	7,223	2,887
Annual Average		**5,800**	**4,728**
2004	January	6,711	5,108
	February	6,921	3,955
	March	7,637	3,654
	April	8,156	3,114
	May	13,754	2,992
	June	6,959	3,573
	July	8,292	4,278
	August	6,967	3,071
	September	8,093	3,252
	October	6,723	3,282
	November	6,707	3,344
	December	7,353	3,161
Annual Average		**7,856**	**3,565**
2005	January	7,158	3,509
	February	7,173	3,556
	March	7,353	4,775
	April	7,934	4,326
	May	6,877	3,463
	June	7,820	1,931
	July	6,365	1,480
	August	6,605	1,688
	September	7,459	1,476

Appendix I, Table 3.
Fairveiw Township Facilities Tributary to Lower Allen WWTP
Average Monthly Flow in Gallons Per Day (GPD) [1]

Month		Buttonwood Estates	Limekiln [2]
	October	7,076	1,372
	November	6,187	1,294
	December	6,503	1,277
Annual Average		**7,042**	**2,512**
2006	January	6,893	1,376
	February	6,462	1,441
	March	6,426	1,436
	April	6,002	1,228
	May	6,784	1,239
	June	7,699	639
	July	6,003	3,078
	August	6,853	3,037
	September	7,102	3,160
	October	7,410	3,154
	November	7,434	2,405
	December	7,873	2,262
Annual Average		**6,912**	**2,038**
2007	January	7,808	3,129
	February	7,362	2,306
	March	7,905	2,529
	April	7,673	2,761
	May	7,930	2,721
	June	6,993	3,402
	July	6,873	2,275
	August	7,828	1,986
	September	8,345	1,432
	October	7,987	1,947
	November	7,715	1,526
	December	8,873	1,466
Annual Average		**7,774**	**2,290**

Notes:

[1] Values are calculated from the pump run times.

[2] Tenant moved out of the Pennsylvania School

Appendix J

Interceptor Characteristics

Appendix J. Table 1.
Fairview Township Sanitary Sewer System
Lower Allen WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe [1] Capacity	Flow Addition		Existing Flow (mgd)	Existing [2] Peak Flow	Remaining [3] Capacity
											Pump Station	EDUs			
Yellow Breeches Trunk	23	24	309	10	324.00	320.90	0.0100	ACP	0.013	1.4188	Buttonwood PS	95	0.0642	0.0642	1.3546
	24	25	288	10	320.90	320.10	0.0028	ACP	0.013	0.7466			0.0000	0.0642	0.6824
	25	28	255	10	320.10	319.59	0.0020	ACP	0.013	0.6335			0.0000	0.0642	0.5693
	28	29	240	10	319.59	318.87	0.0030	ACP	0.013	0.7759			0.0000	0.0642	0.7116
	29	30	212	10	318.87	318.20	0.0032	ACP	0.013	0.7963			0.0000	0.0642	0.7321
	30	31	318	10	318.20	317.60	0.0019	ACP	0.013	0.6153			0.0000	0.0642	0.5511
	31	32	318	10	317.60	316.71	0.0028	ACP	0.013	0.7494			0.0000	0.0642	0.6852
	32	33	320	10	316.71	315.81	0.0028	ACP	0.013	0.7512			0.0000	0.0642	0.6870
	33	126	305	10	315.81	313.00	0.0092	ACP	0.013	1.3596		13	0.0076	0.0718	1.2879
	126	127	400	10	313.00	311.88	0.0028	ACP	0.013	0.7496			0.0000	0.0718	0.6778
	127	128	400	10	311.88	310.76	0.0028	ACP	0.013	0.7496			0.0000	0.0718	0.6778
	128	57	190	10	310.76	310.23	0.0028	ACP	0.013	0.7481		3	0.0017	0.0735	0.6746
	Downstream Facility, Lower Allen Authority Existing MH 57														
Tall Tree Drive Trunk	86	87	145	10	307.00	304.00	0.0207	ACP	0.013	2.0375		160	0.0932	0.0932	1.9443
	87	88	160	12	304.00	300.96	0.0190	CIP	0.013	3.1750			0.0000	0.0932	3.0818
	Downstream Facility, Lower Allen Authority Existing MH														

Note:

Shaded rows are the limiting pipe sections for the particular trunk sewer at the listed diameter.

[1] Pipe gravity capacity calculated using Manning's Equation and listed pipe characteristics.

[2] Estimated Flow based on upstream pump station run time data maximum month flow plus gravity EDUs to tributary line (established based on parcel counts) @ 233 gpd/EDU x Number of tributary EDUs x 2.5 peaking factor.

[3] Remaining Capacity = Pipe Capacity - Existing Peak Flow.

Appendix J. Table 3.
Fairview Township Sanitary Sewer System
South WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe [1] Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing [2] Peak Flow	Remaining [3] Capacity
Old York Road Interceptor	1356	1355	191	10	604.22	603.50	0.0038	PVC	0.010	1.1306	Fairmont PS	100	0.1048	0.1025	1.0281
	1355	1352	53	10	603.50	601.45	0.0387	PVC	0.010	3.6216		3	0.0017	0.1042	3.5174
	1352	1352A	125	10	599.60	584.35	0.1220	PVC	0.010	6.4320		2	0.0012	0.1054	6.3266
	1352A	1351	85	10	584.35	569.95	0.1704	PVC	0.010	7.6018			0.0000	0.1054	7.4965
	1351	1350	368	10	569.95	559.85	0.0274	PVC	0.010	3.0507			0.0000	0.1054	2.9453
	1350	1349	400	10	559.85	548.05	0.0295	PVC	0.010	3.1628			0.0000	0.1054	3.0574
	1349	1348	215	10	548.05	539.05	0.0419	PVC	0.010	3.7676			0.0000	0.1054	3.6622
	1348	1347	265	10	539.15	537.99	0.0044	PVC	0.010	1.2184			0.0000	0.1054	1.1130
	1347	1346	113	10	537.99	537.49	0.0044	PVC	0.010	1.2249			0.0000	0.1054	1.1195
	1346	1345	225	10	537.49	525.95	0.0513	PVC	0.010	4.1704		2	0.0012	0.1066	4.0638
	1345	1344A	35	10	525.95	525.45	0.0143	DIP	0.013	1.6931		2	0.0012	0.1077	1.5853
	1344A	1344	175	10	525.45	522.42	0.0173	PVC	0.010	2.4231			0.0000	0.1077	2.3154
	1344	1318	394	10	522.37	515.12	0.0184	PVC	0.010	2.4980			0.0000	0.1077	2.3902
	1318	1317	284	10	512.81	510.99	0.0064	DIP	0.013	1.1340			0.0000	0.1077	1.0262
	1317	1316A	76	10	510.99	510.23	0.0100	DIP	0.013	1.4165	Deer Run PS		0.0240	0.1344	1.2821
	1316A	1316	82	10	510.23	509.41	0.0100	DIP	0.013	1.4165			0.0000	0.1344	1.2821
	1316	1315	331	10	509.41	507.88	0.0046	DIP	0.013	0.9631		75	0.0437	0.1781	0.7850
	1315	1314	105	10	507.68	499.04	0.0823	PVC	0.010	5.2824			0.0000	0.1781	5.1043
	1314	1308	149	10	499.04	496.79	0.0151	PVC	0.010	2.2629			0.0000	0.1781	2.0848
	1308	1307	297	10	496.79	493.93	0.0096	PVC	0.010	1.8071		20	0.0117	0.1898	1.6173
	1307	1306	400	10	493.93	488.07	0.0147	PVC	0.010	2.2289			0.0000	0.1898	2.0391
	1306	1284	177	10	488.07	483.09	0.0281	PVC	0.010	3.0888			0.0000	0.1898	2.8991
	1284	1283	370	12	483.09	480.01	0.0083	PVC	0.010	2.7321		50	0.0291	0.2189	2.5132
	1283	1282	162	12	476.75	476.21	0.0033	DIP	0.013	1.3299			0.0000	0.2189	1.1110
	1282	1281	386	12	476.21	474.95	0.0033	PVC	0.010	1.7108			0.0000	0.2189	1.4920
	1281	1280	187	12	474.95	472.98	0.0105	DIP	0.013	2.3642			0.0000	0.2189	2.1453
	1280	1279	217	12	472.98	469.90	0.0142	DIP	0.013	2.7442			0.0000	0.2189	2.5253
	1279	1278	221	12	469.90	469.14	0.0034	PVC	0.010	1.7560			0.0000	0.2189	1.5371
	1278	1277	210	12	469.14	465.68	0.0165	PVC	0.010	3.8437			0.0000	0.2189	3.6248

Appendix J. Table 3.
Fairview Township Sanitary Sewer System
South WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe (1) Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing (2) Peak Flow	Remaining (3) Capacity
Old York Road Interceptor	1277	1202	154	12	465.68	464.21	0.0095	DIP	0.013	2.2505			0.0000	0.2189	2.0316
	1202	1793	202	15	463.64	461.52	0.0105	PVC	0.010	5.5621		155	0.0903	0.3092	5.2529
	1793	1792	60	16	461.52	460.20	0.0220	DIP	0.013	7.3579			0.0000	0.3092	7.0487
	1792	1791	124	15	460.20	459.58	0.0050	PVC	0.010	3.8391			0.0000	0.3092	3.5299
	1791	1790	275	15	459.59	456.00	0.0131	PVC	0.010	6.2033			0.0000	0.3092	5.8942
	1790	1789	275	15	456.00	453.25	0.0100	PVC	0.010	5.4293			0.0000	0.3092	5.1201
	1789	1788	28	16	453.25	452.97	0.0100	DIP	0.013	4.9607			0.0000	0.3092	4.6515
	1788	1787	221	15	452.97	451.16	0.0082	PVC	0.010	4.9134			0.0000	0.3092	4.6043
	1787	1786	287	15	451.16	450.48	0.0024	PVC	0.010	2.6428		2	0.0012	0.3103	2.3324
	1786	1785	320	15	450.48	449.73	0.0023	PVC	0.010	2.6284			0.0000	0.3103	2.3181
	1785	1760	58	15	449.73	449.56	0.0029	PVC	0.010	2.9394			0.0000	0.3103	2.6290
	1760	1759	68	16	443.40	443.21	0.0028	DIP	0.013	2.6222	Wyndamere Road		0.0774	0.3877	2.2345
	1759	1758	324	15	443.21	442.36	0.0026	PVC	0.010	2.7809			0.0000	0.3877	2.3931
	1758	1757	340	15	442.36	441.58	0.0023	PVC	0.010	2.6005		3	0.0017	0.3895	2.2110
	1757	1755	195	15	441.58	438.39	0.0164	PVC	0.010	6.9442			0.0000	0.3895	6.5547
	1755	1753	243	15	438.39	437.79	0.0025	PVC	0.010	2.6978			0.0000	0.3895	2.3084
	1753	1746	320	16	437.79	431.72	0.0190	DIP	0.013	6.8322			0.0000	0.3895	6.4428
	1746	1745	234	15	431.72	431.13	0.0025	PVC	0.010	2.7262		31	0.0181	0.4075	2.3187
	1745	1744	208	15	431.13	430.61	0.0025	PVC	0.010	2.7146			0.0000	0.4075	2.3071
	1744	1743	317	15	430.61	429.87	0.0023	PVC	0.010	2.6232			0.0000	0.4075	2.2157
	1743	1742	360	15	429.87	425.88	0.0111	PVC	0.010	5.7158			0.0000	0.4075	5.3083
	1742	1741	390	15	428.88	425.00	0.0099	PVC	0.010	5.4154			0.0000	0.4075	5.0078
	1741	1740	131	16	425.00	424.37	0.0048	DIP	0.013	3.4402			0.0000	0.4075	3.0326
	1740	1739	370	15	424.37	423.53	0.0023	PVC	0.010	2.5869			0.0000	0.4075	2.1794
	1739	1738	179	15	423.53	423.07	0.0026	PVC	0.010	2.7523			0.0000	0.4075	2.3448
	1738	1730	319	15	423.07	422.39	0.0021	PVC	0.010	2.5067			0.0000	0.4075	2.0992
	1730	1729	98	18	422.14	422.02	0.0012	PVC	0.010	3.0894	Corn Hill PS		0.0835	0.4910	2.5983
	1729	PS	24	21	418.52	418.50	0.0008	PVC	0.010	3.8444	Clover Street Trunk		0.0437	0.5347	3.3097
	Downstream Facility, Beinhower PS														

Appendix J. Table 3.
Fairview Township Sanitary Sewer System
South WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe [1] Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing [2] Peak Flow	Remaining [3] Capacity
Wyndamere Road Trunk	1901	1900	123	12	449.53	449.19	0.0028	PVC	0.010	1.5744	Pleasant View PS	75	0.0663	0.0663	1.5080
	1900	1773	69	12	449.19	448.70	0.0071	PVC	0.010	2.5234			0.0000	0.0663	2.4571
	1773	1772	331	12	448.70	447.90	0.0024	PVC	0.010	1.4721		3	0.0017	0.0681	1.4041
	1772	1771	270	12	447.90	447.21	0.0026	PVC	0.010	1.5138		3	0.0017	0.0698	1.4439
	1771	1770	297	12	447.21	445.36	0.0062	PVC	0.010	2.3633		2	0.0012	0.0710	2.2923
	1770	1762	77	12	445.36	444.58	0.0101	PVC	0.010	3.0138		9	0.0052	0.0762	2.9376
	1762	1761	81	12	444.58	444.09	0.0060	PVC	0.010	2.3290			0.0000	0.0762	2.2528
	1761	1760	243	12	444.09	443.45	0.0026	PVC	0.010	1.5367		2	0.0012	0.0774	1.4594
	Downstream Facility, Old York Road Interceptor, MH 1760														
Clover Street Trunk	2125	2108	90	10	419.95	419.57	0.0042	DIP	0.013	0.9204		75	0.0437	0.0437	0.8767
	2108	1729	33	10	419.57	419.42	0.0045	PVC	0.010	1.2415			0.0000	0.0437	1.1978
	Downstream Facility, Old York Road Interceptor, MH 1729														
Corn Hill Trunk	900	899	300	10	489.00	487.50	0.0050	PVC	0.010	1.3021	Corn Hill PS		0.0695	0.0695	1.2326
	899	1737													0.0000
	1737	1736	332	10	479.70	478.98	0.0022	PVC	0.010	0.8576		8	0.0047	0.0742	0.7834
	1736	1735	333	10	478.98	476.31	0.0080	PVC	0.010	1.6489		5	0.0029	0.0771	1.5718
	1735	1734	399	10	476.31	467.19	0.0229	PVC	0.010	2.7841		4	0.0023	0.0794	2.7046
	1734	1733	327	10	467.19	465.79	0.0043	PVC	0.010	1.2049		2	0.0012	0.0806	1.1243
	1733	1732	232	10	465.79	450.84	0.0644	PVC	0.010	4.6746		3	0.0017	0.0823	4.5922
	1732	1731	377	10	450.84	425.55	0.0671	PVC	0.010	4.7695		2	0.0012	0.0835	4.6860
	1731	1730	65	10	425.55	422.80	0.0423	PVC	0.010	3.7877			0.0000	0.0835	3.7042
	Downstream Facility, Old York Road Interceptor, MH 1730														

Appendix J. Table 3.
Fairview Township Sanitary Sewer System
South WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe [1] Capacity	Flow Addition		Existing Flow (mgd)	Existing [2] Peak Flow	Remaining [3] Capacity
											Pump Station	EDUs			

Note:

Shaded rows are the limiting pipe sections for the particular trunk sewer at the listed diameter.

[1] Pipe gravity capacity calculated using Manning's Equation and listed pipe characteristics.

[2] Estimated Flow based on upstream pump station run time data maximum month flow plus gravity EDUs to tributary line (established based on parcel counts) @ 233 gpd/EDU x Number of tributary EDUs x 2.5 peaking factor.

[3] Remaining Capacity = Pipe Capacity - Existing Peak Flow.

Appendix J. Table2.
Fairview Township Sanitary Sewer System
North WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe (1) Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing (2) Peak Flow	Remaining (3) Capacity
Limekiln Road Trunk	119	113	90	10	370.60	361.36	0.1027	VCP	0.013	4.5388		6	0.0035	0.0035	4.5353
	113	112	230	10	361.36	360.72	0.0028	VCP	0.013	0.7472		2	0.0012	0.0047	0.7426
	112	111	226	10	360.72	359.95	0.0034	VCP	0.013	0.8268			0.0000	0.0047	0.8222
	111	109A	286	10	359.95	359.15	0.0028	VCP	0.013	0.7492		2	0.0012	0.0058	0.7434
	109A	108	310	10	395.15	358.29	0.1189	VCP	0.013	4.8845		1	0.0006	0.0064	4.8781
	108	107	294	10	358.29	349.60	0.0296	VCP	0.013	2.4353		2	0.0012	0.0076	2.4278
	107	106	400	10	349.60	336.60	0.0325	VCP	0.013	2.5537		2	0.0012	0.0087	2.5449
	106	105	37	10	336.60	328.80	0.2108	VCP	0.013	6.5038			0.0000	0.0087	6.4951
	105	104	247	10	328.80	328.01	0.0032	VCP	0.013	0.8011		4	0.0023	0.0111	0.7900
	104	103	262	10	328.01	327.17	0.0032	VCP	0.013	0.8021		4	0.0023	0.0134	0.7887
	103	57	300	10	327.17	326.20	0.0032	VCP	0.013	0.8055		3	0.0017	0.0151	0.7903
	Downstream Facility, Lewisberry Road Trunk, MH 57														
Lewisberry Road Trunk	220	221	253	10	469.99	463.15	0.0271	PVC	0.010	3.0308		40	0.0233	0.0233	3.0075
	221	222	400	10	463.15	451.85	0.0282	PVC	0.010	3.0951		2	0.0012	0.0245	3.0706
	222	223	70	10	451.85	447.25	0.0657	PVC	0.010	4.7206		3	0.0017	0.0262	4.6944
	223	224	100	10	447.25	445.65	0.0160	PVC	0.010	2.3293		2	0.0012	0.0274	2.3019
	224	225	195	10	445.65	443.80	0.0095	PVC	0.010	1.7936		1	0.0006	0.0280	1.7657
	225	227	186	10	443.80	442.55	0.0067	PVC	0.010	1.5096			0.0000	0.0280	1.4817
	227	228	350	10	442.55	420.67	0.0624	PVC	0.010	4.6015		2	0.0012	0.0291	4.5724
	228	229	163	10	415.17	414.40	0.0047	PVC	0.010	1.2655		1	0.0006	0.0297	1.2358
	229	230	214	10	414.40	413.02	0.0064	PVC	0.010	1.4786		1	0.0006	0.0303	1.4483
	230	231	217	10	413.02	406.39	0.0306	PVC	0.010	3.2198			0.0000	0.0303	3.1895
	231	296	105	10	406.39	402.62	0.0358	PVC	0.010	3.4827		50	0.0291	0.0594	3.4233
	296	296A	350	10	400.00	394.00	0.0171	DIP	0.013	1.8547			0.0000	0.0594	1.7952
	296A	297A	73	8	394.00	391.00	0.0411	PVC	0.010	2.0585			0.0000	0.0594	1.9991
	297A	255	40	10	391.00	390.50	0.0125	PVC	0.010	2.0588		3	0.0017	0.0612	1.9977
	255	256	186	10	390.50	389.00	0.0081	PVC	0.010	1.6537			0.0000	0.0612	1.5925

Appendix J. Table2.
Fairview Township Sanitary Sewer System
North WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe (1) Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing (2) Peak Flow	Remaining (3) Capacity
Lewisberry Road Trunk	256	257	252	10	389.00	384.00	0.0198	PVC	0.010	2.5939			0.0000	0.0612	2.5327
	257	258	326	10	384.00	374.50	0.0292	PVC	0.010	3.1454		26	0.0151	0.0763	3.0691
	258	278	278	10	372.50	371.18	0.0047	PVC	0.010	1.2687			0.0000	0.0763	1.1924
	278	284	282	10	371.18	365.10	0.0216	PVC	0.010	2.7036			0.0000	0.0763	2.6273
	284	285	389	10	365.10	356.04	0.0233	PVC	0.010	2.8118			0.0000	0.0763	2.7355
	285	286	225	10	356.04	352.99	0.0136	PVC	0.010	2.1447			0.0000	0.0763	2.0684
	28	124	131	10	352.99	350.96	0.0155	PVC	0.010	2.2916			0.0000	0.0763	2.2152
	124	123	191	10	350.96	347.78	0.0166	PVC	0.010	2.3761	Resser's Summit	2	0.0861	0.1624	2.2137
	123	122	288	10	344.78	340.85	0.0136	DIP	0.013	1.6547			0.0000	0.1624	1.4924
	122	121	321	10	340.85	339.34	0.0047	PVC	0.010	1.2631			0.0000	0.1624	1.1007
	121	120	161	10	339.34	338.46	0.0055	PVC	0.010	1.3621			0.0000	0.1624	1.1998
	120	58	244	10	338.46	337.46	0.0041	PVC	0.010	1.1793		2	0.0012	0.1635	1.0157
	58	57	215	10	337.70	327.60	0.0470	PVC	0.010	3.9912		4	0.0023	0.1659	3.8254
	57	43	333	10	327.60	321.00	0.0198	PVC	0.010	2.5925	Limekiln Road	5	0.0181	0.1839	2.4086
	43	41	359	10	321.00	319.00	0.0056	PVC	0.010	1.3745		35	0.0204	0.2043	1.1702
	41	40	261	10	313.00	311.52	0.0057	PVC	0.010	1.3867	Springer's Lane PS		0.0289	0.2332	1.1534
	40	32	268	10	311.52	310.00	0.0057	PVC	0.010	1.3868		2	0.0012	0.2344	1.1524
	32	31	400	10	310.00	301.60	0.0210	PVC	0.010	2.6686		4	0.0023	0.2367	2.4318
	31	30	400	10	301.60	299.58	0.0051	PVC	0.010	1.3086		3	0.0017	0.2385	1.0701
	Downstream Facility, New Market Interceptor - South, MH 30														
Reeser's Summit Trunk	126	125	90	10	346.37	345.31	0.0118	PVC	0.010	1.9985	Ann Drive PS	124	0.0837	0.0837	1.9147
	125	123	81	10	345.31	344.78	0.0065	PVC	0.010	1.4856		2	0.0012	0.0849	1.4007
	Downstream Facility, Lewisberry Road Trunk, MH 123														

Appendix J. Table2.
Fairview Township Sanitary Sewer System
North WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe (1) Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing (2) Peak Flow	Remaining (3) Capacity
New Market Interceptor - South	59	60	352	10	310.49	309.11	0.0039	PVC	0.010	1.1530		35	0.0204	0.0204	1.1326
	60	61	303	10	309.11	307.92	0.0039	PVC	0.010	1.1540		2	0.0012	0.0216	1.1325
	61	62	261	10	307.92	307.18	0.0028	PVC	0.010	0.9805		2	0.0012	0.0227	0.9578
	62	63	358	10	307.18	306.17	0.0028	PVC	0.010	0.9781		15	0.0087	0.0315	0.9467
	63	64	382	10	306.17	305.08	0.0029	PVC	0.010	0.9837		3	0.0017	0.0332	0.9505
	64	65	268	10	305.08	304.32	0.0028	PVC	0.010	0.9806		2	0.0012	0.0344	0.9463
	65	66	305	10	304.32	303.46	0.0028	PVC	0.010	0.9778		3	0.0017	0.0361	0.9417
	66	67	41	10	303.46	303.34	0.0029	PVC	0.010	0.9962		7	0.0041	0.0402	0.9560
	67	69	400	10	303.34	302.22	0.0028	PVC	0.010	0.9744		7	0.0041	0.0443	0.9301
	69	70	400	10	302.22	301.10	0.0028	PVC	0.010	0.9744		30	0.0175	0.0617	0.9127
	70	71	300	10	301.10	300.26	0.0028	PVC	0.010	0.9744		1	0.0006	0.0623	0.9121
	71	72	300	10	300.26	299.42	0.0028	PVC	0.010	0.9744			0.0000	0.0623	0.9121
	72	30	265	10	299.42	298.58	0.0032	PVC	0.010	1.0368			0.0000	0.0623	0.9744
	30	29	285	10	298.58	297.78	0.0028	PVC	0.010	0.9756	Lewisberry Road		0.2385	0.3008	0.6748
	29	28	290	10	297.78	296.96	0.0028	PVC	0.010	0.9792		2	0.0012	0.3020	0.6772
	28	27	400	10	296.96	295.84	0.0028	PVC	0.010	0.9744		3	0.0017	0.3037	0.6707
	Downstream Facility, Meadowbrook Ave PS														
Market Interceptor - North	12	11	390	10	304.94	303.84	0.0028	PVC	0.010	0.9780		45	0.0262	0.0262	0.9518
	11	10	400	10	303.84	302.72	0.0028	PVC	0.010	0.9744		10	0.0058	0.0320	0.9424
	10	9	368	10	302.72	301.68	0.0028	PVC	0.010	0.9789		8	0.0047	0.0367	0.9422
	9	8	375	10	301.68	300.62	0.0028	PVC	0.010	0.9790		7	0.0041	0.0408	0.9383
	8	7	375	10	300.62	299.58	0.0028	PVC	0.010	0.9698		8	0.0047	0.0454	0.9243
	7	1	385	10	299.58	298.49	0.0028	PVC	0.010	0.9798		40	0.0233	0.0687	0.9111
	1	22	154	10	298.49	298.05	0.0029	PVC	0.010	0.9843		1	0.0006	0.0693	0.9150
	22	23	380	10	298.05	296.98	0.0028	PVC	0.010	0.9772		1	0.0006	0.0699	0.9073
	23	24	252	10	296.98	296.27	0.0028	PVC	0.010	0.9775			0.0000	0.0699	0.9076
	24	25	374	10	296.27	295.21	0.0028	PVC	0.010	0.9804			0.0000	0.0699	0.9105

Appendix J. Table2.
Fairview Township Sanitary Sewer System
North WWTP Basin Interceptor Characteristics

	Up MH No.	Down MH No.	Length (feet)	Diameter (inches)	Up Invert	Down Invert	Calculated Slope (ft/ft)	Pipe Type	n	Pipe [1] Capacity	Flow Addition Pump Station	Flow Addition EDUs	Existing Flow (mgd)	Existing [2] Peak Flow	Remaining [3] Capacity
New	25	26	400	10	295.21	294.09	0.0028	PVC	0.010	0.9744			0.0000	0.0699	0.9045
	26	27	354	10	294.09	283.09	0.0311	PVC	0.010	3.2461			0.0000	0.0699	3.1762
	Downstream Facility, Meadowbrook Ave PS														

Note:

Shaded rows are the limiting pipe sections for the particular trunk sewer at the listed diameter

(1) Pipe gravity capacity calculated using Manning's Equation and listed pipe chara

(2) Estimated Flow based on upstream pump station run time data maximum month flow plus gravity EDUs to tributary line (established based on parcel counts) @ 233 gpd/EDU x Number of tributary EDUs x 2.5 peaking factor.

(3) Remaining Capacity = Pipe Capacity - Existing Peak Flow.

Appendix K

Re-rate Analysis

FAIRVIEW TOWNSHIP AUTHORITY
YORK COUNTY, PENNSYLVANIA

NPDES PERMIT NO. PA 0082589

SOUTH WASTEWATER TREATMENT PLANT
RERATE EVALUATION

JANUARY 2003

Gannett Fleming, Inc.
Harrisburg, Pennsylvania

Introduction

In June 2000, the hydraulic and organic loading capacities of the Fairview Township South Wastewater Treatment Plant were re-evaluated due to overload conditions at the plant. Both the hydraulic and organic capacities were rerated at that time to allow for higher loading rates which required no additional operational or structural changes. The Township and Authority has expressed concern that additional capacity will be necessary in the near future to accommodate Township growth.

As requested, a further examination of the existing facility was performed to determine whether additional capacity can be obtained in conjunction with system improvements. Included in the scope of this evaluation were analyses of current operations data, identification of the Annual Average Daily Flow (AADF) limit, identification of revised Biochemical Oxygen Demand (BOD_5) and Ammonia-Nitrogen (NH_3-N) loading capacities, analysis of oxygen demand, and identification of required improvements.

Calculations

Attached are calculations performed in support of the rerate evaluation. Results of the calculations are used in the subsequent sections of this evaluation. Following is a summary of the attachments:

Sheet Number	Description
1	Peak Sustained Daily Flow (PSDF)
2	Maximum Month Average Daily Flow (MMADF)
3	Annual Average Daily Flow (AADF)
4	Actual Oxygen Requirement (AOR) – Capacity, Levels
5	Actual Oxygen Requirement (AOR) – O_2 Per Day
6	Standard Oxygen Requirements (SOR)
7	SCFM Required
8	Maximum Month Organic Loading

Hydraulic Capacity

The peak flow capacity of a Sequencing Batch Reactor (SBR) plant, like the South Plant, is defined by the tank volume between the high water level and low water level. From the analysis of the existing SBR treatment units, it was determined that by raising the water level one foot, the total volume of the tank would be increased to approximately 149,300 gallons *[Sheet 1, Calc. 1]*. This volume represents an 18% increase over the current tank operating volume of 126,700 gallons.

Maintaining the current cycling times of the tank, this new tank volume would be capable of accommodating a peak sustained daily flow (PSDF) of 1.49 million gallons per day (MGD) *[Sheet 1, Calc. 3]*. Using this new peak daily flow in association with historical flow ratios, the new

maximum month average daily flow (MMADF) could be increased to 1.12 MGD *[Sheet 2]* and the annual average daily flow (AADF) to 0.596 MGD *[Sheet 3]*. This revised average annual daily flow represents a 19% increase over the current average daily flow limit of 0.500 MGD.

Organic Capacity

Organic loading capacity was calculated, based on the new flow capacity of the modified tank and the oxygenation capacity restrictions of the existing blower system. While the proposed design organic loading capacity will increase, as noted in Table 1 below, the organic concentration used in the calculation is less than the current historical strength of the influent waste. Taking into account the current hydraulic flow to the plant, the organic loading capacity should not be an issue for the immediate future. However, as the average daily flows approach the revised capacity, any significant increase in organic concentration of the influent would cause the treatment units to exceed their organic capacity prior to exceeding their hydraulic capacity. The installation of larger blowers and additional diffusers would be the only alternative to address these potential additional organic loadings.

Following is a summary table (Table 1) comparing the current plant capacity and the recommended rerate capacity for various parameters:

Table 1

Parameter	June 2000 Rerate Capacity	Recommended Rerate Capacity	Units
Annual Average Daily Flow (AADF)	0.500	0.596	MGD
Maximum Month Average Daily Flow (MMADF)	0.94	1.12	MGD
Peak Sustained Daily Flow (PSDF)	1.25	1.49	MGD
Biochemical Oxygen Demand (BOD_5)			
Annual Average	917	934	lb/day
Maximum Month	1,687	1,756	lb/day
Maximum Day	1,912	2,336	lb/day
Total Kjeldahl Nitrogen (TKN)			
Annual Average	167	159	lb/day

Summary

In summary, the proposed increased hydraulic capacity would require no major equipment changes. Minor program changes will be necessary, such as reprogramming the storm mode and decant programs of the SBR operations, in addition to raising the level of the overflow on the tanks. The proposed organic loading rates are based on historical data and present no problems as long as the influent organic concentration does not significantly increase. It appears that the proposed rerate hydraulic and organic capacities would adequately serve the Fairview Township's South WWTP needs as the residential development of the area continues to increase.

CALCULATIONS

Peak Sustained Daily Flow (PSDF)

LWL = 10'
HWL = 16.6' (increased from 15.6')

1. Peak Flow Volume = (HWL − LWL)(L)(W)
= (16.6 − 10)(55)(55)
= 19,965 ft^3

(19,965 ft^3)(7.48 gal/ft^3) = 149,338 gallons

2. Cycles
5 cycles / day
4.8 hours / cycle
Fill Time ~ 50% cycle ~ 2.4 hours

3. Peak Sustained Daily Flow

$$\frac{149{,}338 \text{ gal}}{\left(\frac{2.4 \text{ hours}}{24 \text{ hr/day}}\right)} = \underline{\underline{1.49 \text{ mgd}}}$$

Maximum Month Average Daily Flow (MMADF)

$$PSDF : MMADF = \frac{1.25}{0.94} = 1.33$$ (From 2000 Rerate)

$$\frac{1.49 \text{ mgd}}{1.33} = \underline{\underline{1.12 \text{ mgd}}}$$

(19% increase (180,000 gpd) over current MMADF (0.94))

Gannett Fleming

SUBJECT Fairview Township

BY NJS DATE 1/13/03 CHKD BY DATE

SHEET NO. 3 OF 8

JOB NO. 36171.025

Annual Average Daily Flow (AADF)

$$MMADF : AADF = \frac{0.94}{0.50} = 1.88$$ (From 2000 Rerate)

$$\frac{1.12 \text{ mgd}}{1.88} = \underline{\underline{0.596 \text{ mgd}}}$$

(19% increase (96,000 gpd) over current AADF (0.50))

Actual Oxygen Requirement (AOR)

$$\frac{596{,}000 \text{ gpd}}{24 \text{ hr/day}} (2.4 \text{ hrs/Fill}) = 59{,}600 \text{ gal.}$$

$$\frac{59{,}600 \text{ gal}}{7.48 \text{ gal/ft}^3} = 7{,}968 \text{ ft}^3$$

$$\frac{7{,}968 \text{ ft}^3}{(55)(55)} = 2.6 \text{ ft.}$$

AWL @ ADF = LWL + ADFWL = 10 + 2.6 = 12.6 ft

Diffusers submerged 1 foot off floor = 12.6 − 1 = 11.6 ft.

Actual Oxygen Requirement (AOR)

1. BOD

$(0.596 \text{ mgd})(220 \text{ mg/L})(8.34) = 1{,}094 \text{ lb/day}$

Peaking Factor $= \frac{\text{MM Loading}}{\text{MA Loading}} = \frac{1{,}687}{917} = 1.84$

$(1{,}094 \text{ lb/day})(1.84) = 2{,}013 \text{ lb/day}$ Max. Mo. Loading

$(2{,}013 \text{ lb BOD/day})(1.2 \frac{\text{lb O2}}{\text{lb BOD}}) = 2{,}416 \text{ lb O2/day}$

2. NH_3

$(0.596 \text{ mgd})(40 \text{ mg/L})(8.34) = 199 \text{ lb/day}$

$(199 \text{ lb } NH_3\text{/day})(4.6 \frac{\text{lb O2}}{\text{lb } NH_3}) = 915 \text{ lb O2/day}$

3. Maximum Month AOR

$= 2{,}416 + 915 = \underline{3{,}331 \text{ lb O2/day}}$

Note:
AOR delivered to process by blowers is 2,793 lb O2/day [Ref: 2000 Remote Supplemental]

Standard Oxygen Requirements (SOR)

1. Maximum Month SOR

$$\frac{AOR}{SOR} = \alpha\left[\frac{\left[\beta\left(\frac{P_F}{P_{msl}}\right)\left(\frac{C_{sat_T}}{C_{sat_{20}}}\right)C_{sat}\right]-C_o}{C_{sat}}\right]\theta^{T-20}$$

Where:

α = Relative rate of O_2 transfer in MLSS = 0.85
β = Relative rate of O_2 saturation in MLSS = 0.95
P_F = Barometric pressure @ site = 27.70
P_{msl} = Barometric pressure @ mean sea level = 29.92
C_{sat_T} = Saturation DO @ standard conditions corrected for temp. = 8.58
$C_{sat_{20}}$ = Saturation DO @ standard conditions = 9.09
C_{sat} = Saturation DO specific for plant & equipment = 10.59
C_o = Steady State DO (Desired residual DO) = 2
T = operating temperature = 23
θ^{T-20} = Temperature correction constant for O_2 transfer

$$\frac{3,331}{SOR} = 0.85\left[\frac{\left[0.95\left(\frac{27.70}{29.92}\right)\left(\frac{8.58}{9.09}\right)10.38\right]-2}{10.38}\right]1.074$$

$$\frac{3,331}{SOR} = 0.5820$$

$$SOR = 5,723 \text{ lb } O_2/\text{day}$$

SCFM Required

SOR = 5,723 lb O2/day
AOR = 3,331 lb O2/day
HWL = 16.6 ft.
LWL = 10.0 ft.
OTE = 1.50 %/ft.
1 SCFM contains 0.0173 lbs O2

$$\frac{5,723 \text{ lb O2/day}}{(24 \text{ hr/day})(60 \text{ min/hr})} = 3.97 \text{ lb O2/min.}$$

AWL = 11.6 ft

OTE = (11.6 ft.)(1.50 %/ft) = 17.4 %

(0.0173 lb O2/SCFM)(0.174) = 0.0030 lb O2/min.

$$\frac{3.97 \text{ lb O2/min. Demand}}{0.0030 \text{ lb O2/min. Transferred}} = 1,323 \text{ SCFM Required}$$

Maximum Month Organic Loading

1. Historical Loadings (6/00 to 5/02)

Flow	0.274	
BOD	207 mg/L	
	478 lb/day	
NH_3	24.1 mg/L	Assume NH_3 = 32.0 mg/L
	56 lb/day	

2. NH_3

$(0.596\ mgd)(32.0\ mg/L)(8.34) = 159\ lb/day$

$(159\ lb/day)(4.6\ lb\ O_2/lb\ NH_3) = 731\ lb\ O_2/day$

3. BOD

Delivered AOR, lb O_2/day	2,793
NH_3 Demand, lb O_2/day	731
Net AOR of BOD	2,062 lb O_2/day

Maximum Month BOD Load $= \frac{2,062}{1.2} = 1,718$ lb BOD/day

Annual Average BOD Load =

$(1,718\ lb\ BOD/day)/1.84 = 934$ lb BOD/day

Peaking Factor $= \frac{\text{MM BOD Loading}}{\text{AA BOD Loading}} = \frac{1,687}{917} = 1.84$ (From 2000 Report)

Annual Average BOD concentration =

$\frac{934\ lb\ BOD/day}{(8.34)(0.596\ mgd)} = 188\ mg/L$

Appendix L

Analysis of Preliminary Needs Areas

APPENDIX L TABLE I

FAIRVIEW FARMS NEEDS ASSESSMENT

Property Address	Year Initially Built	Lot Size (Acres)	Well Water Sample Results			Potential Soil Suitability	On-Lot Problems Observed	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform				
1 CARRIAGE RD	1970	0.76	5.9	1	1	YES		Suspected Malfunction	Fecal Coliform Present
5 CARRIAGE RD	1970	0.46	5.2	1	ND	YES	Active Malfunction, Raw Sewage Surfacing in Backyard	Confirmed Malfunction	Observation of Sampler
9 CARRIAGE RD	1972	0.46	6.0	6	ND	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler
13 CARRIAGE RD	1972	0.46	9.4	156	ND	YES		No Malfunction	
14 CARRIAGE RD	1970	0.46	8.2	1	ND	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler
17 CARRIAGE RD	1970	0.46	4.8	ND	ND	YES		Potential Malfunction	Built Before 1972
18 CARRIAGE RD	1974	0.52	8.8	ND	ND	YES	Lush Green Grass in backyard	Suspected Malfunction	Observation of Sampler
20 CARRIAGE RD	1970	0.55	6.3	61	ND	YES		Potential Malfunction	Built Before 1972
22 CARRIAGE RD	1970	0.82	5.4	1	ND	YES		Potential Malfunction	Built Before 1972
23 CARRIAGE RD	1970	1.19	5.4	4	ND	YES		Potential Malfunction	Built Before 1972
105 DILLER RD	1958	0.34	3.3	435	7	NO		Suspected Malfunction	Fecal Coliform Present
107 DILLER RD	1956	0.30	4.0	157	ND	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
113 DILLER RD	1954	0.92	7.2	ND	ND	No		Potential Malfunction	1972/Unsuitable Soils
114 DILLER RD	1958	0.32	17.6	ND	ND	YES		Potential Malfunction	Before 1972
115 DILLER RD	1958	0.34	8.7	31	ND	NO	Wastewater Backing Up Into The Home	Confirmed Malfunction	Homeowner Notification
120 DILLER RD	1958	0.28	3.3	ND	ND	NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
134 DILLER RD	1940	0.21	8.0	ND	ND	YES		Potential Malfunction	Built Before 1972
3 NORTHVIEW RD	1978	4.46	11.0	ND	ND	YES		Potential Malfunction	Nitrate Over 10
835 OLD FORGE RD	1970	0.44	3.9	ND	ND	YES		Potential Malfunction	Built Before 1972
841 OLD FORGE RD	1985	1.26	4.8	ND	ND	YES		No Malfunction	
101 SUNSET VIEW DR	1959	0.34	4.4	ND	ND	YES	System Overflows	Confirmed Malfunction	Homeowner Notification
110 SUNSET VIEW DR	1974	0.68	4.7	ND	ND	NO		Potential Malfunction	Unsuitable Soils
118 SUNSET VIEW DR	1980	0.51	5.9	2	ND	YES		No Malfunction	
119 SUNSET VIEW DR	1984	0.49	4.7	ND	ND	YES		No Malfunction	
3 CARRIAGE RD	1970	0.49				YES		Potential Malfunction	Built Before 1972
4 CARRIAGE RD	1969	0.51				YES		Potential Malfunction	SEO Repair Permit
6 CARRIAGE RD	1972	0.51				YES		No Malfunction	
7 CARRIAGE RD	1970	0.46				YES		Potential Malfunction	Built Before 1972
8 CARRIAGE RD	1972	0.46				YES		No Malfunction	
10 CARRIAGE RD	1972	0.47				YES		No Malfunction	
11 CARRIAGE RD	1972	0.46				YES		No Malfunction	
12 CARRIAGE RD	1975	0.48				YES		No Malfunction	
15 CARRIAGE RD	1970	0.46				YES		Potential Malfunction	Built Before 1972
16 CARRIAGE RD	1973	0.50				YES		No Malfunction	
19 CARRIAGE RD	1970	0.46				YES		Potential Malfunction	Built Before 1972
21 CARRIAGE RD	1970	0.78				YES		Potential Malfunction	Built Before 1972
101 DILLER RD	1956	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
102 DILLER RD	1959	0.48				NO		Potential Malfunction	1972/Unsuitable Soils
103 DILLER RD	1964	0.34				NO		Potential Malfunction	Built Before 1972/Unsuitable Soils
104 DILLER RD	1960	0.43				NO		Potential Malfunction	1972/Unsuitable Soils
106 DILLER RD	1955	0.55				NO		Potential Malfunction	1972/Unsuitable Soils
108 DILLER RD	1997	0.55				NO		Potential Malfunction	Unsuitable Soils
109 DILLER RD	1960	0.32				NO		Potential Malfunction	1972/Unsuitable Soils
110 DILLER RD	1957	0.54				NO		Potential Malfunction	1972/Unsuitable Soils
111 DILLER RD	1953	0.49				NO		Confirmed Malfunction	BTG Repair Permit
112 DILLER RD	1956	0.62				NO		Potential Malfunction	1972/Unsuitable Soils
116 DILLER RD	1954	0.49				NO		Potential Malfunction	1972/Unsuitable Soils
117 DILLER RD	1972	0.34				NO		Potential Malfunction	Unsuitable Soils
119 DILLER RD	1956	0.28				YES		Potential Malfunction	Built Before 1972
121 DILLER RD	1958	0.35				YES		Potential Malfunction	Built Before 1972
122 DILLER RD	1959	0.56				NO		Potential Malfunction	1972/Unsuitable Soils
123 DILLER RD	1958	0.32				YES		Potential Malfunction	Built Before 1972
124 DILLER RD	1967	0.37				YES		Potential Malfunction	Built Before 1972
125 DILLER RD	1958	0.38				YES		Potential Malfunction	Built Before 1972
126 DILLER RD	1958	0.32				YES		Potential Malfunction	Built Before 1972

APPENDIX L TABLE 1

FAIRVIEW FARMS NEEDS ASSESSMENT

Property Address	Year Initially Built	Lot Size (Acres)	Well Water Sample Results			Potential Soil Suitability	On-Lot Problems Observed	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform				
127 DILLER RD	1958	0.63				YES		Potential Malfunction	Built Before 1972
128 DILLER RD	1956	0.32				YES		Potential Malfunction	Built Before 1972
130 DILLER RD	1959	1.88				YES		Potential Malfunction	Built Before 1972
130 DILLER RD	1956	0.32				YES		Potential Malfunction	Built Before 1972
132 DILLER RD	1958	0.32				YES		Potential Malfunction	Built Before 1972
136 DILLER RD	1958	0.31				YES		Potential Malfunction	Built Before 1972
817 OLD FORGE RD	1950	0.38				NO		Confirmed Malfunction	BTG Repair Permit
819 OLD FORGE RD	1954	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
821 OLD FORGE RD	1954	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
825 OLD FORGE RD	1951	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
827 OLD FORGE RD	1958	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
829 OLD FORGE RD	1958	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
833 OLD FORGE RD	1958	0.44				NO		Potential Malfunction	1972/Unsuitable Soils
837 OLD FORGE RD	1957	0.43				YES		Potential Malfunction	Built Before 1972
839 OLD FORGE RD	1955	0.43				YES		Potential Malfunction	Built Before 1972
847 OLD FORGE RD	1962	0.39				YES		Potential Malfunction	Built Before 1972
1 NORTHVIEW RD	1972	0.55				YES		No Malfunction	
2 NORTHVIEW RD	1970	0.67				YES		Potential Malfunction	Built Before 1972
4 NORTHVIEW RD	1970	1.27				YES		Suspected Malfunction	Observation of Sampler
6 NORTHVIEW RD	1972	0.58				YES		No Malfunction	
222 SHAUFFNERTOWN RD	1850	1.10				YES		Potential Malfunction	Built Before 1972
269 SPANGLERS MILL RD	1954	0.33				NO		Potential Malfunction	1972/Unsuitable Soils
271 SPANGLERS MILL RD	1958	0.33				NO		Potential Malfunction	1972/Unsuitable Soils
100 SUNSET VIEW DR	1958	0.36				NO		Potential Malfunction	1972/Unsuitable Soils
102 SUNSET VIEW DR	1960	0.38				NO		Potential Malfunction	1972/Unsuitable Soils
103 SUNSET VIEW DR	1960	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
104 SUNSET VIEW DR	1960	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
105 SUNSET VIEW DR	1967	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
106 SUNSET VIEW DR	1960	0.34				NO		Potential Malfunction	SEO Repair Permit
107 SUNSET VIEW DR	1957	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
108 SUNSET VIEW DR	1969	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
114 SUNSET VIEW DR	1960	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
115 SUNSET VIEW DR	1968	0.34				NO		Potential Malfunction	1972/Unsuitable Soils
116 SUNSET VIEW DR	1957	0.34				YES		Potential Malfunction	Built Before 1972
120 SUNSET VIEW DR	1957	0.34				YES		Potential Malfunction	SEO Repair Permit
121 SUNSET VIEW DR	1956	1.96				YES		Potential Malfunction	Built Before 1972
122 SUNSET VIEW DR	1958	0.45				YES		Potential Malfunction	Built Before 1972
123 SUNSET VIEW DR	1950	2.06				YES		Potential Malfunction	Built Before 1972
124 SUNSET VIEW DR	1900	0.29				YES		Potential Malfunction	Built Before 1972
125 SUNSET VIEW DR	1956	1.70				YES		Potential Malfunction	Built Before 1972
127 SUNSET VIEW DR	1957	1.35				YES		Potential Malfunction	Built Before 1972
129 SUNSET VIEW DR	1956	0.85				YES		Potential Malfunction	Built Before 1972
131 SUNSET VIEW DR	1956	0.48				YES		Potential Malfunction	Built Before 1972

	No.	% of Total
No. of Occupied Lots	98	---
No. of Lots Sampled	24	24.5%
Confirmed Malfunctions	5	5.1%
Suspected Malfunctions	6	6.1%
Potential Malfunctions	75	76.5%
Average Lot Size, acres	0.58	---

	No.	% of Total
No. of Lots < 0.5 acres	67	68.4%
No. of Lots < 1.0 acres	88	89.8%
Average Age of Lot	1961	---
Samples Positive for bacteria	12	50.0%
Samples Positive for fecal	2	8.3%
No. of Samples with Nitrate>5mg/L	15	62.5%

APPENDIX L TABLE 2.
SAND SPUR ESTATES NEEDS ASSESSMENT

Parcel ID	Property Address	Lot Size (Acres)	Year Initially Built	Well Water Sample Results			Potential Soil Suitability	On-Lot Problems Observed		Classification	Reason for Classification
				Nitrate	Total Coliform	Fecal Coliform					
002800	102 APPALOOSA WAY	1.00	1988	5.2	ND	ND	YES			No Malfunction	
002900	104 APPALOOSA WAY	1.00	1988	7.8	ND	ND	YES			No Malfunction	
0029F0	105 APPALOOSA WAY	1.00	1988	4.3	ND	ND	YES			No Malfunction	
0029B0	106 APPALOOSA WAY	1.01	1988	3.3	ND	ND	YES			No Malfunction	
008000	103 CLYDESDALE CT	1.01	1988	3.7	ND	ND	YES			No Malfunction	
0078A0	106 CLYDESDALE CT	1.02	1988	6.5	ND	ND	YES			No Malfunction	
0050H0	675 SAND SPUR DR	1.28	1989	5.8	ND	ND	YES	Active Malfunction		Confirmed Malfunction	Homeowner Notification
0050F0	678 SAND SPUR DR	1.00	1988	5.2	ND	ND	YES			No Malfunction	
0050R0	679 SAND SPUR DR	1.05	1989	4.1	ND	ND	YES	Active Malfunction		Confirmed Malfunction	Homeowner Notification
0053H0	680 SAND SPUR DR	1.00	1986	5.6	13	ND	YES			No Malfunction	
0045A0	683 SAND SPUR DR	1.00	1986	5.2	ND	ND	YES	Lush Green Grass		Suspected Malfunction	Fecal Coliform Present
0002R0	684 SAND SPUR DR	1.00	1986	5.4	ND	ND	YES			No Malfunction	
0070R0	690 SAND SPUR DR	2.01	1982	4.3	ND	ND	YES			No Malfunction	
0010D0	691 SAND SPUR DR	2.81	1984	4.4	ND	ND	YES	Active Malfunction		Confirmed Malfunction	Homeowner Notification
0010C0	696 SAND SPUR DR	2.08	1984	4.3	ND	ND	YES	Active Malfunction		Confirmed Malfunction	Homeowner Notification
002700	100 APPALOOSA WAY	1.01	1988	Not Sampled			YES			No Malfunction	
002800	103 APPALOOSA WAY	1.00	1988	Not Sampled			YES			No Malfunction	
0029E0	107 APPALOOSA WAY	1.24	1988	Not Sampled			YES			No Malfunction	
0029D0	108 APPALOOSA WAY	1.00	1988	Not Sampled			YES			No Malfunction	
0081A0	101 CLYDESDALE CT	1.01	1989	Not Sampled			YES			No Malfunction	
0081G0	102 CLYDESDALE CT	1.05	1988	Not Sampled			YES			No Malfunction	
0080A0	104 CLYDESDALE CT	1.05	1988	Not Sampled			YES			No Malfunction	
007900	105 CLYDESDALE CT	1.02	1989	Not Sampled			YES			No Malfunction	
0079A0	108 CLYDESDALE CT	1.07	1989	Not Sampled			YES			No Malfunction	
0051C0	673 SAND SPUR DR	1.02	1988	Not Sampled			YES			No Malfunction	
0050D0	677 SAND SPUR DR	1.00	1989	Not Sampled			YES			No Malfunction	
0050J0	681 SAND SPUR DR	1.00	1988	Not Sampled			YES			No Malfunction	
0050M0	682 SAND SPUR DR	1.02	1989	Not Sampled			YES			No Malfunction	
0050P0	685 SAND SPUR DR	1.00	1988	Not Sampled			YES			No Malfunction	
0050E0	686 SAND SPUR DR	1.01	1989	Not Sampled			YES			No Malfunction	
0053M0	687 SAND SPUR DR	1.00	1987	Not Sampled			YES			No Malfunction	
053P0	688 SAND SPUR DR	1.00	1987	Not Sampled			YES			No Malfunction	
0053Q0	689 SAND SPUR DR	1.00	1987	Not Sampled			YES			No Malfunction	
0045C0	692 SAND SPUR DR	1.00	1986	Not Sampled			YES			No Malfunction	
0002V0	693 SAND SPUR DR	1.00	1986	Not Sampled			YES			Potential Malfunction	SEO Repair Permit
0002S0	694 SAND SPUR DR	1.00	1986	Not Sampled			YES			No Malfunction	
0001Q0	698 SAND SPUR DR	1.00	1986	Not Sampled			YES			No Malfunction	

	No.	% of Total		No.	% of Total
No. of Occupied Lots	37	---	No. of Lots < 0.5 acres	0	0.0%
No. of Lots Sampled	15	40.5%	No. of Lots < 1.0 acres	0	0.0%
Confirmed Malfunctions	4	10.8%	Average Age of Lot	1987	---
Suspected Malfunctions	1	2.7%	Samples Positive for bacteria	2	13.3%
Potential Malfunctions	1	2.7%	Samples Positive for fecal	0	0.0%
Average Lot Size, acres	1.13	---	No. of Samples with Nitrate>5mg/L	8	53.3%

APPENDIX L TABLE 3
TIMBER RIDGE NEEDS ASSESSMENT

Property Address		Year Initially Built	Well Water Sample Results			Lot Size (Acres)	Potential Soil Suitability	Classification	Reason for Classification
			Nitrate	Total Coliform	Fecal Coliform				
2	PINE TREE DR	1982	3.0	ND	ND	3.18	YES	No Malfunction	
8	PINE TREE DR	1999	1.5	ND	ND	10.51	YES	No Malfunction	
104	TALL OAK DR	1980	4.6	ND	ND	0.66	YES	No Malfunction	
108	TALL OAK DR	1979	3.7	1	ND	1.22	YES	No Malfunction	
200	TALL OAK DR	1978	5.5	ND	ND	18.39	YES	No Malfunction	
204	TALL OAK DR	2004	3.8	ND	ND	10.63	YES	Confirmed Malfunction	BTG Repair Permit
208	TALL OAK DR	1996	2.8	ND	ND	6.32	YES	No Malfunction	
209	TALL OAK DR	1994	1.5	ND	ND	13.35	YES	No Malfunction	
10	TIMBER LN	1978	3.6	ND	ND	0.37	YES	No Malfunction	
12	TIMBER LN	1978	4.0	21	ND	0.79	YES	No Malfunction	
24	TIMBER LN	1998	16.2	10	1	1.18	YES	Suspected Malfunction	Fecal Coliform Present and Nitrate Over 10
36	TIMBER LN	1972	3.2	ND	ND	2.14	YES	No Malfunction	
39	TIMBER LN	2004	4.2	ND	ND	1.56	YES	No Malfunction	
345	TIMBER RD	1986	0.6	26	ND	0.46	YES	No Malfunction	
443	LEWISBERRY RD	1972	0.5	ND	ND	0.47	YES	No Malfunction	
442	LEWISBERRY RD	1961	3.9	4	ND	0.45	YES	Potential Malfunction	Built Before 1972
437	LEWISBERRY RD	1960	4.7	15	1	0.97	YES	Suspected Malfunction	Fecal Coliform Present
2	HOLLY DR	1980				0.58	YES	No Malfunction	
3	HOLLY DR	1976				0.60	YES	No Malfunction	
4	HOLLY DR	1975				0.48	YES	No Malfunction	
6	HOLLY DR	1979				0.46	YES	No Malfunction	
7	HOLLY DR	1979				0.54	YES	No Malfunction	
1	PINE TREE DR	1980				0.57	YES	No Malfunction	
3	PINE TREE DR	1980				0.59	YES	No Malfunction	
5	PINE TREE DR	1980				0.48	YES	No Malfunction	
7	PINE TREE DR	1980				0.43	YES	No Malfunction	
9	PINE TREE DR	1980				0.46	YES	No Malfunction	
10	PINE TREE DR	1980				0.54	YES	No Malfunction	
11	PINE TREE DR	1980				0.51	YES	No Malfunction	
12	PINE TREE DR	1980				0.49	YES	No Malfunction	
15	PINE TREE DR	1980				0.81	YES	No Malfunction	
16	PINE TREE DR	1980				1.47	YES	No Malfunction	
18	PINE TREE DR	1980				0.82	YES	No Malfunction	
100	TALL OAK DR	1974				0.99	YES	No Malfunction	
106	TALL OAK DR	1975				0.54	YES	No Malfunction	
206	TALL OAK DR	1976				0.80	YES	No Malfunction	
207	TALL OAK DR	1976				0.73	YES	No Malfunction	
210	TALL OAK DR	1980				0.88	YES	No Malfunction	
211	TALL OAK DR	1983				0.51	NO	Potential Malfunction	Unsuitable Soils
213	TALL OAK DR	1981				0.77	NO	Potential Malfunction	Unsuitable Soils
3	TIMBER LN	1975				0.70	YES	No Malfunction	
5	TIMBER LN	1978				0.32	YES	No Malfunction	
7	TIMBER LN	1976				0.58	YES	No Malfunction	
9	TIMBER LN	1974				0.36	YES	No Malfunction	
10	TIMBER LN	1978				0.37	YES	No Malfunction	
14	TIMBER LN	1978				0.44	YES	No Malfunction	
21	TIMBER LN	1978				0.51	YES	No Malfunction	
26	TIMBER LN	1975				0.40	YES	No Malfunction	
315	TIMBER RD	2001				51.40	YES	No Malfunction	
339	TIMBER RD	2000				6.20	YES	No Malfunction	
343	TIMBER RD	1999				1.00	YES	No Malfunction	
353	TIMBER RD	1985				7.77	YES	No Malfunction	
355	TIMBER RD	1978				6.18	YES	No Malfunction	
441	LEWISBERRY RD	1971				1.00	YES	Potential Malfunction	Built Before 1972
445	LEWISBERRY RD	1949				1.40	YES	Potential Malfunction	Built Before 1972

	No.	% of Total		No.	% of Total
No. of Occupied Lots	55	---	No. of Lots < 0.5 acres	15	27.3%
No. of Lots Sampled	17	30.9%	No. of Lots < 1.0 acres	37	67.3%
Confirmed Malfunctions	1	#DIV/0!	Average Age of Lot	1981	---
Suspected Malfunctions	2	#DIV/0!	Samples Positive for bacteria	6	35.3%
Potential Malfunctions	5	#DIV/0!	Samples Positive for fecal	2	11.8%
		---	No. of Samples with Nitrate>5mg/L	2	11.8%

Appendix M

Meadowbrook Mobile Home Park WWTP
History of Non-Compliance

2010 Notice of Violation

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MANAGEMENT PROGRAM

June 3, 2010

CERTIFIED MAIL NO. 7008 0500 0001 8949 0032

Mr. Ernest Kerstetter, Owner
Meadowbrook Mobile Home Park
314 Erford Road
Camp Hill, PA 17011

Re: Sewage - 3A
Meadowbrook Mobile Home Park
NPDES Permit No. PA 0081060
Fairview Township, York County

Dear Mr. Kerstetter:

Due to violations of your NPDES Permit No. PA 0081060 and The Clean Streams Law, your case has been referred to me for additional enforcement. The reasons for this referral include:

- Violations of the effluent limits in your NPDES Permit.
- An unauthorized discharge of sewage documented during a Department inspection on February 22, 2010.
- Operation and monitoring and reporting violations documented during a Department inspection on February 22, 2010.

To address these violations and bring your facility into compliance, the Department requests your presence at an enforcement conference at our Southcentral Regional Office. Please contact me within **seven** days of your receipt of this letter to coordinate an acceptable date and time for this meeting.

Your cooperation in this matter is greatly appreciated. Please call me at 717.705.4923 to schedule this meeting.

Sincerely,

Victor Landis
Compliance Specialist
Water Management Program

Pennsylvania Department of Environmental Protection
909 Elmerton Avenue
Harrisburg, PA 17110-8200
April 2, 2010

Southcentral Regional Office

717-705-4707
FAX - 717-705-4760

NOTICE OF VIOLATION

Mr. Ernest Kerstetter, Owner
Meadowbrook Mobile Home Park
314 Erford Road
Camp Hill, PA 17011

Re: Sewage
Meadowbrook Mobile Home Park
Fairview Township, York County

Dear Mr. Kerstetter:

On February 22, 2010, an inspection was conducted of your wastewater treatment facility. As a result of that inspection, the following deficiencies were found:

A. The facility was not monitored according to the permit, PART A 1.a. Your plant maintenance person Mr. Preston Showers admitted to not monitoring since February 18, 2010.

B. An unauthorized discharge was observed at a sewage manhole located about 100 yards upstream from the plant. Mr. Showers said this had happened last month. Sewage flowed into the stream beside the manhole. This discharge is not authorized by your permit or any permit issued by the Department of Environmental Protection (Department). A discharge of sewage without authorization by a permit issued by the Department is a violation of Sections 201 and 202 of The Clean Streams Law.

C. The treatment facilities are not being properly maintained. Sludge had accumulated on the surface of both clarifiers and was seen discharging from them. Also, floating sludge was observed in the chlorine contact tanks.

D. The Department of Environmental Protection (Department) was not properly notified by telephone of the raw sewage spill into the stream, as required by 25 Pa. Code Section 91.33(a).

E. Flow is not measured on a continuous basis as required by PART A.1.a of the permit.

We request that you submit a report to this office within 15 days of the date of this letter, describing the cause of noncompliance and the steps being taken to prevent recurrence of the violation along with a correction schedule.

Please be advised that failure to comply with the terms and conditions of your permit constitutes a violation of Sections 201 and 202 of The Clean Streams Law, and subjects you to appropriate enforcement action.

This Notice of Violation is neither an order nor any other final action of the Department of Environmental Protection (Department). It neither imposes nor waives any enforcement action available to the Department under any of its statutes. If the Department determines that an enforcement action is appropriate, you will be notified of the action.

If you have any questions, please call me at 717-705-4775.

Sincerely,

Joseph F. Roth
Water Quality Specialist
Water Management Program

2004 Consent Assessment of Civil Penalty

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the matter of:

Ernest Kerstetter Meadowbrook Mobile Home Park 314 Erford Road Camp Hill, PA 17011	: : : : : :	Clean Streams Law NPDES Permit No. PA 0081060 Fairview Township York County

CONSENT ASSESSMENT OF CIVIL PENALTY

This Consent Assessment of Civil Penalty ("CACP") is entered into this 4th day of August, 2004, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection ("Department") and Ernest Kerstetter ("Mr. Kerstetter").

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, the Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. § 691.1 et seq. ("The Clean Streams Law") and the rules and regulations promulgated thereunder.

B. Mr. Kerstetter maintains a business address of 314 Erford Road, Camp Hill, Pennsylvania 17011.

C. Mr. Kerstetter owns and operates Meadowbrook Mobile Home Park which is located in Fairview Township, York County, along with an associated sewage treatment plant ("Plant"). Mr. Kerstetter is authorized to discharge treated sewage from the Plant into an unnamed tributary of Yellow Breeches Creek, a water of the Commonwealth, under the terms and conditions of NPDES Permit No. PA 0081060 ("NPDES Permit").

D. The NDPES Permit requires the submission of Discharge Monitoring Reports ("DMRs) to the Department by the 28th day of each month following the monitoring period.

E. By letter dated April 12, 2000, Mr. Kerstetter was notified by the Department that DMRs were not being submitted in a timely manner.

F. By Notice of Violation dated January 23, 2004, Mr. Kerstetter was notified by the Department that DMRs for the months of March through November 2003 were overdue.

G. During an enforcement conference with the Department on April 27, 2004, Mr. Kerstetter was reminded of the monitoring and reporting requirements of the NPDES Permit.

H. The DMRs for March through December 2003 were not received by the Department until May 10, 2004. The DMRs for January through March 2004 were not received by the Department until June 16, 2004.

I. During the months of January through March 2004, Mr. Kerstetter failed to monitor for CBOD, Fecal Coliform, Total Phosphorus, and Total Suspended Solids as required by the NPDES Permit.

J. Failure to monitor and report in accordance with the NPDES Permit as described in paragraphs H and I constitute violations of Sections 201 and 202 of The Clean Streams Law, 35 P.S. §§ 691.201 and 691.202.

K. The violations described in the preceding paragraphs constitute unlawful conduct under Section 611 of The Clean Streams Law, 35 P.S. § 691.611, and subject Mr. Kerstetter to a claim for civil penalties under Section 605 of The Clean Streams Law, 35 P.S. § 691.605.

L. The Department estimates that approximately 92,000 gallons of sludge was generated by the Plant over the previous four years. Based on invoices provided by Mr. Kerstetter, only 17,000 gallons of sludge were removed from the Plant, resulting in a cost savings to Mr. Kerstetter.

After full and complete negotiation of all matters set forth in this CACP and upon mutual exchange of the convenants herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ASSESSED by the Department and AGREED to by Mr. Kerstetter as follows:

1. **Assessment.** In resolution of the Department's claim for civil penalties, which the Department is authorized to pursue under Section 605 of The Clean Streams Law, 35 P.S. § 691.605, the Department hereby assesses a civil penalty of $5,000, which Mr. Kerstetter hereby agrees to pay.

2. **Civil Penalty Settlement.** Mr. Kerstetter shall pay the civil penalty assessed in paragraph 1 in accordance with the following schedule: $500 upon signing this CACP, and $500 by the last day of each of the subsequent nine months. These payments are in settlement of the Department's claim for civil penalties for the violations set forth in paragraph J, above, for the dates set forth in paragraph I, above. The payment shall be by corporate check or the like, made payable to "Commonwealth of Pennsylvania, Clean Water Fund", and sent c/o Lee A. Yohn, Compliance Specialist, DEP Water Management Program, 909 Elmerton Avenue, Harrisburg, PA 17110-8200.

3. **Findings.**

   a. Mr. Kerstetter agrees that the findings in paragraphs A through L are true and correct, and in any matter or proceeding involving Mr. Kerstetter and the Department, Mr. Kerstetter shall not challenge the accuracy or validity of these findings.

   b. The parties do not authorize any other persons to use the findings in this CACP in any matter or proceeding.

4. **Remedies.** In the event that Mr. Kerstetter fails to make any payment required by this CACP, all remaining payments shall be immediately due and payable. In that event, the Department may pursue any remedy available for failure to pay a civil penalty, including an action for breach of contract or the filing of this CACP as a lien in any county in this Commonwealth.

5. **Reservation of Rights.** The Department reserves all other rights with respect to any matter addressed by this CACP, including the right to require abatement of any conditions resulting from the events described in the findings. Mr. Kerstetter reserves the right to challenge any action which the Department may take, but waives the right to challenge the content or validity of this CACP.

IN WITNESS WHEREOF, the parties have caused the CACP to be executed by their duly authorized representatives. The undersigned representatives of Mr. Kerstetter certify, under penalty of law, as provided by 18 Pa. C.S. § 4904, that they are authorized to execute this CACP on behalf of Mr. Kerstetter, that Mr. Kerstetter consents to the entry of this CACP as an ASSESSMENT of the Department, that Mr. Kerstetter hereby knowingly waives any right to a hearing under the statutes referenced in this CACP, and that Mr. Kerstetter knowingly waives its right to appeal this CACP, which rights may be available under Section 4 of the Environmental Hearing Board Act, the Act of July 13, 1988, C.S. § 103(a) and Chapters 5A and 7A, or any other provision of law.

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION:

8/2/04

Ernest Kerstetter — Date
Owner

8/3/2004

James S. Spontak
Acting Program Manager
Water Management Program

Assistant Counsel

1999 Proposed Civil Penalty

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103

99 SEP 30 PM 2:25

RECEIVED
OCT 0 5 1999
DEP - SOUTHCENTRAL
WATER MANAGEMENT

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

SEP 3 0 1999

Mr. Ernest E. Kerstetter, Jr., Owner
Meadowbrook Mobile Home Park
314 Erford Road
Camp Hill, PA 17011

Re: NPDES Permit No. PA0081060
Notice of Proposed Assessment of a Civil Penalty
Docket No. CWA-3-99-0023

Dear Mr. Kerstetter:

Enclosed please find an Administrative Complaint and Notice of Opportunity to Request a Hearing ("Complaint"), filed by the U.S. Environmental Protection Agency ("EPA") against the Meadowbrook Mobile Home Park ("Respondent") under the authority of Section 309(g) of the Clean Water Act ("Act"), 33 U.S.C. § 1319(g).

The Complaint alleges that Respondent has violated various provisions of the Clean Water Act, its implementing regulations, and the terms of its National Pollution Discharge Elimination System ("NPDES") Permit (the "Permit") issued to Respondent pursuant to Section 402 of the Act, 33 U.S. C. § 1342. The violations alleged are specifically set forth in Section II of the Complaint.

An Answer addressing each allegation must be filed within thirty (30) days of receipt or, according to the rules governing this case (enclosed), the allegations will be deemed admitted. Failure to respond may result in the issuance of a Default Order which will preclude Respondent from participating in hearing in this matter.

Respondent has a right to request a Hearing regarding the violations alleged in the Complaint and the proposed administrative civil penalty. The request should be included with the Answer to this Complaint, or if submitted separately, must be made within thirty (30) days of receipt of this Complaint.

Whether or not a Hearing is requested, we invite Respondent to confer informally with EPA concerning the alleged violations and the amount of the proposed penalty. Respondent may be represented by an attorney at any conference, whether in person or by telephone. If a settlement is reached, it will be formalized by the issuance of a Consent Agreement signed by the Respondent and by the Director of the Water Protection Division, EPA Region III.

A request for an informal conference does not extend the thirty (30) days by which the

Respondent must request or waive a Hearing on the proposed penalty assessment. A copy of the "Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties," 40 C.F.R. Part 22, is enclosed for your reference.

Finally, EPA has determined that your company may be a "small business" under the Small Business Regulatory Enforcement and Fairness Act ("SBREFA"). Enclosed is a copy of the SBREFA Fact Sheet. This Fact Sheet provides information on contacting the SBREFA Ombudsman to comment on federal enforcement and compliance activities and also provides information on compliance assistance. As noted in the Fact Sheet, any decision to participate in such a program or to seek compliance assistance does not relieve you of your obligation to respond in a timely manner to an EPA request or other enforcement action, create any new rights or defenses under law and will not affect EPA's decision to pursue this enforcement action. To preserve your legal rights, you must comply with all rules governing the administrative enforcement process. The Ombudsman and fairness boards do not participate in the resolution of EPA's enforcement actions.1

If you have any questions, or wish to discuss the possibility of settlement of this matter, please contact Pamela Lazos, Office of Regional Counsel, at (215) 814-2658.

We urge your prompt attention to this matter.

Sincerely,

for Thomas J. Maslany
Director, Water Protection Division

Enclosure
as noted

cc: Mr. Leon Oberdick, PADEP Harrisburg
Mr. John Murtha, PADER Central Office
Regional Hearing Clerk, EPA (3RC00)

BEFORE THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

IN THE MATTER OF:	Docket No. CWA-3-99-0023
Ernest E. Kerstetter Jr., Owner Meadowbrook Mobile Home Park 314 Erford Road Camp Hill, PA 17011 NPDES Permit No. PA0081060	Proceedings to Assess Class II Administrative Penalty Under Section 309(g) of the Clean Water Act, 33 U.S.C. § 1319(g)
Respondent	**ADMINISTRATIVE COMPLAINT**

I. STATUTORY AUTHORITY

1. This Administrative Complaint is issued under the authority vested in the Administrator of the U.S. Environmental Protection Agency ("EPA") by Section 309(g)of the Clean Water Act ("CWA" or "Act"), 33 U.S.C. § 1319(g). The Administrator has delegated these authorities to the Regional Administrator of EPA Region III, pursuant to Delegation No. 2-51 (5/11/94), who has in turn delegated them to the Director of the Water Protection Division of EPA Region III, ("Complainant"), pursuant to Delegation No. 2-51 (6/7/95).

2. Pursuant to Section 309(g)(2)(B) of the Act, 33 U.S.C. § 1319(g)(2)(B), and in accordance with the enclosed "Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties, Issuance of Compliance or Corrective Action Orders, and the Revocation, Termination or Suspension of Permits" ("Consolidated Rules"), 64 Fed. Reg. 40138 (July 23, 1999), to be codified at 40 C.F.R. Part 22, Complainant hereby requests that the Regional Administrator assess a civil penalty of fifty-seven thousand eight hundred and fourteen dollars ($57,814) against Respondent.

II. ALLEGATIONS AND FINDINGS OF VIOLATIONS

1. The Respondent is a person within the meaning of Section 502(5) of the Clean Water Act, 33 U.S.C. § 1362(5).

2. Respondent owns and operates a privately owned waste water treatment works ("WWTW") located in the City of Camp Hill, Fairview Township, York County, Pennsylvania, which

discharges pollutants to an unnamed tributary which flows to the Yellow Breeches Creek.

3. Section 301(a) of the CWA, 33 U.S.C. § 1311(a) prohibits any person from discharging pollutants into waters of the U.S. from any point source except in accordance with various sections of the CWA, 33 U.S.C. §1251 et seq.

4. The unnamed tributary to the Yellow Breeches Creek is a navigable water as set forth in Section 502(7) of the Act, 33 U.S.C. § 1362(7).

5. Respondent's facility, Meadowbrook Mobile Home Park, is a "point source" within the meaning of Section 502(14) of the Act, 33 U.S.C. § 1362(14).

6. Respondent is subject to the provisions of the 402 of the CWA, 33 U.S.C. § 1342, which prohibits the discharge pollutants into navigable waters from any point source except in accordance with Section 402 of the CWA, 33, U.S.C. § 1342.

5. On March 9, 1990, pursuant to Section 402 of the Act, 33 U.S.C. § 1342, and Chapter 92 of the Pennsylvania's Clean Streams Law, as amended, 35 P.S. § 691.1, et.seq., the Pennsylvania Department of Environmental Protection ("PADEP"), issued a National Pollutant Discharge Elimination System("NPDES") Permit Number PA0081060 (the "Permit") to Respondent for the discharge of certain pollutants from its facility to the unnamed tributary to the Yellow Breeches Creek, York County, Pennsylvania in accordance with Section 402 of the CWA, 33 U.S.C. § 1342. The Permit became effective on March 9, 1990 and expired on March 9, 1995.

COUNT I - UNPERMITTED DISCHARGE

A. Failure to Renew NPDES Permit

1. Special Condition E (1)(c)(8)(iii) of the 1990 Permit states "Complete application for renewal of this permit, or notification of intent to cease discharging by the expiration date, must be submitted to the Department at least 180 days prior to the above expiration date (unless permission has been granted by the Department for submission at a later date), using the appropriate NPDES permit application form. Permits are valid for a period of five (5) years." Respondent did not submit an application for renewal before the expiration of the 1990 Permit.

2. The Permit was not reissued until September 16, 1996 ("Reissued Permit"), and is effective until September 16, 2001.

3. Respondent violated Section 301 of the CWA by continuing to discharge without a valid NPDES permit from March 10, 1995 through September 15, 1996, a period of eighteen months.

COUNT II - EFFLUENT LIMIT VIOLATIONS

A. Effluent Limit Violations

1. Respondent has repeatedly violated both the Permit and Reissued Permit and the Act over the past five years as detailed in Attachment "A" Effluent Violations.

COUNT III - PERMIT CONDITION VIOLATIONS

A. Violations of Permit Conditions

1. On January 5, 1999, EPA inspectors observed a variety of unpermitted events including a frozen delivery line for the alum feed; the "burping" of raw sewage from the air vent for the splitter box directly onto the ground; blockage of one side of the aeration tank resulting in no return activated sludge ("RAS") coming into the side of the tank; the delivery of wastewater to only one side of the parallel treatment train; and a malfunctioning skimmer for effluent discharges.

B. Failure to Properly Monitor

1. Part A of both the Permit and the Reissued Permit requires that Respondent conduct continuous monitoring and measurement of flow at the WWTP to determine the Monthly Average and Daily Maximum Flow discharged from the WWTP into the receiving waters.

2. Respondent has violated the conditions of both the Permit and Reissued Permit by not having a continuous flow monitoring device in place at the WWTP since the issuance of the 1990 Permit.

C. Failure to Properly Maintain an Operate Facilities

1. Part B, Item D, of the Reissued Permit entitled "Facilities Operation" states: "[t]he permittee shall at all times maintain in good working order and properly operate and maintain all facilities and systems which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit."

2. Over the past five years PADEP inspections have revealed many problems including, but not limited to the following: failure to prevent solids from overflowing from settling tanks; failure to operated the comminutor for 9 months; failure to use approved chlorine and pH meters; failure to keep filamentus growth from forming on the creek bottom resulting in adverse impacts; failure to maintain dissolved oxygen levels in discharges above the required 5.0 milligrams per liter

("Mg/l"); general failure of air supply to the aeration tanks; failure to prevent sludge solids from entering the receiving stream; failure to prevent a sludge layer from covering the surface of the chlorine contact tank; failure to keep chlorine in the chlorine feed tank; failure to maintain a functioning level in the alum feed tank; and failure to keep complete operator log books.

3. Respondent has violated Part B, Item D of the permit by not properly operating and maintaining the facilities.

D. Failure to Properly Sample

1. Part A, III. A., of the Reissued Permit entitled, "Representative Sampling," requires that samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. During the EPA inspection of January 5, 1999 it was observed that Respondent had failed to properly calibrate the pH meter used for analysis resulting in an unapproved method of pH determination. At that time, inspectors also determined that the chlorine meter had not been stored properly and as a result, the instrument was jammed resulting in invalid sampling results reported for that day.

3. Under the Permit requirements, Respondent must follow the sampling, analysis, and collection procedures under 40 C.F.R. Part 136. During the EPA inspection of January 5, 1999, it was observed that Respondent failed to preserve the Phosphorus sample collected as required by the Part 136 test methods.

4. Respondent has therefore violated Part A, III.A., of the Reissued Permit by failure to use proper sampling equipment and failure to preserve phosphorus samples.

E. Record Keeping

1. Part A, Section III, A, 3 of the Reissued Permit, "Recording of Results," requires that for each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: the date(s) the analyses were performed; the person(s) who performed the analysis; the analytical techniques or methods used; and the associated detection level.

2. Respondent has violated the Reissued Permit by failing to record the date and time of analysis of the samples taken. In addition, the analysis method numbers utilized, the name of the analyst, and the associated detection levels utilized were not included on the record sheets as required by 40 C.F.R. Part 136 and Part A, pg. 6 of the Permit.

F. Failure to Submit Non-Compliance Reports

1. Part A, Page 2, et seq. of the Reissued Permit, contains effluent limitations and monitoring and reporting requirements for pollutants discharged from Outfall 001.

2. Respondent has failed to submit any Non Compliance Reports (NCR's) to PADEP with the monthly discharge monitoring reports ("DMRs") submissions, as required by Part A.C.4 of the Reissued Permit.

COUNT IV - FAILURE TO ANSWER INFORMATION REQUESTS

1. By letter dated March 11, 1998, EPA requested certain information and documents from Respondent under the authority of Section 308 of the CWA, 33 U.S.C. § 1318, including but not limited to, flow data for 1995 through 1998, as well as a description of the waste water treatment facilities. The response to this information request was due within 30 days of receipt of the correspondence or by April 6, 1998. Although Respondent sent a letter promising the requested information, that information was never provided.

2. A very limited general response was received dated April 20, 1998, which promised to submit all the information requested in the near future. In addition, a telephone call was made to Respondent on October 8, 1998, when no information was forthcoming requesting the additional information. Respondent indicated that the information would be sent shortly. No information has been received since that time.

3. Respondent is in violation of Section 308 for failure to submit all the information requested.

III. PROPOSED CIVIL PENALTY

1. Based on the foregoing allegations, and pursuant to the authority of Section 309(g)(2)(B) of the Act, 33 U.S.C. § 1319(g)(2)(B), Complainant hereby proposes that the Regional Administrator issue a Final Order Assessing Administrative Penalties against the Respondent in the amount of fifty-seven thousand eight hundred and fourteen dollars $57,814.

2. The proposed penalty amount was determined by EPA after taking into account the nature, circumstances, extent and gravity of the violation or violations, and Respondent's prior compliance history, degree of culpability for the cited violations, any economic benefit or savings accruing to Respondent by virtue of the violations, and Respondent's ability to pay the proposed penalty, and such other matters as justice may require, all factors identified at Section 309(g)(3) of the Act, 33 U.S.C. § 1319(g)(3). The burden of raising and demonstrating an inability to pay rests with the Respondent.

3. This does not constitute a "demand" as that term is defined in the Equal Access to Justice Act, 28 U.S.C. § 2412. In addition, to the extent that facts or circumstances unknown to Complainant at the time of issuance of the Complaint become known after issuance of the Complaint, such facts and circumstances may also be considered as a basis for adjusting the proposed civil penalty assessed in the Complaint.

4. In accordance with 40 C.F.R. § 22.18(a), Respondent may conclude this proceeding at any time by paying this penalty by certified or cashier's check payable to "Treasurer, the United States of America," and remit to:

Regional Hearing Clerk
U.S. EPA, Region III
P.O. Box 360515M
Pittsburgh, PA 15251

Copies of the check should be mailed to:

Regional Hearing Clerk (3RC00)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

The transmittal letter identifying this Complaint shall accompany the remittance and copies of the check.

IV. RESPONSE TO THIS COMPLAINT

1. A Response to this Complaint must be filed *within thirty (30) days* of its receipt by Respondent. *Failure to file a Response, or, in the alternative, to make payment in the amount of the proposed penalty will result in entry of a default judgement against Respondent and waiver by Respondent of its opportunity to appear in the action for any purpose.*

2. The Response must clearly and directly admit, deny or explain each of the factual allegations contained in the Complaint with respect to which the Respondent has any knowledge, or clearly state the Respondent has no knowledge as to particular factual allegations in the Complaint. Failure to deny any of the factual allegations in the Complaint constitutes admission of the undenied allegations.

3. The Response should also state the following:

a. The specific factual and legal circumstances or argument which are alleged to constitute any grounds of defense;

b. The factual and legal issues which Respondent intends to place at issue;

c. Whether Respondent request a hearing; and

d. The basis for opposing any proposed relief.

The denial of any material fact or the raising of any affirmative defense shall be construed as a request for a hearing. The Answer and any subsequent documents filed in this action should be sent to:

Regional Hearing Clerk (3RC00)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103

V. OPPORTUNITY TO REQUEST HEARING

1. Pursuant to Section 309(g)(2)(B) of the Act, 33 U.S.C. § 1319(g)(2)(B), Respondent may request a hearing on the proposed civil penalty within thirty (30) days of receiving this Complaint.

2. At the hearing, Respondent may contest any material fact contained in the allegations listed in Section II of this Complaint, and the appropriateness of the penalty proposed in Section III of this Complaint.

3. Hearing procedures are described in the Consolidated Rules, a copy of which is enclosed.

4. A Request for Hearing must be filed along with the Response to this Complaint *within thirty days of receiving this Complaint with:*

Regional Hearing Clerk (3RC00)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

5. A copy of the Response, the Request for a Hearing, and any other documents filed in this action should also be sent to the following:

Pamela Lazos
Sr. Assistant Regional Counsel (3RC20)
U. S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-2658

6. If Respondent fails to file an written Answer and Request for Hearing within thirty (30) days of service of this Complaint, a Default Order may be issued by the Regional Administrator. The civil penalty proposed herein shall become due and payable upon issuance of a Default Order. Respondent's failure to fully pay the entire penalty assessed by the Default Order by its due date will result in a civil action to collect the assessed penalty, plus interest, attorney's fees, costs, and an additional quarterly nonpayment penalty pursuant to Section 309(g)(9) of the Act, 33 U.S.C. § 1319(g)(9).

7. In addition, the default penalty is subject to the provisions relating to imposition of interest, penalty and handling charges set forth in the Federal Claims Collection act on the default penalty at the rate established by the Secretary of the Treasury pursuant to 31 U.S.C. § 3717.

8. If Respondent requests a hearing on this proposed penalty assessment, members of the public, to whom EPA is obligated to give notice of this proposed action, will have a right under Section 309(g)(4)(B) of the Act, 33 U.S.C. § 1319(g)(4)(B), to be heard and to present evidence on the appropriateness of the penalty assessment. If Respondent does not request a hearing, EPA will issue a Final Order Assessing Administrative Penalties, and only members of the public who submitted timely comments on this Proposed Assessment of an Administrative Penalty will have an additional thirty (30) days to petition EPA to set aside the Final Order Assessing Administrative Penalties and to hold a hearing thereon. EPA will grant the petition and will hold a hearing if the petitioner's evidence is material and was not considered by EPA in the issuance of the Final Order Assessing Administrative Penalties.

Date: 9/30/99

for Thomas J. Maslany, Director
Water Protection Division
U. S. EPA, Region III

Attachment A

Meadowbrook Mobile Home Park
Camp Hill, PA 17011
NPDES Permit No. PA0081060

Date	Outfall	Parameter	Reported	Limit
12/98	001	Dis Oxy (Min)	4.0 Mg/l	5.0 Mg/l
08/98	001	Phos(Avg)	2.23 Mg/l	2.0 Mg/l
06/98	001	TSS(Avg)	49 Mg/l	30 Mg/l
05/98	001	F. Coli(Avg)	283 Cols/100ml	200 Cols/100ml
05/98	001	Phos (Avg)	3.3 Mg/l	2.0 Mg/l
04/98	001	Phos(Avg)	3.1 Mg/l	2.0 Mg/l
03/98	001	Phos(Avg)	4.47 Mg/l	2.0 Mg/l
02/98	001	Phos(Avg)	2.58 Mg/l	2.0 Mg/l
01/98	001	Phos(Avg)	4.13 Mg/l	2.0 Mg/l
10/97	001	Phos(Avg)	2.25 Mg/l	2.0 Mg/l
09/97	001	Phos(Avg)	8 Mg/l	2.0 Mg/l
08/97	001	Phos(Avg)	9.88 Mg/l	2.0 Mg/l
08/97	001	F. Coli(Avg)	808 Cols/100ml	200 Cols/100ml
07/97	001	Phos(Avg)	8.16 Mg/l	2.0 Mg/l
07/97	001	F. Coli(Avg)	1312 Cols/100ml	200 Cols/100ml
06/97	001	Phos(Avg)	3.23 Mg/l	2.0 Mg/l
06/97	001	F. Coli(Avg)	554 Cols/100ml	200 Cols/100ml
05/97	001	F. Coli(Avg)	212 Cols/100ml	200 Cols/100ml
03/97	001	Phos(Avg)	2.7 Mg/l	2.0 Mg/l
01/97	001	Phos(Avg)	2.5 Mg/l	2.0 Mg/l
12/96	001	Dis Oxy(Min)	4 Mg/l	5.0 Mg/l
10/96	001	Phos(Avg)	2.75 Mg/l	2.0 Mg/l
10/96	001	Dis Oxy(Min)	4 Mg/l	5.0 Mg/l
09/96	001	Phos(Avg)	3.05 Mg/l	2.0 Mg/l
09/96	001	F. Coli(Avg)	450 Cols/100ml	200 Cols/100ml

CERTIFICATE OF SERVICE

I certify that on the date noted below, I caused to be sent by certified mail, return receipt requested, a copy of this Administrative Complaint and a copy of the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties, Issuance of Compliance or Corrective Action Orders, and the Revocation, Termination or Suspension of Permits ("Consolidated Rules") to the following person at the address below:

Ernest Kerstetter
Meadowbrook Mobile Home Park
314 Erford Road
Camp Hill, PA 17011

I further certify that on the same date below I sent by regular mail a copy of this document to the following persons at the addresses listed below:

Leon Oberdick
PADEP Harrisburg
909 Elmerton Avenue
Harrisburg, PA 17110-8200

John Murtha
PADER Central Office
P.O. Box 2063
Harrisburg, PA 17120

I further certify that on the same date below the original was filed with the following:

Regional Hearing Clerk (3RC00)
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Date: 9/30/99

Pamela Lazos
U.S. EPA Region III

1995 Consent of Civil Penalty

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the matter of:

Mr. Ernest Kerstetter Meadowbrook Mobile Home Park 314 Erford Road Camp Hill, PA 17011	Clean Streams Law NPDES Permit No. PA 0081060 Fairview Township, York County

CONSENT ASSESSMENT OF CIVIL PENALTY

NOW, this 22nd day of November, 1995, the Commonwealth of Pennsylvania, Department of Environmental Protection (hereinafter "Department"), has determined the following findings of fact:

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, the Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. §691.1 et seq. and the rules and regulations of the Environmental Quality Board adopted thereunder.

B. Mr. Ernest Kerstetter (hereinafter "Mr. Kerstetter") is the owner of the Meadowbrook Mobile Home Park, York County, Pennsylvania and maintains a business address of 314 Erford Road, Camp Hill, Pennsylvania. Mr. Kerstetter owns and operates a sewage treatment plant ("plant") which services the Meadowbrook Mobile Home Park and is located in Fairview Township, York County. The plant is authorized to discharge treated effluent under the terms of NPDES Permit No. PA 0081060.

C. The Department determined and Mr. Kerstetter agrees that Mr. Kerstetter caused or allowed the following violations:

- Since at least June 1994, Mr. Kerstetter discharged sewage from the plant into an unnamed tributary of the Yellow Breeches Creek, a water of the Commonwealth, with a concentration of CBOD, suspended solids, phosphorus, and fecal coliform in excess of the effluent limitations established in NPDES Permit No. PA 0081060, as more fully set forth in Attachment No. 1.

D. The discharge of sewage into waters of the Commonwealth by Mr. Kerstetter, as described in Paragraph C herein, was not authorized by permit or regulation and thereby constitutes a violation of Sections 201, 202, and 611 of The Clean Streams Law, 35 P.S. §§691.201, 691.202, and 691.611.

E. Section 605 of The Clean Streams Law, 35 P.S. §691.605, provides that the Department may assess a civil penalty of up to TEN THOUSAND DOLLARS ($10,000.00) per day for each violation of The Clean Streams Law.

F. After complete negotiations in this matter between the parties hereto, the Department and Mr. Kerstetter agree to a settlement of the Department's claim for civil penalties, for the violations identified in Paragraphs C and D hereof, as follows:

1. Pursuant to the Department's authority under Section 605 of The Clean Streams Law, supra, a Civil Penalty in the amount of TWO THOUSAND DOLLARS ($2,000.00) is hereby assessed against and agreed to by Mr. Kerstetter. Payment of the civil penalty shall be made as outlined in Attachment No. 2. Submittal of a certified check or the like made payable to the "Commonwealth of Pennsylvania, Clean Water Fund", and forwarded c/o Ms. Jineen Boyle, Compliance Specialist, Water Management Program, Department of Environmental Protection, One Ararat Boulevard, Harrisburg, Pennsylvania 17110.

2. Mr. Kerstetter hereby consents to this civil penalty assessment issued pursuant to Section 605 of The Clean Streams Law, supra.

G. By entering into this Consent Assessment of Civil Penalty, the Department waives its right to bring an action for civil penalties for the specific violations set forth in Paragraphs C and D herein, for the dates set forth therein. Nothing herein shall be construed to imply that the Department waives any other rights which it may have concerning said violations or relieves Mr. Kerstetter from any future liability for environmental damages resulting from the activities described herein.

H. Mr. Kerstetter hereby consents to this civil penalty assessment issued pursuant to Section 605 of The Clean Streams Law, supra, and waives its right to a hearing under that section and further waives its right to appeal from this Assessment, which rights are available pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. §§7514, and the Administrative Agency Law, 2 Pa. C.S., Chapter 5A.

The undersigned states subject to the penalties of 18 PA. C.S. §4904 relating to unsworn falsification to authority, that he/she is authorized to execute this Agreement on behalf of Mr. Ernest Kerstetter.

FOR MR. ERNEST KERSTETTER, MEADOWBROOK MOBILE HOME PARK:

Signature 10/15/95 Date
Name: Ernest Kerstetter
Title: Owner

Signature Date
Name:
Title:

FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION:

Jineen Boyle
Compliance Specialist
Water Management Program

Gina Thomas
Assistant Counsel

ATTACHMENT 1

DATE	PARAMETER	PERMIT LIMIT	REPORTED VALUE	"Monthly" "Weekly" "Daily"
Jun-1-94	TSS	60	288	daily
Jun-1-94	CBOD	50	180	daily
Jun-1-94	PHOS	4	6.3	daily
Jun-1-94	FEC COL	1000	490000	daily
June 1994	CBOD	25	42	monthly
June 1994	TSS	30	53	monthly
July 1994	TSS	30	43	monthly
July 1994	CBOD	25	34	monthly
August 1994	CBOD	25	30	monthly
August 1994	TSS	30	39	monthly
January 1995	PHOS	2	2.2	monthly
February 1995	PHOS	2	2.7	monthly
Jun-05-95	TSS	60	164	daily
Jun-05-95	PHOS	4	7.9	daily
Jun-05-95	FEC COL	1000	45000	daily

Attachment No. 2 - Payment Schedule

Payment	Date Due
$200	with signed Consent Assessment
1. $150	December 1, 1995
2. $150	January 1, 1996
3. $150	February 1, 1996
4. $150	March 1, 1996
5. $150	April 1, 1996
6. $150	May 1, 1996
7. $150	June 1, 1996
8. $150	July 1, 1996
9. $150	August 1, 1996
10. $150	September 1, 1996
11. $150	October 1, 1996
12. $150	November 1, 1996

Report

Expansion and Nutrient Removal Study Fairview Township Authority Northern and Southern Area Wastewater Treatment Plants

August 2007
Revised August 24, 2007

Stearns & Wheler
Companies

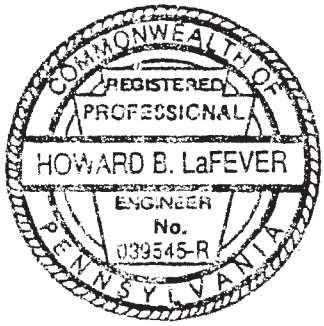
EXPANSION AND NUTRIENT REMOVAL STUDY

FAIRVIEW TOWNSHIP AUTHORITY

NORTHERN AND SOUTHERN AREA WASTEWATER TREATMENT PLANTS

Prepared for

FAIRVIEW TOWNSHIP AUTHORITY
NEW CUMBERLAND, PA



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PREFACE

The Fairview Township Authority owns and operates two wastewater treatment plants (WWTP) -- the Southern Area WWTP and the Northern Area WWTP. This report summarizes a study to expand the capacity of the Southern Area WWTP and upgrade both treatment plants to meet the nutrient removal requirements for the Susquehanna River Basin.

In this report, Chapters 1 through 4 contain the initial study of the Southern Area WWTP. In these chapters, three alternatives for expansion and nutrient removal and one alternative for nutrient removal only are summarized.

Chapter 5 includes an evaluation of the Northern Area WWTP. Chapter 6 includes an assessment of the various WWTP alternatives for compliance with the Chesapeake Bay Initiative nutrient removal requirements. Chapter 7 includes a summary of various alternatives for carbon source supplement addition required for nitrogen removal. The final recommended alternatives and approach are summarized in Chapter 8.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The Fairview Township Authority (Authority) owns and operates two wastewater treatment facilities which serve the Fairview Township. The collection system is divided, with a portion of the flow going to the Southern Area and Northern Area Wastewater Treatment Plants (WWTPs). The Southern Area WWTP, located in northern York County, is currently permitted under NPDES Permit No. PA0082589 to treat an annual average flow of 0.5 million gallons per day (mgd), a maximum month flow of 0.94 mgd, and an organic capacity of 1,687 lbs. of BOD per day. The permit capacity was revised on October 25, 2000 by the Pennsylvania Department of Environmental Protection (DEP). The permit was last amended on April 1, 2006 to include new monitoring requirements for total phosphorus (TP) and total nitrogen (TN).

The Southern Area WWTP currently has 2,130 connected equivalent dwelling units (EDUs) as of January 1, 2006. Utilizing the annual average influent flow of 0.37 mgd received by the WWTP during 2005 equates to an EDU hydraulic loading rate of 174 gallons per day (gpd) per EDU. A significant amount of growth is occurring within the Southern Area WWTP service area. It is anticipated that the ongoing developments will increase the total number of EDUs to 2,871. At the hydraulic loading rate of 174 gpd per EDU, this is equivalent to a flow rate of 0.5 mgd. In addition, there are 753 future proposed developments within the Southern Area service area. This will increase the total EDUs to 3,624 with an equivalent flow of 0.63 mgd.

Recognizing that the plant is currently designed for an annual average flow of 0.5 mgd, the Authority is considering expanding the Southern Area WWTP to handle future growth. This report evaluates the facility improvements required to accommodate a proposed design annual average flow rate of up to 1.0 mgd to the Southern Area WWTP.

1.2 FACILITY OVERVIEW

The Southern Area WWTP is an activated sludge plant utilizing influent fine (2 mm) screening, two sequencing batch reactors (SBRs), and two chlorine contact tanks with discharge to an

unnamed tributary of Fishing Creek. Fishing Creek is a tributary to the Susquehanna River. Sludge treatment is provided by one aerobic digester followed by a 1.7-meter belt filter press for sludge dewatering. Facilities for lime storage and addition are provided at the plant for sludge stabilization, but are not currently utilized. Dewatered solids are stored in an on-site container and are transported and disposed by a contract hauler at the Cumberland County landfill.

The existing process basis of design at the plant is summarized in Table 1-1. The existing facility site plan and process flow schematic are shown in Figures 1-1 and 1-2, respectively.

1.3 NUTRIENT REDUCTION COMPLIANCE

On December 30, 2006, the DEP issued the *"Chesapeake Bay Tributary Strategy Trading of Nutrient and Sediment Reduction Credits - Policy and Guidelines."* This policy established the development of nutrient cap loads based on wastewater treatment plants' design annual average daily flow and required effluent concentrations of 6 mg/L TN and 0.8 mg/L TP. The policy also established a three-phased approach to the implementation of the TN and TP cap loads.

Based on the annual average capacity of 0.5 mgd, the Southern Area WWTP will be subject to a TN cap load of 9,132 lbs/year (25 lbs/day) and a TP load of 1,218 lbs/year (3.3 lbs/day). Since these limits are cap loads, any increase in wastewater treatment capacity will be subject to the same mass permit limits. For the proposed annual average flow rate of 1.0 mgd, the Southern Area WWTP would be required to meet a TN concentration of 3 mg/L and a TP effluent concentration of 0.4 mg/L.

DEP has categorized the Southern Area WWTP under their Phase 2 implementation program. It is our understanding that DEP will issue revised NPDES permits to Phase 2 facilities by 2009 and that monitoring for compliance with these new permits will be required within three years, or by 2012.

Fairview Township also owns and operates the Northern Area WWTP. DEP classified the Northern Area plant under a Phase 1 implementation program. As such, monitoring for compliance with these new regulations will begin in 2010. The Authority has met with DEP and requested that the Northern Area plant be reclassified under the Phase 2 implementation program. DEP indicated reclassification is not possible at this time; however, it may be possible to switch the classification requirements for the Southern Area and Northern Area WWTPs.

TABLE 1-1

EXISTING BASIS OF DESIGN
SOUTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Influent screening	Type Screen spacing Influent screen capacity Influent press capacity	Rotating screen (Hycor) 2 mm 2,500 gpm (3.6 mgd) @ 200 mg/L TSS 12 CF/hour @ 8% solids
Sequencing batch reactors[1,2]	No. of units Dimensions Tank depth Maximum side water depth Minimum side water depth Volume of sludge (each) Full Decanted HRT SRT MLSS	2 55 feet x 55 feet 18.1 feet 15.6 feet 10 feet 353,000 gallons 226,000 gallons 21.7 hours @ 0.5 mgd @ 10 feet SWD 14 days 3,950 mg/L
	Process air blowers Number Capacity (each) Maximum day air flow rate (2 blowers)	 3 (with 1 standby) 520 scfm @ 8.0 psig 1040 scfm
Chlorine contact tank	No. of units Volume HRT (peak hour) HRT (maximum month)	1 90,000 gallons 43 minutes (@ 3.0 mgd) 106 minutes (@ 1.22 mgd)
Chlorination equipment	No. of ejectors Capacity Maximum water flow Maximum water pressure	2 500 ppd 20 gpm 40 psi
Aerobic digesters	No. of units Dimensions Tank depth Maximum side water depth Average SRT Maximum volume	1 55 feet x 45 feet 18.1 feet 15.6 feet 38 days (with 2% solids) 289,000 gallons
Lime system	No. of units Storage capacity Storage volume Feed capacity	1 30 tons 2,000 CF 300 lbs/hr (at 45 lbs/CF)
Belt filter press	No. of units Size Capacity Hours of operation per week	1 1.7 meter 600 dry lbs/hr 16 hours

TABLE 1-1 (continued)

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Effluent (utility) water system	No. of pumps Pump capacity Total capacity	3 2 - 125 gpm @ 185 feet TDH 1 - 50 gpm @ 185 feet TDH 175 gpm

(1) Dimensions taken from the 1992 drawings by Hartman & Associates, Inc.
(2) SBR basis of design from 2000 plant rerating by Gannett Fleming, Inc.

Under this arrangement, the Southern Area WWTP permit requirements could be accelerated under the Phase 1 implementation program and the Northern Area plant would be revised for compliance under the Phase 2 implementation program. Specific dates for the Southern Area and Northern Area WWTP compliance requirements are currently being negotiated with DEP.

1.4 HISTORICAL PERFORMANCE

Currently, the Southern Area plant is operating at 75 percent (0.37 mgd) of its permitted annual average capacity of 0.5 mgd. Limited influent characteristics, which include flow rate, biochemical oxygen demand (BOD) loading, and total suspended solids (TSS), have been monitored. The influent flow and BOD loading from January 2005 through April 2007 are shown in Figure 1-3. The average effluent performance of the plant since 2005 is summarized in Table 1-2.

The plant has been able to maintain an average effluent ammonia (NH_3-N) of 0.53 mg/L for the period from January 2005 to April 2007. This concentration is in compliance with the facility's permit limits of 1.5 mg/L during the months of May to October and 4.5 mg/L during the months of November to April. Although a sudden increase in effluent NH_3-N during the months of March and April 2007 was observed at the plant, this increase was attributed to a microbiological process upset. This also resulted in an increase in solids concentration observed in the plant effluent. The effluent NH_3-N from January 2005 through April 2007 is shown in Figure 1-4.

The plant has consistently produced effluent TSS, BOD, and ammonia concentrations that are within the permitted discharge concentration limits for the facility. Influent parameters such as alkalinity, TN, total Kjeldahl nitrogen (TKN), TP, and pH have not been measured.

TABLE 1-2

HISTORICAL SOUTH PLANT EFFLUENT CHARACTERISTICS

DATE	EFFLUENT											
	$CBOD_5$ (mg/L)	TSS (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	TN (mg/L)	TN (lb/day)	TP (mg/L)	TP (lb/day)	pH (S.U.)	DO (mg/L)	Fecals/ 100 ml	TRC (mg/L)
Average 2005	2.7	3.4	0.14	NM	NM	NM	0.50	1.6	7.1	7.8	15	0.16
Average 2006	3.7	3.9	0.21	NM	NM	NM	0.90	2.7	7.0	7.3	22	0.14
Average 2007	5.1	6.0	4.9	6.6	15.6	53	1.2	3.4	6.9	7.2	202	0.12
Average 2005-2007	3.4	4.0	0.85	6.6	15.6	53	0.75	2.3	7.0	7.5	45	0.15

Notes:
1. Data range: January 2005-April 2007.
2. Annual average data shown for each year.
3. NM= Not measured.

CHAPTER 2

PROPOSED BASIS OF DESIGN

2.1 DESIGN FLOWS AND LOADS

Flows and organic loadings to the Southern Area WWTP plant were evaluated to establish a basis of design for the plant upgrade and expansion. The proposed plant expansion would provide an average annual flow capacity of 1.0 mgd. This expansion would provide for an additional 0.5 mgd of average capacity that is equivalent to an additional 2,871 EDUs.

Influent flow data at the plant was reviewed to determine the existing average annual, maximum month, and peak hour flows to the plant. The average annual flow is used to determine the permitted plant capacity and allocation of EDUs for service. The maximum month flows are used to size the treatment process to meet the discharge permit. The peak hour flow is used to size the hydraulic capacity of the plant.

The permitted, existing, and proposed design flows are listed in Table 2-1. The design average annual flow of 1.0 mgd was previously selected by the Authority. The current peaking factor of 1.2 for average annual to maximum month flow was used to establish the new design maximum month flow of 1.22 mgd.

All of the influent flow to the plant is pumped through the Beinhower Road Pump Station and is measured by a flow meter at the plant. Under normal conditions, only one pump cycles and delivers approximately 1.15 mgd (800 gpm). The influent flow records show that during wet weather events, both pumps run, producing a flow of approximately 1.7 mgd (1,180 gpm). Wet weather events with both pumps running occur several times a year and can last up to two hours. Based on this information, the existing influent peak hour flow was estimated to be 1.7 mgd. The future design peak hour is based on using a peaking factor of 2.0 for the new flow because newer systems typical have less infiltration and inflow. The resulting design peak hour flow is 3.0 mgd.

TABLE 2-1

DESIGN FLOWS

CONDITION	CURRENT[1] FLOW (MGD)	CURRENT NPDES PERMIT FLOW (MGD)	PROPOSED DESIGN FLOW (MGD)
Average day	0.37	0.5	1.0
Maximum month	0.46	0.94	1.2
Peak hour	1.70	--	3.0 [2]

(1) Based on record from January 2005 to April 2007.
(2) A 2.0 peaking factor was used for new flows.

The design organic loadings to the plant were based on available influent sampling of BOD and TSS. Historically, the plant has not been sampling for influent nitrogen and phosphorus. Typical domestic wastewater concentrations for influent nitrogen and phosphorus were used for this initial study. A detailed influent characterization will be required to verify assumptions for influent nitrogen and phosphorus. The design influent loads are summarized in Table 2-2.

TABLE 2-2

DESIGN INFLUENT CONCENTRATIONS AND LOADS

PARAMETER	CURRENT DESIGN				PROPOSED DESIGN			
	AVERAGE MONTH		MAXIMUM MONTH		AVERAGE MONTH		MAXIMUM MONTH	
	mg/L	LB/DAY	mg/L	LB/DAY	mg/L[1]	LB/DAY	mg/L[2]	LB/DAY
$CBOD_5$	233	728	309	982	233	1,947	258	2,627
TSS	169	529	235	730	170	1,409	192	1,952
TKN [3]	--	--	--	--	30	250	40	407
TP [3]	--	--	--	--	7	58	9	92

(1) Based on an average flow of 1.0 mgd.
(2) Based on a maximum month flow of 1.2 mgd.
(3) Influent TKN and TP data is not available; typical values used until sampling is performed on these constituents.
(4) Loads do not include plant recycle flows.

2.2 NITROGEN AND PHOSPHORUS REMOVAL

Upgrades to the plant must also be incorporated to meet stringent nitrogen and phosphorus discharge limits. The nutrient discharges from the plant will be capped at a TN of 6.0 mg/L and TP of 0.8 mg/L based on a capacity of 0.5 mgd. In order to double the plant's capacity to 1.0 mgd and still meet these nutrient limits, the plant must be able to reduce those effluent concentrations by half. Therefore, the design effluent concentrations would be TN of 3.0 mg/L and TP of 0.4 mg/L. The design effluent performance of the plant is shown in Table 2-3.

TABLE 2-3

ANTICIPATED EFFLUENT PERMIT REQUIREMENTS

PARAMETER	PERMIT REQUIREMENT
Flow	1.0 mgd
$CBOD_5$	25
TSS	30
TN	9,132 lb/yr (3.0 mg/L)(1)
TP	1,218 lb/yr (0.4 mg/L)(2)
Fecal coliform	200 MPN/100 ml
Total residual chlorine	0.19 mg/L(3)
DO	Minimum 5.0 mg/L
pH	6.0 to 9.0 range

(1) Concentration required to meet TN load cap of 9,132 lb/yr which corresponds to a TN of 6 mg/L at a permitted flow of 0.5 mgd.
(2) Concentration required to meet TP load cap of 1,218 lb/yr which corresponds to a TP of 0.8 mg/L at a permitted flow of 0.5 mgd.
(3) To be verified by DEP.

2.3 INFLUENT CHARACTERIZATION

A characterization of the influent wastewater to the treatment plant must be performed to verify assumptions used in this analysis for unit process selection and sizing. Currently, the influent concentrations and forms of nitrogen and phosphorus are unknown. Raw wastewater can contain forms of non-biodegradable (refractory) nitrogen that cannot be removed in the treatment

process. Refractory nitrogen concentrations can be high enough to limit TN removals. Likewise, phosphorus could be present in a form that is not readily precipitated. Based on past effluent TP performance, it appears this is likely not the case.

The influent characterization should be performed before moving forward with the design of the plant upgrade. A copy of the sampling plan required for the influent characterization is attached in Appendix A.

CHAPTER 3

BEINHOWER ROAD PUMP STATION

3.1 INTRODUCTION

The Southern Area WWTP currently receives all of its influent flow from the Beinhower Road Pump Station, located on Beinhower Road just east of Old York Road. Wastewater is transported by gravity sewers to the Beinhower Road Pump Station; from there, it is pumped through a 12-inch force main directly to the headworks of the WWTP. The pump station has two self-priming centrifugal pumps and an emergency generator contained within a pre-engineered building. Table 3-1 summarizes the capacity of the existing pump station equipment.

TABLE 3-1

EXISTING PUMP DESIGN CAPACITY

CRITERIA	VALUE (1)
Manufacturer	Gorman-Rupp Pumps
Type	Self-priming centrifugal
Number of units	2
Flow rate	875 gpm (1.3 mgd)
Total dynamic head	68 feet
Total dynamic suction lift	18 feet
Pump speed	1050 rpm
Motor horsepower	40 HP

(1) Based on information provided by Gorman-Rupp for existing facility.

The Authority is proposing to increase the Southern Area WWTP capacity from 0.5 to 1.0 mgd with a corresponding peak flow of approximately 3.0 mgd. This will require an increase to the influent pumping capacity to the WWTP. To achieve this increase, two alternatives were developed:

- Alternative B-1 - Upgrade the Beinhower Road Pump Station
- Alternative B-2 - Construct a new pump station adjacent to the WWTP off of Old York Road

3.2 ALTERNATIVE B-1 – BEINHOWER ROAD PUMP STATION UPGRADE (3 MGD)

Alternative B-1 involves upgrading the existing pumps at the Beinhower Road Pump Station to accommodate a peak pump flow rate of 3 mgd. Existing data for this pump station shows that under high flow conditions, both pumps at the station are required to operate simultaneously to maintain the proper wastewater levels in the wet well. Therefore, this pump station does not currently have a dedicated standby pump as recommended by DEP's Domestic Wastewater Facilities Manual.

Under this alternative, the two existing pumps would be modified so that each pump is capable of handling the future peak flow of 3.0 mgd. This would allow the second pump to become a standby unit. To complete this upgrade, the existing pumps would be modified to run at a higher pump speed and would be equipped with new larger motors and variable frequency drives (VFDs). The VFDs would allow each pump to operate across a wide range of flow rates according to the level of wastewater present in the pump station wet well. Therefore, the upgraded pumps would be capable of providing a steady influent flow to the WWTP, as opposed to the current mode of simple on/off pump operation, which results in more pump cycling and a less consistent plant influent flow. Table 3-2 summarizes the design criteria for the proposed pump upgrades at the Beinhower Road Pump Station.

It also estimated that a new backup generator will be required for the upgraded pump station due to the increased motor horsepower of the station's pumps.

(continued)

TABLE 3-2

ALTERNATIVE B-1 – PUMP DESIGN CAPACITY

CRITERIA	VALUE (1)
Manufacturer	Gorman-Rupp Pumps
Type	Self-priming centrifugal
Number of units	2
Flow rate (each pump)	2,100 gpm (3.0 mgd)
Total dynamic head	100 feet
Total dynamic suction lift	22 feet
Pump speed	1450 rpm
Motor horsepower	100 HP

(1) Based on information provided in a proposal from Gorman-Rupp.

3.3 ALTERNATIVE B-2 – NEW PUMP STATION CONSTRUCTION ALONG OLD YORK ROAD

The second alternative evaluated to provide increased influent pumping capacity to the WWTP was to construct a new pump station along Old York Road, adjacent to the WWTP. This station would be located to intercept an existing gravity sewer line that currently flows to the Beinhower Road Pump Station. This sewer line carries a large portion of the current wastewater flow in the collection system. Under this alternative, the new pump station would handle approximately 75 percent of the existing system flow, while the existing Beinhower Road Pump Station would pump the remaining 25 percent of the current wastewater flows in the system. This would free up capacity at the Beinhower Road Pump Station and allow it to receive the new WWTP expansion flows from the proposed development planned for the areas served by this pump station.

Table 3-3 summarizes the estimated pumping capacities that will be required by these two pump stations with this alternative under current and future conditions.

TABLE 3-3

PUMP STATION DESIGN FLOWS

CONDITION	BEINHOWER ROAD PUMP STATION (MGD)	NEW PUMP STATION (MGD)	TOTAL
CURRENT FLOWS(1)			
Average day	0.09	0.28	0.37
Peak	0.43	1.28	1.71
FUTURE FLOWS(2)			
Average day	0.63	0.38	1.0
Peak	1.43	1.54	3.0

(1) Based on actual plant influent data (current average plant flow of 0.37 mgd).
(2) A 2.0 peaking factor was used for new flows.

It was anticipated that a similar package pump station, as was provided for the Beinhower Road Pump Station, containing two self-priming centrifugal pumps and an emergency generator would be installed for the new pump station. Even with the construction of a new pump station along Old York Road, it will still be necessary to upgrade the Beinhower Road Pump Station to meet the future peak flow at the WWTP. Table 3-4 summarizes the design criteria for the pumps at the new pump station as well as the required pump upgrades at the Beinhower Road Pump Station to meet the future flow requirements presented in Table 3-3.

TABLE 3-4

ALTERNATIVE B-2 – PUMP DESIGN CAPACITIES

CRITERIA	BEINHOWER ROAD PUMP STATION	NEW PUMP STATION(1)
Manufacturer	Gorman-Rupp Pumps	Gorman-Rupp Pumps
Type	Self-priming centrifugal	Self-priming centrifugal
Number of units	2	2
Flow rate (each pump)	1,000 gpm (1.4 mgd)	1,100 gpm (1.6 mgd)
Total dynamic head	70 feet	60 feet (2)
Total dynamic suction lift	18 feet	23 feet
Pump speed	1150 rpm	1450 rpm
Motor horsepower	40 HP	30 HP

(1) Based on information provided in a proposal from Gorman-Rupp Pumps.
(2) Total dynamic head estimated.

3.4 ALTERNATIVE B-3 -BEINHOWER ROAD PUMP STATION UPGRADE (2.5 MGD)

Alternative B-3 is similar to Alternative B-1 except that peak flow would only be increased to 2.5 mgd. This alternative was included for use in evaluating a 0.75 mgd design flow alternative for the Southern Area WWTP. The Southern Area WWTP alternatives are discussed in Chapter 4. Table 3-5 summarizes the design criteria for the proposed pump upgrades at the Beinhower Road Pump Station for Alternative B-3. A new standby generator is also required for this alternative.

TABLE 3-5

ALTERNATIVE B-3 – PUMP DESIGN CAPACITY

CRITERIA	VALUE (1)
Manufacturer	Gorman-Rupp Pumps
Type	Self-priming centrifugal
Number of units	2
Flow rate (each pump)	1,750 gpm (2.5 mgd)
Total dynamic head	88 feet
Total dynamic suction lift	22 feet
Pump speed	1350 rpm
Motor horsepower	75 HP

(1) Based on information provided in a proposal from Gorman-Rupp.

3.5 PUMP STATION UPGRADE COSTS

Alternative B-1 has an estimated construction cost of approximately $200,000. Alternative B-2 involving the construction of a new pump station along Old York Road was estimated at approximately $450,000. Alternative B-3 has an estimated construction cost of approximately $190,000. Capital cost breakdowns are provided in Appendix C.

3.6 OTHER PUMP STATION IMPROVEMENTS

In addition to the need for improved pumping capacity to the plant, the Authority has expressed an interest in replacing the existing pre-engineered enclosure at the Beinhower Road Pump Station with a more traditional masonry building. This building would be similar in size to the existing enclosure and have an estimated construction cost of $100,000 to $150,000.

CHAPTER 4

SOUTHERN AREA WWTP ALTERNATIVES

Four alternatives were identified to upgrade and/or expand the Southern Area WWTP. All of the alternatives are based on maximizing the use of the plant's existing facilities to provide a cost-effective upgrade. The alternatives are based on continued use of the existing sequencing batch reactor (SBR) process for biological nitrogen removal. Phosphorus would be removed through both biological uptake and chemical precipitation with and without filtration. The alternatives are summarized below.

1. **Alternative S-1, SBR Expansion to 1.0 mgd.** For this alternative, two SBR tanks would be added and the SBR operation would be modified to provide denitrification for nitrogen removal. Phosphorus removal would be accomplished by chemical precipitation followed by filtration through an effluent sand filter. The effluent filter would also be provided with methanol feed and serve as a denitrification filter. With this alternative, the anticipated effluent concentrations for TN and TP would be <6.0 mg/L and <0.5 mg/l, respectively.

2. **Alternative S-2, Membrane Bioreactors.** For this alternative, membrane filters would be added to the plant, which would allow expanded biological treatment of 1 mgd to be accomplished within the two existing SBR basins. The membranes would also remove the precipitated phosphorus. With this alternative, the anticipated effluent concentrations for TN and TP would be <6.0 mg/L and <0.5 mg/L, respectively.

3. **Alternative S-3, SBR Expansion to 0.75 mgd.** This alternative is similar to Alternative S-1 except that only one SBR basin would be added to provide an expanded capacity of 0.75 mgd and no effluent filtration would be provided. With this alternative, the anticipated effluent concentrations for TN and TP would be 6 to 8 mg/L and 0.8 mg/L, respectively.

4. **Alternative S-4, Upgrade for Nutrient Removal Only.** The alternative includes modifications to the operation of the existing SBR and associated improvements to provide nutrient removal for TN. No increase in overall plant capacity is provided with this

alternative. With this alternative, the anticipated effluent concentrations for TN and TP would be 6 to 8 mg/L and 0.8 mg/L, respectively.

4.1 ALTERNATIVE S-1 - SBR EXPANSION TO 1 MGD

A. **Process Description.** In Alternative S-1, two SBR basins would be added to expand plant capacity and provide biological nitrogen removal. Phosphorus would be removed by chemical precipitation of the phosphorus followed by effluent sand filters.

Biological nitrogen removal consists of a two-step process where ammonia is first "nitrified" under aerobic conditions to form nitrate. Currently, the plant is designed to nitrify to meet the discharge limits for ammonia. The second step of nitrogen removal is denitrification, where nitrates are converted to nitrogen gas under anoxic conditions. In order for the SBRs to denitrify, the treatment sequence must be modified to allow for unaerated periods, during which the dissolved oxygen concentration in the basin will drop to zero and denitrification will occur.

Aqua Aerobic Systems, the manufacturer of the existing SBR equipment at the plant, has evaluated the proposed design flows and loadings and recommended that the plant should be modified through the addition of two new SBR basins. A methanol feed system would provide an additional carbon source for denitrification in order to achieve low levels of nitrates. The process flow diagram for Alternative S-1 is shown in Figure 4-1.

Phosphorus removal would be achieved by the use of a metal salt to precipitate the phosphorus, which would then be removed through the settling cycle and a subsequent filtration process. There are several types of effluent filters, including conventional sand filters, dual-media filters, traveling bridge filters, cloth media disc filters, and continuously backwashing sand filters. Continuously backwashing sand filters are recommended for this application. These types of filters are preferred to batch-cycled filters because they provide a constant backwash recycle flow to the front of the treatment process. Continuous recycle flows have a lesser impact on plant hydraulics and biological performance than intermittent recycle flows. These filters are typically constructed in open concrete structures located outdoors. The motive force for the backwash operation is provided by an air compressor which will be located in a separate building adjacent to the effluent filters.

The effluent filters would also help with nitrogen removal in two ways. First, the filters remove suspended solids from the wastewater. Suspended solids contain some nitrogen; therefore, total nitrogen can be reduced in the filters. Second, the effluent filters can be used for polishing denitrification with the addition of methanol. A biofilm grows on the sand which, under anoxic conditions in the filter, will result in additional nitrate removal from denitrification.

B. **WWTP Modifications.** Conversion of the plant for nutrient removal will require expansion and upgrades as well as modifications to the existing unit processes. The following sections describe the proposed modifications to each of the plant's main unit processes.

1. **Headworks.** The existing headworks building, which contains a Hycor drum screen, has a capacity of 3.6 mgd, which is adequate to handle the increased flow to the plant. No upgrades are needed for this system. The existing headworks building has steel doors, window frames, and steel roof joists that are in a deteriorated condition because of the wet and corrosive atmosphere in this building. It is the Authority's option to repair or replace these items as part of the plant upgrade.

2. **SBRs.** Two additional SBR tanks are proposed to handle the capacity increase. The tanks would be identical to the existing tanks and would utilize the existing four-way distribution box. The proposed site plan for this alternative is shown in Figure 4-2. To meet the increased aeration needs of the plant, the three existing SBR aeration blowers would be replaced with larger blowers.

The four SBRs would operate on a 6-hour cycle with each SBR cycle offset by 90 minutes. The SBR cycle has a maximum 60-minute decant cycle, leaving 30 minutes or more when there is no flow from the SBRs. The effluent filters downstream of the SBRs operate best with a steady flow. The chemical feed for chlorination and dechlorination is also easier to control with a steady effluent flow. A post-equalization tank is proposed after the SBRs to help equalize the flow going to the effluent filters.

3. **Effluent Filters.** The filters would consist of eight filter modules sized to provide removal of phosphorus and denitrification polishing up to the maximum day flow of 2.0 mgd. The filters would be constructed with common walls to the new SBR tanks and the post-equalization tank. A filter building would be constructed above the post-

equalization tank to house the compressors for the filters and an electrical room to power the additional equipment to be installed.

The effluent filters require a hydraulic head of 4 feet to move water through the sand media and piping. An intermediate pump station is required to lift the wastewater so it can gravity flow through the effluent filters and the chlorine contact tank. The intermediate pumps would be located in the post-equalization tank. To maintain a continuous feed to the effluent filters, it is recommended the intermediate pump station be operated with VFDs.

Equipment literature for the effluent filters is provided in Appendix B.

4. **Disinfection and Post-Aeration.** The construction of two new SBRs with offset cycles and construction of the post-equalization tank will produce a more steady flow to the chlorine contact tanks. The chlorine contact tanks currently have excess capacity, and elimination of the slug flows to the tank from decanting will free up more capacity in the tanks.

The plant discharge permit has a maximum residual chlorine limit of 0.19 mg/L. Currently, the plant meets this limit by providing enough chlorine to meet the fecal coliform limit, but not adding too much chlorine to violate the residual chlorine limit. This is a very difficult balance to maintain and is not a recommended practice. Although this is not directly related to the upgrade, installation of a dechlorination system is recommended. Thus, sufficient chlorine can be added to meet the fecal coliform limit, followed by dechlorination to meet the residual chlorine limits. Dechlorination can be accomplished using a variety of chemicals such as liquid sodium bisulfite or gaseous sulfur dioxide. The selected dechlorination chemical would be fed into the chlorinated effluent and mixed with a mixer. The dechlorination equipment and chemicals will be located in the existing Control and Dewatering Building.

The plant has a residual minimum dissolved oxygen (D.O.) concentration of 5 mg/L. When the plant is upgraded to perform nitrogen removal, the final denitrification step is anoxic, which will leave the treated effluent with no D.O. A post-aeration step will be required to raise the D.O. up to the 5 mg/L minimum limit. The existing chlorine contact tank has excess capacity and can be partitioned to allow both dechlorination and post-aeration to be conducted within the existing contact tank.

5. **Solids Handling.** The plant currently uses the aerobic digester to stabilize sludge; it is then dewatered with a belt filter press and hauled away to a landfill for disposal. The plant has a lime silo and feed system for lime stabilization of the sludge, but the system is not currently used. As the flow to the plant increases, the production of sludge will also increase. Eventually, the aerobic digester will not have sufficient volume to provide the required solids retention time (SRT) to stabilize the sludge prior landfilling. It is proposed to restart the existing lime system to achieve stabilization when plant sludge production reaches a point where the aerobic digesters no longer have sufficient SRT for stabilization. The reuse of the lime system will prevent the Authority from having to construct an additional aerobic digester.

The existing belt filter press is currently operated two days per week and three days per week when sludge is hauled from the north plant to be dewatered. The existing belt filter press has sufficient capacity and should not need to be upgraded to handle additional sludge production. The press will have to be operated more frequently as the plant flows increase, but it is not estimated to require more than four to five days of operation per week when the plant reaches the proposed design capacity. Sludge from the North Plant should be hauled more frequently to minimize the effect of this peak loading.

6. **Unit Process Summary.** The unit processes at the plant which are proposed to be upgraded or modified are summarized in Table 4-1.

C. Advantages and Disadvantages.

1. Advantages.

a. An expansion of the existing SBRs to meet the capacity expansion and nutrient removal limits would represent a relatively minor departure from the current plant operations.

b. The proposed continuously backwashed sand filters are simple to operate and maintain. The system is driven by an air compressor and there are no other moving parts or equipment.

TABLE 4-1

ALTERNATIVE S-1 UNIT PROCESSES

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Sequencing batch reactors[1] (two new SBR tanks)	No. of units	4
	Dimensions	55 feet x 55 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Minimum side water depth	10.5 feet
	Volume of sludge (each)	
	Full	364,000 gallons
	Decanted	238,000 gallons
	HRT	1.029 days
	SRT	18.6 days
	MLSS	4,500 mg/l @ minimum water depth
	Process air blowers	
	Number	5
	Capacity (each)	40 HP
Post-equalization tank	Dimensions	26 feet x 14 feet
	Tank depth	20 feet
	Maximum side water depth	15.5 feet
	Minimum side water depth	4 feet
	Working volume	42,250 gallons
Intermediate pump	Type	Submersible
	No. of units	2 large, 2 small
	Total system capacity	2.0 mgd
Effluent filters [2] (new)	Type	Upflow, continuous backwash
	Media depth	6 feet
	No. of filters	8
	Filter area per module	50 SF
	Total filtration area	400 SF
	Active filtration volume	2,400 CF
	Peak hour flow (following equalization)	2.0 mgd
	Average hydraulic loading	1.7 gpm/SF (@1.0 mgd)
	Peak hydraulic loading	3.5 gpm/SF (@ 2.0 mgd) (all cells in service) 4.6 gpm/SF (with one cell out of service)
	Design peak nitrate loading	25 lbs/d/CF of media
Chlorine contact tank (after partitioning)	Total tank volume	90,000 gallons
	Chlorine contact tank	
	New volume	69,500 gallons
	HRT (peak hour)	33 minutes (@ 3.0 mgd)
	HRT (maximum month)	82 minutes (@ 1.22 mgd)
	Dechlorination chamber	
	Volume	3,500 gallons
	HRT (peak hour)	1.7 minutes (@ 3.0 mgd)
	HRT (maximum month)	4.1 minutes (@ 1.22 mgd)

TABLE 4-1 (continued)

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Chlorine contact tank (after partitioning) (continued)	Post-aeration Volume HRT (maximum month) Aeration type	 17,000 gallons 20 minutes (@ 1.22 mgd) Fine bubble
Aerobic digesters (existing)	No. of units Dimensions Tank depth Maximum side water depth Sludge loading(3) Average SRT Maximum volume	1 55 feet x 45 feet 18.1 feet 16.1 feet 15,700 dry lb/week 22 days (@ 2% solids) 298,100 gallons
Lime system (existing)	No. of units Storage capacity Storage volume Feed capacity	1 30 tons 2,000 CF 300 lbs/hr (at 45 lbs/CF)
Belt filter press (existing)	No. of units Size Capacity Hours of operation per week	1 1.7 meter 600 dry lbs/hr 26 hrs(3)

(1) Based on Aqua Aerobics proposal, June 12, 2007.
(2) Based on Parkson Dynasand proposal, June 14, 2007.
(3) Includes 3,000 lb/s week of dry solids from the North Plant.

2. **Disadvantage.** The proposed design for Alternative S-1 would meet the currently anticipated discharge limits. If the limits became stricter in the future, additional modifications may be required for the plant.

D. **Cost Estimate.** A preliminary opinion of costs was prepared for this alternative that includes the previously mentioned plant upgrades along with an upgrade to the Beinhower Road Pump Station (discussed in Chapter 3). The total estimated project cost in today's dollars is $9,100,000. The cost of the project based on the midpoint of construction in 2009 and a 4 percent inflation rate yields an estimated cost of $9,800,000. Table 4-2 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

TABLE 4-2

ALTERNATIVE S-1 - SBR EXPANSION TO 1 MGD
ESTIMATED PROJECT COSTS

DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
Sequencing batch reactors	$2,390,000
Post-equalization tank and intermediate pumping station	389,000
Effluent filters	1,630,000
Post-aeration and dechlorination	127,000
Beinhower Road Pump station modifications	195,000
Subtotal Capital Costs(1)	**$4,700,000**
Site work (7%)	331,000
Electrical (15%)	710,000
Instrumentation (5%)	237,000
Subtotal Capital Costs(1)	**$6,000,000**
Mobilization/demobilization (5%)	301,000
Subtotal Capital Costs(1)	**$6,300,000**
Contingency (25%)	1,578,000
Total Capital Costs(1)	**$7,900,000**
Engineering/Legal/Administration (15%)	1,184,000
Total Design and Construction Services(1)	**$9,100,000**
Inflation to Construction Midpoint (2009) (2)	730,000
TOTAL PROJECT COST (1)	**$9,800,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

4.2 ALTERNATIVE S-2 - MEMBRANE BIOREACTORS

A. **Process Description.** In this alternative, the use of membrane filters was evaluated to convert the plant to a membrane bioreactor (MBR) process. An MBR process is a modification of a typical activated sludge treatment process where the solids separation step performed by settling and decanting is replaced with membrane filters. The membranes can provide better solids separation (filtration) than settling and tertiary sand filters combined.

There are various types of membranes used in wastewater, including submerged hollow fiber, submerged membrane plate, and in-series membranes. Aqua Aerobic Systems use the manufacturer Koch to provide submerged hollow fiber membranes combined with their SBR systems. The membranes are ultrafiltration-type with a nominal pore size of 0.05 μm. The membranes provide a positive barrier to solids in the effluent, bacteria, and to some extent, viruses.

The membranes are arranged in cassettes submerged in a separate membrane tank that would be constructed adjacent to the two existing SBR tanks. Use of a MBR is a very equipment-intensive process due to the cleaning required to maintain the flux of wastewater through the membranes. An additional MBR building would be necessary to house the pumps, blowers, and cleaning chemicals for the membranes. There are three levels of cleaning used to maintain the flux of treated wastewater through the membranes:

1. **Air Scour Cleaning**. Intermittent coarse bubble aeration is used to remove buildup of solids on the membranes. This prevents a cake of solids from developing around the membrane fibers. The air scour cleaning blowers run continually and the air is automatically switched between cassettes in a set sequence.

2. **Maintenance Cleaning.** The membranes are backwashed with clean effluent by use of backpulse pumps, typically two to three times per week. Backwash cleaning is an automated process and sodium hypochlorite is added to the backpulse water to remove organic fouling.

3. **Recovery Cleaning**. Membranes progressively foul over time and the transmembrane pressure needed to pull water through the membranes increases to an unacceptable level. At this point, recovery cleaning is conducted, consisting of isolating

an individual tank, draining the contents, and soaking the membrane in a solution of citric acid and sodium hypochlorite for 8 to 12 hours. The frequency between recovery cleanings varies from site to site, but can be on the order of once every six months.

The proposed MBR system would be operated in a similar cycle as the SBRs in Alternative S-1 where there are alternating aerated and unaerated periods for nitrogen removal through nitrification and denitrification. An MBR typically operates with a mixed liquor suspended solids (MLSS) concentration of 8,000 to 10,000 mg/L. This MLSS concentration is substantially higher than the MLSS concentrations of 2,500 to 4,000 mg/L used in an activated sludge process with SBRs. The higher MLSS concentrations allow for the MBR process in the expanded plant to occur within the existing two SBR basins.

The process flow diagram for this alternative is shown in Figure 4-3. The proposed site plan is shown in Figure 4-4.

B. **Plant Modifications.** The expansion of the plant and conversion for nutrient removal using the MBR process would require different modifications to the plant than were required in Alternative 1. These upgrades are listed below.

1. **Headworks.** Due to the small openings in the membranes, screening of the influent is very important. Any debris that passes into the process tanks could potentially damage the membranes. Membrane manufacturers require a perforated plate-type screen with a 2 mm opening or a wedge wire screen with 1 mm spacing. A second standby screen is also required since it is not permissible to bypass the screen.

The existing Hycor drum screen is a wedgewire-type screen with a 2 mm spacing. It is proposed to install a second Hycor screen with 1 mm spacing. The new screen would operate continuously with the existing 2 mm screen acting as a backup. The new screen could be located in the current bypass channel. A new screenings washer/press would be added to capture the screenings from both screens.

Grit removal is also recommend because grit could be passed to the membrane tanks, and aggressive air scour cleaning could cause the grit to wear on the membrane fibers and lead to a premature fail. Grit removal would be provided by use of a vortex-type system such as the Smith & Loveless Pista Grit System or the Eutek Headcell System.

2. **Other Items.** The modifications to the chlorine contact tank for dechlorination and post-aeration would be the same as discussed in Alternative S-1. Similarly, the aerobic digester and sludge dewatering systems would remain the same as they currently exist.

3. **Unit Process Summary.** The unit processes at the plant proposed to be upgraded or modified in this alternative are summarized in Table 4-3. Equipment literature for the fine screen, grit removal, and MBR unit processes is included in Appendix B.

C. **Advantages and Disadvantages.**

1. **Advantages.**

a. Membranes provide a high quality effluent that is suitable for water reuse if the opportunity arises.

b. Membranes are currently the best technology available and would be the most adaptable to meet stricter effluent limits in the future.

c. Filtrate from membranes can typically produce effluent phosphorus concentrations of less than 0.2 mg/L. These levels would be lower than the target TP concentration of 0.4 mg/L. The additional phosphorus removal credit could potentially be used at the North Plant or traded.

2. **Disadvantages.**

a. Membranes are more costly to operate because of higher power requirements, chemicals for cleaning, and periodic replacement of the membranes.

b. Membranes are more difficult to operate. Diligent attention is required to maintain the automated valves, pumps, blower, and chemical cleaning system used to keep the membrane system functioning.

D. **Cost Estimate.** A preliminary opinion of costs was prepared for this alternative that includes the previously mentioned plant upgrades along with an upgrade to the Beinhower Road Pump Station (discussed in Chapter 3). The total estimated project cost in today's dollars is

TABLE 4-3

ALTERNATIVE S-2 UNIT PROCESS MODIFICATIONS

UNIT PROCESS / EQUIPMENT	DESIGN CRITERIA	VALUE
Screen (existing)	Type	Rotating screen (Hycor)
	Screen spacing	2-mm
	Influent screen capacity	2,500 gpm @ 200 mg/L TSS
	Influent press capacity	12 CF/hour @ 8% solids
Screen (new)	Type	Rotating screen (Hycor)
	Screen spacing	1 mm
	Influent screen capacity	2,500 gpm @ 200 mg/L TSS
	Influent press capacity	13 CF/hour @ 8% solids
Grit removal (new)	No. of units	1
	Type	Vortex system
	Capacity	4 mgd
	Grit pump capacity	250 gallons/min
SBRs (existing tanks)	No. of units	2
	Dimensions	55 feet x 55 feet
	Tank depth	18.1 feet
	Max side water depth	15.1 feet
	Volume of sludge Full Decanted	 342,000 gallons (each) 240,000 gallons (each)
	HRT	15.9 hrs
	SRT	26.8 days
	MLSS	9,000 mg/L
Membrane tanks[1] (new)	No of units	4
	Dimensions	21.6 feet x 11 feet
	Side water depth	11.08 feet
	Total volume of tank	19,700 gallons
	No of membrane modules	5 membrane modules/tank
	Total membrane area	107,640 ft^2
	Average membrane flux rate	9.3 gpd/ft^2
	Maximum membrane flux rate	27.5 gpd/ft^2
	MLSS in membrane tank	12,000 mg/L
	Average sludge recycle rates	2.94 x average design flow
Chlorine contact tank (after partitioning)	Total tank volume	105,000 gallons
	Chlorine contact tank New volume HRT (peak hour) HRT (maximum month)	 69,500 gallons 33 minutes (@ 3.0 mgd) 82 minutes (@ 1.22 mgd)

TABLE 4-3 (continued)

UNIT PROCESS / EQUIPMENT	DESIGN CRITERIA	VALUE
Chlorine contact tank (after partitioning) (continued)	Dechlorination chamber Volume HRT (peak hour) HRT (maximum month)	 3,500 gallons 1.7 minutes (@ 3.0 mgd) 4.1 minutes (@ 1.22 mgd)
	Post-aeration Volume HRT (Maximum month) Aeration type	 17,000 gallons 20 minutes (@1.22 mgd) Fine bubble
Aerobic digesters (existing)	No. of units	1
	Dimensions	55 feet x 45 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Sludge loading(3)	15,700 dry lb/week
	Average SRT	22 days (@ 2% solids)
	Maximum volume	298,100 gallons
Lime system (existing)	No. of units	1
	Storage capacity	30 tons
	Storage volume	2,000 CF
	Feed capacity	300 lbs/hr (at 45 lbs/CF)
Belt Filter Press (existing)	No. of units	1
	Size	1.7 meter
	Capacity	600 dry lbs/hr
	Hours of operation per week(2)	26 hrs

(1) Based on Aqua Aerobics proposal, June 13, 2007
(2) Includes 3,000 lb/s week of dry solids from the North Plant.

$15,200,000. The cost of the project based on the midpoint of construction in 2009 and a 4 percent inflation rate yields an estimated cost of $16,400,000. Table 4-4 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

4.3 ALTERNATIVE S-3 - SBR EXPANSION TO 0.75 MGD

The initial evaluation of Alternatives S-1 and S-2 revealed that a nutrient removal upgrade and expansion to a 1.0 mgd capacity may be cost prohibitive for the Township. Alternative S-3 was developed as a way to provide additional expansion capacity (0.25 mgd) and meet the nutrient reduction limits in a more cost-effective manner.

A. **Design Flows and Loads.** The design flows and loads were derived in a similar fashion as was used for Alternatives S-1 and S-2 except that the total capacity expansion was limited to 0.25 mgd. The design flows and loads are summarized in Tables 4-5 and 4-6, respectively.

B. **Process Description.** In this alternative, the target effluent TN concentration is 7.0 mg/L and TP is 0.8 mg/L. The higher effluent concentrations allow for the elimination of the effluent filters and associated equalization tank and intermediate pump station. If this alternative is implemented, elimination of these processes results in a significant cost savings.

The modifications to the SBRs for nutrient removal are the same for this alternative as they were for Alternative S-1, with the exception that only one new SBR tank would be constructed to handle the additional 0.25 mgd of added capacity. The existing SBR controls would be modified and blowers upgraded to modify the SBR operations for nutrient removal. The proposed site plan and process flow schematic for this alternative are shown in Figures 4-5 and 4-6, respectively.

C. **WWTP Modifications.** The plant modifications needed for this alternative are limited to SBR modifications, addition of a supplemental carbon feed system, and modifications to the chlorine contact tank for dechlorination and post-aeration. A summary of the proposed Southern Area WWTP unit process design criteria is provided in Table 4-7.

D. **Cost Estimate.** A preliminary opinion of costs was prepared for this alternative that includes the previously mentioned plant upgrades along with an upgrade to the Beinhower Road Pump Station (discussed in Chapter 3). The total estimated project cost in today's dollars is $3,700,000. The cost of the project based on the midpoint of construction in 2009 and a 4 percent

TABLE 4-4

ALTERNATIVE S-2 - MEMBRANE BIOREACTORS
ESTIMATED PROJECT COSTS

DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
Headworks modifications	$674,000
Membrane bioreactors	6,930,000
Post-aeration and dechlorination	127,000
Beinhower Road Pump Station modifications	195,000
Subtotal Capital Costs(1)	**$7,900,000**
Site work (7%)	555,000
Electrical (15%)	1,190,000
Instrumentation (5%)	397,000
Subtotal Capital Costs(1)	**$10,100,000**
Mobilization/demobilization (5%)	504,000
Subtotal Capital Costs(1)	**$10,600,000**
Contingency (25%)	2,643,000
Total Capital Costs(1)	**$13,200,000**
Engineering/Legal/Administration (15%)	1,982 ,000
Total Design and Construction Services(1)	**$15,200,000**
Inflation to Construction Midpoint (2009)(2)	1,220,000
TOTAL PROJECT COST (1)	**$16,400,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

TABLE 4-5

DESIGN FLOWS

CONDITION	CURRENT[1] FLOW (MGD)	CURRENT NPDES PERMIT FLOW (MGD)	PROPOSED DESIGN FLOW (MGD)
Average day	0.37	0.5	0.75
Maximum month	0.46	0.94	0.91
Peak hour	1.70	--	2.45 [2]

(1) Based on record from January 2005 to April 2007.
(2) A 2.0 peaking factor was used for new flows.

TABLE 4-6

DESIGN INFLUENT CONCENTRATIONS AND LOADS

PARAMETER	PROPOSED DESIGN			
	AVERAGE MONTH		MAXIMUM MONTH	
	mg/L[1]	LB/DAY	mg/L[2]	LB/DAY
$CBOD_5$	233	1,460	258	1,969
TSS	170	1,061	192	1,463
TKN[3]	30	188	34	263
TP[3]	7	44	8	61

(1) Based on an average flow of 0.75 mgd.
(2) Based on a maximum month flow of 0.91 mgd.
(3) Influent TKN and TP data is not available; typical values used until sampling is performed on these constituents.
(4) Loads do not include plant recycle flows.

TABLE 4-7

ALTERNATIVE S-3 UNIT PROCESSES - SOUTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Sequencing batch reactors[1] (one new SBR tanks)	No. of units	3
	Dimensions	55 feet x 55 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Minimum side water depth	10.5 feet
	Volume of sludge (each)	
	Full	364,000 gallons
	Decanted	238,000 gallons
	HRT	24.7 hours
	SRT	18.6 days
	MLSS	4,500 mg/l @ minimum water depth
	Process air blowers	
	Type	Positive displacement
	Number	5
	Capacity (each)	40 HP
Chlorine contact tank (after partitioning)	Total tank volume	90,000 gallons
	Chlorine contact tank	
	New volume	69,500 gallons
	HRT (peak hour)	41 minutes (@ 2.45 mgd)
	HRT (maximum month)	110 minutes (@ 0.91 mgd)
	Dechlorination chamber	
	Volume	3,500 gallons
	HRT (peak hour)	2.1 minutes (@ 2.45 mgd)
	HRT (maximum month)	5.5 minutes (@ 0.91 mgd)
Chlorine contact tank (after partitioning) (continued)	Post-aeration	
	Volume	17,000 gallons
	HRT (maximum month)	26.9 minutes (@ 0.91 mgd)
	Aeration type	Fine bubble
Aerobic digesters (existing)	No. of units	1
	Dimensions	55 feet x 45 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Sludge loading[3]	10,200 dry lb/week
	Average SRT	48 days (@ 2% solids)
	Maximum volume	298,100 gallons
Lime system (existing)	No. of units	1
	Storage capacity	30 tons
	Storage volume	2,000 CF
	Feed capacity	300 lbs/hr (at 45 lbs/CF)
Belt filter press (existing)	No. of units	1
	Size	1.7 meter
	Capacity	600 dry lbs/hr
	Hours of operation per week	26 hrs[3]

(1) Based on Aqua Aerobics proposal, June 12, 2007.
(2) Based on Parkson Dynasand proposal, June 14, 2007.
(3) Includes 3,000 lbs/week of dry solids from the North Plant.

inflation rate yields an estimated cost of $4,000,000. Table 4-8 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

TABLE 4-8

ALTERNATIVE S-3 - SBR EXPANSION TO 0.75 MGD
ESTIMATED PROJECT COSTS

DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
Sequencing batch reactors	$1,630,000
Post-equalization tank and intermediate pumping station	--
Effluent filters	--
Post-aeration and dechlorination	127,000
Beinhower Road Pump station modifications	189,000
Subtotal Capital Costs(1)	**$1,950,000**
Site work (7%)	137,000
Electrical (15%)	293,000
Instrumentation (5%)	98,000
Subtotal Capital Costs(1)	**$2,480,000**
Mobilization/demobilization (5%)	124,000
Subtotal Capital Costs(1)	**$2,600,000**
Contingency (25%)	650,000
Total Capital Costs(1)	**$3,250,000**
Engineering/Legal/Administration (15%)	488,000
Total Design and Construction Services(1)	**$3,700,000**
Inflation to Construction Midpoint (2009) (2)	300,000
TOTAL PROJECT COST (1)	**$4,000,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

4.4 ALTERNATIVE S-4 - UPGRADE FOR NUTRIENT REMOVAL ONLY

A. **Design Flows and Loads.** The design flows and loads were derived in a similar fashion as was used for Alternatives S-1 through S-3 except that no capacity expansion is provided. The design flows and loads are summarized in Tables 4-9 and 4-10, respectively.

TABLE 4-9

DESIGN FLOWS

CONDITION	CURRENT[1] FLOW (MGD)	CURRENT NPDES PERMIT FLOW (MGD)	PROPOSED DESIGN FLOW (MGD)
Average day	0.37	0.5	0.5
Maximum month	0.46	0.94	0.61
Peak hour	1.70	--	1.95 [2]

(1) Based on record from January 2005 to April 2007.
(2) A 2.0 peaking factor was used for new flows.

TABLE 4-10

DESIGN INFLUENT CONCENTRATIONS AND LOADS

PARAMETER	PROPOSED DESIGN			
	AVERAGE MONTH		MAXIMUM MONTH	
	mg/L[1]	LB/DAY	mg/L[2]	LB/DAY
$CBOD_5$	233	974	258	1,313
TSS	170	707	192	976
TKN[3]	30	125	34	175
TP[3]	7	29	8	41

(1) Based on an average flow of 0.5 mgd.
(2) Based on a maximum month flow of 0.61 mgd.
(3) Influent TKN and TP data is not available; typical values used until sampling is performed on these constituents.
(4) Loads do not include plant recycle flows.

B. **Process Description.** In this alternative, the target effluent TN concentration is 7.0 mg/L and TP is 0.8 mg/L. The SBR controls would be modified.

C. **WWTP Modifications.** The plant modifications needed for this alternative are limited to SBR modifications, addition of a supplemental carbon feed system, and modifications to the chlorine contact tank for dechlorination and post-aeration. A summary of the proposed Southern Area WWTP unit process design criteria is provided in Table 4-11.

D. **Cost Estimate.** A preliminary opinion of costs was prepared for this alternative that includes the previously mentioned plant upgrades. The total estimated project cost in today's dollars is $1,000,000. The cost of the project based on the midpoint of construction in 2009 and a 4 percent inflation rate yields an estimated cost of $1,100,000. Table 4-12 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

4.5 OPERATION AND MAINTENANCE COSTS

Table 4-13 presents a comparison of the additional operation and maintenance (O&M) costs for all the Southern Area WWTP alternatives. The O&M costs shown do not include total expenses for the existing plant, such as staffing, insurances, electrical, chemical addition, sludge disposal, etc.

Alternative S-2 has the highest O&M cost of all the alternatives for several reasons. The use of membranes is more power intensive because of the air scour blowers, filtrate pumps, and recycle sludge pumps. There are costs for periodic membrane replacement and more maintenance on the associated membrane equipment. Additional cleaning chemicals are also required for the membranes.

TABLE 4-11

ALTERNATIVE S-4 UNIT PROCESSES - SOUTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Sequencing batch reactors[1] (one new SBR tanks)	No. of units	2
	Dimensions	55 feet x 55 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Minimum side water depth	10.5 feet
	Volume of sludge (each)	
	Full	364,000 gallons
	Decanted	238,000 gallons
	HRT	24.7 hours
	SRT	18.6 days
	MLSS	4,500 mg/l @ minimum water depth
	Process air blowers	
	Type	Positive displacement
	Number	5
	Capacity (each)	40 HP
Chlorine contact tank (after partitioning)	Total tank volume	90,000 gallons
	Chlorine contact tank	
	New volume	69,500 gallons
	HRT (peak hour)	51 minutes (@ 1.95 mgd)
	HRT (maximum month)	164 minutes (@ 0.61 mgd)
	Dechlorination chamber	
	Volume	3,500 gallons
	HRT (peak hour)	2.6 minutes (@ 1.95 mgd)
	HRT (maximum month)	8.3 minutes (@ 0.61 mgd)
Chlorine contact tank (after partitioning) (continued)	Post-aeration	
	Volume	17,000 gallons
	HRT (maximum month)	40 minutes (@ 0.61 mgd)
	Aeration type	Fine bubble
Aerobic digesters (existing)	No. of units	1
	Dimensions	55 feet x 45 feet
	Tank depth	18.1 feet
	Maximum side water depth	16.1 feet
	Sludge loading[3]	10,200 dry lb/week
	Average SRT	48 days (@ 2% solids)
	Maximum volume	298,100 gallons
Lime system (existing)	No. of units	1
	Storage capacity	30 tons
	Storage volume	2,000 CF
	Feed capacity	300 lbs/hr (at 45 lbs/CF)
Belt filter press (existing)	No. of units	1
	Size	1.7 meter
	Capacity	600 dry lbs/hr
	Hours of operation per week	26 hrs[3]

(1) Based on Aqua Aerobics proposal, June 12, 2007.
(2) Based on Parkson Dynasand proposal, June 14, 2007.
(3) Includes 3,000 lbs/week of dry solids from the North Plant.

TABLE 4-12

ALTERNATIVE S-4 - UPGRADE FOR NUTRIENT REMOVAL ONLY
ESTIMATED PROJECT COSTS

DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
Sequencing batch reactors	$406,000
Post-equalization tank and intermediate pumping station	--
Effluent filters	--
Post-aeration and dechlorination	127,000
Beinhower Road Pump station modifications	--
Subtotal Capital Costs(1)	**$533,000**
Site work (7%)	37,000
Electrical (15%)	80,000
Instrumentation (5%)	27,000
Subtotal Capital Costs(1)	**$677,000**
Mobilization/demobilization (5%)	34,000
Subtotal Capital Costs(1)	**$700,000**
Contingency (25%)	175,000
Total Capital Costs(1)	**$880,000**
Engineering/Legal/Administration (15%)	132,000
Total Design and Construction Services(1)	**$1,000,000**
Inflation to Construction Midpoint (2009) (2)	80,000
TOTAL PROJECT COST (1)	**$1,100,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

TABLE 4-13

OPERATION AND MAINTENANCE COSTS

ADDITIONAL ANNUAL COST COMPONENT	ALTERNATIVE			
	S-1 SBR EXPANSION TO 1 MGD	S-2 MBR	S-3 SBR EXPANSION TO 0.75 MGD	S-4 UPGRADE FOR NUTRIENT REMOVAL ONLY
Labor cost	$62,000	$62,000	$31,000	$0
Maintenance cost	28,000	58,000	13,000	5,000
Membrane replacement cost	N/A	29,000	N/A	N/A
Carbon source cost	7,000	7,000	2,000	2,000
Dechlorination cost	4,000	4,000	4,000	4,000
Coagulant cost	0	0	0	0
Hypochlorite cost(1)	N/A	3,000	N/A	N/A
Citric acid cost(1)	N/A	3,000	N/A	N/A
Power requirements	29,000	99,000	11,000	1,000
Additional Annual O&M Cost (2007 Dollars)	**$131,000**	**$265,000**	**$61,000**	**$12,000**

N/A = Not applicable.

(1) These chemicals are used for cleaning the membranes.

CHAPTER 5

NORTHERN AREA WWTP IMPROVEMENTS

5.1 INTRODUCTION

The Northern Area WWTP currently serves the New Market area of Fairview Township. The Northern plant discharges its effluent to the Susquehanna River through an outfall which is shared with the Lower Allen Township WWTP. The Northern Area WWTP was originally constructed in 1965 with an annual average daily design capacity of 0.24 mgd. In 1992, the plant was expanded to provide treatment capacity for an annual average daily flow of 0.5 mgd and an anticipated peak flow of 1.0 mgd. Both the original design and the plant expansion were designed as extended aeration activated sludge treatment processes. During the plant expansion the configuration of the existing system was mirrored and aeration capacity was doubled; however, to obtain the desired overall capacity of 0.5 mgd, modifications were made to the design of the final clarifiers, chlorine contact tanks, and effluent metering chamber, providing additional capacity within the expanded portion of the plant. As a result, a flow distribution box was constructed at the head of the plant to proportion flows between the existing plant (old side) and the expanded portion of the plant (new side) as a 42 to 58 percent split, respectively.

Additional upgrades to the plant during the 1992 project included the construction of a sludge handling system including a rotary sludge thickener and an aerobic digester, the installation of a polymer addition system to enhance the settleability of the solids in the wastewater, and the installation of baffles in the clarifiers on the new side of the plant to prevent washout of solids under high flow conditions.

In April 1999, Fairview Township submitted an engineering report which evaluated the feasilbity of re-rating the existing plant. The report stated that the capacity of the Northern plant could be increased with minimal modifications to the overall system. In August 2000, DEP issued a revised NPDES permit which incorporated an increased capacity as follows:

Annual hydraulic capacity .....0.726 mgd
Monthly maximum hydraulic capacity .....1.206 mgd
Organic capacity .....1,740 lbs BOD/day

A limited amount of growth is occurring in the Northern sewer service area. There are approximately 200 EDUs planned for connection in the near future. The Township further anticipates a modest growth rate of approximately four EDUs per year. There is at least one commercial area which could be developed and produce additional wastewater flows; however, no definite plans exist at this time.

Since the plant is designed for an average annual flow of 0.726 mgd, there is currently 0.35 mgd of reserve capacity. Given the limited growth which exists, the reserve capacity is anticipated to be sufficient for the foreseeable future.

5.2 FACILITY OVERVIEW

The Northern Area WWTP is an extended aeration plant which receives flow from the New Market and Meadowbrook Pump Stations. Wastewater from each of these pump stations is pumped through a common force main to an influent distribution box, which splits flow on a 37/63 percent basis to the "old train" (1965) and "new train" (1992), respectively. No screening, grit removal, or primary treatment is provided. From the distribution box, wastewater flows by gravity to the aeration tanks. Following aeration, mixed liquor flows by gravity to the final settling tanks. Return sludge is removed by air lifts and flows by gravity back to the head end of the aeration tank. Waste sludge is removed from the return sludge line with a timer-controlled valve. Settled effluent flows by gravity through a chlorine contact tank and effluent flow meter to the plant outfall.

The Northern Area WWTP existing basis of design is summarized in Table 5-1. The site plan and process flow schematic are illustrated in Figures 5-1 and 5-2, respectively.

A. **Historical Performance.** The Northern Area WWTP is presently operating at an average daily flow rate of 0.38 mgd with a permitted annual average capacity of 0.73 mgd. Therefore, the WWTP is currently operating at 53 percent of its permitted capacity. Plant influent data is available from January 2006 through June 2007 for the following parameters: flow rate, BOD, TSS, and TP. In addition, plant staff has more recently begun to sample the plant influent for NH_3-N and TKN concentrations (March 2007-June 2007). Influent parameters such as alkalinity and pH have not been measured.

TABLE 5-1

EXISTING BASIS OF DESIGN
NORTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Aeration tanks	No. of units	4
	Dimensions	45 feet x 30 feet
	Side water depth	14 feet
	Tank volume (each)	141,000 gallons
	HRT	9.32 hours @ 0.726 mgd
	MLSS	3,200 mg/L (old side) 2,700 mg/L (new side)
	Process air blowers	
	Type	Positive displacement
	Number	3
	Capacity (each)	2 at 40 HP, 1 at 50 HP
Clarifiers	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 39 feet (new side) 10 feet x 32 feet (old side)
	Side water depth	10.4 feet (new side) 8 feet (old side)
	Tank volume (total)	110,000 gallons
	Surface overflow rate	
	Design average	461 gpd/SF @ 0.726 mgd
	Design maximum month	768 gpd/SF @ 1.21 mgd
Chlorine contact tank	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 6 feet (new side) 8.75 feet x 7.5 feet (old side)
	Maximum side water depth	8 feet (new side) 6.25 feet (old side)
	Volume (per tank)	4,300 gallons (new side) 3,100 gallons (old side)
	HRT (average day)	29 minutes @ 0.726 mgd
	HRT (maximum month)	18 minutes @ 1.21 mgd
Aerobic sludge holding tank	No. of units	1
	Diameter	31 feet
	Tank depth	17 feet
	Maximum side water depth	15 feet
	Volume	85,000 gallons

Dimensions taken from the 1992 drawings by Buchart Horn, Inc. and the 1964 drawings by William B. Whitlock Consulting Engineers.

Based on the analysis of effluent data from the North Plant, it is evident that the facility has consistently produced effluent TSS, BOD, and phosphorus concentrations within the permitted discharge concentration limits. The average effluent performance of the plant since 2005 is summarized in Table 5-2.

5.3 DESIGN FLOWS AND LOADS

Flows and organic loadings to the Northern Area WWTP were evaluated to establish a basis of design for the nutrient removal upgrade. The plant is currently operating at just over 50 percent of its permitted annual average flow capacity of 0.73 mgd (current annual average flow is 0.384 mgd). Given the financial constraints for this project and the apparent excess capacity at the North Plant, it was determined that the most cost-effective alternative would be to maximize the use of the existing tankage. This may be accomplished by conversion of the existing tanks as required for biological nitrogen removal. After an initial review, it was determined that this conversion would require a de-rating of the plant's permitted capacity. This de-rated capacity was determined based on the amount of excess treatment capacity that is currently available and the additional capacity that will be needed in the future to accommodate the projected growth in the Northern Sewer Service Area. The proposed plant upgrade would provide an average annual flow capacity of 0.6 mgd, which would still maintain an excess capacity at the plant of approximately 0.2 mgd for future growth, while also addressing the need for nutrient removal.

Influent flow data at the plant was reviewed to determine the existing average annual, maximum month, and peak hour flows to the plant. The average annual flow is used to determine the permitted plant capacity and allocation of EDUs for service. The maximum month flows are used to size the treatment process to meet the discharge permit. The peak hour flow is used to size the hydraulic capacity of the plant.

The permitted, existing, and proposed design flows are listed in Table 5-3. The design average annual flow of 0.6 mgd was selected based on the need to accommodate future growth and provide the necessary treatment for nutrient removal. The current peaking factor of 1.5 for average annual to maximum month flow was used to establish the new design maximum month flow of 0.93 mgd.

All of the influent flow to the plant is pumped through two pump stations; the Meadowbrook Pump Station and the New Market Pump Station (located at the WWTP site). The majority of

TABLE 5-2

HISTORICAL NORTH PLANT EFFLUENT CHARACTERISTICS

DATE	EFFLUENT											
	$CBOD_5$ (mg/L)	TSS (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	TN (mg/L)	TN (lb/day)	TP (mg/L)	TP (lb/day)	pH (S.U.)	DO (mg/L)	Fecals/ 100 ml	TRC (mg/L)
Average 2005	3.5	3.6	0.68	NM	13.6	NM	1.51	4.4	7.3	7.2	42	0.59
Average 2006	2.8	3.5	0.42	0.61	16.2	NM	0.68	2.1	7.3	7.6	57	0.53
Average 2007	1.9	2.7	0.38	1.1	14.4	44	0.51	1.7	7.3	8.1	35	0.51
Average 2005-2007	2.9	3.4	0.51	1.1	14.7	53	0.92	2.9	7.3	7.5	47	0.55

Notes:

1. Data range: January 2005-April 2007.
2. Annual average data shown for each year.
3. NM= Not measured.

the flow is delivered through the New Market Pump Station. Influent flow to the plant is split and distributed to two separate process treatment trains. Each train has its own effluent flow measurement, which consists of ultrasonic level sensing with a V-notch weir. Daily plant flow is obtained by adding the flows from the two trains together. Based on this information, chart recorder data for each train from a high flow event was analyzed, and it was determined that the existing peak hour flow rate is approximately 1.65 mgd. The future design peak hour is based on using a peaking factor of 2.0 for the new flows because newer systems typically have less infiltration and inflow. The resulting design peak hour flow is 2.09 mgd. The design influent flows are summarized in Table 5-3.

TABLE 5-3

DESIGN FLOWS

CONDITION	CURRENT(1) FLOW (MGD)	CURRENT NPDES PERMIT FLOW (MGD)	PROPOSED DESIGN FLOW (MGD)
Average day	0.38	0.73	0.6
Maximum month	0.59	1.21	0.93
Peak hour	1.65	--	2.09 (2)

(1) Based on record from January 2005 to April 2007.
(2) A 2.0 peaking factor was used for new flows.

The design organic loadings to the plant were based on available influent sampling of BOD, TSS, TKN, and TP. The plant has just recently begun sampling the influent for nitrogen. Therefore, plant influent data was used to develop all of the influent loads with the exception of the maximum month TKN loading. Due to the limited number of TKN samples, the maximum month loading was determined by applying a 40 percent peaking factor to the average TKN loading. This peaking factor is typical for domestic wastewater, and is in line with the measured maximum month peaking factors for both BOD and TSS in the influent to the North Plant. It is recommended that a detailed influent characterization be conducted to verify the influent nitrogen and phosphorus characteristics. The design influent loads are summarized in Table 5-4.

TABLE 5-4

DESIGN INFLUENT CONCENTRATIONS AND LOADS

PARAMETER	CURRENT CONDITIONS				PROPOSED DESIGN			
	AVERAGE MONTH		MAXIMUM MONTH		AVERAGE MONTH		MAXIMUM MONTH	
	mg/L	LB/DAY	mg/L	LB/DAY	mg/L[1]	LB/DAY	mg/L[2]	LB/DAY
$CBOD_5$	--	602	--	982	188	941	173	1,339
TSS	--	527	--	730	165	823	154	1,195
TKN [3]	--	59	--	N/A[4]	18	92	17	129
TP [3]	--	15	--	29	5	23	6	45

(1) Based on an average flow of 0.6 mgd.
(2) Based on a maximum month flow of 0.93 mgd.
(3) Loads do not include plant recycle flows.
(4) Insufficient data to establish the current maximum month TKN loading.

A. **Nitrogen and Phosphorus Removal.** Upgrades to the plant must be made to meet the stringent nitrogen and phosphorus discharge limits. The nutrient discharges from the plant will be capped at a TN of 6.0 mg/L and TP of 0.8 mg/L based on the current permitted capacity of 0.73 mgd. To achieve this nutrient reduction, it is proposed that the plant be de-rated from 0.73 mgd to 0.6 mgd on an average daily flow basis. The design effluent performance of the plant is shown in Table 5-5.

(continued)

TABLE 5-5

ANTICIPATED EFFLUENT PERMIT REQUIREMENTS

PARAMETER	PERMIT REQUIREMENT
Flow	0.6 mgd
$CBOD_5$	25
TSS	30
TN	13,260 lb/yr (1)
TP	1,768 lb/yr (2)
Fecal coliform	200 MPN/100 ml
Total residual chlorine	1.0 mg/L
DO	Minimum 5.0 mg/L
pH	6.0 to 9.0 range

(1) The TN load cap of 13,260 lb/yr corresponds to a TN of 6 mg/L at a permitted flow of 0.73 mgd.
(2) The TP load cap of 1,768 lb/yr corresponds to a TP of 0.8 mg/L at a permitted flow of 0.73 mgd.

B. **Influent Characterization.** A characterization of the influent wastewater to the treatment plant must be performed to understand the characteristics of the influent nitrogen and phosphorus. Currently, the influent data on nitrogen and phosphorus are limited. Raw wastewater can contain forms of non-biodegradable (refractory) nitrogen that cannot be removed in the treatment process. Refractory nitrogen concentrations can be high enough to limit TN removals. Likewise, phosphorus could be present in a form that is not readily precipitated. Based on past effluent TP performance, it appears this is likely not the case.

The influent characterization should be performed before moving forward with the design of the plant upgrade. A copy of the sampling plan required for the influent characterization is attached in Appendix A.

5.4 EVALUATION OF ALTERNATIVES

Two alternatives were identified to upgrade the Northern Area WWTP. Both alternatives are based on maximizing the use of the plant's existing facilities to provide a cost-effective upgrade. One alternative is based on continued use of the flow-through activated sludge process with modifications to provide biological nitrogen removal, while the second alternative involves

converting the existing process into an SBR process. In both alternatives, phosphorus would be removed through biological uptake and chemical precipitation. The alternatives are summarized below.

1. **Alternative N-1, SBR Conversion.** For this alternative, the four existing aeration basins would be converted into SBRs and the clarifiers downstream of these tanks would be used as post-equalization tanks. The remaining unit processes would be relatively unchanged. SBR operations would be set up to provide denitrification for nitrogen removal, while phosphorus removal would be accomplished through chemical precipitation. This alternative would be beneficial in providing process standardization between both the Northern and Southern Area WWTPs.

2. **Alternative N-2, Enhanced Modified Ludzack-Ettinger (eMLE) Conversion.** For this alternative, the existing aeration basins would be partitioned to provide four separate zones within each existing basin. These modified basins would provide the necessary denitrification for nitrogen removal, and the existing clarifiers would be used to chemically precipitate the phosphorus for phosphorus removal.

A. **Alternative N-1 - SBR Conversion.**

1. **Process Description.** In Alternative N-1, the existing aeration basins would be converted into SBR basins, which would be used to provide the biological nitrogen removal. Phosphorus would be removed by chemical precipitation of the phosphorus.

Aqua Aerobic Systems, the manufacturer of the existing SBR equipment at the South Plant, has evaluated the dimensions and general layout of the existing aeration tanks at the North Plant and determined that the basins can be converted into SBR tanks with no major tank modifications. Based on the proposed design flows and loadings and the required effluent quality, Aqua Aerobics has stated that the converted SBR tanks would be capable of treating 0.59 mgd. Supplemental carbon addition would be required to provide an additional carbon source for denitrification in order to achieve low levels of nitrates. Phosphorus removal would be achieved by the use of a metal salt to precipitate the phosphorus, which would then be removed through the settling cycle. The proposed site plan and process flow diagram for Alternative N-1 are shown in Figures 5-3 and 5-4, respectively.

2. **WWTP Modifications.** Conversion of the plant for nutrient removal using SBR technology will require upgrades as well as modifications to the existing unit processes. The following sections describe the proposed modifications to each of the plant's main unit processes.

a. **Headworks.** The Northern Area WWTP does not currently have any screenings or grit removal facilities. As part of this plant upgrade, installation of an influent screening facility is recommended. This upgrade is necessary to protect the SBR mixing equipment from rags and other screenable materials that can bind up the mixing equipment and impact process performance.

It is proposed that the new screening equipment would be installed upstream of the existing splitter box, and would receive flow from a new influent pump station. Based on the need to maintain the existing hydraulics through the treatment plant, the new screenings equipment will need to be elevated to allow for gravity flow through the existing splitter box to avoid installation of another pump station between the screenings equipment and the splitter box. The proposed screening unit is a mechanical screen, such as manufactured by Lakeside Equipment, which contains a cylindrical bar screen, a rotating rake arm, and a screw conveyor to transport the screenings up to the discharge point. This screening unit is designed to wash and compact the screenings prior to discharge, and is installed on an incline. For cost saving measures, the screen will be tank mounted in a prefabricated steel tank containing a backup manual bar screen. This unit is designed for outdoor duty and can be configured to receive pumped flow. Thus, a building and an influent channel can be eliminated, as the force main from the new pump station can be directly connected to the tank containing the screen. An open-sided enclosure is proposed to protect the unit from precipitation and improve ease of operations and maintenance of the equipment. In addition, the unit will be heat traced and insulated to prevent freezing.

b. **Influent Pump Station.** Currently, the Northern Area WWTP receives influent flow from two separate pump stations, as previously discussed in this chapter. Installation of a new screenings unit will impact the current influent hydraulics as there will be additional headloss associated with the new influent screen. Based on this increased headloss, it is proposed that a new influent pump station be installed to

pump up to the new screenings unit. The proposed pump station would be a duplex suction lift packaged pump station. The new station would be located to intercept the existing force main from the Meadowbrook Pump Station, and the gravity line delivering flow to the New Market Pump Station would be rerouted to the new wet well.

c. **SBRs.** Under this alternative, the four existing aeration basins would be converted into SBR tanks by adding necessary mixing and decanting equipment, as well as replacing the existing aeration diffusers with retrievable aeration diffusers provided by the SBR equipment vendor. The existing effluent channel that conveys flow from the aeration basins to the clarifiers will no longer be used. The existing splitter box would remain in place for flow distribution to the new SBR tanks. The proposed site plan for this alternative is shown in Figure 5-3. Based on the age of the existing blowers and the changes to the aeration demands of the upgraded plant, it is proposed that the three existing aeration blowers be replaced.

d. **Post-Equalization.** The chemical feed for chlorination is easier to control with a steady effluent flow. Therefore, it is proposed that the existing clarifiers be converted into post-equalization tanks to help equalize the flow to the chlorine contact tanks. The existing return activated sludge air lifts in the clarifiers would no longer be required and would be removed. Submersible pumps would be installed in the current location of the air lifts to pump the plant flow from the post-equalization tanks to the chlorine contact tanks. Due to the nature of the SBR gravity decanting operation, the post-equalization pumps will be required to re-establish the hydraulic gradeline downstream of the SBR tanks.

e. **Unit Process Summary.** The unit processes proposed to be upgraded or modified at the plant are summarized in Table 5-6.

3. **Cost Estimate.** A preliminary opinion of costs was prepared for this alternative. The total estimated project cost in 2007 dollars is $4,400,000. The cost of the project based on the midpoint of construction in 2009, and a 4 percent inflation rate yields an estimated cost of $4,800,000. Table 5-7 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

TABLE 5-6

ALTERNATIVE N-1 UNIT PROCESSES - NORTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Sequencing batch reactors[1] (new SBR tanks)	No. of units	4
	Dimensions	45 feet x 30 feet
	Tank depth	15 feet
	Maximum side water depth	14 feet
	Minimum side water depth	10.4 feet
	Volume (each)	
	Full	141,000 gallons
	Decanted	105,000 gallons
	HRT	23.2 hours
	SRT	18.5 days
	MLSS	4,500 mg/l @ minimum water depth
	Process air blowers	
	Type	Positive displacement
	Number	3
	Capacity (each)	40 HP
Post-equalization tank (converted clarifiers)	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 39 feet (new side) 10 feet x 32 feet (old side)
	Side water depth	10.4 feet (new side) 8 feet (old side)
	Tank volume (total)	110,000 gallons
Intermediate pump	Type	Submersible
	No. of units	4
	Total system capacity	2.1 mgd
Chlorine contact tank	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 6 feet (new side) 8.75 feet x 7.5 feet (old side)
	Maximum side water depth	8 feet (new side) 6.25 feet (old side)
	Volume (per tank)	4,300 gallons (new side) 3,100 gallons (old side)
	HRT (average day)	36 minutes @ 0.6 mgd
	HRT (maximum month)	23 minutes @ 0.93 mgd
Post-aeration	Volume	17,000 gallons
	HRT (maximum month)	26 minutes @ 0.93 mgd
	Aeration type	Fine bubble
Aerobic sludge holding tank	No. of units	1
	Diameter	31 feet
	Tank depth	17 feet
	Maximum side water depth	15 feet
	Volume	85,000 gallons

(1) Based on Aqua Aerobics proposal, July 12, 2007.

Dimensions taken from the 1992 drawings by Buchart Horn, Inc. and the 1964 drawings by William B. Whitlock Consulting Engineers.

TABLE 5-7

ALTERNATIVE N-1 - SBR CONVERSION
ESTIMATED PROJECT COSTS

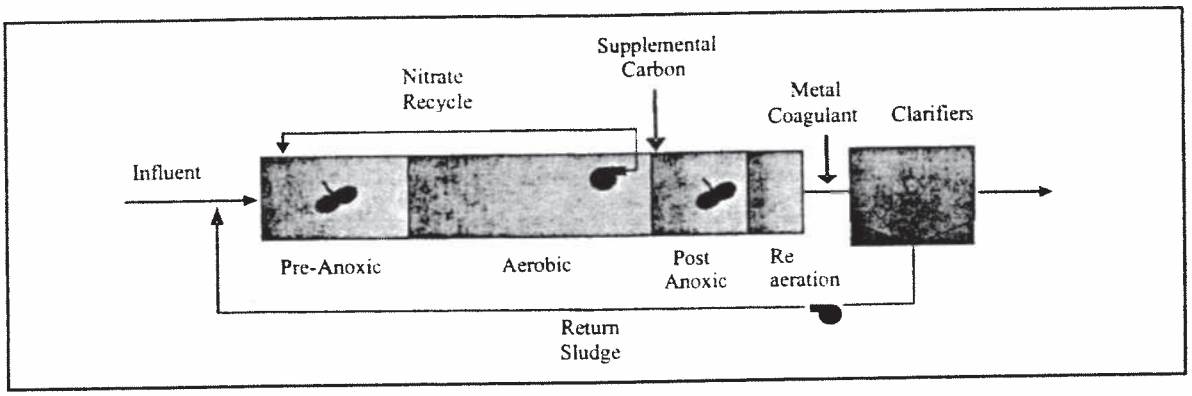
DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
SBR conversion	$1,280,000
Headworks	335,000
New influent pump station	340,000
Intermediate pump station	170,000
Post-aeration	160,000
Subtotal Capital Costs(1)	**$2,290,000**
Site work (7%)	160,000
Electrical (15%)	344,000
Instrumentation (5%)	115,000
Subtotal Capital Costs(1)	**$2,910,000**
Mobilization/demobilization (5%)	146,000
Subtotal Capital Costs(1)	**$3,060,000**
Contingency (25%)	765,000
Total Capital Costs(1)	**$3,830,000**
Engineering/Legal/Administration (15%)	575,000
Total Design and Construction Services(1)	**$4,400,000**
Inflation to Construction Midpoint (2009) (2)	350,000
TOTAL PROJECT COST (1)	**$4,800,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

B. Alternative N-2 – Enhanced MLE Conversion.

1. **Process Description.** In this alternative, the existing aeration tanks would be modified to an eMLE process configuration. The eMLE process consists of two anoxic (low oxygen environment) and two aerobic zones which are configured in the following order: pre-anoxic, aerobic, post-anoxic, reaeration. The anoxic zones are characterized by very low oxygen concentrations, and are equipped with submersible mixers to circulate the wastewater within the zone, while the aerobic zones contain aeration diffusers at the bottom of each zone to provide oxygen to the mixed liquor. The following schematic depicts the general layout of an eMLE process.

eMLE PROCESS SCHEMATIC



Flow coming from the influent splitter box will first enter the pre-anoxic zone, where the untreated wastewater will mix with the nitrified wastewater that is being recycled back from the end of the aerobic zone. In this pre-anoxic zone, the influent wastewater provides the necessary carbon source to perform denitrification (conversion of nitrates to nitrogen gas) of the nitrified recycle stream. From the pre-anoxic zone, flow travels to the aerobic zone where the untreated wastewater is aerated for BOD removal and nitrification (ammonia is converted into nitrates). At the end of the aerobic zone, a nitrate recycle pump recycles a portion of the nitrified wastewater back to the pre-anoxic zone, while the remaining nitrified wastewater travels into the post-anoxic zone. Since the wastewater entering the post-anoxic zone has already been aerobically treated to remove the BOD in the wastewater, another source of carbon is required in this post-anoxic zone. Therefore, in the post-anoxic zone, a supplemental carbon source would be added to achieve further denitrification. Following the post-anoxic zone, a re-aeration zone would strip nitrogen gas from the mixed liquor and add dissolved oxygen to the wastewater prior to the clarifiers.

The proposed site plan for this alternative is shown in Figure 5-5. The process flow diagram is shown in Figure 5-6.

2. **Plant Modifications.** The plant conversion for nutrient removal using the eMLE configured process tanks will require upgrades as well as modifications to existing facilities at the plant. These upgrades and modifications are listed below.

a. **Headworks.** The same headworks modifications proposed in Alternative 1 for the SBR conversion would be recommended here, as the anoxic zones will have submersible propeller-type mixers that can be damaged by rags and other screenable materials present in unscreened domestic wastewater. In addition, this would relieve some of the operational effort required to remove screenable material from the clarifiers using the scum skimming equipment.

b. **Influent Pump Station.** The same influent pump station proposed in Alternative 1 for the SBR conversion would be recommended here.

c. **Aeration Tanks (eMLE Configuration).** To achieve this modification, the existing aeration tanks will be partitioned into multiple zones to provide the necessary aerobic and anoxic zones within the existing aeration tanks as described in the process description. These zones will be configured by installing baffle walls at the proper locations to provide the desired hydraulic and sludge retention times in each zone. The pre-anoxic and post-anoxic zones will each have a submersible mixer to keep the contents of the tank thoroughly mixed. In addition, the post-anoxic zones will have a supplemental carbon feed system to provide carbon for denitrification. The aerobic zones will contain fine bubble aeration systems to provide the necessary oxygen for the biological process, and will contain axial flow propeller pumps for the nitrate recycle back to the pre-anoxic zones. The reaeration zones will have coarse bubble aeration systems for nitrogen gas stripping and to add dissolved oxygen to the mixed liquor.

d. **Unit Process Summary.** The unit processes proposed to be upgraded or modified at the plant in this alternative are summarized in Table 5-8. Equipment literature for the fine screen is included in Appendix B.

5.5 COST ESTIMATES

A preliminary opinion of costs was prepared for this alternative. The total estimated project cost in 2007 dollars is $3,400,000. The cost of the project based on the midpoint of construction in 2009 and a 4 percent inflation rate yields an estimated cost of $3,700,000. Table 5-9 contains a summary of costs. A more detailed breakdown of the costs can be found in Appendix D.

TABLE 5-8

ALTERNATIVE N-2 UNIT PROCESSES
NORTHERN AREA WWTP

UNIT PROCESS/EQUIPMENT	DESIGN CRITERIA	VALUE
Aeration tanks[1,2]	No. of units	4
	Dimensions	45 feet x 30 feet
	Side water depth	14 feet
	Tank volume (each)	141,000 gallons
	HRT	23 hours @ 0.6 mgd
	Pre-anoxic zone	2.4 hours
	Aerobic zone	14.4 hours
	Post-anoxic zone	4.6 hours
	Reaeration zone	1.2 hours
	SRT	20 days @ 0.60 mgd 15 days @ 0.93 mgd
	MLSS	2,700 mg/L @ 0.60 mgd 3,300 mg/L @ 0.93 mgd
	Process air blowers	
	Type	Positive displacement
	Number	3
	Capacity (each)	40 HP
Clarifiers	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 39 feet (new side) 10 feet x 32 feet (old side)
	Side water depth	10.4 feet (new side) 8 feet (old side)
	Tank volume (total)	110,000 gallons
	Surface overflow rate	
	Average	380 gpd/SF @ 0.60 mgd
	Maximum month	590 gpd/SF @ 0.93 mgd
Chlorine contact tank	No. of units	4 (2 new side, 2 old side)
	Dimensions	12 feet x 6 feet (new side) 8.75 feet x 7.5 feet (old side)
	Maximum side water depth	8 feet (new side) 6.25 feet (old side)
	Volume (per tank)	4,300 gallons (new side) 3,100 gallons (old side)
	HRT (average day)	36 minutes @ 0.6 mgd
	HRT (maximum month)	23 minutes @ 0.93 mgd
Aerobic sludge holding tank	No. of units	1
	Diameter	31 feet
	Tank depth	17 feet
	Maximum side water depth	15 feet
	Volume	85,000 gallons

Dimensions taken from the 1992 drawings by Buchart Horn, Inc. and the 1964 drawings by William B. Whitlock Consulting Engineers.

Due to the considerable difference in capital costs between the two alternatives for the Northern Area WWTP and the fact that the operation and maintenance costs are estimated to be about the same, a present-worth analysis was not completed.

TABLE 5-9

ALTERNATIVE N-2 - eMLE CONVERSION
ESTIMATED PROJECT COSTS

DESCRIPTION	TOTAL COST (PRELIMINARY ESTIMATE)
eMLE process tank modifications	$1,100,000
Headworks	335,000
New influent pumping station	340,000
Subtotal Capital Costs[1]	**$1,780,000**
Site work (7%)	125,000
Electrical (15%)	267,000
Instrumentation (5%)	89,000
Subtotal Capital Costs[1]	**$2,260,000**
Mobilization/demobilization (5%)	113,000
Subtotal Capital Costs[1]	**$2,370,000**
Contingency (25%)	593,000
Total Capital Costs[1]	**$2,960,000**
Engineering/Legal/Administration (15%)	444,000
Total Design and Construction Services[1]	**$3,400,000**
Inflation to Construction Midpoint (2009) [2]	270,000
TOTAL PROJECT COST [1]	**$3,700,000**

(1) Rounded.
(2) Based on 4 percent annual inflation of construction costs.

5.6 OPERATION AND MAINTENANCE COSTS

O&M costs were estimated and are summarized in Table 5-10. Alternative N-1 has an O&M cost of $68,000, per year and Alternative N-2 has an estimated O&M cost of $72,000 per year.

TABLE 5-10

OPERATION AND MAINTENANCE COSTS

ADDITIONAL ANNUAL COST COMPONENT	ALTERNATIVE N-1 SBR CONVERSION	ALTERNATIVE N-2 ENHANCED MLE REMOVAL
Labor cost	$31,000	$31,000
Maintenance cost	15,000	11,000
Carbon source cost	3,000	3,000
Coagulant cost	0	0
Power requirements	18,000	27,000
Additional Annual O&M Cost (2007 Dollars)	**$68,000**	**$72,000**

Note: All dollar values have been rounded.

5.7 NORTHERN AREA WWTP NUTRIENT REDUCTION COMPLIANCE

The eMLE process modifications described above are anticipated to produce a TN effluent concentration ranging from 5 to 7 mg/L (6 mg/L average) and a TP of ≤0.8 mg/L. Figure 5-7 illustrates the anticipated annual TN/TP discharge loading versus the TN/TP cap loads for the Northern Area WWTP. The discharge loadings were extrapolated in future years by the addition of loadings from planned and proposed developments and a continuous yearly growth of 4 EDUs per year. A similar projection was completed for TP discharge. As can be seen from Figure 5-7, both the TN and TP discharge loadings are significantly below the annual cap loads established for the Northern Area WWTP.

CHAPTER 6

NUTRIENT REDUCTION COMPLIANCE STRATEGY

On December 30, 2006, the DEP issued the *"Chesapeake Bay Tributary Strategy Trading of Nutrient and Sediment Reduction Credits - Policy and Guidelines."* This policy established the development of nutrient cap loads based on wastewater treatment plants' design annual average daily flow and required effluent concentrations of 6 mg/L TN and 0.8 mg/L TP. The policy also established a three-phased approach to the implementation of the TN and TP cap loads.

6.1 COMPLIANCE STRATEGY

Based on the annual average capacity of 0.5 mgd, the Southern Area WWTP will be subject to a TN cap load of 9,132 lbs/year (25 lbs/day) and a TP load of 1,218 lbs/year (3.3 lbs/day). Since these limits are cap loads, any increase in wastewater treatment capacity will be subject to the same mass permit limits.

lbs/year

The Northern Area WWTP has a design flow of 0.726 mgd. Utilizing the TN and TP effluent requirements of 6 mg/L and 0.8 mg/L, respectively, yields a cap load of 13,260 lbs/day and 1,768 lbs/day, respectively. The TN and TP cap loads were developed separately by DEP for the Southern Area WWTP and the Northern Area WWTP. However, compliance with these cap loads may be accomplished on a town-wide basis. Combining the cap loads for both plants yields a total of 22,392 lbs/day TN and 2,986 lbs/day TP.

Figure 6-1 illustrates the combined annual TN/TP discharge loading from both the Northern and Southern Area WWTPs. The annual discharge loads are projected into the future by the addition of planned and proposed developments as well as a continuing yearly growth of 100 EDUs for the Southern Plant and 4 EDUs for the Northern plant. This figure was prepared with anticipated effluent performance of 7.0 mg/L TN and 0.8 mg/L TP at the Southern Area WWTP (see Alternatives S-3 and S-4) and 6.0 mg/L TN and 0.8 mg/L at the Northern Area WWTP. As can be seen from Figure 6-1, the TN and TP cap loads will be met until approximately 2024 using the assumed rates of growth.

6.2 TN CREDIT PURCHASE ALTERNATIVE

As an alternative, a potential short-term approach may be to upgrade the Northern Area WWTP using recommended Alternative N-2 and purchase TN removal credits for the Southern Area WWTP until expansion/upgrade is required. Figure 6-2 represents the TN discharge under this scenario. As can be seen from this figure, a projected deficit of 8,100 lbs. of TN per day is estimated to occur in 2012 when the Phase II TN requirements become effective at the Southern Area WWTP. Using an estimated TN credit cost of $9 per lb. yields an annual cost of approximately $73,000. If TN credits are available, this may be a viable approach depending on the actual cost of the credits.

CHAPTER 7

SUPPLEMENTAL CARBON ADDITION

Supplemental carbon is used to achieve denitrification in the post-anoxic zones or the eMLE process or the final denitrification stages of the sequence for the SBR process. There are several potential supplemental carbon sources that can be used for this purpose, including methanol, ethanol, acetic acid, molasses, glycol, sugar waste, Micro-C™, and Unicarb-DN. Methanol has been the widely accepted industry standard for denitrification applications in wastewater. Table 7-1 illustrates the general characteristics of each source.

The following is a brief description of the different types of carbon sources available.

7.1 METHANOL

Methanol is the most commonly used and well-studied carbon substrate for denitrification. It is often required by some equipment manufacturers to provide a process performance guarantee. Research has shown that methanol had a greater impact on the nitrifiers than ethanol; it also increased the diversity of denitrifiers, which indicates that denitrifiers favored by methanol were on the rise in the community. However, methanol requires an approximate two- to three-week startup period before it becomes effective. Methanol is also flammable and is poisonous if swallowed. If methanol is used, it is recommended that it be diluted to 20 percent by the chemical supplier prior to delivering on site. The 20 percent methanol solution is significantly less flammable and safer to work with. The price of methanol can vary seasonally and has been rising over the past few years.

7.2 ETHANOL

Ethanol is more efficient (together with acetic acid) than methanol for denitrification under laboratory conditions. Studies show that ethanol addition results in a specific denitrification rate that is approximately three times higher than methanol and provides an immediate response to denitrification. Ethanol has a similar flammability of methanol and must be stored in a special storage facility. It is expensive and requires U.S. Food and Drug Administration approval for implementation.

TABLE 7-1

GENERAL CHARACTERISTICS OF THE SUPPLEMENTAL CARBON SOURCES

CHARACTERISTIC	METHANOL	ETHANOL	ACETIC ACID	MOLASSES	GLYCOL	SUGAR WASTE	MICRO-C	UNICARB-DN
Carbon content, (g/mL)	0.30	0.41	0.42	N/A	N/A	N/A	1.18	0.68
Specific gravity, (g/cm^3, g/mL)	0.79	0.79	1.05	1.4	1.26	N/A	1.16	1.09
pH	N/A	N/A	2.4	5.1	N/A	N/A	5.8	9.3
Flammability	High	High	Moderate	N/A	Low	N/A	Moderate	N/A
Health effects	Severe	Severe	Moderate	N/A	Low	N/A	Low	Low
Freezing point	-98°C	-114°C	-20°C	-18°C	17.1°C	N/A	-20°C	-20°C
Flashpoint	12°C	16.6°C	40°C	N/A	199°C	N/A	55°C	>200°C
Viscosity @ 20°C	0.55 cP	1.2 cP	N/A	8,640 cP	880 cP	N/A	16.4 cP	N/A
COD (gCOD/g)	1.5	2.1	1.06	N/A	N/A	1.06	0.55	N/A

7.3 ACETIC ACID

Acetic acid is more efficient (together with ethanol) than methanol for denitrification under laboratory conditions. Similar to ethanol, it provides an immediate response to denitrification. A study shows that when applied in the SBR system, acetate is more effective than methanol. Acetic acid is not considered flammable, so storage requirements are less stringent, but it is very corrosive. If sodium acetate, a salt of acetic acid, is used as supplemental carbon source, it must be dissolved in water prior to application.

7.4 MOLASSES OR SUCROSE SOLUTION

A study has shown an SBR system that utilizes hydrolyzed molasses provides higher nitrogen removal than that using methanol. Pilot-scale studies proved molasses to be as effective for nitrogen removal as other organic materials (except for methanol) in upflow submerged denitrification filters. However, for high strength nitrogen wastewater with C/N of more than 2, it was found that some organic/ammonium nitrogen and refractory organic matter including colors from final molasses was difficult to remove from the reactor and caused a major increase in effluent total nitrogen and organic carbon concentrations. The downside of using molasses or sucrose solution is that they are viscous and dilution is required in order to pump. They also have fermentation problems where carbon is lost in the form of carbon dioxide over time, resulting in inconsistent carbon content. Molasses causes problems with UV disinfection equipment due to its natural dark color.

7.5 GLYCOL

Glycol was found to be an easily biodegradable organic material (like ethanol and acetic acid) for bacteria, and only one day was required to achieve a high nitrogen removal efficiency in a suspended growth system. However, glycol is a poorly studied new material used in enhanced nitrogen removal application. It is also rare on the market.

7.6 SUGAR WASTE

Sugar waste is a relatively inexpensive carbon source, but the carbon content may be inconsistent due to seasonal changes and it will degrade over prolonged storage time.

7.7 MICRO-C™

MicroC™ is a relatively new product developed by EOS Inc. MicroC™ offers slightly better nitrogen removal rates than methanol based on the 2005 studies performed by EOS Inc. It is not considered flammable, so storage requirements are less stringent than for methanol and ethanol. The price of MicroC™ depends on the quantity and term of contract. Since MicroC™ contains about 5 percent methanol, it is toxic to humans and requires storage and handling as for moderately flammable materials. The supplier claims that the equilibrium state for denitrification is reached more quickly with MicroC™ than with methanol.

7.8 UNICARB-DN

Unicarb-DN is a product produced by Keystone Biofuels in Cumberland County. Unicarb-DN is a glycerine byproduct of biodiesel production that is being marketed for use as a supplemental carbon source for denitrification at wastewater treatment plants. The product is non-flammable and available locally. Stearns & Wheler will be pilot testing Unicarb-DN at the Damascus WWTP, Maryland, along with other potential carbon sources.

7.9 RECOMMENDATIONS

A supplemental carbon addition system based around a 20 percent dilute methanol solution was used for the initial cost estimates for the North and South Plants. The cost and availability of other chemicals can be reviewed during the detailed design to determine if there is a low cost local chemical of another type that could be utilized. It is possible to design a system that can accommodate several different types of chemicals.

CHAPTER 8

SUMMARY

8.1 RECOMMENDED ALTERNATIVES

To meet the Chesapeake Bay Tributary Strategy nutrient reduction requirements, future growth needs and the financial constraints of the Township, the following improvements are recommended:

A. **Northern Area WWTP - Conversion to 0.6 mgd eMLE Biological Process.**

1. New influent pump station (package type).

2. New influent fine screen (2 mm).

3. Conversion of existing aeration basins to an eMLE process.

4. New baffle walls and mixers for pre-anoxic and post-anoxic zones in existing aeration tanks.

5. New reaeration zone in existing aeration tanks.

6. New process air blowers and diffused aeration system.

7. New supplemental carbon source storage and feed system.

9. New submersible return sludge pumps.

To complete these modifications, it will be necessary to re-rate the Northern Area WWTP to an average annual flow of 0.6 mgd. The total estimated project cost for the recommended improvements is $3,700,000.

B. **Southern Area WWTP.** The recommended improvements at the Southern Area WWTP are dependent on anticipated development within the service area. Recommendations for this WWTP are as follows:

ANTICIPATED GROWTH	RECOMMENDED ALTERNATIVE	ESTIMATED PROJECT COST[1]
Limited	S-4, Upgrade for Nutrient Removal Only	$1,100,000
Moderate	S-3, SBR Expansion to 0.75 mgd	$4,000,000
Significant	S-1, SBR Expansion to 1 mgd	$9,300,000

(1) Projected to midpoint of construction (2009).

As an alternative, it may be possible to complete the Northern Area WWTP improvements described above and purchase nitrogen removal credits to delay required upgrade/expansion of the Southern Area WWTP. Using an estimated deficit TN removal of 8,100 lbs. per day and an estimated credit cost of $9 per lb. results in an annual cost of approximately $73,000 per year.

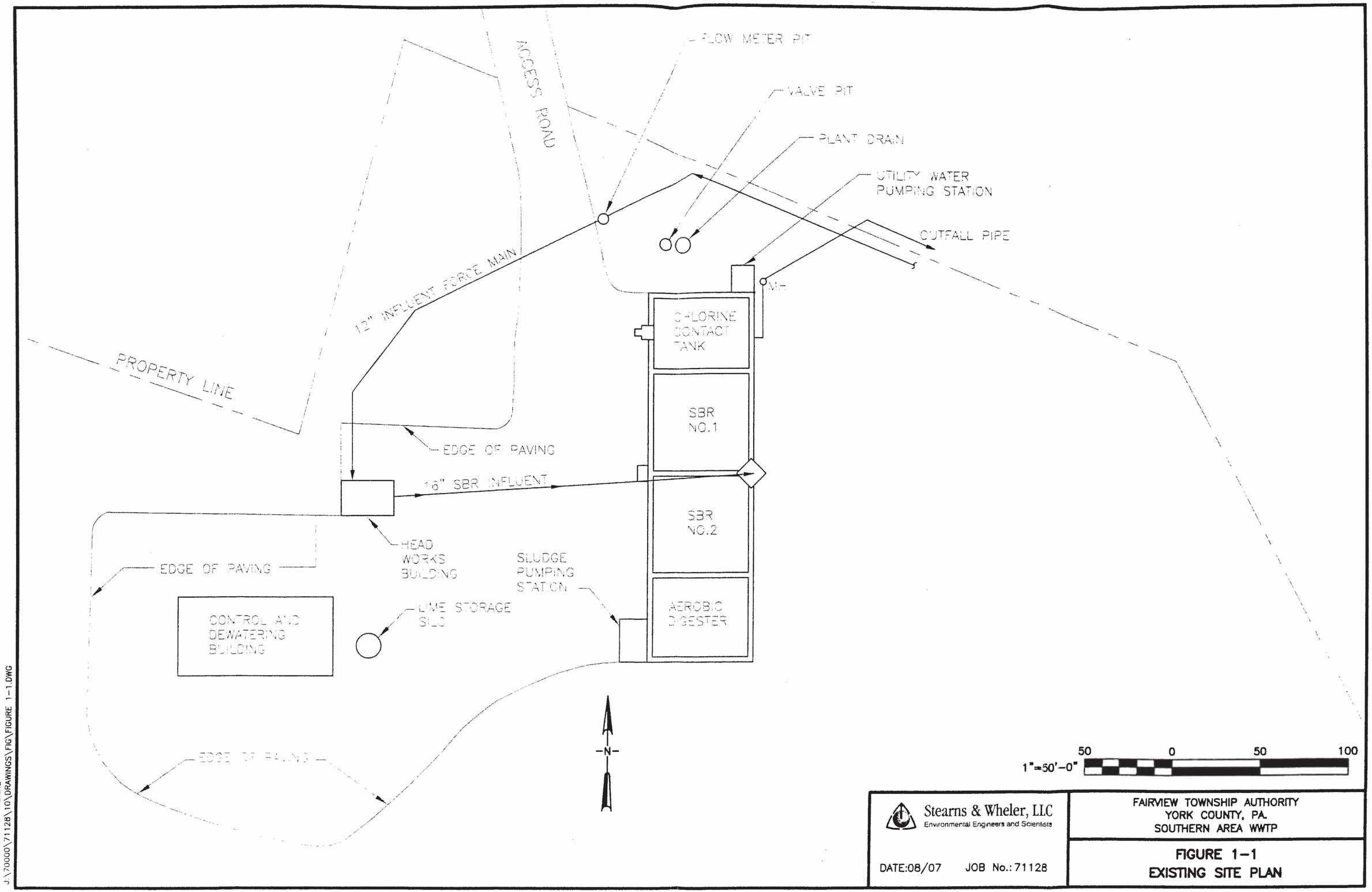
8.2 ACTION PLAN

Following review and comment by the Authority, this engineering report will be revised and finalized for submission to DEP. The recommended action items for implementation of the Northern Area WWTP improvements are as follows:

1. Complete influent characterization analysis.
2. Submit engineering report to DEP.
3. Meet with DEP to review report and proposed implementation schedule.
4. Initiate project financing process.
5. Begin project permitting and environmental review process.
6. Complete preliminary design, including surveying and geotechnical investigations.
7. Complete final design and preparation plans and specifications.
8. Initiate bidding and construction.

A preliminary schedule of implementation for the Northern Area WWTP improvements is presented in Figure 8-1. With this schedule, construction is anticipated to be completed by mid-2010.

FIGURES



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FAIRVIEW TOWNSHIP AUTHORITY
YORK COUNTY, PA.
SOUTHERN AREA WWTP

FIGURE 1-1
EXISTING SITE PLAN

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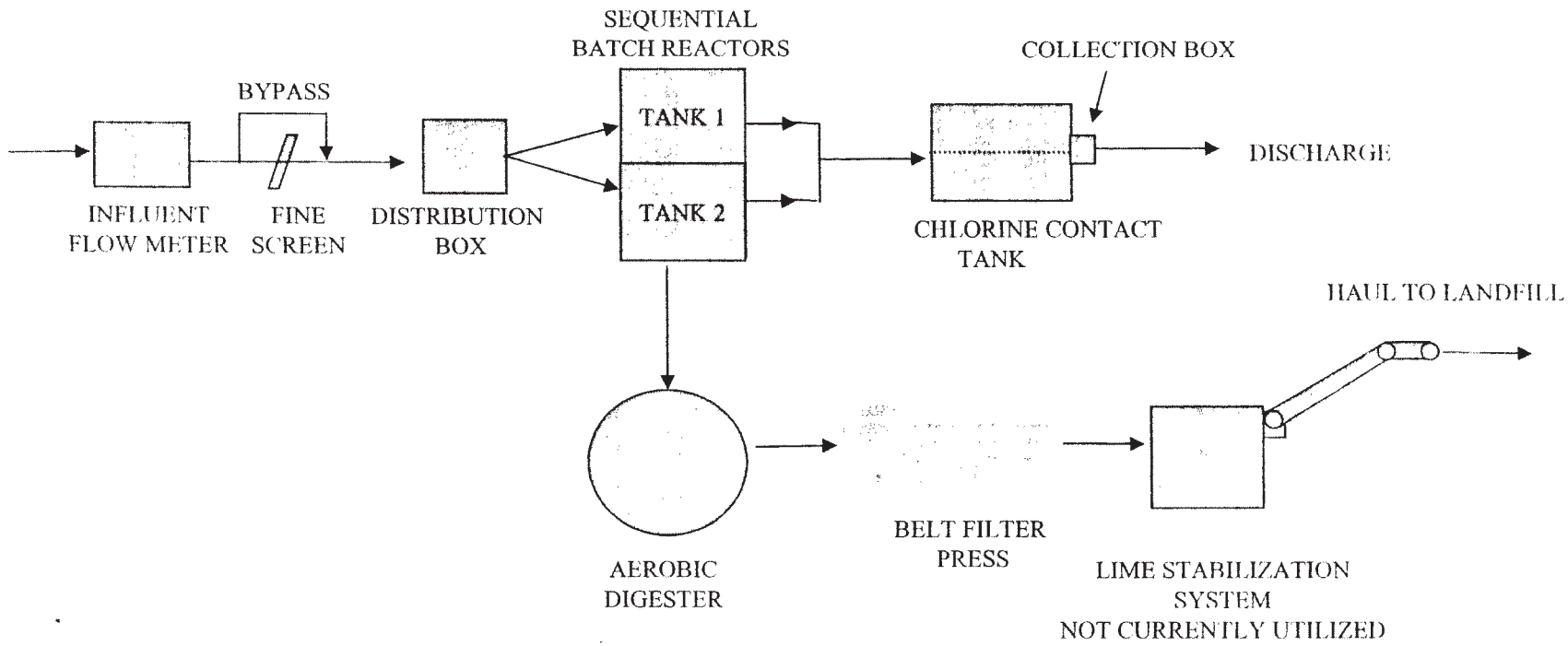

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Fairview Township Authority
Southern Area WWTP

Figure 1-2
Existing Process Flow Schematic

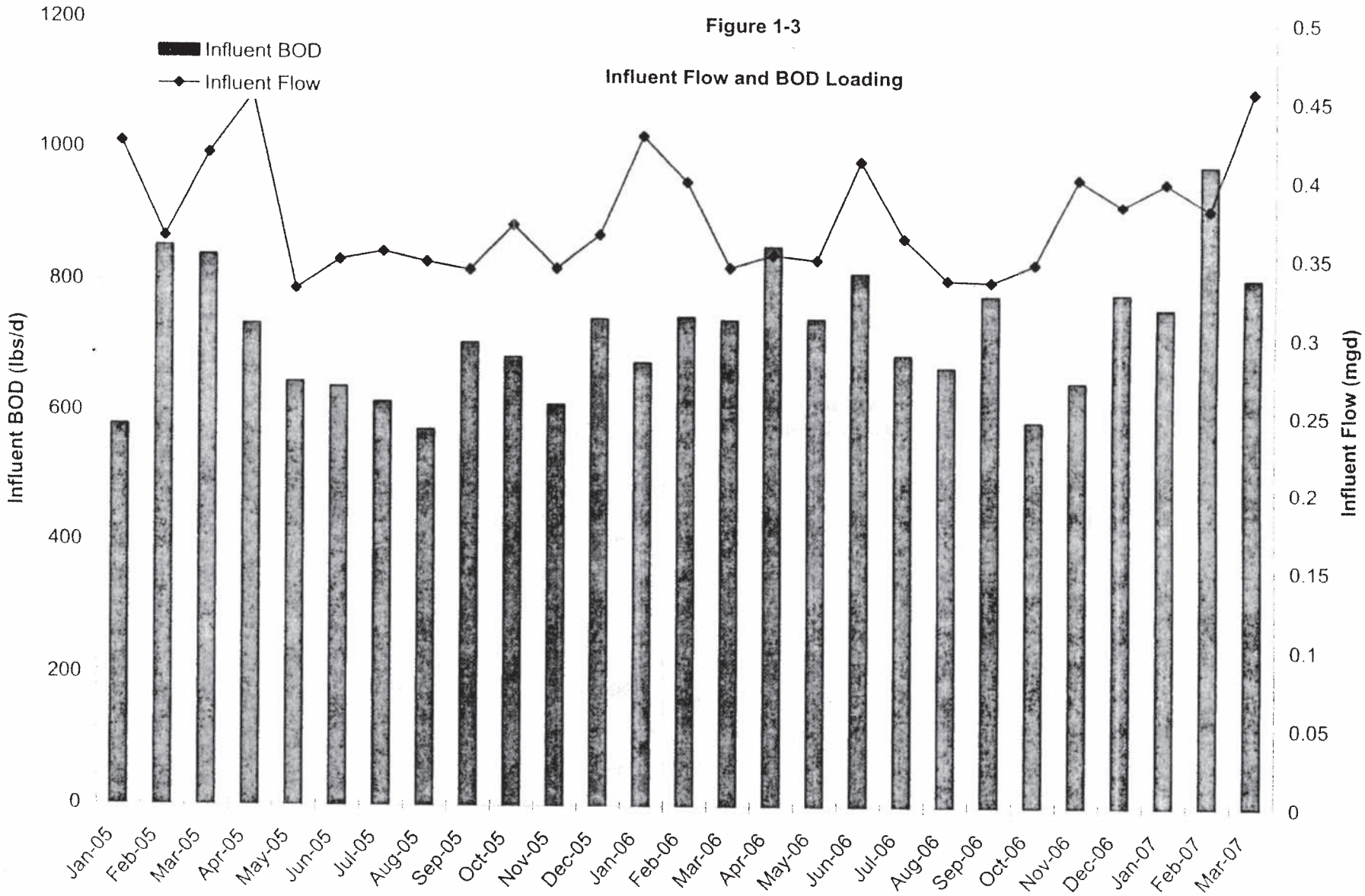
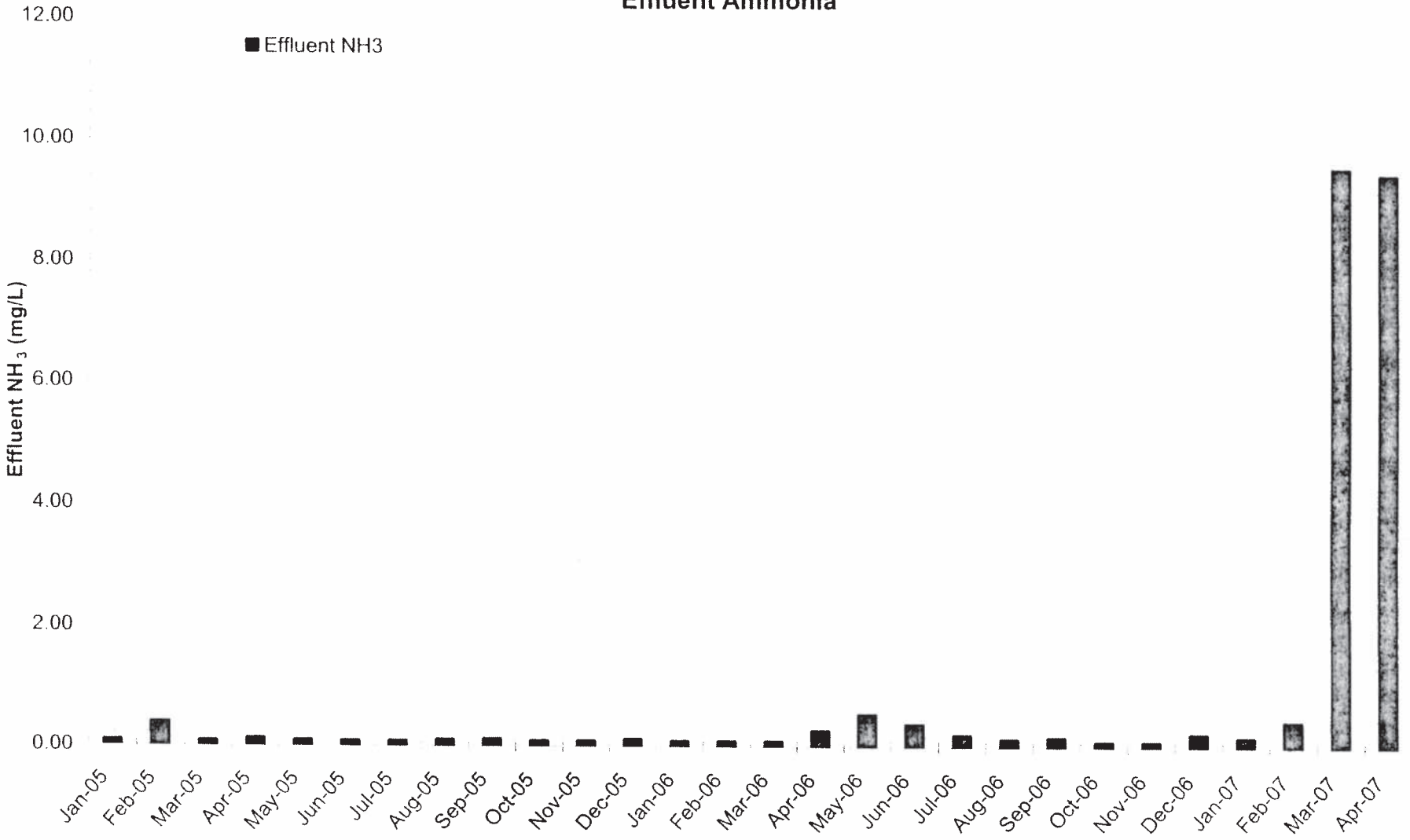


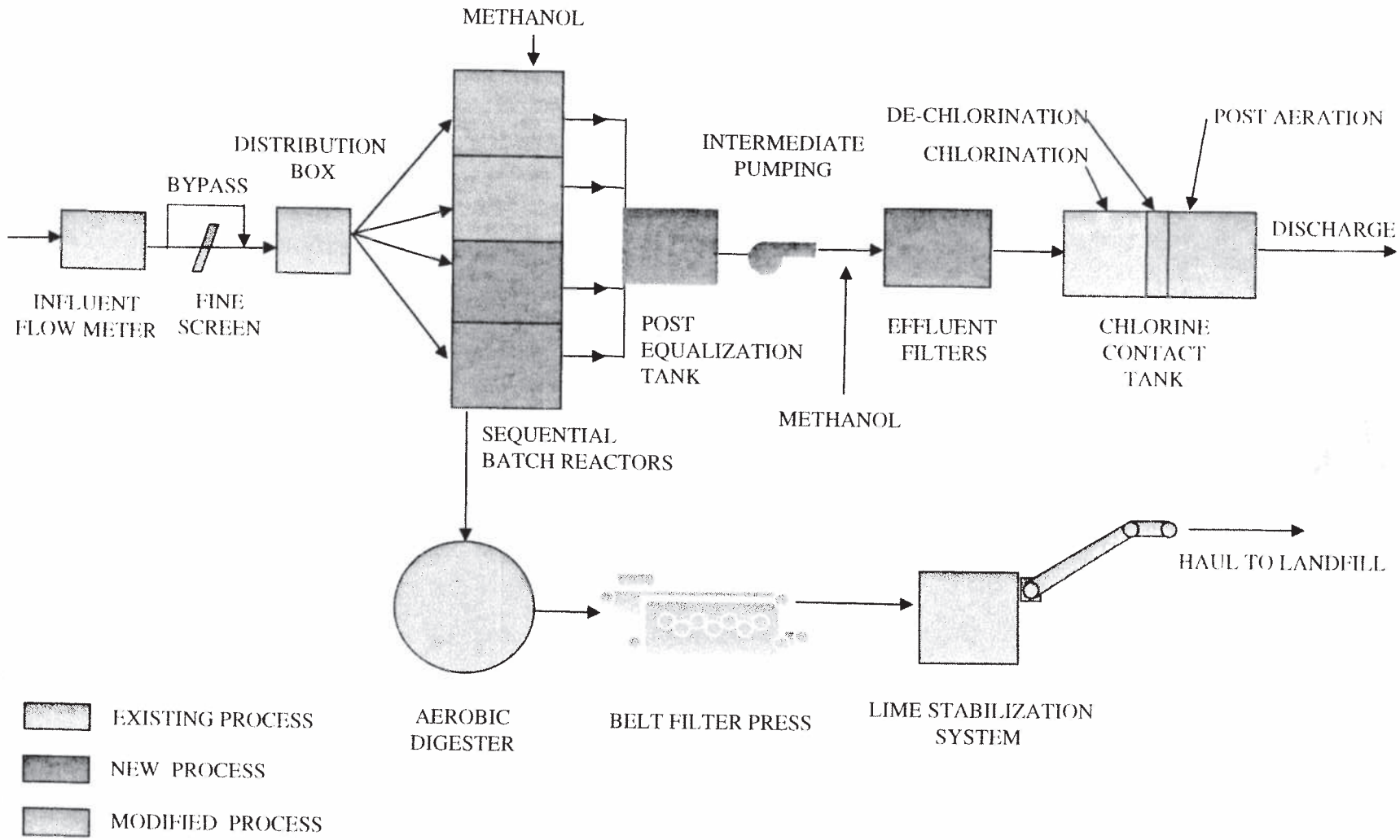
Figure 1-3

Influent Flow and BOD Loading

Figure 1-4

Effluent Ammonia





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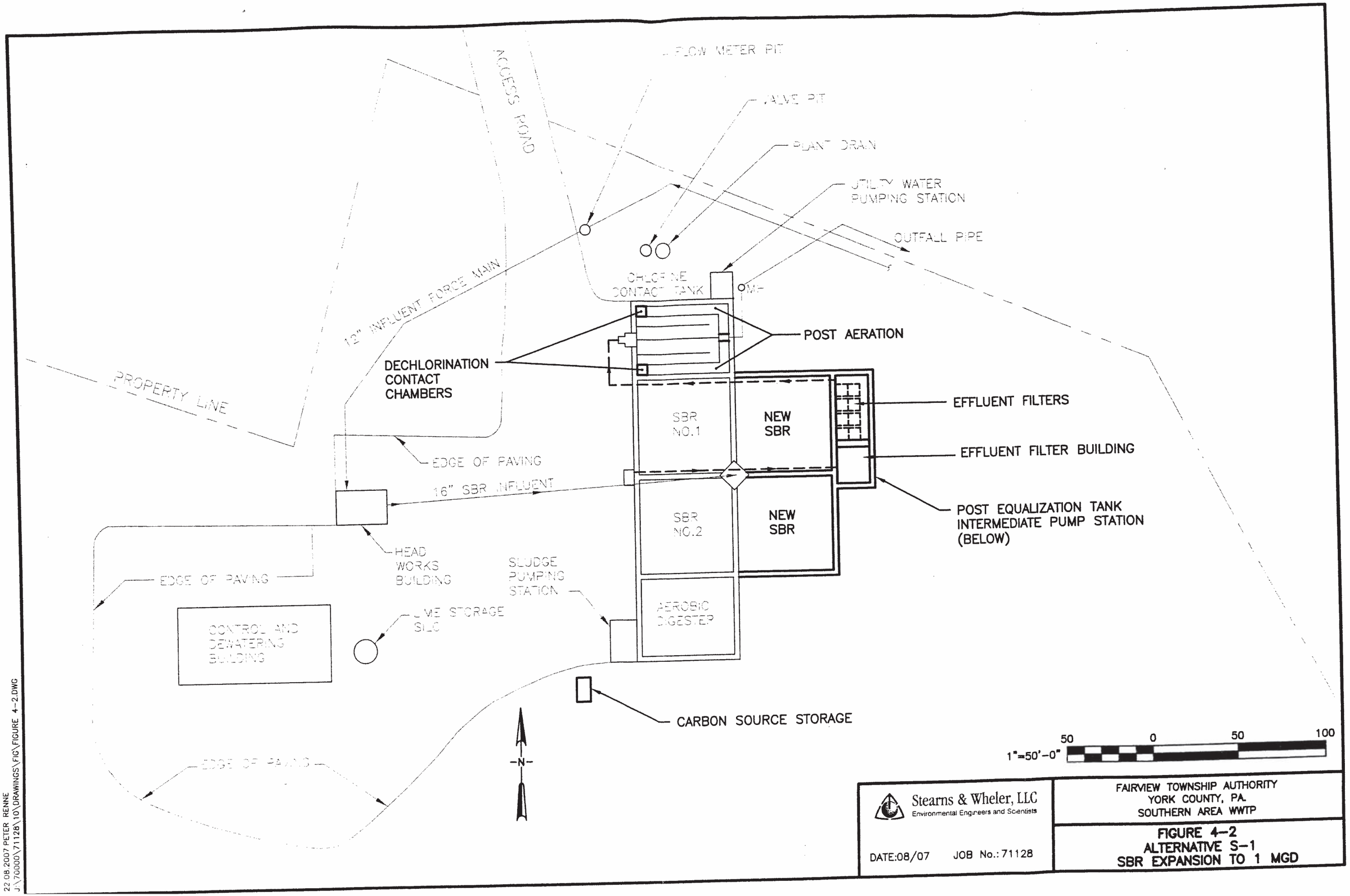
Southern Area WWTP

Figure 4-1
Alternative S-1: SBR Expansion to 1 MGD
Process Flow Schematic



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J:\70000\71128\10\DRAWINGS\FIG\FIGURE 4-2.DWG

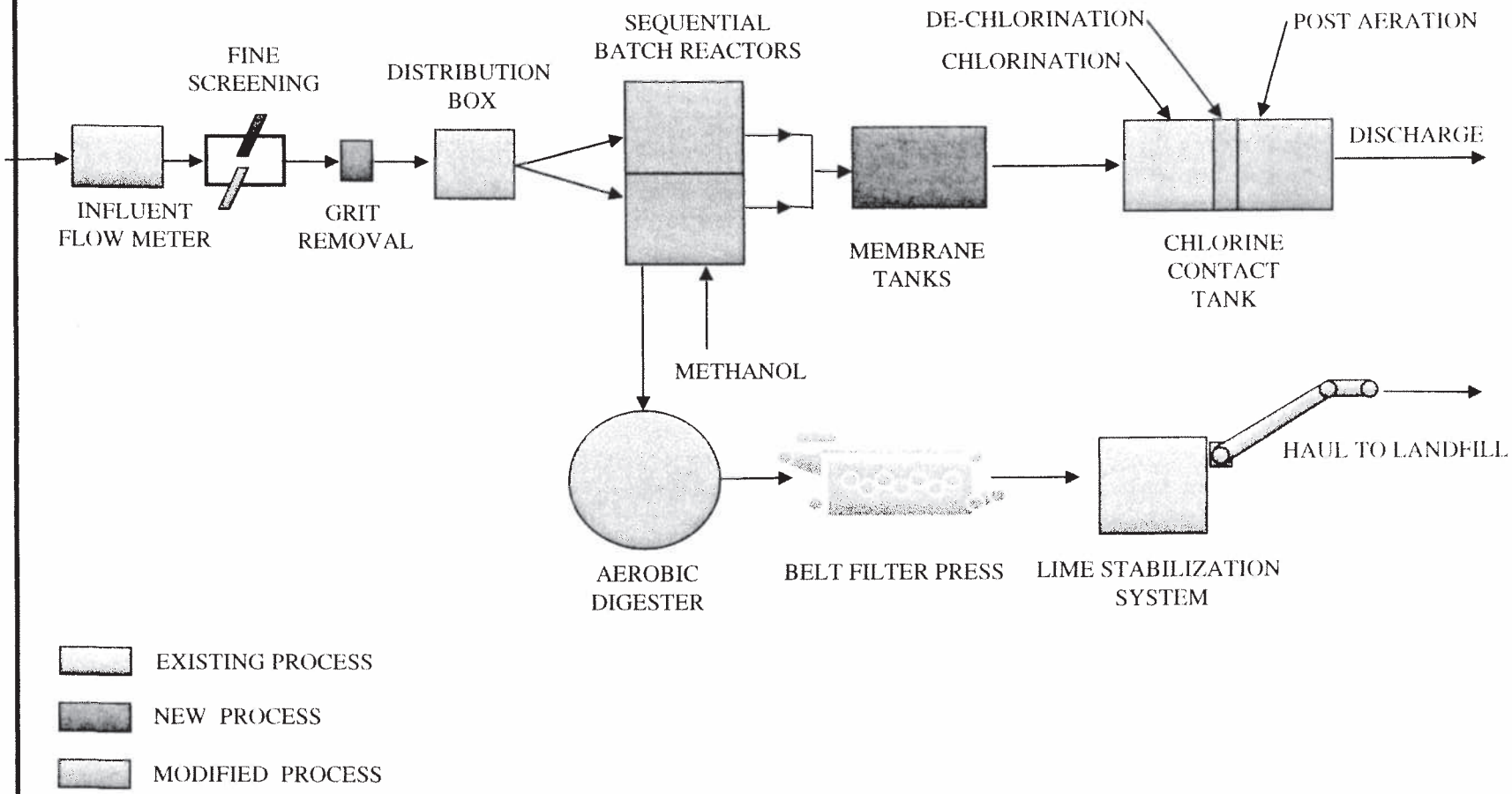

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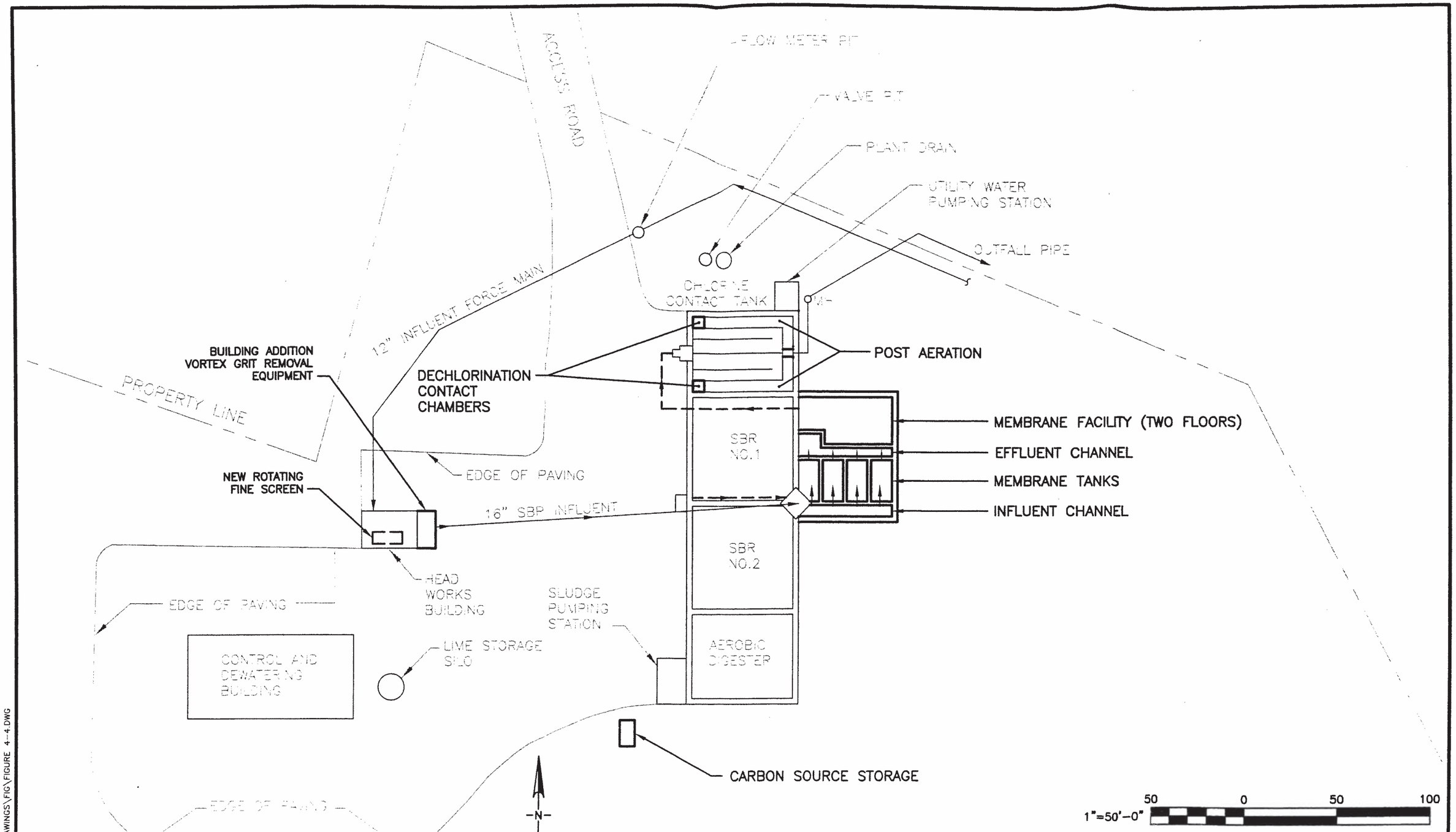
Figure 4-3
Alternative S-2: Membrane Bioreactors
Process Flow Schematic



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SOUTHERN AREA WWTP

FIGURE 4–4
ALTERNATIVE S–2
MEMBRANE BIOREACTORS

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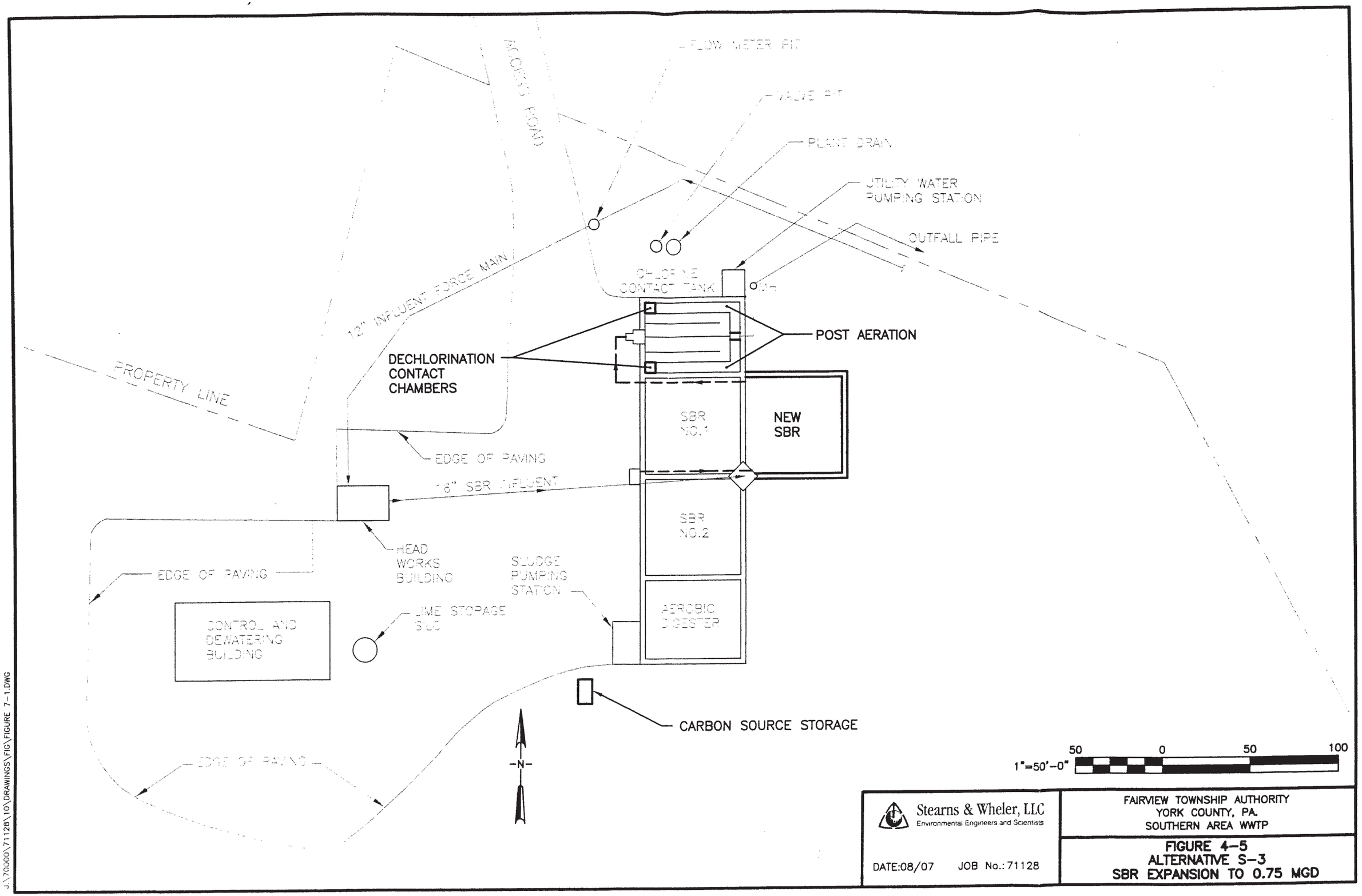
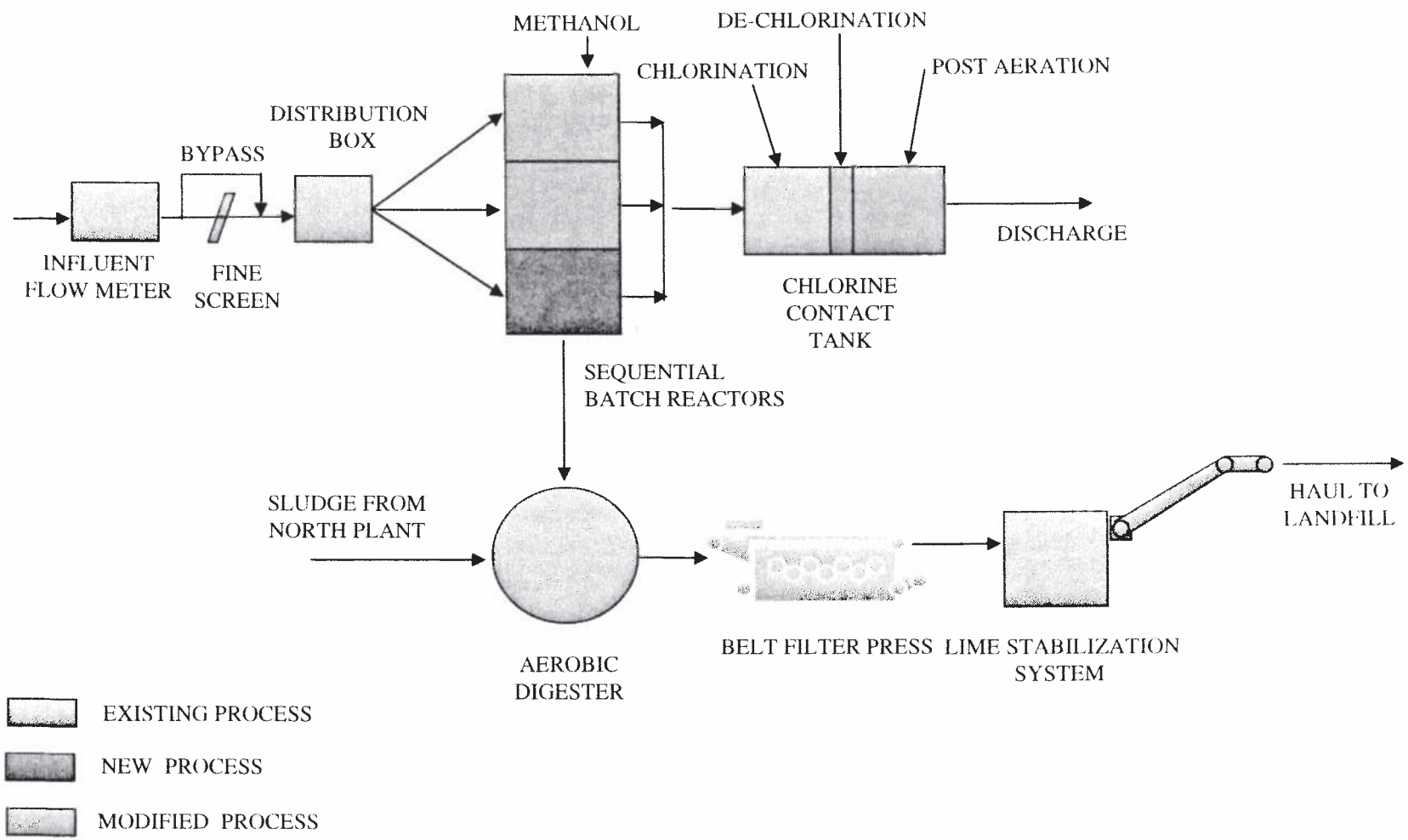
J:\70000\71128\10\DRAWINGS\FIG\FIGURE 4-4.DWG



22 08 2007 PETER RENNE
J:\70000\71128\10\DRAWINGS\FIG\FIGURE 7-1.DWG



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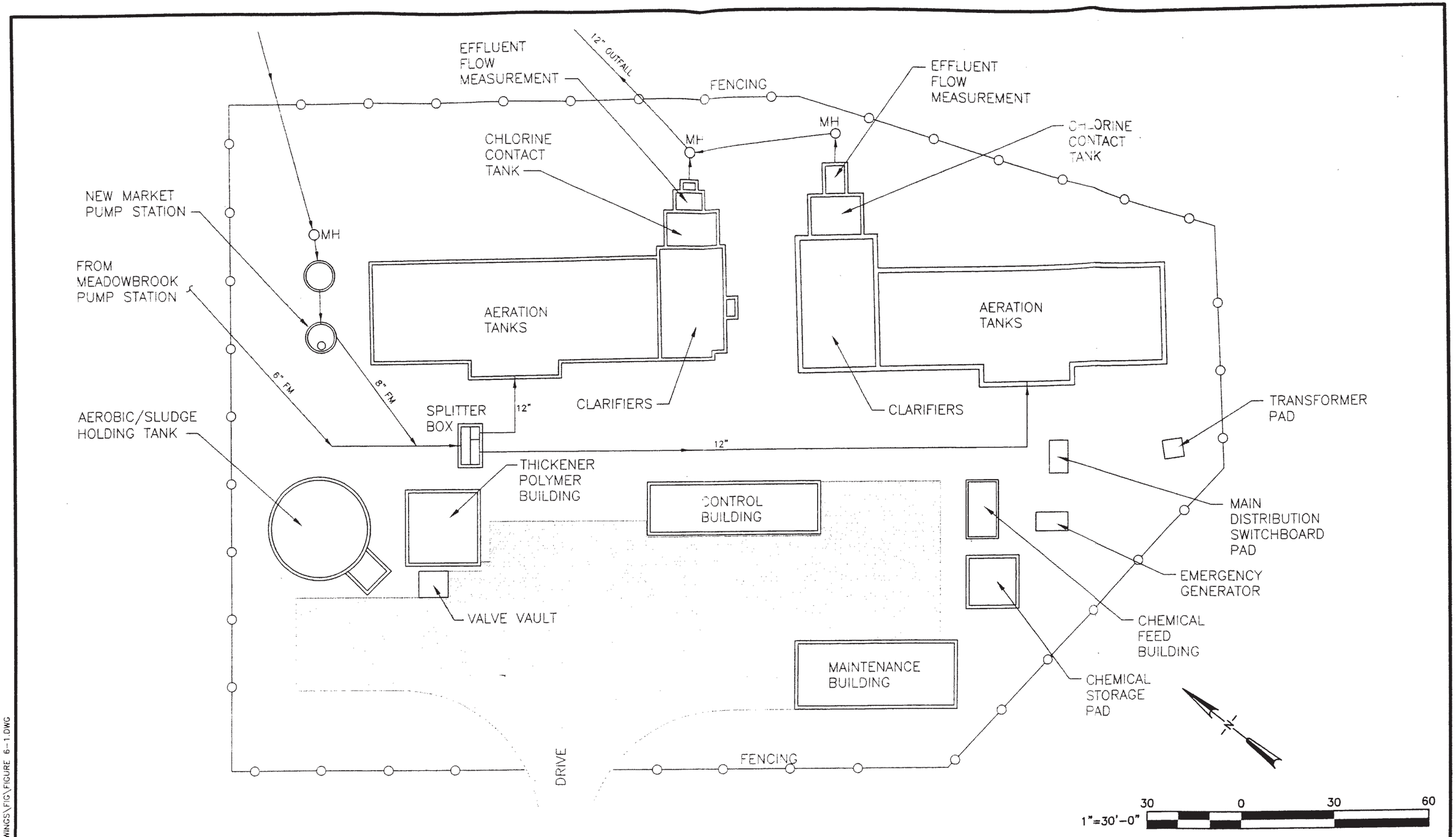
Southern Area WWTP

Figure 4-6
Alternative S-3: SBR Expansion to 0.75 MGD
Process Flow Schematic



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YORK COUNTY, PA.
NORTHERN AREA WWTP

FIGURE 5–1
EXISTING SITE PLAN

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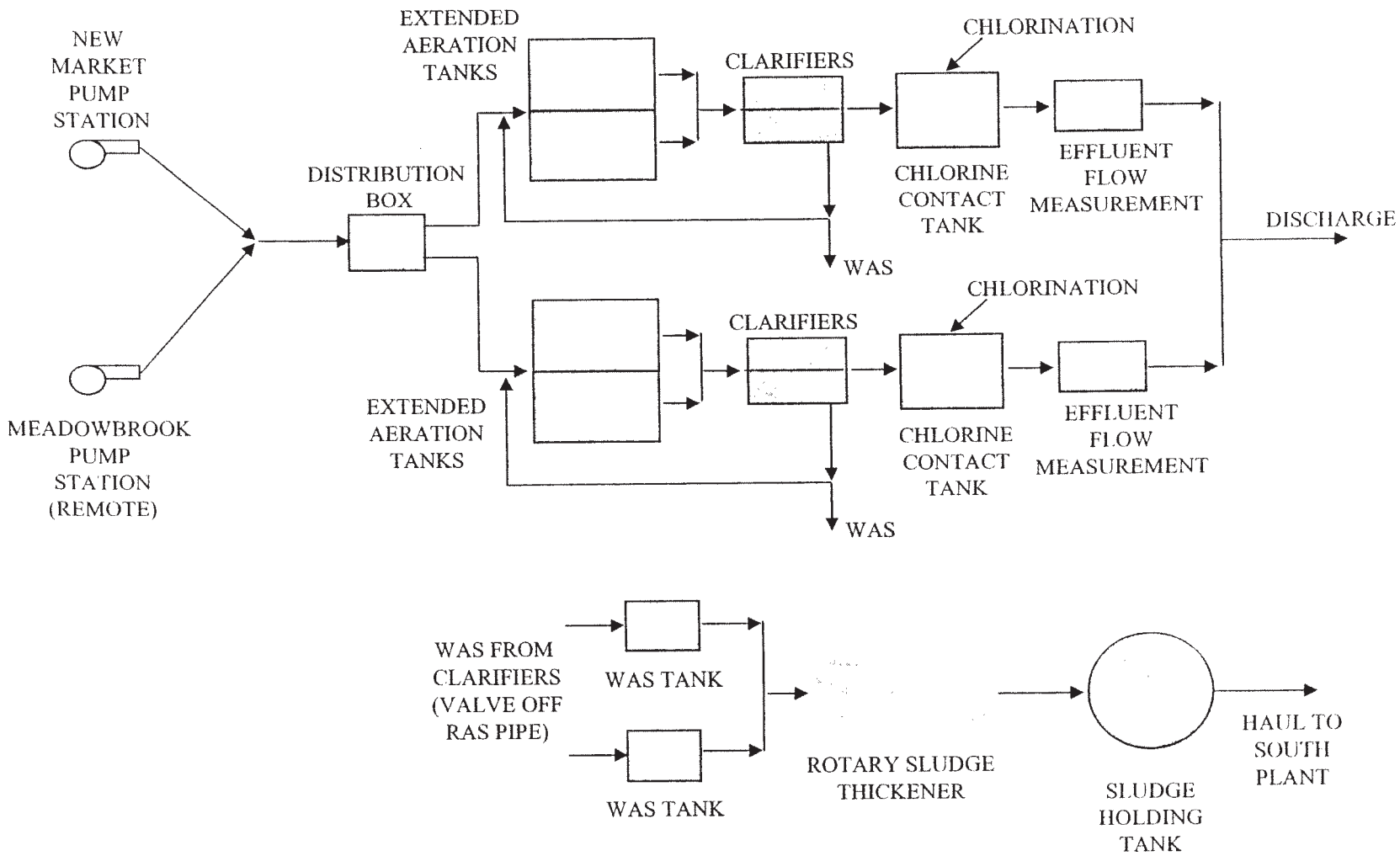
J:\70000\71128\10\DRAWINGS\FIG\FIGURE 6-1.DWG



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Fairview Township Authority
Northern Area WWTP

Figure 5-2
Existing Process Flow Schematic

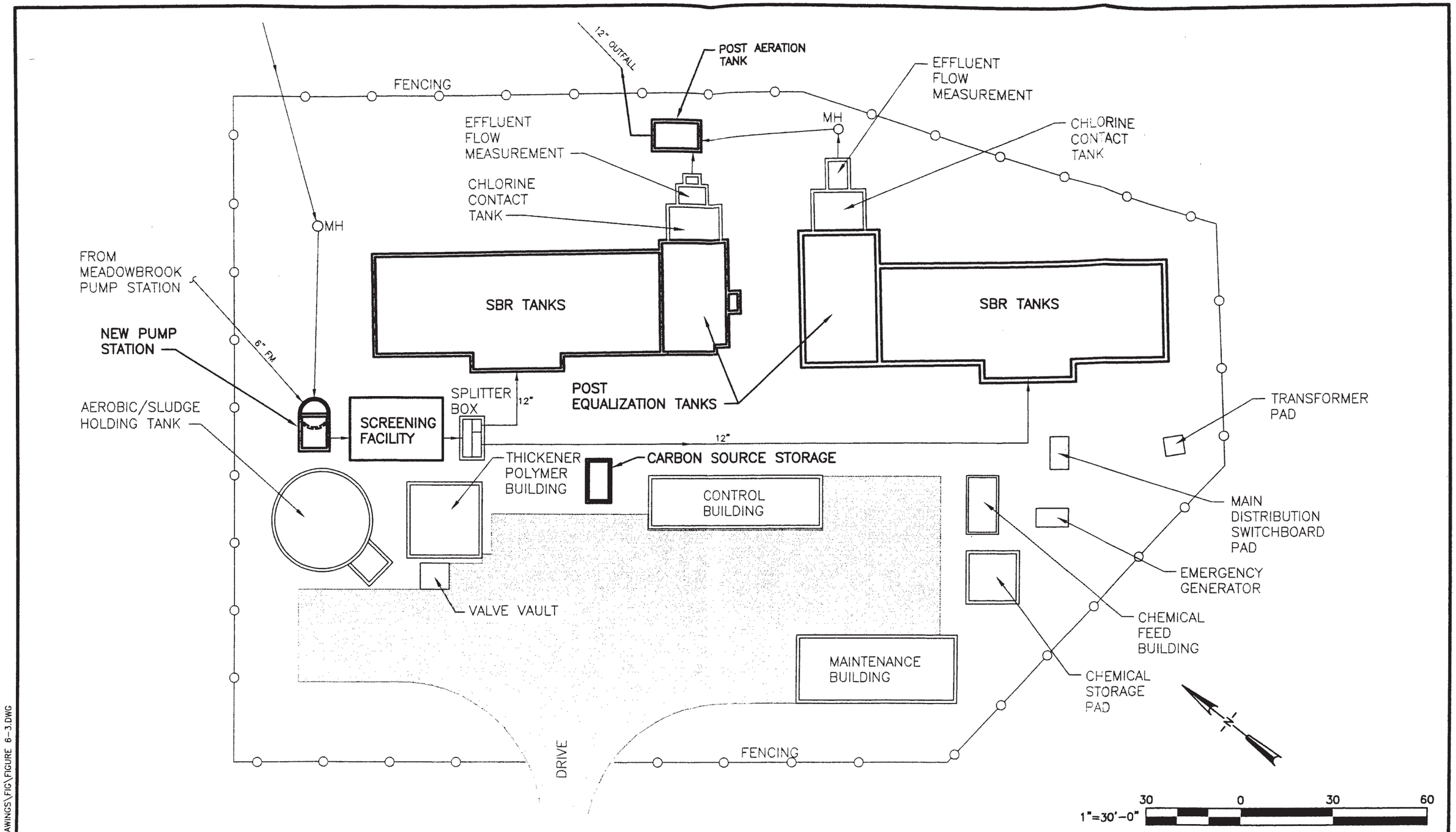

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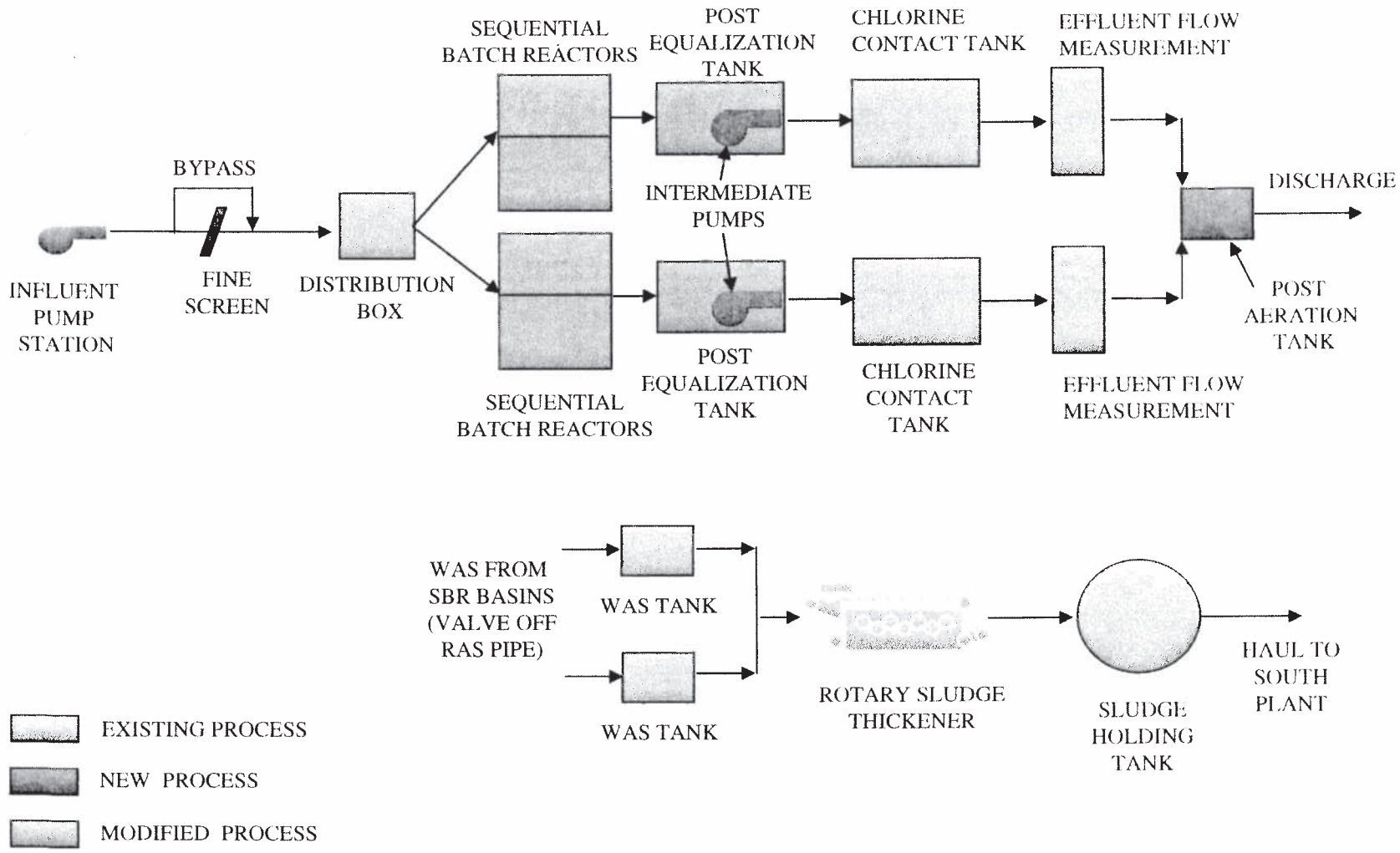
FIGURE 5-3
ALTERNATIVE N-1
SBR CONVERSION SITE PLAN

22.08.2007 PETER RENNE
J:\70000\71128\10\DRAWINGS\FIG\FIGURE 6-3.DWG

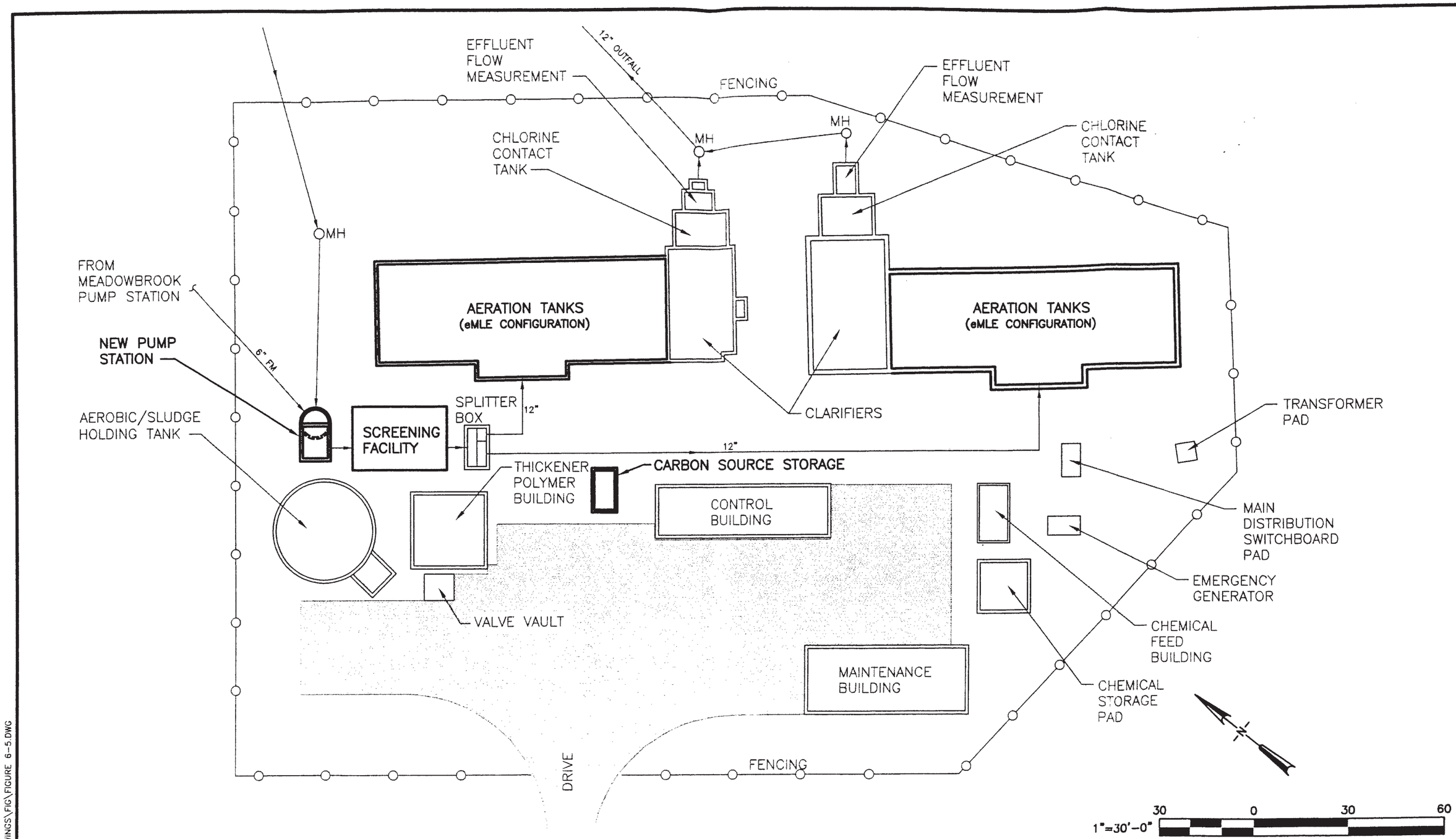


Stearns & Wheler, LLC
Environmental Engineers and Scientists

DATE: 8/07 JOB No: 71128

Fairview Township Authority
Northern Area WWTP

Figure 5-4
Alternative N-1: SBR Conversion
Process Flow Schematic



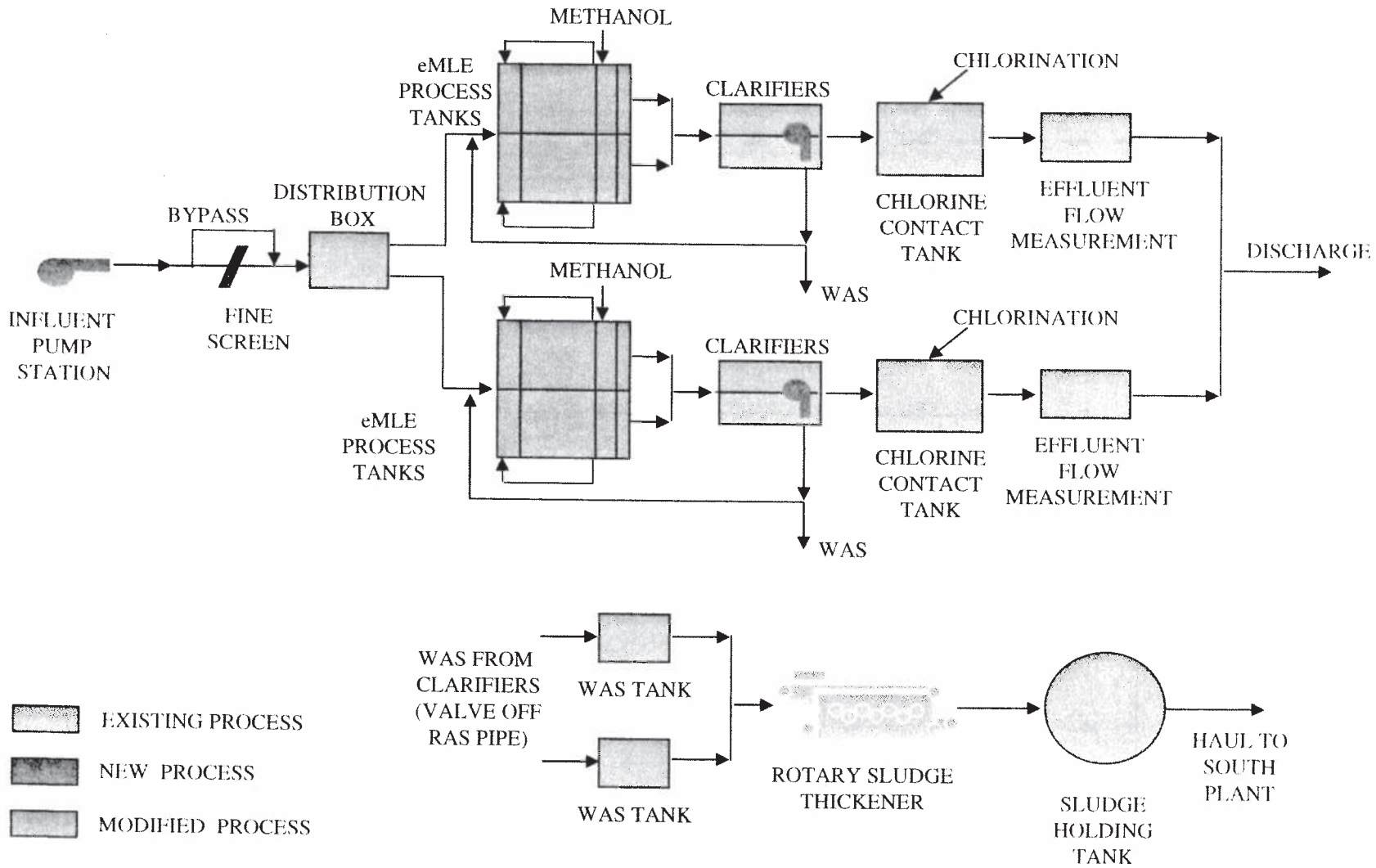
Stearns & Wheler, LLC
Environmental Engineers and Scientists

DATE:08/07 JOB No.: 71128

FAIRVIEW TOWNSHIP AUTHORITY
YORK COUNTY, PA.
NORTHERN AREA WWTP

FIGURE 5–5
ALTERNATIVE N–2
ENHANCED MLE CONVERSION SITE PLAN

22.08.2007 PETER RENNE
J:\70000\71128\10\DRAWINGS\FIG\FIGURE 6-5.DWG



Stearns & Wheler, LLC
Environmental Engineers and Scientists

DATE: 8/07 JOB No: 71128

Fairview Township Authority
Northern Area WWTP

Figure 5-6
Alternative N-2: eMLE Process
Process Flow Schematic

Figure 5-7
Annual Nutrient Discharge Loading
Northern Area WWTP (6.0 mg/L TN & 0.8 mg/L TP)

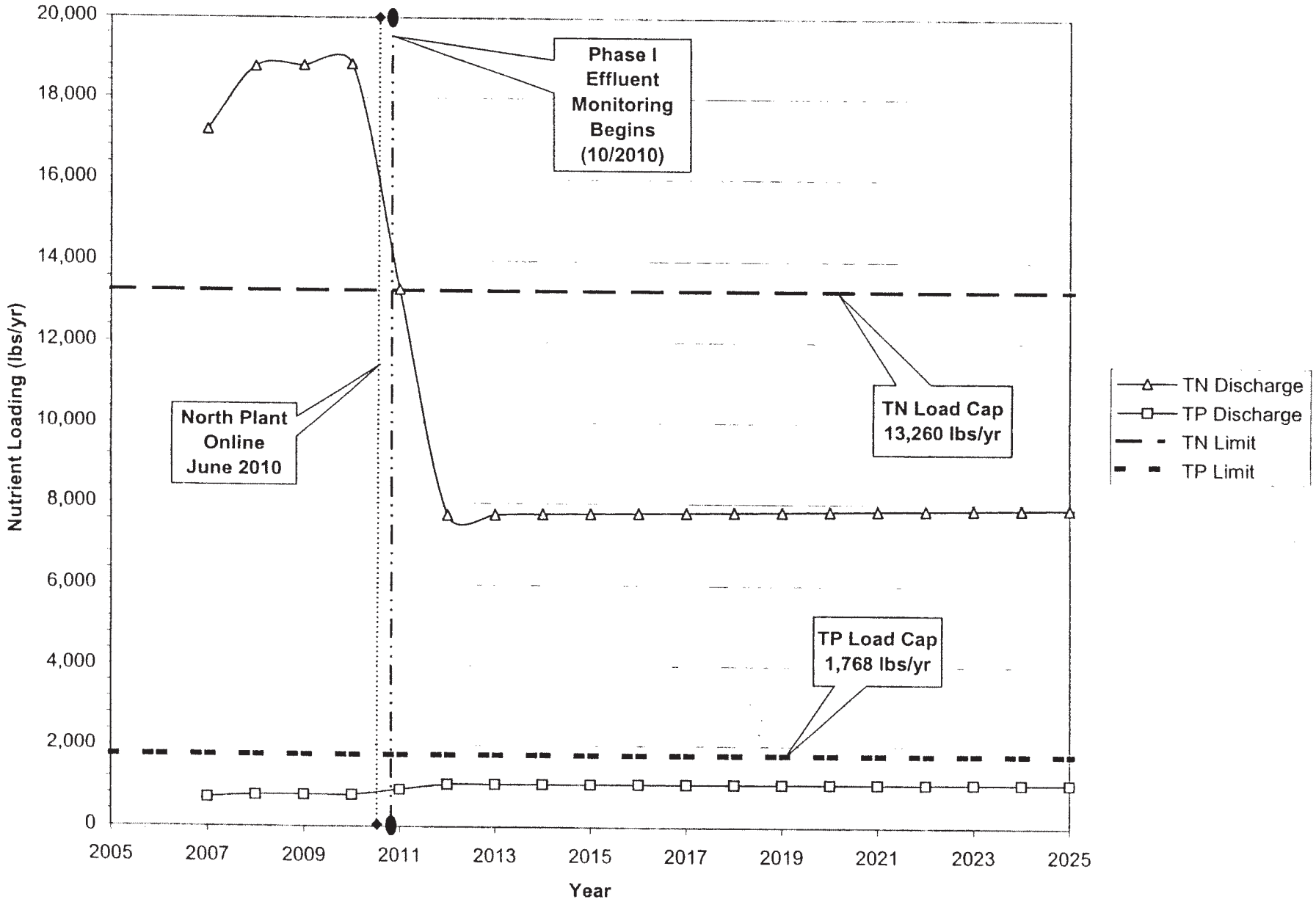


Figure 6-1
Annual Combined Nutrient Discharge Loading
Upgraded Southern Area WWTP (7.0 mg/L TN & 0.8 mg/L TP)
Upgraded Northern Area WWTP (6.0 mg/L TN & 0.8 mg/L TP)

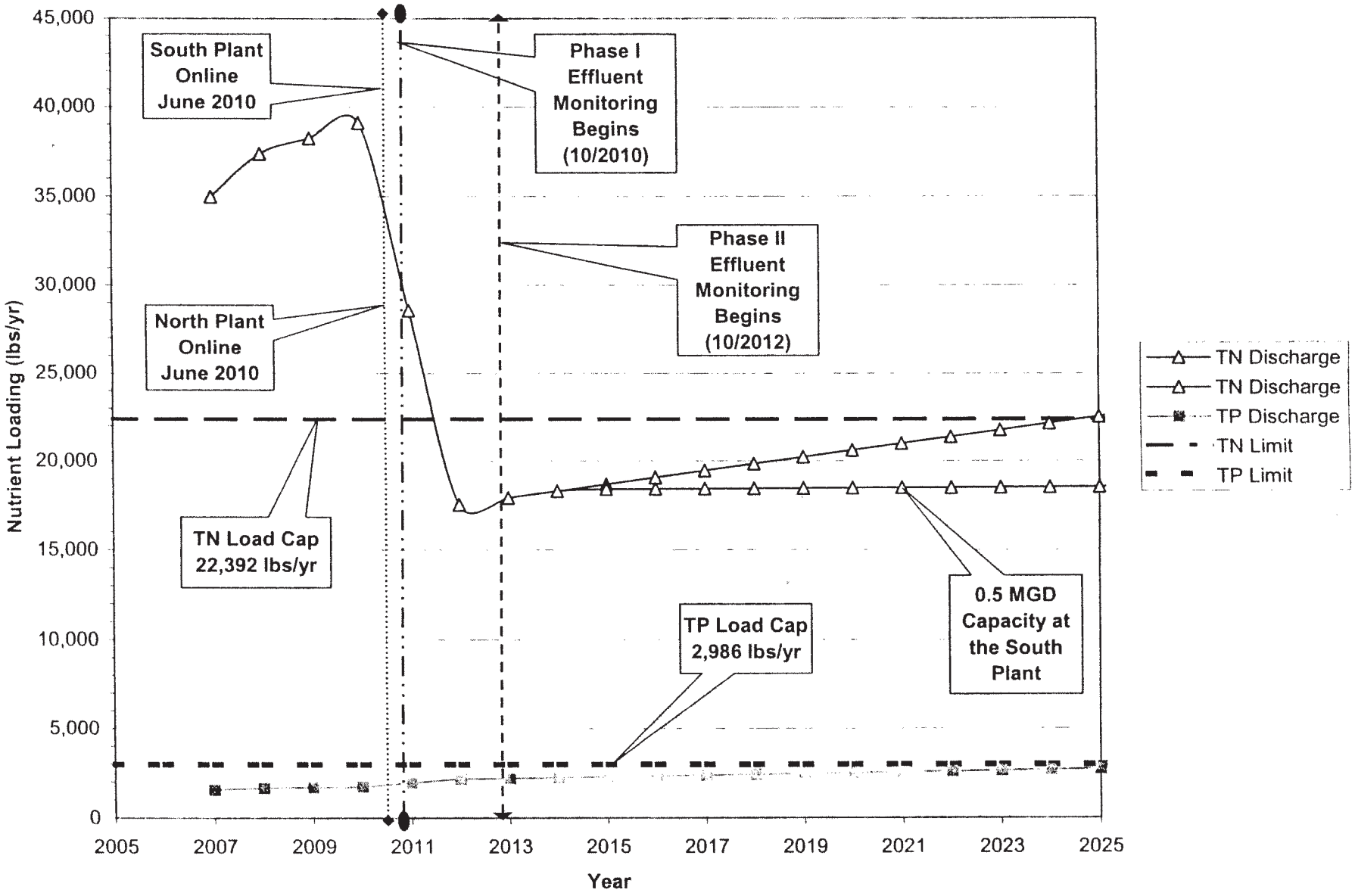


Figure 6-2
Annual Combined Nutrient Discharge Loading
Southern Area WWTP - No Improvements
Upgraded Northern Area WWTP (6.0 mg/L TN & 0.8 mg/L TP)

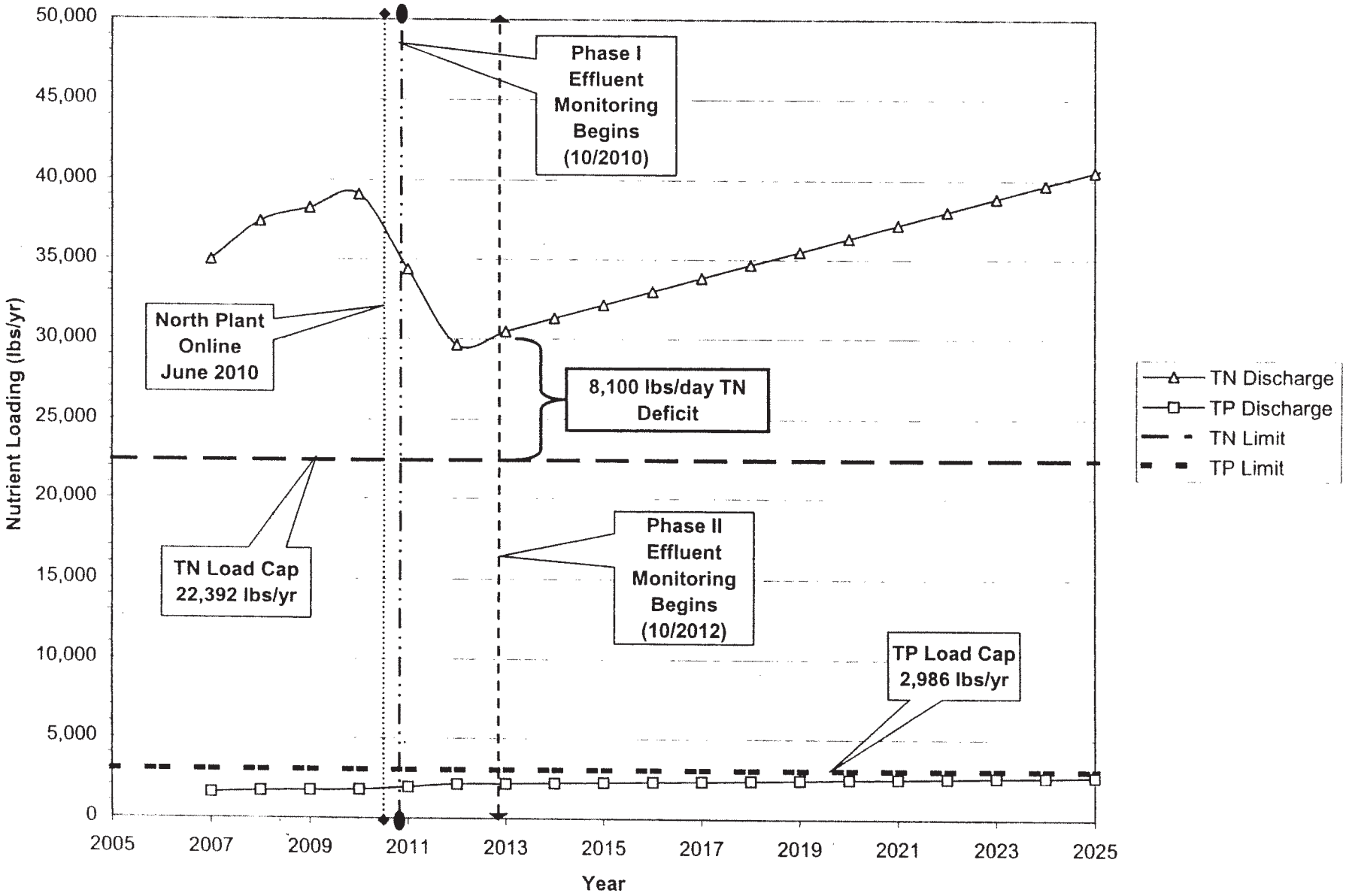
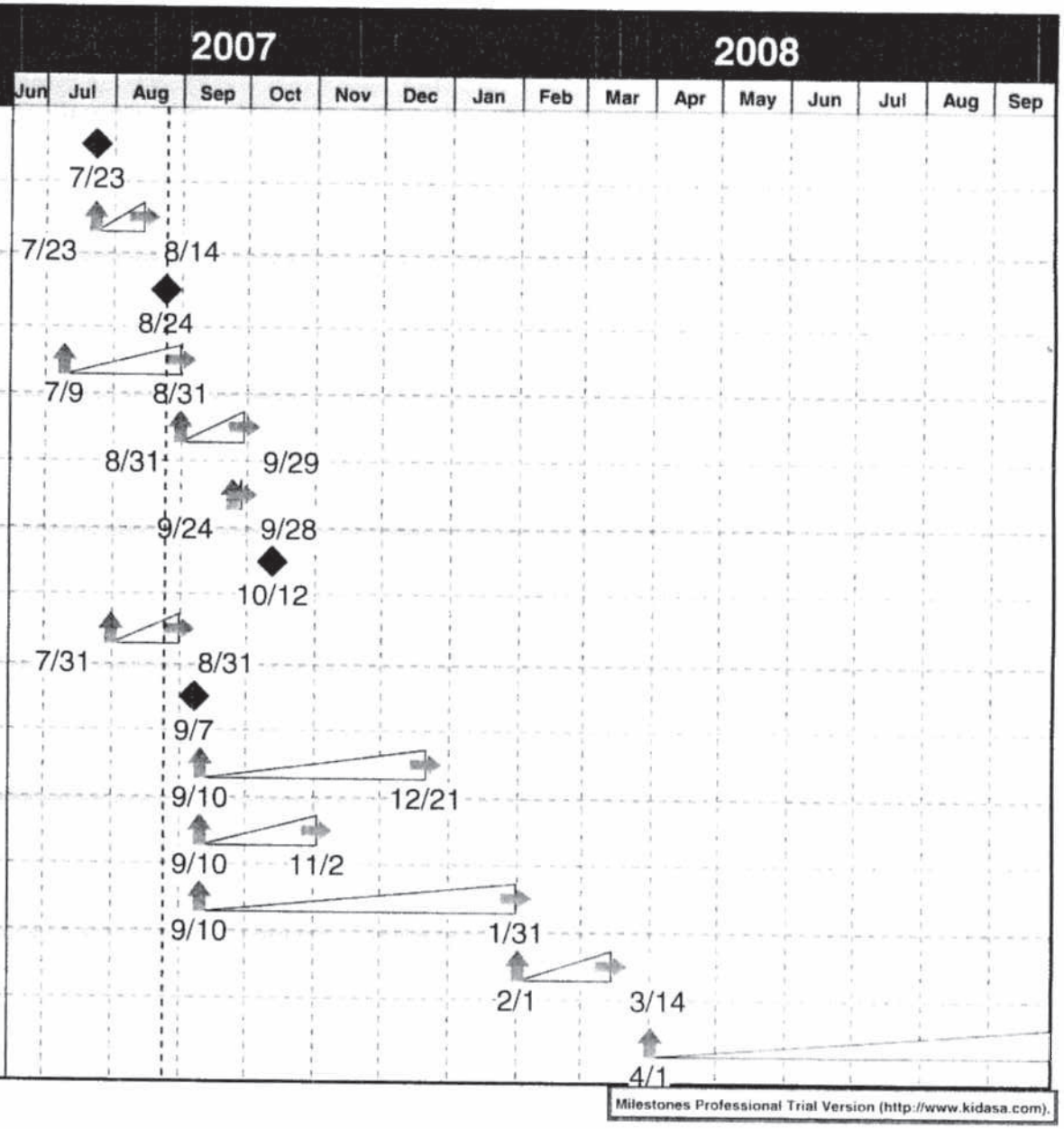


Figure 8-1
Design and Construction Schedule
Fairview Township Authority - Northern Area WWTP

Start Date	End Date	TASK
7/23/07	7/23/07	AuthorityMeeting
7/23/07	8/14/07	Revise Report
8/24/07	8/24/07	Finalize Report
7/9/07	8/31/07	Influent Characterization
8/31/07	9/29/07	DEP Review
9/24/07	9/28/07	Response to DEP Comments
10/12/07	10/12/07	PADEP Report Approval
7/31/07	8/31/07	Prepare Agreement
9/7/07	9/7/07	Signed Agreement
9/10/07	12/21/07	Environmental Review
9/10/07	11/2/07	Preliminary Design Design
9/10/07	1/31/08	Final Design
2/1/08	3/14/08	Review and Approval
4/1/08	8/1/09	Bidding & Construction



APPENDICES

APPENDIX A

WASTEWATER CHARACTERIZATION SAMPLING

Stearns & Wheler, LLC

Environmental Engineers and Scientists

MEMORANDUM

To: Robert Stanley, Chairman, Fairview Township Authority

From: Stearns & Wheler

Date: June 29, 2007

Re: Southern Area WWTP – Wastewater Characterization Sampling

In order to more accurately model the treatment process and predicate the performance of the treatment plant, Stearns & Wheler would like to obtain additional sampling data for the parameters and locations shown in Table 1. This work will be required before design on the treatment plant expansion and upgrade can begin. Currently the plant does routinely perform the necessary sampling needed to fully characterize the wastewater influent to the plant. This sampling information will be used by Stearns & Wheler and system suppliers such as Aqua Aerobics to better predict the performance of the upgraded plant.

Table 1: Wastewater Characterization Sampling

Parameter	Raw Influent	Final Effluent	Belt Filter Press Filtrate(2)
BOD_5	X	X	X
COD	X		X
TSS	X	X	X
VSS	X	X	X
TKN	X	X	X
$_sTKN$(1)	X	X	
NH_4N	X	X	X
TP	X	X	X
Ortho-P	X	X	X
Alkalinity	X	X	X

Notes:

1. Soluble TKN
2. Sample BFP filtrate once per week

The sampling should be conducted for a two week period, with samples collected once per day. The influent and effluent samples should be a 24-hour composite sample. The BFP filtrate should be a grab sample once per week.

APPENDIX B

EQUIPMENT LITERATURE

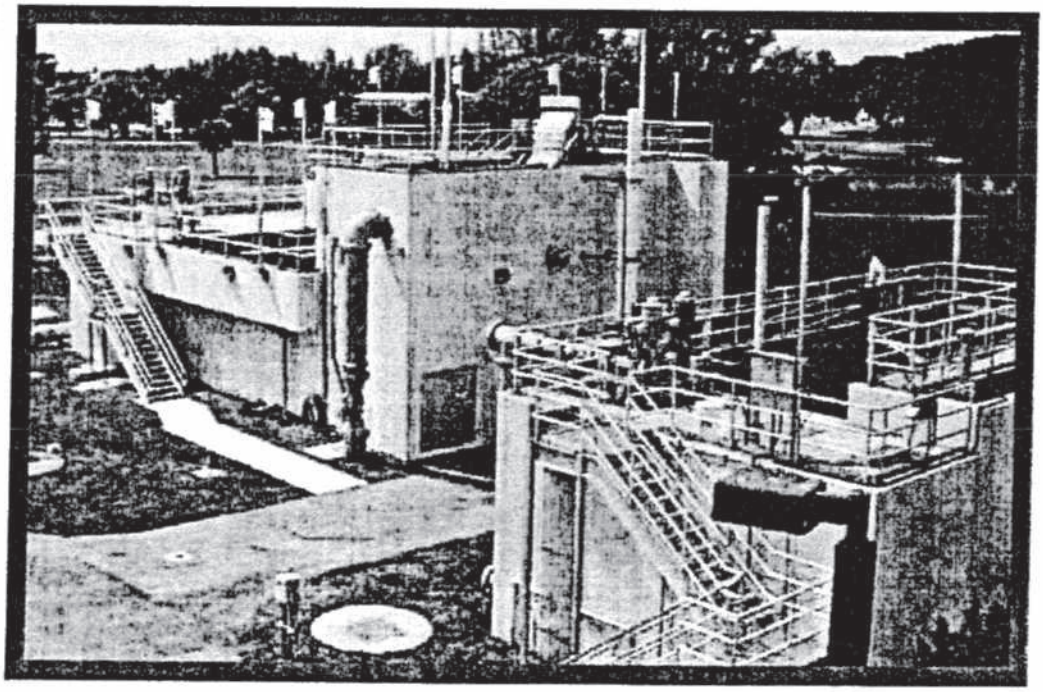
SOUTHERN AREA WWTP

EFFLUENT FILTERS

PARKSON CORPORATION
...the environmental technology company

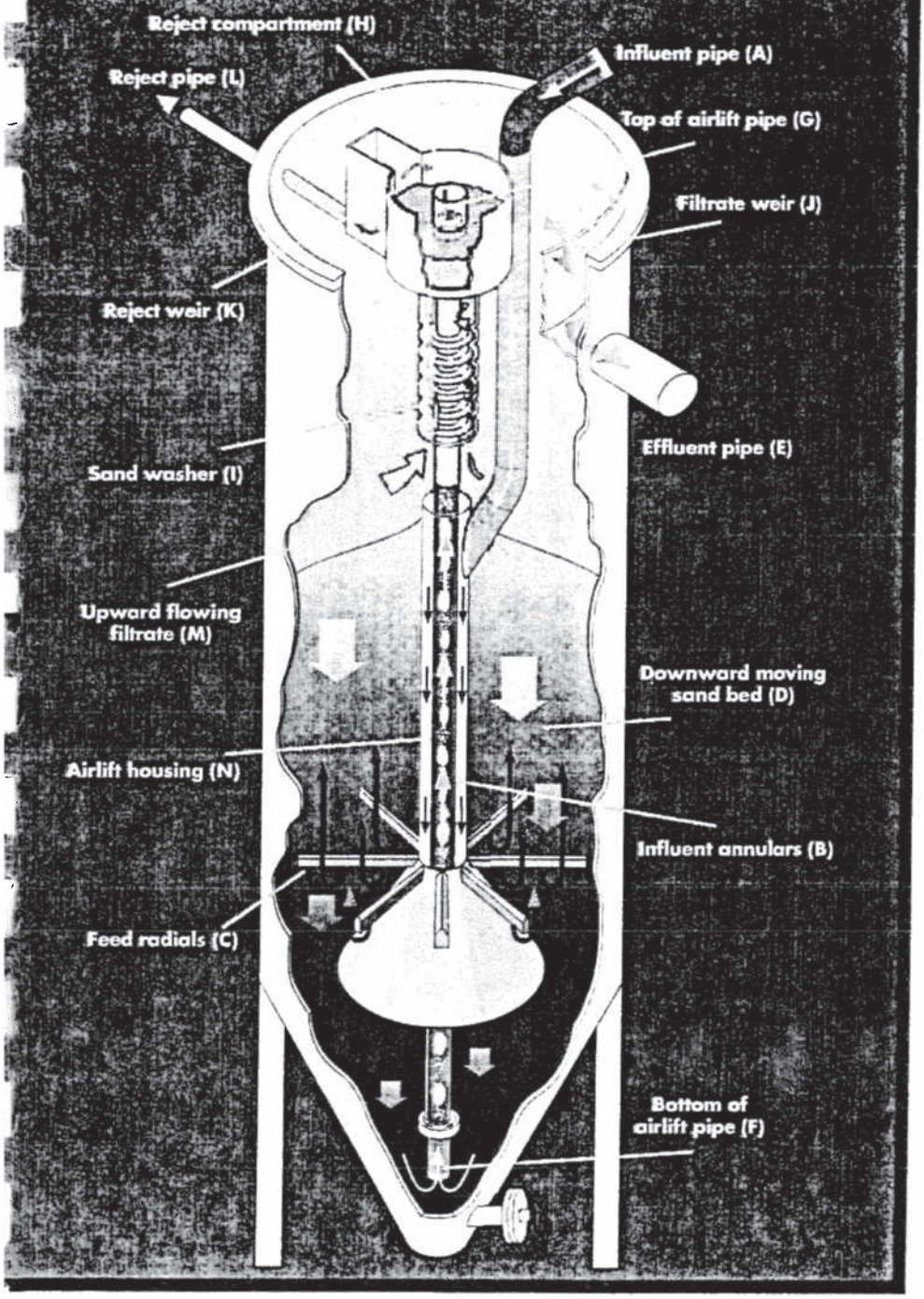
DYNASAND®

CONTINUOUS, UPFLOW, GRANULAR MEDIA FILTER



The DynaSand® Filter

Simplicity, low maintenance, outstanding performance



The DynaSand filter is an upflow, deep bed, granular media filter with continuous backwash. The filter media is cleaned by a simple internal washing system that does not require backwash pumps or storage tanks. The absence of backwash pumps means low energy consumption.

The DynaSand filter's deep media bed allows it to handle high levels of suspended solids. This heavy-duty performance may eliminate the need for pre-sedimentation or flotation steps in the treatment process in some applications.

The DynaSand filter is available in various sizes and configurations. This flexibility allows for customization to fit specific site and structural requirements.

DynaSand Principles of Operation

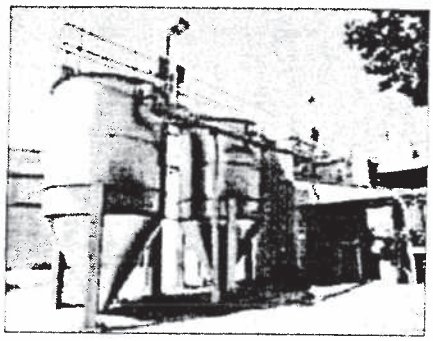
Influent Filtration Influent feed is introduced at the top of the filter (A) and flows downward through an annular section (B) between the influent feed pipe and airlift housing. The feed is introduced into the bottom of the sand bed through a series of feed radials (C) that are open at the bottom. As the influent flows upward (M) through the downward moving sand bed (D), organic and inorganic impurities are captured by the sand. The clean, polished filtrate continues to move upward and exits at the top of the filter over the filtrate weir (J) and out through the effluent pipe (E).

Sand Cleaning The sand bed containing captured impurities is drawn downward into the center of the filter where the airlift pipe (F) is located. A small volume of compressed air is introduced at the bottom of the airlift, drawing the sand into the airlift pipe. The sand is scoured within the airlift pipe at an intensity of 100-150 SCFM/ft^2. The effectiveness of this scouring process is vastly greater than what can be expected in conventional sand filtration backwash. The scouring dislodges any solid particles attached to the sand grains.

The dirty slurry is pushed to the top of the airlift (G) and into the reject compartment (H). From the reject compartment, the sand falls into the sand washer (I) and the lighter reject solids are carried over the reject weir (K) and out the reject pipe (L). As the sand cascades down through the concentric stages of the washer, it encounters a small amount of polished filtrate moving upward, driven by the difference in water level between the filtrate pool and the reject weir. The heavier, coarser sand grains fall through this small countercurrent flow while the remaining contaminants are carried back up to the reject compartment. The clean, recycled sand is deposited on the top of the sand bed where it once again begins the influent cleaning process and its eventual migration to the bottom of the filter.

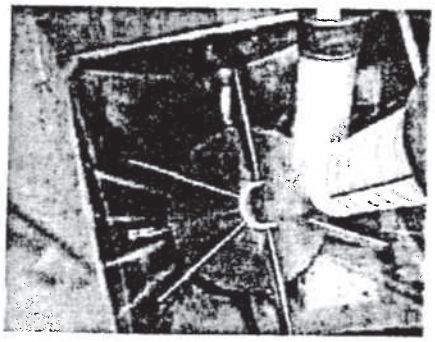
DynaSand Filter Configurations

The DynaSand filter is available as either stand alone package units or in a modular concrete design. The package units are constructed of either 304 SST or FRP. Materials of construction for the internal components of both package and concrete units are SST and/or FRP. Filters are available in 40" standard bed or 80" deep-bed design depending on the nature of the application. Concrete modules are frequently used for high flow capacity systems by placing multiple modules into a common filter cell. The modules in a filter cell share a common filter bed where cones at the bottom of each module distribute sand to their respective airlifts and sand washers.

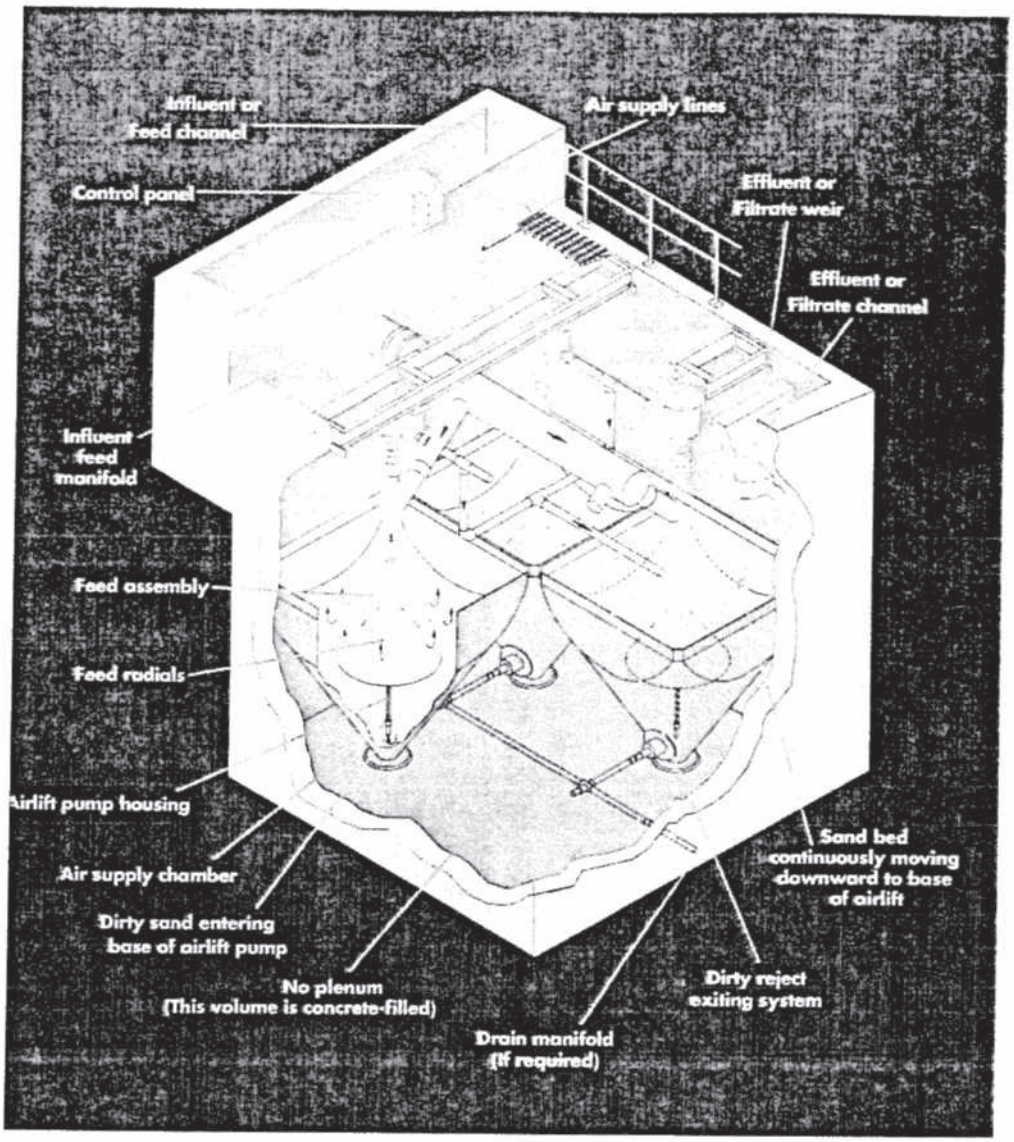


DynaSand Filter above ground package units

A concrete DynaSand installation can be designed for any size filter area. This enables the technology to be applied to any size water or wastewater treatment plant. Since all filter beds are being continuously cleaned, the pressure drop remains low and even throughout all the filters. Equal pressure drop ensures even distribution of feed to each filter without the need for splitter boxes or flow controls. Therefore, a typical multiple unit installation can use a common header pipe with feed connections and isolation valves for each filter.



DynaSand Filter modules in concrete basin

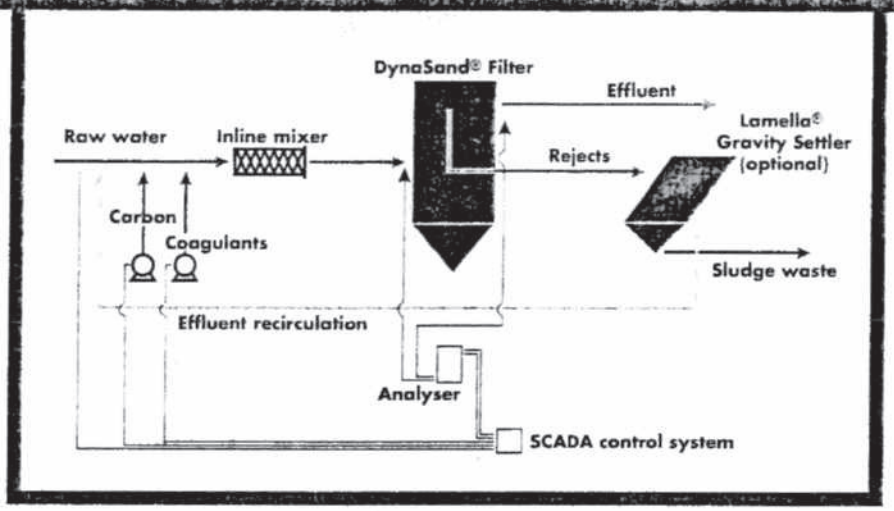


Features	Benefits
Continuously Cleaned Sand Bed	No shutdown for backwash cycles Elimination of ancillary backwash equipment No flow control valves, splitter boxes, or backwash controls
No Underdrains or Screens	No short-circuiting
Sand Washed with Filtrate	Optimum sand-washing efficiency Superior filtrate quality
No Level Control	Reduced operator attention Minimizes overall pressure-drop
Internal, Vertical Airlift	Reduces potential for pluggage Significantly reduces wear/maintenance Can be easily maintained without filter shutdown
Low Power Requirements	Up to 70% less compressed air vs. other self-cleaning filters

DynaSand® Filter Continuous Contact Filtration Process

Water and wastewater treatment in conventional plants typically involves flocculation, clarification and filtration. Direct filtration eliminates clarification but still requires flocculation. The DynaSand filter utilizes a proprietary process known as Continuous Contact Filtration. The DynaSand filter's 80" media bed depth provides greater hydraulic residence times and more opportunity for floc formation and attachment. Thus, coagulation, flocculation and separation can be performed within the sand bed, eliminating the need for external flocculators and clarifiers. Equipment savings can be substantial, up to 85% compared to conventional treatment and 50% compared to direct filtration. The DynaSand Continuous Contact Filtration process is better suited to remove small floc, which can help reduce chemical requirements by 20-30% over conventional treatment.

Applications The DynaSand filter is currently providing exceptional treatment in over 8,000 installations worldwide in a wide variety of applications.



DynaSand Applications — partial list

Tertiary filtration • Algae removal • Potable water (turbidity and color) • Oil removal • Process water • Brine filtration • Metal finishing • Cooling tower blowdown • Steel mill scale • Chemical processing • Phosphorus removal • Product recovery • Denitrification • Cryptosporidium and Giardia removal • Surface water • Ground water • Arsenic removal • Effluent reuse

Typical Data	Loading rate (gpm/ft²)	Influent solids	Filtrate solids
Tertiary Filtration	3-5	20-50 ppm SS	5-10 ppm SS
Potable Water – Turbidity	4-5	10-30 NTU	0.1-0.5 NTU
Potable Water – Color	4-5	10–120 ACU	1-5 ACU
Process Water	5	10-30 NTU	0.1-0.5 NTU
Metal Finishing	4-6	20-50 ppm SS	2-5 ppm SS
Steel Mill Scale	8-10	50-300 ppm SS	5-10 ppm SS
Phosphorus Removal	3-5	<1 ppm Total P	<0.1 ppm Total P
Algae Removal	2-4	100 ppm SS	10-20 ppm SS
Denitrification	3-4	10-15 ppm TN	<3 ppm TN
Oil Removal	2-6	<50 ppm O&G	5-10 ppm O&G

PARKSON CORPORATION

ISO 9001:2000 Certified
Quality Management System

www.parkson.com

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Fort Lauderdale FL
33309-1721
P.O. Box 408399
Fort Lauderdale FL
33340-8399
P 954.974.6610
F 954.974.6182

Parkson Illinois
562 Bunker Court
Vernon Hills IL
60061-1831
P 847.816.3700
F 847.816.3707

Parkson Michigan
2001 Waldorf St. NW
Suite 300
Grand Rapids MI
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Pointe-Claire QC
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Canada
P 514.636.4618
F 514.636.9718

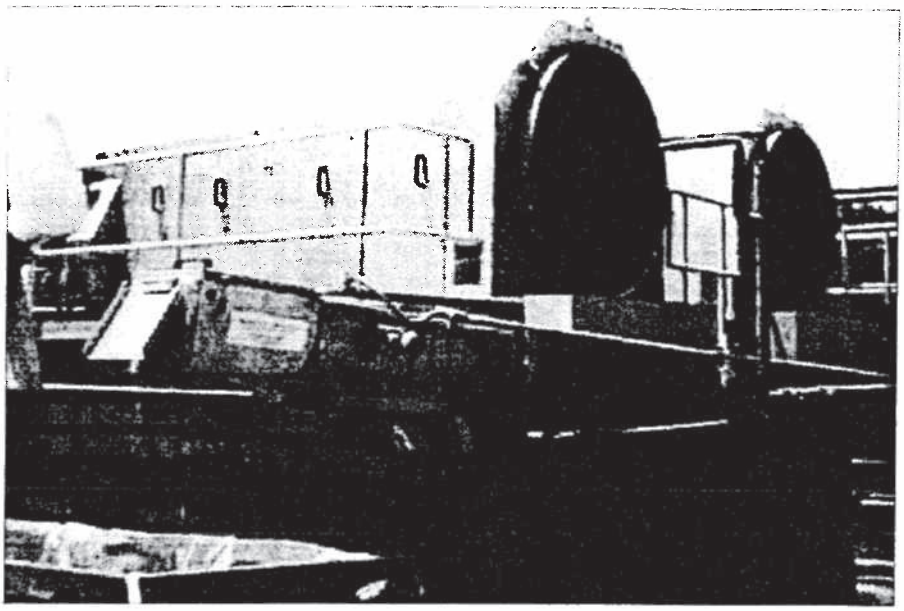
Parkson do Brasil Ltda.
Caixada dos Mirtilos, 15
Barueri, Sao Paulo
CEP 06453-000
Brasil
P/F 55.11.4195.5084
P/F 55.11.4688.0330

FINE SCREENING EQUIPMENT

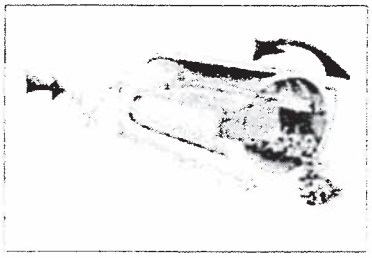
PARKSON CORPORATION
...the environmental technology company

Hycor® Rotoshear®

Internally-fed Rotary Wedgewire Screens



The Hycor Rotoshear screen is a high capacity fine screen that was developed over two decades ago. It has been continually updated with new design enhancements; and today, is represented by a complete family of screens. There are ten models with many application specific



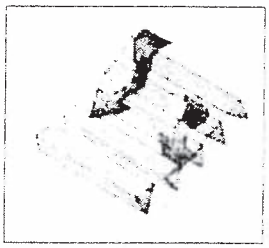
choice for efficient wastewater screening and improved by-product recovery in a multitude of applications. Heavy-duty models are available for heavy solids loadings. One, in fact, handles 25 wet tons per hour in a slaughterhouse application.

In wastewater treatment plants, the Rotoshear unit is respected as a fine screen for pretreatment and primary treatment as alternative technology to replace clarifiers. Meat processors, food processors, tanneries, textile mills, petrochemical plants, and recyclers rely on it for product recovery and wastewater

weirs and contacts two sides of the rotating cylinder screen. As the influent hits the turning screen, the solids are caught inside the cylinder and the liquid passes through the screen into the process or on for further treatment. Diverters on the cylinder move the solids along the length of the screen to discharge. The unit is equipped with spray bar(s) to clean the screen.

Wedgewire construction maximizes capture

The Rotoshear screen is constructed of quality 304 stainless steel wedgewire, recognized for its ability to handle stringy fibers, greasy solids and high concentrations of suspended solids without blinding. It is corrosion-resistant, durable, and will give years of trouble-free service. The entire wedgewire cylinder is surrounded by stainless ribbing for stability and long life.

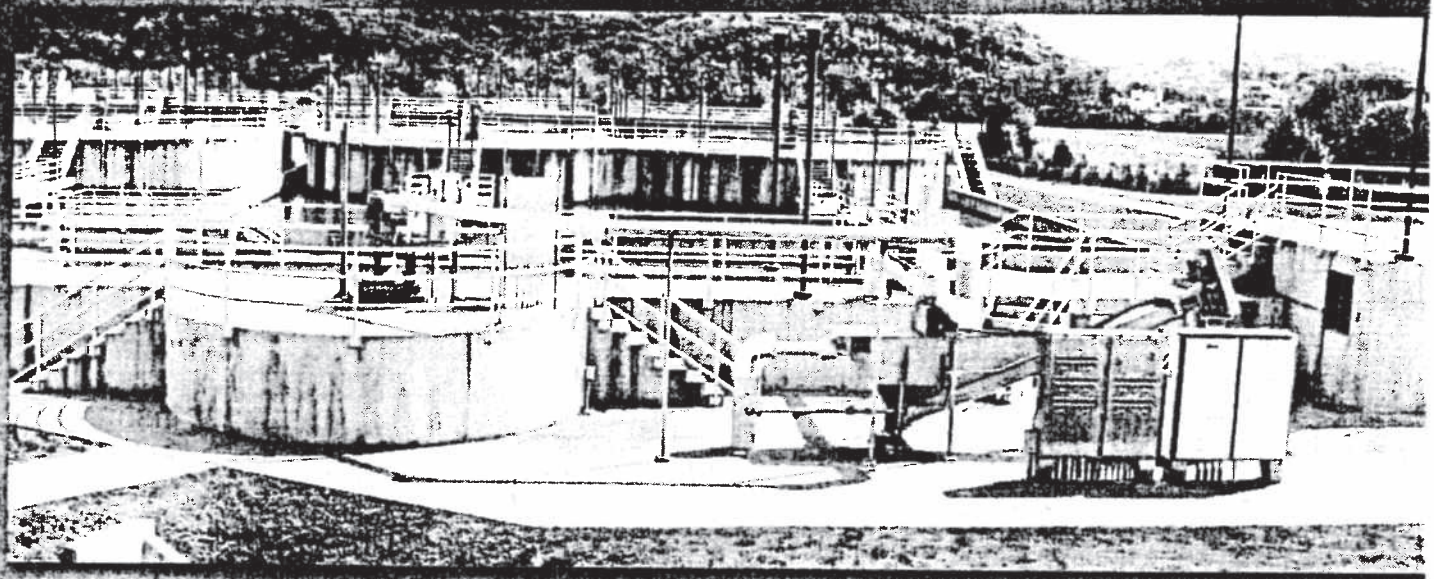


But wedgewire for high capacity capture is only part of the story. The Hycor Rotoshear unit is created with a precise relationship of headbox size to cylinder length which creates a drying zone to allow free drainage of screenings as they travel along to discharge.

GRIT REMOVAL EQUIPMENT

PISTA®

GRIT REMOVAL SYSTEM



COMPLETE GRIT HANDLING, WASHING, & DEWATERING

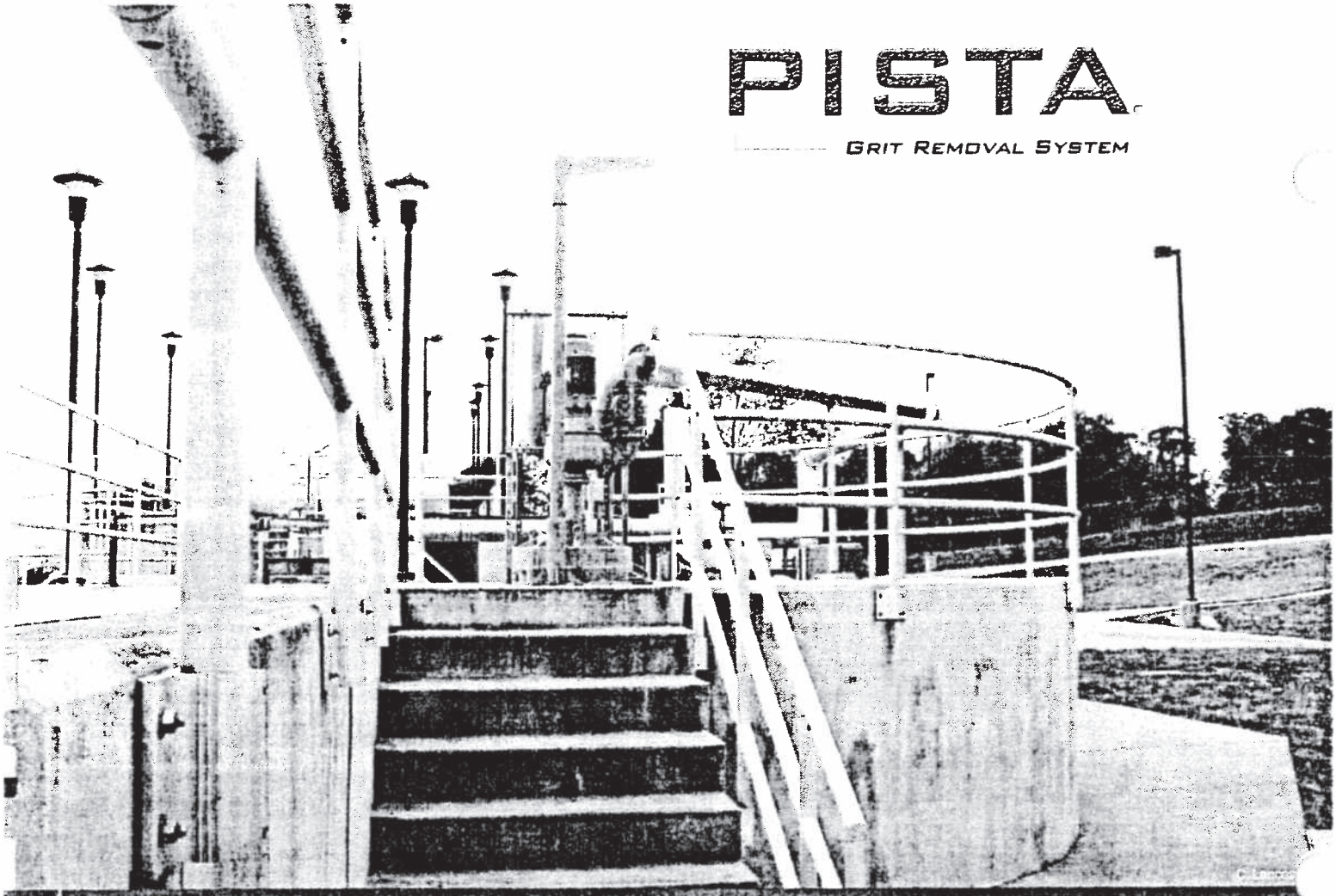
UNPARALLELED RESEARCH & DEVELOPMENT

HIGHEST GRIT REMOVAL EFFICIENCIES

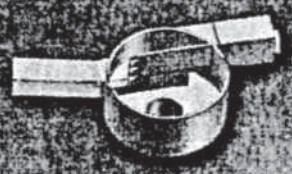
BY SMITH & LOVELESS INC.

PISTA

GRIT REMOVAL SYSTEM



UNPARALLELED INNOVATION FOR 30+ YEARS.



- 1973 - PISTA® Grit Removal System (270°)
- 1974 - PISTA® Grit Screw Conveyor
- 1978 - Air Lift Vents
- 1981 - 50 MGD PISTA® Grit Chamber
- 1982 - 175 GPM PISTA® Grit Concentrator
- 1982 - 4" PISTA® Turbo Grit Pump
- 1984 - 70 MGD PISTA® Grit Chamber
- 1988 - 360° PISTA® In-Line Design
- 1988 - 250 GPM PISTA® Grit Concentrator
- 1989 - Parallel (Lamella) Plate Screw Conveyor
- 1992 - PISTA® Grit Fluidizer
- 1998 - 6" PISTA® Turbo Grit Pump
- 1998 - 500 GPM PISTA® Grit Concentrator (Ni-Hard)
- 1999 - 100 MGD PISTA® Grit Chamber
- 2004 - PISTA® Flow Control Baffle
- 2004 - PISTA® Turbo Grit Pump with SonicStart™

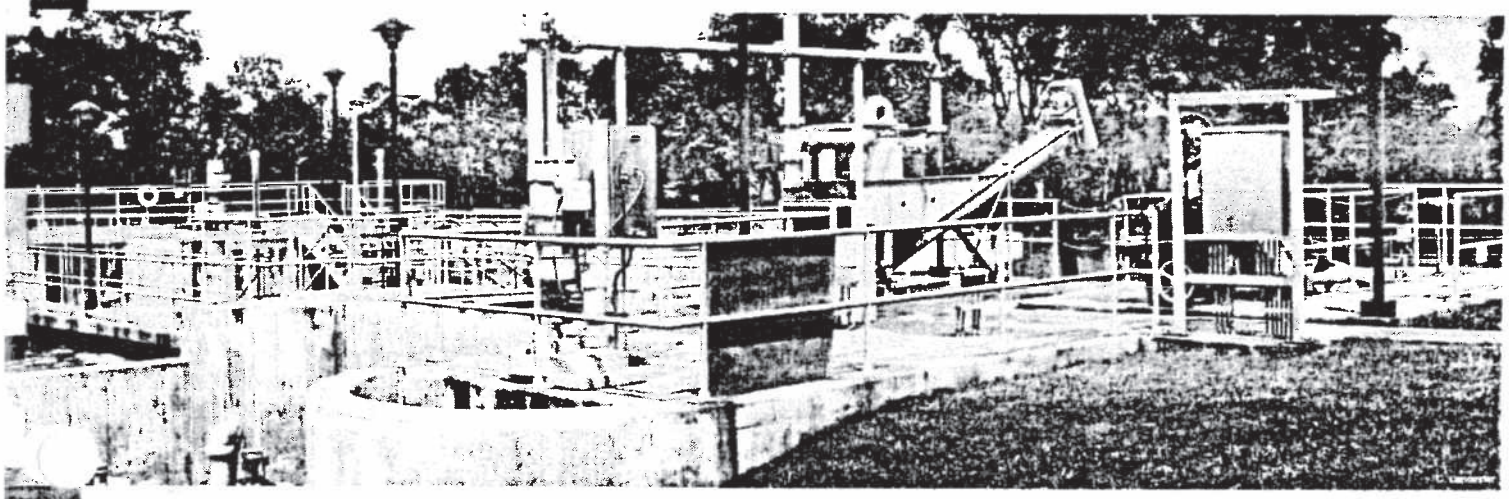
PISTA®

GRIT REMOVAL SYSTEM

Smith & Loveless' commitment to market leadership in grit removal kindles on-going research and development, which leads to continued system innovations. Since the introduction of the original vortex **PISTA**® Grit Chamber in the early 1970s, S&L has developed numerous patented and exclusive components to further enhance the capability for complete grit removal, handling, and dewatering. This innovation and experience makes the unparalleled **PISTA**® the industry's most specified grit removal system today.

Exclusive & Patented Features

- *Flat Bottom **PISTA**® Grit Chamber*
- ***PISTA**® Grit Flow Control Baffle*
- ***PISTA**® 360-degree In-Line Design*
- *Low Energy-Use **PISTA**® Propeller*
- *S&L **PISTA**® Coanda Ramp Design*
- ***PISTA**® Grit Fluidizer Vane*
- ***PISTA**® Turbo Grit Pumps with **SonicStart**™*
- ***PISTA**® Grit Handling System*



PISTA® GRIT REMOVAL SYSTEM *Unparalleled Vortex Grit Removal*

Removing grit reduces accumulation in downstream basins, channels and piping, thus preventing excess wear and abrasion on mechanical equipment and reduction of basin volumes and detention times.

The **PISTA**® Grit Removal System maintains the highest proven grit removal effciencies on the market over a wide range of daily flows. In fact, Smith & Loveless—backed by the experience *and* evidence of more than 2,000 system installations—publishes its removal efficiencies for a range of grit sizes, including fine grit. The **PISTA**® efficiencies are based on actual WWTP performance—not hypothetical testing or theorizing.

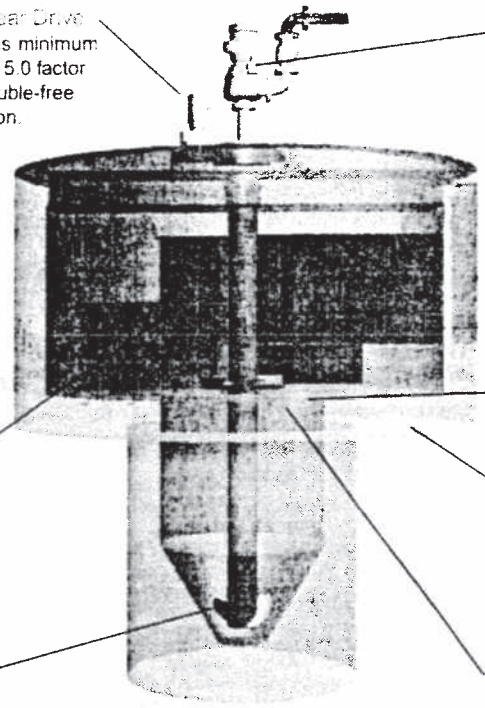
High removal efficiencies originate from the **PISTA**®'s unparalleled hydraulic design, including its flat grit chamber floor, engineered baffle arrangements and low-energy axial-flow propeller. The combination creates a true vortex which effectively separates grit from organics and the waste stream. Forced vortex action distinguishes the **PISTA**® because it does not rely *only* on less efficient particle settling or gravity.

Grit Characteristics & Removal

Grit consists of a variety of particles including sand, gravel and other heavy, discrete inorganic materials. A large majority of grit found in typical domestic sewage–in upwards of 90% and more–are coarser particles 50 mesh size grit and larger (300 µm). The remainder composition of smaller grit particles mostly ranges between 50 and 100 mesh (150 µm). Grit particles can reach 200 mesh (100 µm) in size—like silt—but turbulence in the flow prevents them from settling anywhere in the treatment scheme (not posing problems like typical grit). S&L's published removal efficiencies demonstrate percentage removal at various particulate sizes and total removal. Our field tests consistently prove that the **PISTA**® meets or exceeds 95 percent removal efficiency for all grit in a waste stream.

PISTA® Grit Chamber Features and Benefits

GRIT REMOVAL SYSTEM



Inlet Channel
Controls velocity of influent and draws grit to the grit chamber floor

Bull Gear Drive
Provides minimum service 5.0 factor and trouble-free operation.

PISTA® Turbo Grit Pump (Top-Mounted & Remote-Mounted Options)
Removes grit from storage hopper to washing dewatering. Available in vacuum-primed and flooded suction arrangements. Now available with **SonicStart™** prime sensing.

Outlet Channel
S&L can assist with design information for optimal performance.

Coanda Ramp
Engineered entry facilitates laminar flow so that it takes a steady tangential direction as it enters the grit chamber and properly conditions the grit for entrapment.

Axial-Flow Propeller
Aids in directing organic-free grit into lower hopper by enhancing flow patterns. Rounded edges prevent solids build-up, thus ensuring high efficiency.

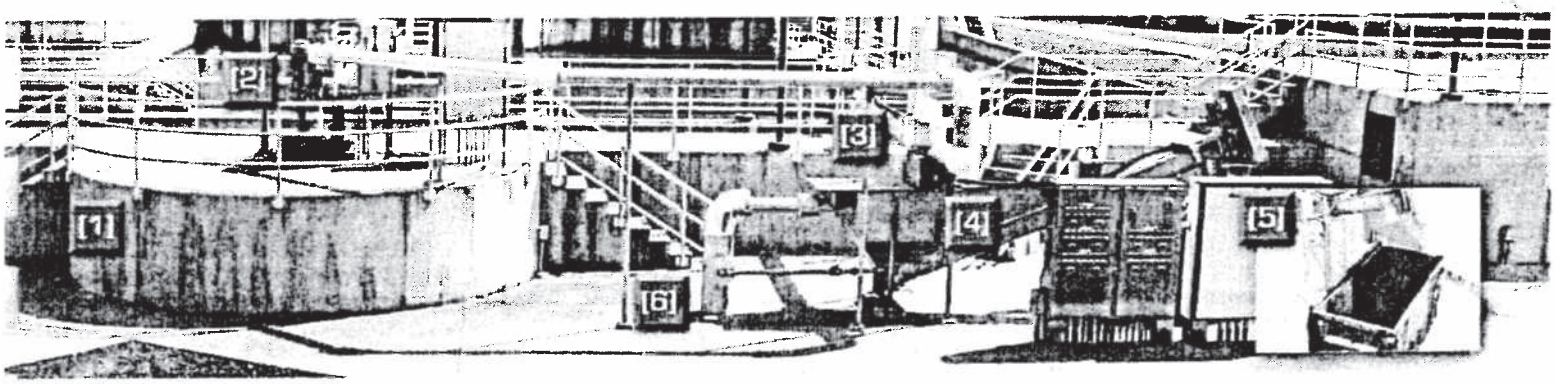
PISTA® Flow Control Baffle
New, patented innovation enhances removal efficiency for low-flow periods and offers design engineering benefits (*see page at right*)

Exclusive Flat-Bottom Basin Floor
Facilitates the forced vortex flow pattern inside the chamber. Minimizes organic capture while hydraulically directing grit into lower hopper. Patented, 360-degree in-line design.

PISTA® Grit Fluidizer
Patented blade exclusive to S&L design. Loosens collected grit, preventing compacting.

Storage Hopper
Stores removed grit prior to dewatering.

Hopper Cover Plate
Stationary and recessed, it removes for quick access to storage hopper.



PISTA® Complete Grit Removal, Handling & Dewatering System Flow Scheme

GRIT REMOVAL SYSTEM

[1] ***PISTA® Grit Chamber*** — Influent enters flat-floor grit chamber hydraulically guided by coanda ramp, internal baffles and central, low-speed propeller. Forced vortex drives grit particles to center chamber floor and into lower grit hopper while organics and flow continue to plant.

[2] ***PISTA® Turbo Grit Pump*** — Top-mounted or remote mounted unit pumps collected grit slurry (kept fluid by the **PISTA®** Grit Fluidizer) to the **PISTA®**'s second-stage grit washing and dewatering system while also providing proper head.

[3] ***PISTA® Grit Concentrator*** — Specifically engineered for the **PISTA®** system, this abrasion-resistant Ni-Hard unit washes grit further. It positions on the grit discharge line.

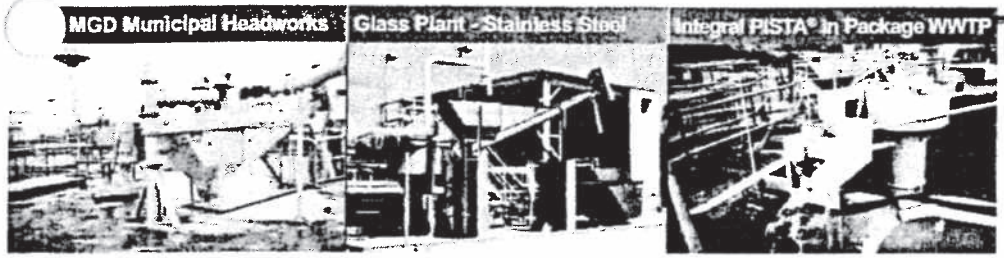
[4] ***PISTA® Grit Screw Conveyor*** — Grit from the concentrator deposits into the parallel (lamella) plate section of the S&L dewatering screw conveyor, which aids in retaining finer grit and reducing the stream's turbulence and overflow rate.

[5] ***Dewatered Grit Discharges*** from the top of the inclined screw conveyor into a container for disposal.

[6] ***The Flow and any Residual Organics are Returned*** to the inlet channel prior to the grit chamber, typically 93% of flow and 95% of organics.

PISTA® Design & Application

GRIT REMOVAL SYSTEM



The patented 360-degree in-line design (Model A Series) allows for easy installation to existing headworks.

PISTA® offers flexible application for true grit removal, whether from domestic sewage in a municipal WWTP headworks, distribution network pump stations or industrial process streams in a commercial production facility. The grit chamber can be installed above-grade or below ground with either concrete, carbon steel, or stainless steel tankage.

Individual units can handle waste streams less than 0.5 MGD all the way to 100 MGD. In large treatment works, multiple units arrange to efficiently remove grit from hundreds of millions of gallons of flow a day.

PISTA® Model Number	Max. Flow	Metric
0.5 / 0.5A	0.5 MGD	1,892 CMD
1.0 / 1.0A	1.0 MGD	3,785 CMD
2.5 / 2.5A	2.5 MGD	9,465 CMD
4.0 / 4.0A	4.0 MGD	15,140 CMD
7.0 / 7.0A	7.0 MGD	26,495 CMD
12.0 / 12.0A	12.0 MGD	45,420 CMD
20.0 / 20.0A	20.0 MGD	75,700 CMD
30.0 / 30.0A	30.0 MGD	113,550 CMD
50.0 / 50.0A	50.0 MGD	189,250 CMD
70.0 / 70.0A	70.0 MGD	265,000 CMD
100 / 100.0A	100.0 MGD	378,500 CMD

PISTA® New Flow Control Baffle Provides Engineering Benefits

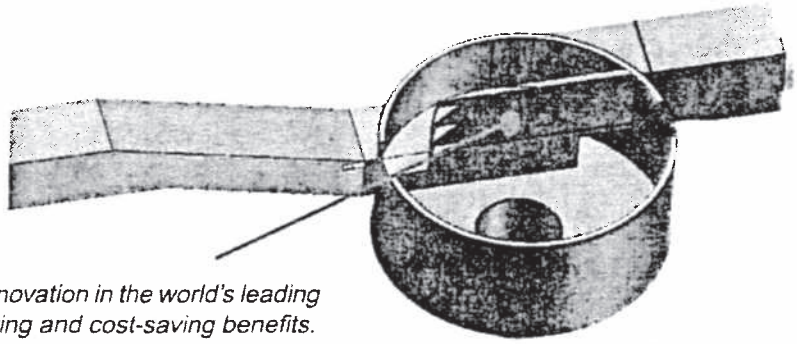
GRIT REMOVAL SYSTEM

The patented PISTA® Grit Flow Control Baffle provides many engineering benefits and cost-saving considerations. By increasing chamber velocity during low flow periods, the baffle extends the grit extraction path within the vortexing grit chamber. This is key because a longer grit path within in the flow pattern increases the likelihood of grit being captured on the chamber's flat-floor.

Beyond this, the PISTA® Grit Flow Control Baffle also permits design flexibility so that water elevations can be controlled. Controlling the water level is important because it upholds the proper velocities approaching the grit chamber. Previously, the most common way to accomplish this was to back up the flow with a downstream submerged weir. The PISTA® Flow Control Baffle with its preset inlet and outlet openings supplants the need for the submerged weir. By integrating the water elevation settings with the baffle, the overall outlet footprint requirements decrease as much as half the typical distance. This also affords the design engineer the flexibility to allow an outlet channel to make sharp turns immediately after leaving the circular portion of the grit chamber. The resulting smaller footprint provides significant construction cost savings.

Flow Control Baffle Benefits

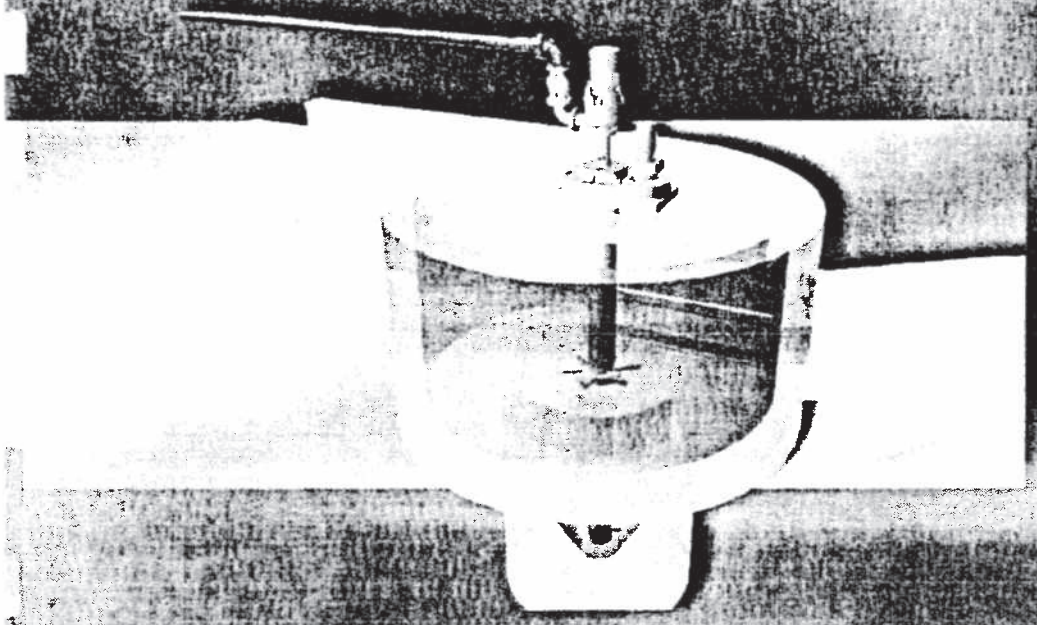
- *Increases grit chamber velocity during low-flow periods and removal efficiency by lengthening grit extraction path.*
- *Controls flow velocity and eliminates need for downstream level control devices.*
- *Decreases overall grit system footprint requirements.*



The PISTA® Grit Chamber Flow Control Baffle is the latest design innovation in the world's leading removal system. The baffle development offers many engineering and cost-saving benefits.

VISIT PISTAGRITCHAMBER.COM

UNPARALLELED GRIT REMOVAL.



Smith & Loveless Inc. knows grit removal. Our experience flows from more than three decades of thorough R&D and 2000+ PISTA® installations throughout North America and the world. Along the way, we've continued to enhance the complete system with innovations that deliver unparalleled results. With the PISTA® Grit Removal System you receive the finest in system performance backed by the value-added experience and support of Smith & Loveless.

PISTA®

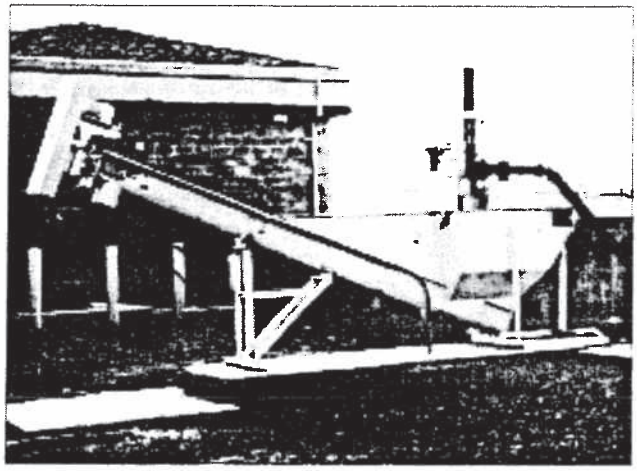
GRIT REMOVAL SYSTEM

BY SMITH & LOVELESS INC.

S&L®

The PISTA® Grit Screw Conveyor: Complete Your Grit Removal System

Smith & Loveless offers the second-stage dewatering companion, the **PISTA** Grit Screw Conveyor, designed to work with the **PISTA** Grit Chamber. The **PISTA** Grit Screw Conveyor is superior to other dewatering units because of its low maintenance and high retention of fine grit.



The **PISTA®** *Grit Screw Conveyor comes in Model 15 and Model 17 sizes, which provides increased settling and retention of fine grit.*

Design Benefits

The specially designed separate inlet zone reduces turbulence in the hopper by energy dissipation for better grit removal. Likewise, the conveyor offers increased grit retention because of its large grit settling area. The **PISTA®** Grit Screw Conveyor's parallel plate section acts as a high-rate settling device for the retention of fine grit. The introduction of an inclined plate pack makes a dramatic improvement to the Smith & Loveless **PISTA®** Grit Screw Conveyor.

Fine grit is also retained due to the incorporation of a longer, double-sided weir trough, which lowers the carry-over rate.

Screen Drawbacks

While screens are an effective method of dewatering grit, particularly in smaller plants, they do have their drawbacks. They can be maintenance intensive and allow fine grit to be returned to the flow stream. Not to mention that using screens for second-stage dewatering can be very messy!

A Better Choice

The design of the **PISTA®** Grit Screw Conveyor greatly reduces maintenance while offering increased grit removal and dryer grit. Additionally, the **PISTA®** Grit Screw Conveyor has a smaller profile for easier layout. It also has a specially designed outlet weir for reduced overflow rates and no underwater bearings.

The **PISTA®** Grit Screw Conveyor is the ideal second-stage dewatering choice, particularly for applications that currently use screens. Different size options are available to meet your grit loads.

How It Works

Flow enters the **PISTA®** Grit Screw Conveyor through the energy dissipation zone, then through the plate pack, thus settling the grit towards the screw for further grit dewatering. The dewatered grit then discharges from the top of the screw into a container for transport to final disposal.

PISTA® Grit Removal System

The **PISTA®** Grit Screw Conveyor is designed to work with the rest of the components available in the **PISTA®** Grit Removal System. A mixture of components from several manufacturers not designed to work together with the **PISTA®** Grit Chamber guarantees grit problems.

The System Concept

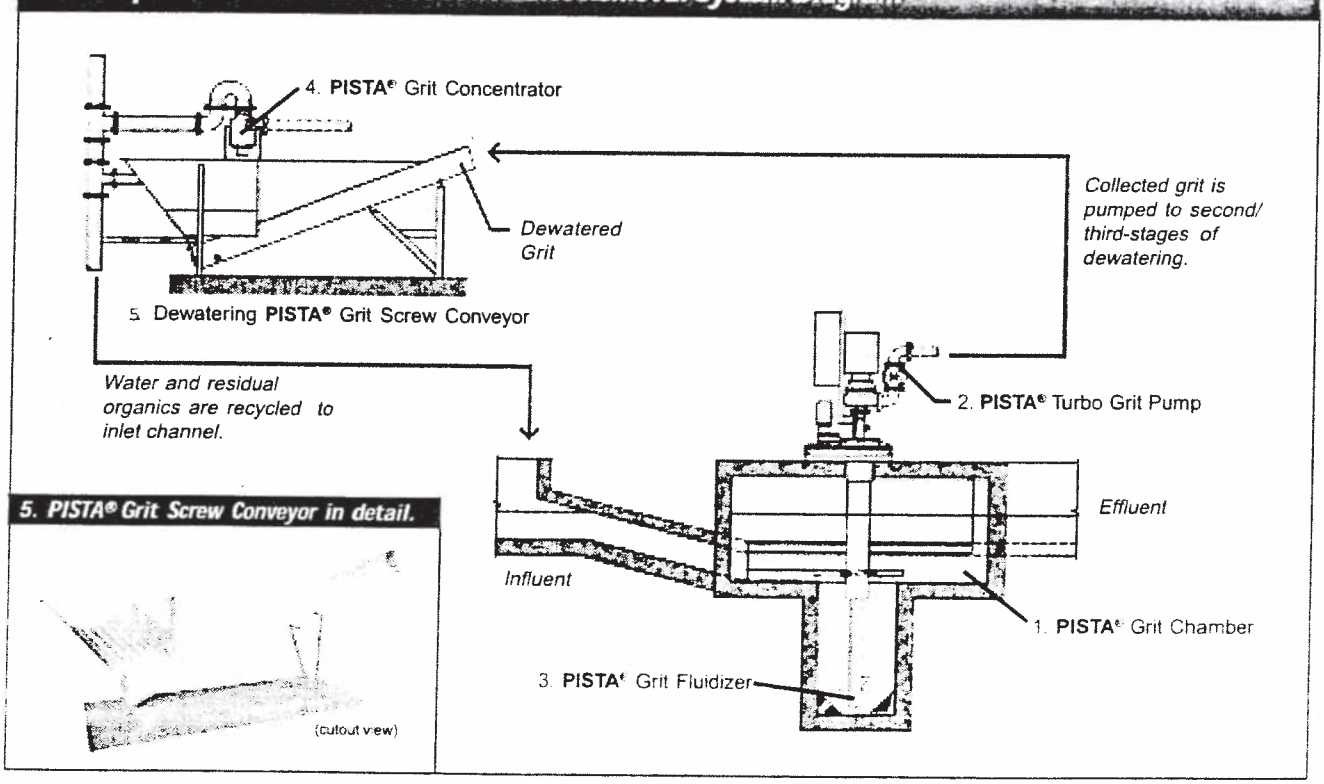
Field tests consistently show that the **PISTA®** Grit Removal System is the most efficient and effective grit removal system available. Although its patented design has endured for decades, new features and developments are constantly incorporated.

For maximum grit removal, the **PISTA®** Grit Chamber should be complemented with other Smith & Loveless **PISTA®** components. These components transport, dewater and prepare the grit for final disposal. These components can be retrofitted to increase the efficiency of your grit handling system originally equipped with older components or non-Smith & Loveless accessories.

Components

1. **PISTA®** Grit Chamber – The lowest cost, most efficient and effective grit removal system.
2. **PISTA®** Turbo Grit Pump – Specifically designed to pump grit. Supplies a greater flow at higher head, minimizing clogging.
3. **PISTA®** Grit **FLUIDIZER®** – Keeps grit in constant motion to prevent compaction.
4. **PISTA®** Grit Concentrator – Now abrasion resistant with cast Ni-Hard iron construction and larger diameters.
5. **PISTA®** Grit Screw Conveyor – Incorporates a parallel plate system for increased retention of fine grit.

The Complete Smith & Loveless PISTA® Grit Removal System Diagram

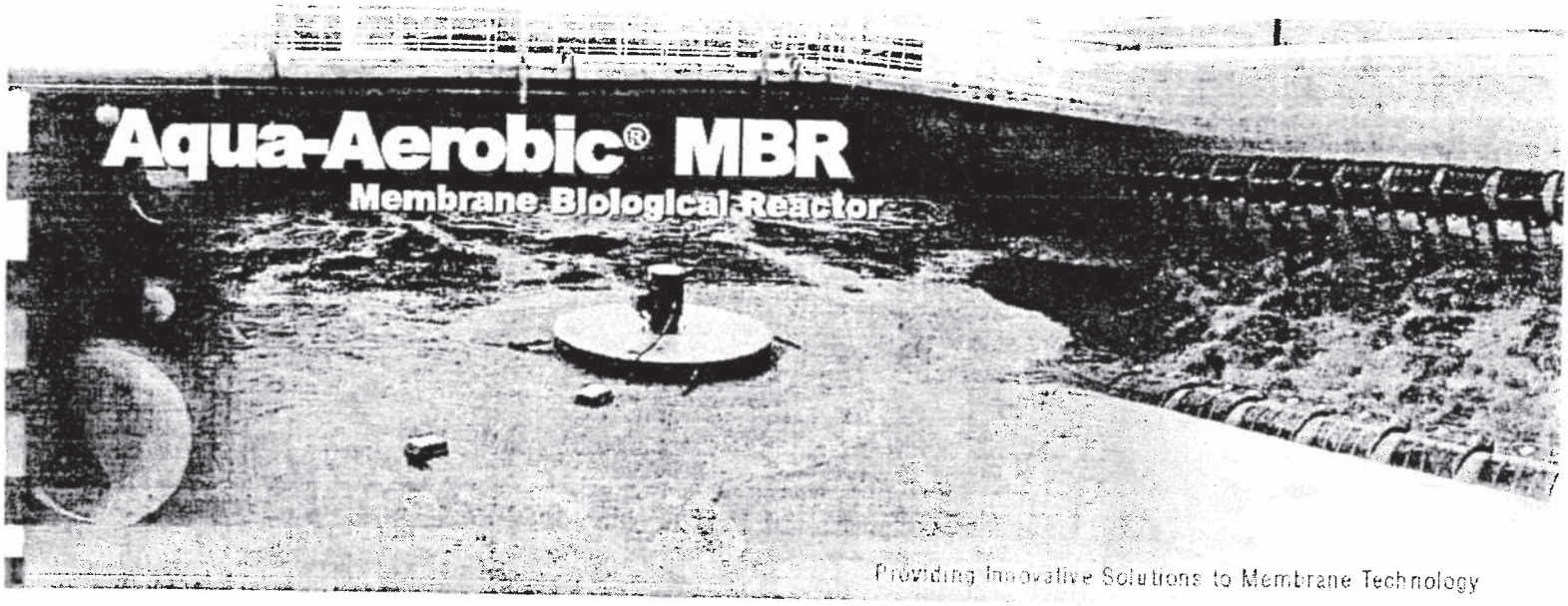


4-950 ©2003 Smith & Loveless, Inc.

SMITH & LOVELESS INC
Innovators for global pumping, water and wastewater treatment

Contact us via e-mail at answers@smithandloveless.com or through project inquiry at our website
14040 Santa Fe Trail Drive • Lenexa, KS 66215 USA • Phone: 913.888.5201 • Fax: 913.888.2173

MEMBRANE BIOREACTOR



Aqua-Aerobic Systems, Inc.

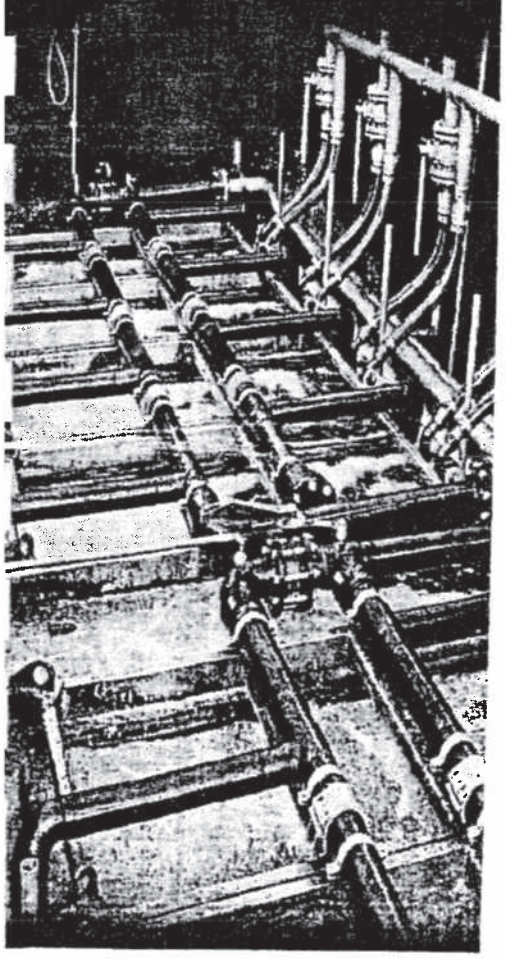
Aqua-Aerobic® MBR

Membrane Biological Reactor

The Aqua-Aerobic® MBR Membrane Biological Reactor is a unique, time-managed process which uses sequential aeration to promote biological nutrient removal in a simplified unit process. The integration of PURON® submerged membranes provides direct filtration of high-level MLSS. This unit process places the Aqua-Aerobic® MBR system in a unique class of high-quality, membrane-coupled biological reactors.

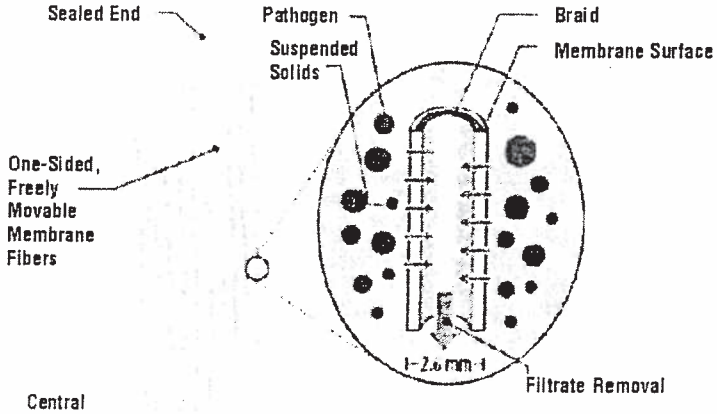
Applications

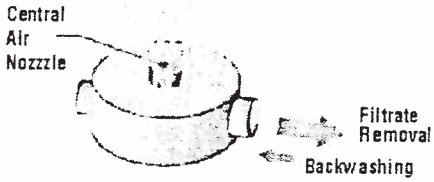
- Municipal wastewater reclamation
- Impaired water bodies (TMDL limits)
- Groundwater re-injection
- Finished water ideal for further treatment by reverse osmosis
- Industrial reuse reducing fresh-water demands
- Retrofit and expansion of existing treatment works
- Planning for future requirements

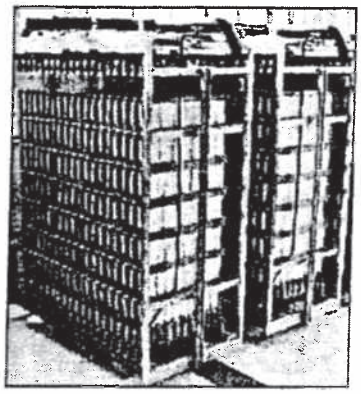


PURON® Submerged Membranes

- 0.05 micron filtration barrier to bacteria and suspended solids
- Single header design promotes unobstructed solids movement
- Central air injection eliminates sludge build-up at membrane support base
- Braided fiber offers exceptional mechanical strength
- Baffled design accelerates cross flow within membrane modules
- Open-top design of module eliminates clogging with hair and fibrous material
- Chemically resistant material offers flexibility in maintenance and recovery cleaning
- Elevated, stable fluxes maintained at high permeability levels
- Lowest energy consumption among submerged membranes
- Title 22 approved







KOCH MEMBRANE SYSTEMS

PURON® membranes are manufactured by Koch Membrane Systems, Inc

Aqua-Aerobic® MBR
Membrane Biological Reactor

Aqua-Aerobic® MBR Typical Arrangement

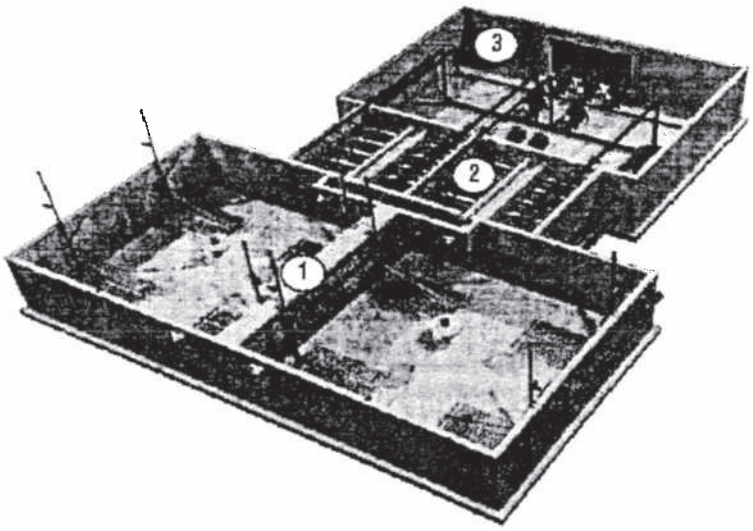
1. Biological Process – Screened influent enters the biological system and is treated via time-managed process control. Aeration is provided with retrievable diffusers, and independent mixing is used to conserve energy and assure a proper reactor environment. Efficient treatment can be performed in either a true-batch or a continuous-flow operational mode:

True-Batch Process: Flow enters one reactor at a time and is equalized during the aerated and mixed React Fill phase. The other reactor continues aeration and mixing, and sludge is transferred to the membrane tanks in the React Draw phase.

Continuous-Flow Process: The reactor water level is held nearly constant as flow enters into, and is discharged from all the reactors continuously.

2. Membrane Filtration – Sludge from the biological process is continuously fed to the membrane tanks. PURON® membranes are submerged directly in the biological solids and permeate is drawn equally from all membranes. Excess biological solids are either returned back to the biological reactors or wasted from the system.

3. System Control – A simplified arrangement of pumps and blowers are used to draw effluent and maintain membrane permeability. Backwashing, air scour and chemical cleaning is performed automatically under supervision of the plant operator.

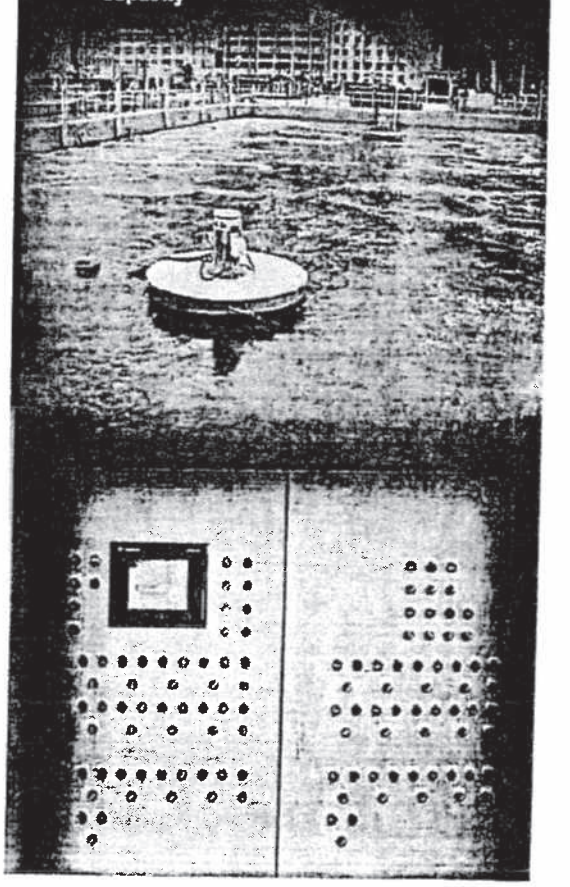


Membrane Biological Reactor

- Simplified pre-screening requirements
- Proven enhanced nutrient removal (ENR)
- Time-managed control offers unlimited operational flexibility with fewer tanks
- Separate nitrate recycle pumps are eliminated via time-based operation
- On-line, load-proportional demand oxygen control system
- Integrated equalization minimizes membrane area
- Controlled sludge recycle from membrane tanks prevents DO interference during anoxic treatment
- Predictive evaluation of membrane feed offers planned back-flush and relaxation

Advantages

- Ideal for space restricted applications
- Modular concept supports ease of expansion
- Lowest energy among MBR systems
- Superior performance reliability with membrane filtration
- Elevated mixed liquor suspended solids for volume reduction or sludge stabilization
- Positive barrier ensures high quality effluent is realized, even during severely under-loaded conditions
- Rapid solution for augmenting plant capacity



Aqua-Jet®
Surface Aerators

Aqua-Jet II®
Contained Flow Aerators

AquaDDM®
Direct Drive Mixer-Blenders

Aqua MixAir®
Aeration Systems

Aqua EnduraDisc®
Fine Bubble Diffusers

Aqua EnduraTube®
Fine Bubble Diffusers

Aqua CB-24®
Coarse Bubble Diffusers

AquaSBR®
Sequencing Batch Reactors

AquaExcel®
Batch Reactor with AquaEnsure®

Aqua MSBR®
Modified Sequencing Batch Reactor

AquaPASS™
Phased Activated Sludge Systems

AquaMB Process®
Multiple Barrier Membrane Systems

Aqua-Aerobic® MBR
Membrane Biological Reactors

AquaDisk®
Cloth Media Filters with OptiFiber™

Aqua MiniDisk®
Cloth Media Filters with OptiFiber™

AquaDiamond®
Cloth Media Filters with OptiFiber™

AquaDrum®
Cloth Media Filters with OptiFiber™

AquaABF®
Automatic Backwash Filters

ThermoFlo®
Surface Spray Coolers

IntelliPro®
Process Management System

Contact Your Local Representative:

Aqua-Aerobic Systems, Inc.
6306 N. Alpine Rd • P.O. Box 2026 • Rockford, IL 61130
(Phone) 815/654-2501 • (Fax) 815/654-2508
Email: solutions@aqua-aerobic.com • www.aqua-aerobic.com

The information contained herein relative to data, dimensions and recommendations as to size, power and assembly are for purpose of estimation only. These values should not be assumed to be universally applicable to specific design problems. Particular designs, installations and plants may call for specific requirements. Consult Aqua-Aerobic Systems, Inc. for exact recommendations or specific needs. Patents Apply. Patents Pending.

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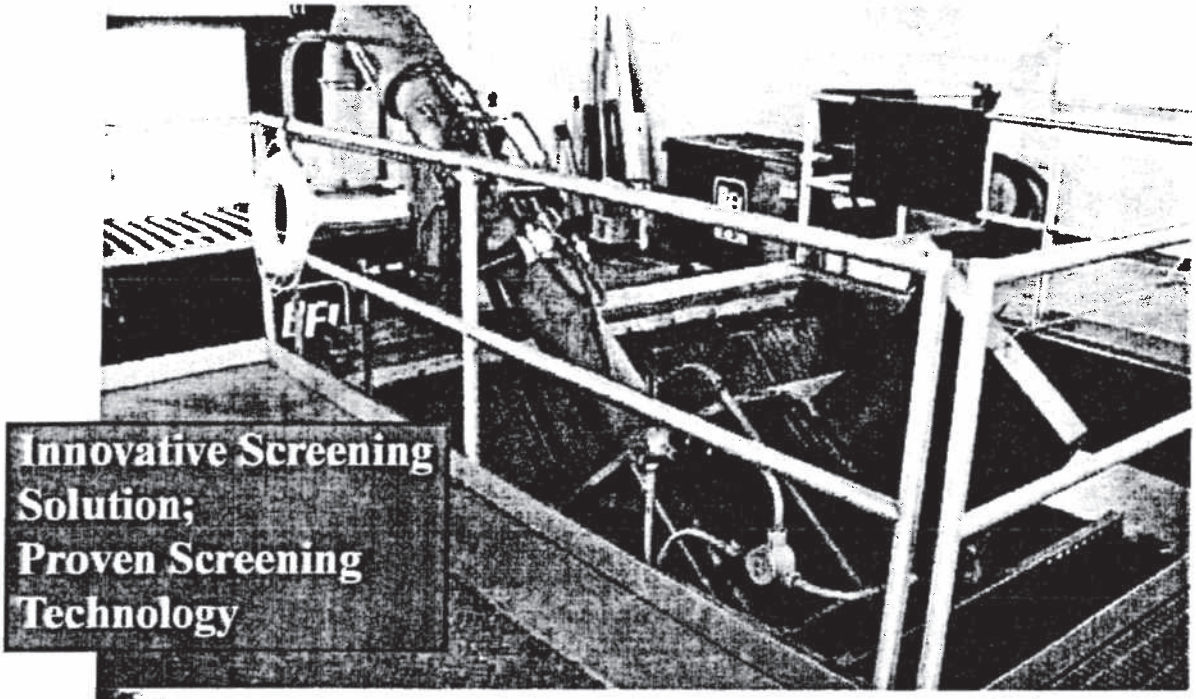
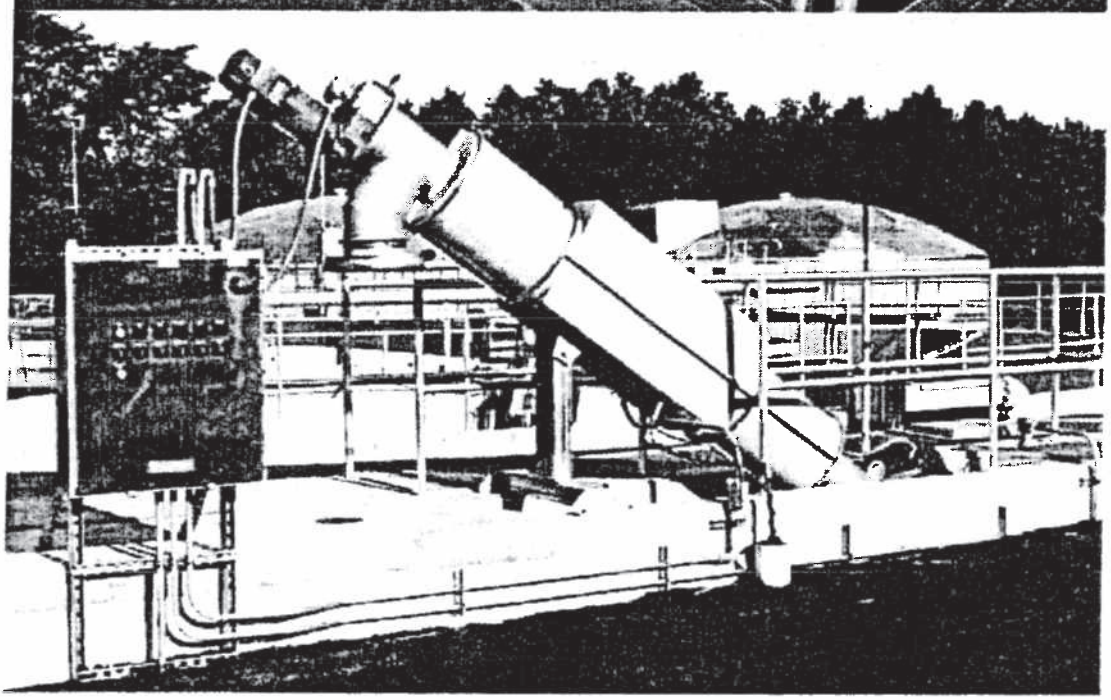
Bulletin #650A 12/06

NORTHERN AREA WWTP

Lakeside's *RAPTOR*® Fine Screen



Innovative Screening Solution; Proven Screening Technology



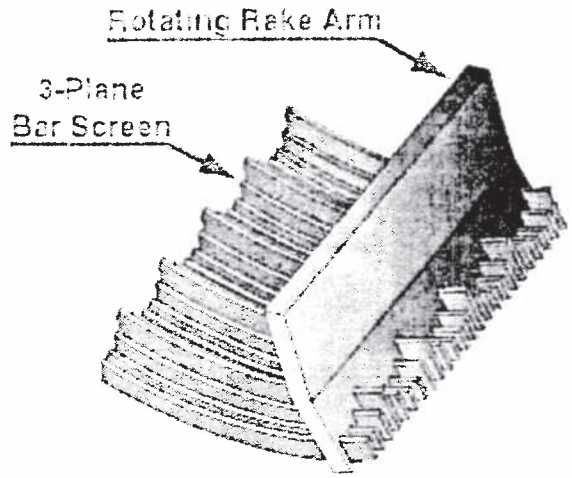
- Removes More Solids Than Other Screens
- Single operational unit screens, compacts and dewaters
- Design minimizes maintenance costs

Lakeside's *Raptor* Fine Screen

With hundreds of installations in operation worldwide, the Lakeside *Raptor* Fine Screen is proven screening technology. This unique in-channel bar screen not only screens wastewater but washes, compacts and transports the screenings. Unlike conventional bar screens, the *Raptor* Fine Screen's characteristic cylindrical screen, angled installation and screen bars of varied heights increase removal efficiency and decrease head loss.

Because captured solids are washed, compacted and dewatered up to a 40 percent solids content, disposal costs are reduced. The *Raptor* Fine Screen also minimizes maintenance expenses with all stainless steel construction and a single drive. With only one motorized moving part, the unit is durable and simple in design.

The unit is shipped fully assembled and easily installs into open channels for reduced installation costs.

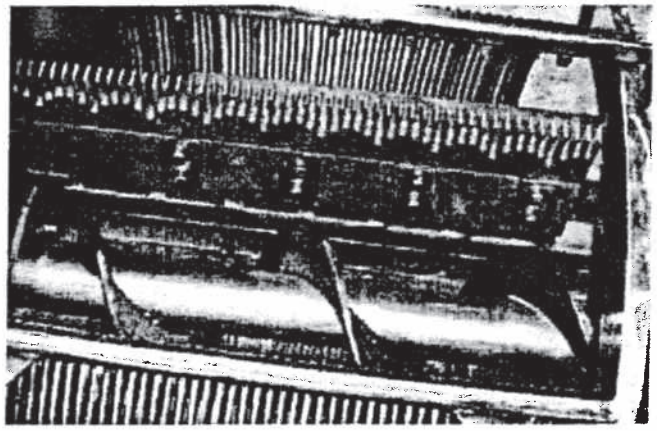


The Lakeside Raptor Fine Screen offers a heavy duty stainless steel rake head that penetrates the screen bars to positively remove grease and debris without blinding and plugging.

The Design Sets Lakeside Apart

Positive Screenings Removal

The *Raptor* Fine Screen's bar spacing ranges from 1/4 to 1/2 inches (6 to 12 mm) to remove solids that normally pass through conventional screens. Debris is removed from the screening area by a rotating rake that passes through the full depth of the bars. **The Lakeside *Raptor* Fine Screen is the only heavy-duty 3-plane screen on the market where the rake passes through the full depth of the basket bars.**



Positive screenings removal is accomplished by the heavy-duty rake design. Grease, rags and hair will not plug the Raptor Fine Screen.

Greater Removal Efficiency

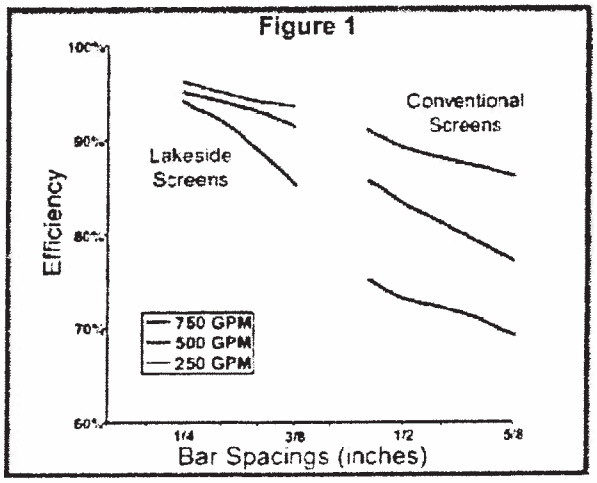
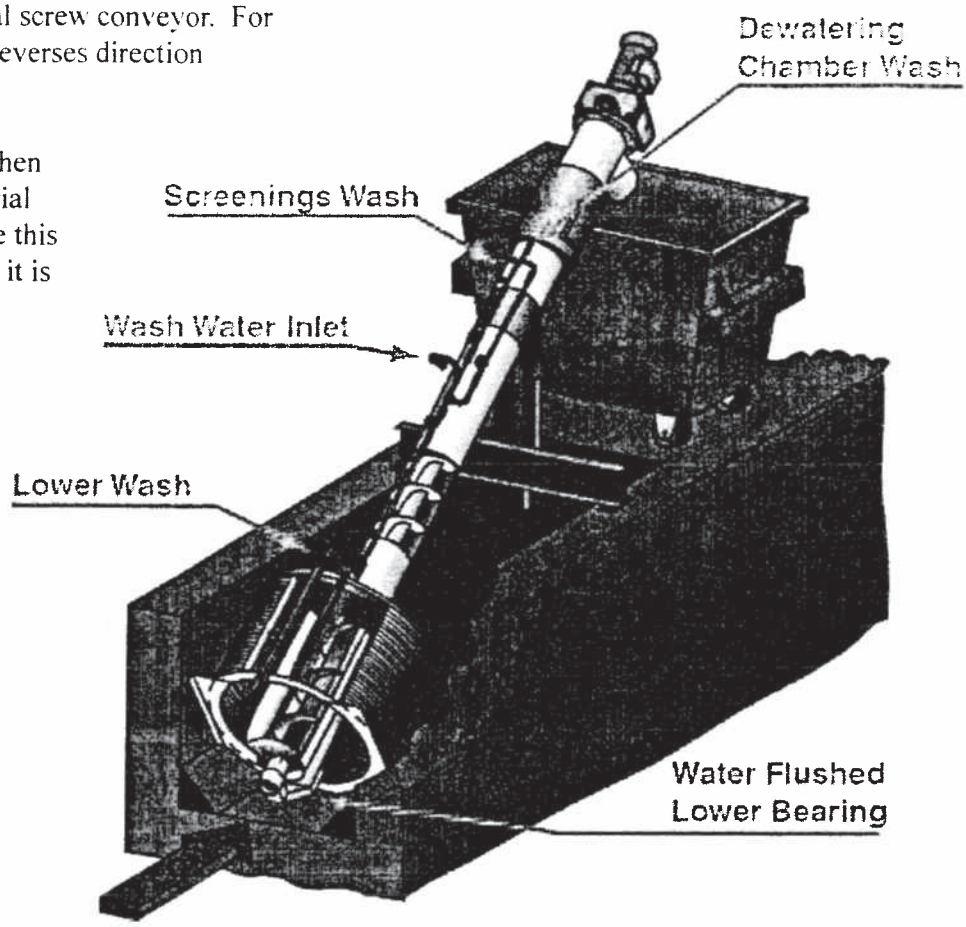


Figure 1 shows the high removal efficiency of the Raptor Fine Screen compared to conventional bar screens at flow rates of 250 gpm, 500 gpm, and 750 gpm.

Tests with a wastewater solids content of 64 cubic feet per million gallons showed that approximately 62 cubic feet of screenings per million gallons were removed by the Raptor Fine Screen. The removal efficiency of the screen was over 96 percent.

Engineered for Superior Operation and Performance

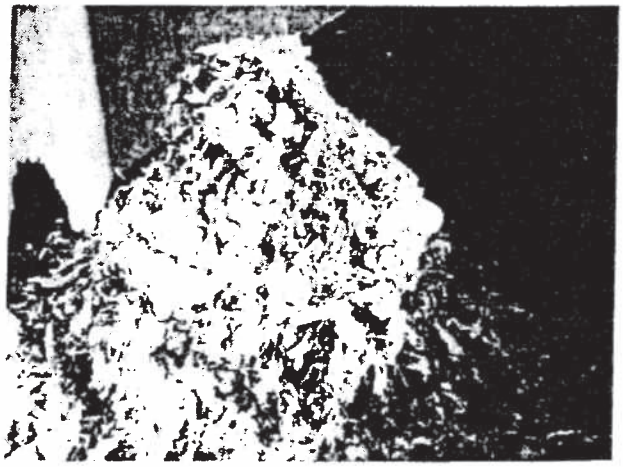
As liquid flows through the screening basket, solids are trapped by the screen bars that form the circular basket. When the liquid rises to a predetermined level, the rake begins to rotate to clean the screen bars. The rake's teeth pass between the bars of the screen to remove the screened material. When the rake reaches the top of the screen, the captured material drops into the central screw conveyor. For complete cleaning, the rake reverses direction and passes through a comb.



The central screw conveyor then transports the screened material to the discharge chute. While this material is being transported, it is washed, compacted and dewatered. Dewatered screenings have a solids content exceeding 40 percent when discharged.

Screenings are initially washed as they are deposited in the collection trough. The screenings are washed a second time at the upper section of the transport tube. The macerating action of the screw breaks down large organic particles which are then washed back into the flow stream. A spray wash system in the dewatering chamber removes any collected material to ensure free drainage of water that is removed in the compaction process.

The *Raptor* Fine Screen can fit your needs with bar spacings from 1/4 to 1/2 inches (6 to 12 mm) and a screen diameter from 24 to 71 inches. The largest single screen can handle a maximum flow of up to 21.9 mgd. For higher capacities, multiple screens can be installed.



The photo at right is of actual material discharged from a Lakeside Raptor Fine Screen. Screenings are compacted, dewatered and washed free of most organic materials to approximately 40 percent solids. Volume is reduced by 50 percent and weight by 67 percent, thereby reducing disposal costs.

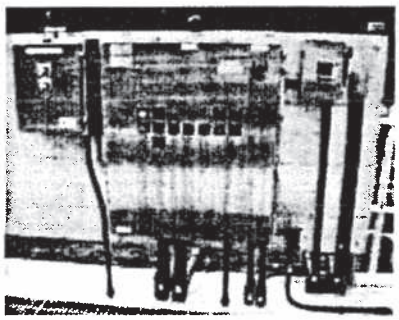
RAPTOR Fine Screen Benefits

- Simple design and operation lengthen the unit's life and minimize maintenance costs. The unit can easily pivot out of the channel for servicing.
- Single operational unit screens, compacts, dewaters, and transports solids, and provides a high removal efficiency and low head loss.
- Slow operating speed and minimal number of moving parts reduce wear caused by sand and grit, and increase mechanical dependability.
- Dual spray wash systems return organic materials to the wastewater flow.
- All stainless steel construction resists corrosion.
- No bearings to grease and no chains to tighten.
- Direct installation minimizes construction costs.
- Factory pre-wired solenoid valves save on installation costs.
- Enclosed transport and optional bagging attachment reduce odors and offer a clean work area.
- Optional insulation and heating system available for cold weather operation.

Additional Features

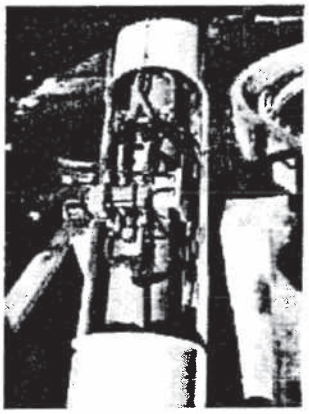
Control Panel

Lakeside control panels are PLC equipped for versatile and efficient operation. Explosion-proof designs are available.



Operation is completely automatic.

Factory Pre-Wired



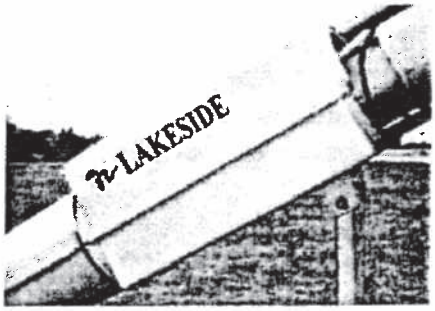
Factory pre-wired solenoid valves save installation costs.

Optional Bagging Attachment

The optional continuous bagging attachment provides a clean work area.

Optional Weather Protection System

Available for all sizes of screens and transport tubes, the Lakeside weather protection system protects to 13° below zero (minus 25° C).



Constructed of fiberglass reinforced polyester laminate.

LAKESIDE

1022 E. Devon, P.O. Box 8448
Bartlett, IL 60103
630/837-5640 FAX 630/837-5647
E-mail sales@lakeside-equipment.com

APPENDIX C

BEINHOWER ROAD PUMP STATION ALTERNATIVES
CAPITAL COST ESTIMATES

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade						**Computed By:**			JDG
Location:	New Cumberland, PA						**Checked By:**			RCF
Owner:	York County						**Design Status of Estimate:**			Study
Description:	**Beinhower PS Upgrade**						**Project Number:**			71128
	Quantity		Material		Equipment		Labor			
Description	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	Total Cost
Equipment										
Pump Modifications	1	LS	$65,000	$65,000			-	-	$32,500	$97,500
New Generator w/ ATS	1	LS	$50,000	$50,000						$50,000
Piping & Valve Allowance	1	LS	$7,375	$7,375						$7,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			**5%**	$6,100	**5%**			**5%**	$1,600	
Subtotal				$128,500					$34,100	**$163,000**
Taxes			**Tax-Exempt**	$0	**0%**	$0		**0%**	$0	
Overhead			**10%**	$12,900	**10%**			**10%**	$3,400	
Profit			**10%**	$12,900	**10%**			**10%**	$3,400	
Subtotal				$154,300					$40,900	**$195,000**
Contingency										
TOTAL				$154,300					$40,900	**$200,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Beinhower PS Modification & New PS	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
New PS Wetwell	34	CY	$750	$25,500						$25,500
Civil										
Excavation	962	CY			$3	$2,887	0.4	$38	$14,627	$17,510
Crushed Stone Bedding	2	CY	$15.00	$31	$3	$6	0.250	$38	$20	$60
Backfill (on-site material)	870	CY			$3	$2,610	0.250	$38	$8,266	$10,880
Hauling	92	CY	$7.30	$673			0.110	$38	$385	$1,060
Misc. Metals										
Access Hatches	16	SF	$60	$960						$960
Equipment										
New PS Pump Equip	1	LS	$75,211	$75,211			-	-	$37,606	$112,820
Beinhower PS Pump Mods	1	LS	$64,420	$64,420			-	-	$32,210	$96,630
New PS Gen w/ ATS	1	LS	$25,000	$25,000						$25,000
New Beinhower Gen w/ ATS	1	LS	$50,000	$50,000						$50,000
Piping & Valve Allowance	1	LS	$17,021	$17,021						$17,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$12,900	5%	$300		5%	$4,700	
Subtotal				$271,700		$5,800			$97,800	**$375,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$27,200	10%	$600		10%	$9,800	
Profit			10%	$27,200	10%	$600		10%	$9,800	
Subtotal				$326,100		$7,000			$117,400	**$451,000**
Contingency										
TOTAL				$326,100		$7,000			$117,400	**$450,000**

APPENDIX D

WWTP ALTERNATIVES - CAPITAL COST ESTIMATES

SOUTHERN AREA WWTP

ALTERNATIVE S-1
SUMMARY OF ESTIMATED COSTS

Fairview Southern Area WWTP BNR Upgrade and Expansion
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
Sequencing Batch Reactors	$2,390,000
Post EQ Tank & Interm. Pumping Station	$389,000
Effluent Filters	$1,630,000
Post Aeration & Dechlorination	$127,000
Beinhower Pumping Station Modifications	$195,000
Subtotal Capital Costs	**$4,730,000**
Sitework (7%)	$331,000
Electrical (15%)	$710,000
Instrumentation (5%)	$237,000
Subtotal Capital Costs	**$6,010,000**
Mobilization/Demobilization (5%)	$301,000
Subtotal Capital Costs	**$6,310,000**
Contingency (25%)	$1,578,000
Total Capital Costs	**$7,890,000**
Engineering/Legal/Admin (15%)	$1,184,000
Total Design & Construction Services	**$9,100,000**
Inflation to construction mid point (2009) (1)	$730,000
Total Project Cost	**$9,800,000**

(1) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Sequencing Batch Reactors**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Slab Concrete	481	CY	$500	$240,667						$240,670
Wall Concrete	277	CY	$750	$207,396						$207,400
Civil										
Excavation	3093	CY			$3	$9,280	0.4	$38	$47,019	$56,300
Crushed Stone Bedding	120	CY	$15.00	$1,805	$3	$361	0.250	$38	$1,143	$3,310
Backfill (on-site material)	494	CY			$3	$1,482	0.250	$38	$4,694	$6,180
Hauling	2599	CY	$7.30	$18,975			0.110	$38	$10,865	$29,840
Misc. Metals										
Stairs	32	RISER	$400.00	$12,800			1.000	$38	$1,216	$14,020
Handrail	330	LF	$70.00	$23,100			0.400	$38	$5,016	$28,120
Equipment										
SBR Equipment	1	LS	$660,000	$660,000			-	-	$330,000	$990,000
New WWTP Gen (800 kW)	1	LS	$163,000	$163,000			-	-	$81,500	$244,500
Piping & Valve Allowance	1	LS	$78,792	$78,792						$79,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$70,300	5%	$600		5%	$24,100	
Subtotal				$1,476,800		$11,700			$505,600	**$1,994,000**
Taxes			**Tax-Exempt**	$0	0%	$0		0%	$0	
Overhead			10%	$147,700	10%	$1,200		10%	$50,600	
Profit			10%	$147,700	10%	$1,200		10%	$50,600	
Subtotal				$1,772,200		$14,100			$606,800	**$2,393,000**
Contingency										
TOTAL				$1,772,200		$14,100			$606,800	**$2,390,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Post Equilization Tank & Interm. PS**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	Cost
Concrete										
Slab Concrete	59	CY	$500	$29,333						$29,330
Wall Concrete	89	CY	$750	$66,667						$66,670
Civil										
Excavation	2027	CY			$3	$6,081	0.4	$38	$30,812	$36,890
Crushed Stone Bedding	15	CY	$15.00	$220	$3	$44	0.250	$38	$139	$400
Backfill (on-site material)	1590	CY			$3	$4,770	0.250	$38	$15,105	$19,870
Hauling	437	CY	$7.30	$3,191			0.110	$38	$1,827	$5,020
Misc. Metals										
Stairs	8	RISER	$400.00	$3,200			1.000	$38	$304	$3,500
Handrail	102	LF	$45.00	$4,590			0.400	$38	$1,550	$6,140
Equipment										
Small Intermediate Pumps	2	EA	$5,000	$10,000					$5,000	$15,000
Large Intermediate Pumps	2	EA	$15,000	$30,000					$15,000	$45,000
Intermediate PS CP + VFDs	1	LS	$35,000	$35,000					$17,500	$52,500
Piping & Valve Allowance	1	LS	$28,032	$28,032						$28,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$10,500	5%	$500		5%	$4,400	
Subtotal				$220,700		$11,400			$91,600	**$324,000**
Taxes			**Tax-Exempt**	$0	0%	$0		0%	$0	
Overhead			10%	$22,100	10%	$1,100		10%	$9,200	
Profit			10%	$22,100	10%	$1,100		10%	$9,200	
Subtotal				$264,900		$13,600			$110,000	**$389,000**
Contingency										
TOTAL				$264,900		$13,600			$110,000	**$389,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Effluent Filters	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Architectural										
Filter Building	440	SF	$250	$110,000						$110,000
HVAC	1	LS	$30,000	$30,000						$30,000
Concrete										
Slab Concrete	67	CY	$500	$33,407						$33,410
Wall Concrete	193	CY	$750	$144,375						$144,380
Grout for filter bottom cone	49	CY	$300	$14,700						$14,700
Channel Slab Concrete	20	CY	$750	$14,750						$14,750
Channel Wall Concrete	18	CY	$750	$13,861						$13,860
Civil										
Excavation	2097	CY			$3	$6,291	0.4	$38	$31,875	$38,170
Crushed Stone Bedding	17	CY	$15.00	$251	$3	$50	0.250	$38	$159	$460
Backfill (on-site material)	1641	CY			$3	$4,922	0.250	$38	$15,586	$20,510
Hauling	456	CY	$7.30	$3,331			0.110	$38	$1,907	$5,240
Misc. Metals										
Stairs	32	RISER	$400.00	$12,800			1.000	$38	$1,216	$14,020
Handrail	92	LF	$70.00	$6,440			0.400	$38	$1,398	$7,840
Aluminum Plank Covers	314	SF	$55	$17,270			-	-	$8,635	$25,910
Access Hatches	54	SF	$65	$3,510			-	-	$1,755	$5,270
Equipment										
Filter Equipment	1	LS	$490,000	$490,000			-	-	$147,000	$637,000
Methanol Feed System	1	LS	$40,000	$40,000			-	-	$20,000	$60,000
Piping & Valve Allowance	1	LS	$117,552	$117,552						$118,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$52,600	5%	$600		5%	$11,500	
Subtotal				$1,104,800		$11,900			$241,000	**$1,358,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$110,500	10%	$1,200		10%	$24,100	
Profit			10%	$110,500	10%	$1,200		10%	$24,100	
Subtotal				$1,325,800		$14,300			$289,200	**$1,629,000**
Contingency										
TOTAL				$1,325,800		$14,300			$289,200	**$1,630,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Post Aeration Tank**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Tank Modifications	1	LS	$20,000	$20,000						$20,000
Equipment										
Aeration Equipment	1	LS	$9,000	$9,000			-	-	$4,500	$13,500
Piping	1	LS	$10,000	$10,000			-	-	$5,000	$15,000
Dechlorination Equipment	1	LS	$20,000	$20,000			-	-	$10,000	$30,000
Dechlorination Flash Mixer	1	LS	$7,000	$7,000			-	-	$3,500	$10,500
Dechlorination Piping	360	LF	$20	$7,200						$7,200
Piping & Valve Allowance	1	LS	$4,810	$4,810						$5,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$3,900	5%			5%	$1,200	
Subtotal				$81,900					$24,200	**$106,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$8,200	10%			10%	$2,400	
Profit			10%	$8,200	10%			10%	$2,400	
Subtotal				$98,300					$29,000	**$127,000**
Contingency										
TOTAL				$98,300					$29,000	**$127,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Beinhower PS Upgrade**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Equipment										
Pump Modifications	1	LS	$65,000	$65,000			-	-	$32,500	$97,500
New Generator w/ ATS	1	LS	$50,000	$50,000						$50,000
Piping & Valve Allowance	1	LS	$7,375	$7,375						$7,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$6,100	5%			5%	$1,600	
Subtotal				$128,500					$34,100	**$163,000**
Taxes			**Tax-Exempt**	$0	0%	$0		0%	$0	
Overhead			10%	$12,900	10%			10%	$3,400	
Profit			10%	$12,900	10%			10%	$3,400	
Subtotal				$154,300					$40,900	**$195,000**
Contingency										
TOTAL				$154,300					$40,900	**$195,000**

ALTERNATIVE S-2
SUMMARY OF ESTIMATED COSTS

Fairview Southern Area WWTP BNR Upgrade and Expansion
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
Headworks Modifications	$674,000
Membrane Bioreactors	$6,930,000
Post Aeration & Dechlorination	$127,000
Beinhower Pumping Station Modifications	$195,000
Subtotal Capital Costs	**$7,930,000**
Sitework (7%)	$555,000
Electrical (15%)	$1,190,000
Instrumentation (5%)	$397,000
Subtotal Capital Costs	**$10,070,000**
Mobilization/Demobilization (5%)	$504,000
Subtotal Capital Costs	**$10,570,000**
Contingency (25%)	$2,643,000
Total Capital Costs	**$13,210,000**
Engineering/Legal/Admin (15%)	$1,982,000
Total Design & Construction Services	**$15,200,000**
Inflation to construction mid point (2009) (1)	$1,220,000
Total Project Cost	**$16,400,000**

(1) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Headworks Modifications**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Architectural										
Headworks Building Addition	200	SF	$250	$50,000						$50,000
Concrete										
Grit Removal Concrete	10	CY	$750	$7,500						$7,500
Civil										
Excavation	53	CY			$3	$160	0.40	$38	$811	$970
Piping Excavation	21	CY			$5	$107	0.50	$38	$405	$510
Crushed Stone Bedding	5	CY	$15.00	$80	$3	$16	0.25	$38	$51	$150
Backfill (on-site material)	24	CY			$3	$71	0.25	$38	$225	$300
Hauling	30	CY	$7.30	$216			0.11	$38	$124	$340
Misc. Metals										
Stairs	16	RISER	$400.00	$6,400			1.00	$38	$608	$7,010
Equipment										
1-mm Rotating Fine Screen	1	LS	$100,000	$100,000			-	-	$50,000	$150,000
Screenings Press	1	LS	$50,000	$50,000			-	-	$25,000	$75,000
Grit Removal Equipment	1	LS	$145,000	$145,000			-	-	$72,500	$217,500
Piping & Valve Allowance	1	LS	$25,464	$25,464						$25,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$19,200	5%			5%	$7,500	
Subtotal				$403,900		$400			$157,200	**$562,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$40,400	10%			10%	$15,700	
Profit			10%	$40,400	10%			10%	$15,700	
Subtotal				$484,700		$400			$188,600	**$674,000**
Contingency										
TOTAL				$484,700		$400			$188,600	**$674,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Membrane Bioreactors**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	Cost
Architectural										
MBR Building	3200	SF	$250	$800,000						$800,000
MBR Enclosure	1400	SF	$150	$210,000						$210,000
HVAC	1	LS	$80,000	$80,000						$80,000
Concrete										
Slab Concrete	113	CY	$500	$56,389						$56,390
Wall Concrete	160	CY	$750	$120,250						$120,250
Channel Wall Concrete	30	CY	$750	$22,222						$22,220
Channel Slab Concrete	15	CY	$500	$7,407						$7,410
Civil										
Excavation	1837	CY			$3	$5,511	0.4	$38	$27,924	$33,440
Crushed Stone Bedding	32	CY	$15.00	$478	$3	$96	0.250	$38	$303	$880
Backfill (on-site material)	1231	CY			$3	$3,693	0.250	$38	$11,693	$15,390
Hauling	606	CY	$7.30	$4,426			0.110	$38	$2,534	$6,960
Misc. Metals										
Stairs	32	RISER	$400.00	$12,800			1.000	$38	$1,216	$14,020
Guardrail	100	LF	$70.00	$7,000			0.400	$38	$1,520	$8,520
Aluminum Grating	320	SF	$60.00	$19,200			0.400	$38	$4,864	$24,060
Equipment										
MBR Equipment	1	LS	$2,370,000	$2,370,000			-	-	$1,185,000	$3,555,000
Hoisting Equipment	1	LS	$25,000	$25,000					$12,500	$37,500
New WWTP Gen (800 kW)	1	LS	$163,000	$163,000			-	-	$81,500	$244,500
Piping & Valve Allowance	1	LS	$261,827	$261,827						$262,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$208,000	5%	$500		5%	$66,500	
Subtotal				$4,368,000		$9,800			$1,395,600	**$5,773,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$436,800	10%	$1,000		10%	$139,600	
Profit			10%	$436,800	10%	$1,000		10%	$139,600	
Subtotal				$5,241,600		$11,800			$1,674,800	**$6,928,000**
Contingency										
TOTAL				$5,241,600		$11,800			$1,674,800	**$6,930,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Post Aeration Tank	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Tank Modifications	1	LS	$20,000	$20,000						$20,000
Equipment										
Aeration Equipment	1	LS	$9,000	$9,000			-	-	$4,500	$13,500
Piping	1	LS	$10,000	$10,000			-	-	$5,000	$15,000
Dechlorination Equipment	1	LS	$20,000	$20,000			-	-	$10,000	$30,000
Dechlorination Flash Mixer	1	LS	$7,000	$7,000			-	-	$3,500	$10,500
Dechlorination Piping	360	LF	$20	$7,200						$7,200
Piping & Valve Allowance	1	LS	$4,810	$4,810						$5,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$3,900	5%			5%	$1,200	
Subtotal				$81,900					$24,200	**$106,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$8,200	10%			10%	$2,400	
Profit			10%	$8,200	10%			10%	$2,400	
Subtotal				$98,300					$29,000	**$127,000**
Contingency										
TOTAL				$98,300					$29,000	**$127,000**

ALTERNATIVE S-3
SUMMARY OF ESTIMATED COSTS

Fairview Southern Area WWTP BNR Upgrade and Expansion
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
Sequencing Batch Reactors	$1,630,000
Post EQ Tank & Interm. Pumping Station (1)	-
Effluent Filters (1)	-
Post Aeration & Dechlorination	$127,000
Beinhower Pumping Station Modifications	$189,000
Subtotal Capital Costs	**$1,950,000**
Sitework (7%)	$137,000
Electrical (15%)	$293,000
Instrumentation (5%)	$98,000
Subtotal Capital Costs	**$2,480,000**
Mobilization/Demobilization (5%)	$124,000
Subtotal Capital Costs	**$2,600,000**
Contingency (25%)	$650,000
Total Capital Costs	**$3,250,000**
Engineering/Legal/Admin (15%)	$488,000
Total Design & Construction Services	**$3,700,000**
Inflation to construction mid point (2009) (2)	$300,000
Total Project Cost	**$4,000,000**

(1) No effluent filtration would be required to meet the less stringent effluent requirements of 7.0 mg/L TN & 0.8 mg/L TP.

(2) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Sequencing Batch Reactors	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Slab Concrete	249	CY	$500	$124,556						$124,560
Wall Concrete	166	CY	$750	$124,438						$124,440
Civil										
Excavation	1676	CY			$3	$5,027	0.4	$38	$25,468	$30,500
Crushed Stone Bedding	62	CY	$15.00	$934	$3	$187	0.250	$38	$592	$1,710
Backfill (on-site material)	376	CY			$3	$1,128	0.250	$38	$3,571	$4,700
Hauling	1300	CY	$7.30	$9,487			0.110	$38	$5,432	$14,920
Dewatering	1	LS	$15,000	$15,000						$15,000
Misc. Metals										
Stairs	16	RISER	$400.00	$6,400			1.000	$38	$608	$7,010
Handrail	330	LF	$70.00	$23,100			0.400	$38	$5,016	$28,120
Equipment										
SBR Equipment	1	LS	$435,000	$435,000			-	-	$217,500	$652,500
New WWTP Gen (600 kW)	1	LS	$160,000	$160,000			-	-	$80,000	$240,000
Piping & Valve Allowance	1	LS	$50,173	$50,173						$50,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$47,500	5%	$300		5%	$16,900	
Subtotal				$996,600		$6,600			$355,100	**$1,358,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$99,700	10%	$700		10%	$35,500	
Profit			10%	$99,700	10%	$700		10%	$35,500	
Subtotal				$1,196,000		$8,000			$426,100	**$1,630,000**
Contingency										
TOTAL				$1,196,000		$8,000			$426,100	**$1,630,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Post Aeration Tank	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Tank Modifications	1	LS	$20,000	$20,000						$20,000
Equipment										
Aeration Equipment	1	LS	$9,000	$9,000			-	-	$4,500	$13,500
Piping	1	LS	$10,000	$10,000			-	-	$5,000	$15,000
Dechlorination Equipment	1	LS	$20,000	$20,000			-	-	$10,000	$30,000
Dechlorination Flash Mixer	1	LS	$7,000	$7,000			-	-	$3,500	$10,500
Dechlorination Piping	360	LF	$20	$7,200						$7,200
Piping & Valve Allowance	1	LS	$4,810	$4,810						$5,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$3,900	5%			5%	$1,200	
Subtotal				$81,900					$24,200	**$106,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$8,200	10%			10%	$2,400	
Profit			10%	$8,200	10%			10%	$2,400	
Subtotal				$98,300					$29,000	**$127,000**
Contingency										
TOTAL				$98,300					$29,000	**$127,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Beinhower PS Upgrade	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$ Man Hour	Total	
Equipment										
Pump Modifications	1	LS	$62,000	$62,000			-	-	$31,000	$93,000
New Generator w/ ATS	1	LS	$50,000	$50,000						$50,000
Piping & Valve Allowance	1	LS	$7,150	$7,150						$7,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$6,000	5%			5%	$1,600	
Subtotal				$125,200					$32,600	**$158,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$12,500	10%			10%	$3,300	
Profit			10%	$12,500	10%			10%	$3,300	
Subtotal				$150,200					$39,200	**$189,000**
Contingency										
TOTAL				$150,200					$39,200	**$189,000**

ALTERNATIVE S-4
SUMMARY OF ESTIMATED COSTS

Fairview Southern Area WWTP BNR Upgrade
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
Sequencing Batch Reactors	$406,000
Post EQ Tank & Interm. Pumping Station (1)	-
Effluent Filters (1)	-
Post Aeration & Dechlorination	$127,000
Beinhower Pumping Station Modifications (2)	-
Subtotal Capital Costs	**$530,000**
Sitework (7%)	$37,000
Electrical (15%)	$80,000
Instrumentation (5%)	$27,000
Subtotal Capital Costs	**$670,000**
Mobilization/Demobilization (5%)	$34,000
Subtotal Capital Costs	**$700,000**
Contingency (25%)	$175,000
Total Capital Costs	**$880,000**
Engineering/Legal/Admin (15%)	$132,000
Total Design & Construction Services	**$1,000,000**
Inflation to construction mid point (2009) (3)	$80,000
Total Project Cost	**$1,100,000**

(1) No effluent filtration would be required to meet the less stringent effluent requirements of 7.0 mg/L TN & 0.8 mg/L TP.

(2) No additional pumping capacity would required.

(3) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Sequencing Batch Reactors	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$ Man Hour	Total	
Equipment										
SBR Equipment	1	LS	$195,000	$195,000			-	-	$97,500	$292,500
Piping & Valve Allowance	1	LS	$29,250	$29,250						$29,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$11,200	5%			5%	$4,900	
Subtotal				$235,500					$102,400	**$338,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$23,600	10%			10%	$10,200	
Profit			10%	$23,600	10%			10%	$10,200	
Subtotal				$282,700					$122,800	**$406,000**
Contingency										
TOTAL				$282,700					$122,800	**$406,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Post Aeration Tank**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Slab Concrete	33	CY	$500	$16,667						$16,670
Wall Concrete	29	CY	$750	$21,667						$21,670
Dechlorination Chamber	1	LS	$5,000	$5,000						$5,000
Civil										
Excavation	228	CY			$3	$684	0.40	$38	$3,466	$4,150
Pipe Excavation	213	CY			$5	$1,067	0.50	$38	$4,053	$5,120
Crushed Stone Bedding	8	CY	$15.00	$125	$3	$25	0.25	$38	$79	$230
Backfill (on-site material)	109	CY					0.25	$38	$1,036	$1,040
Hauling	119	CY	$7.30	$868			0.11	$38	$497	$1,370
Misc. Metals										
Stairs	16	RISER	$400.00	$6,400			1.00	$38	$608	$7,010
Handrail	52	LF	$70.00	$3,640			0.40	$38	$790	$4,430
Equipment										
Aeration Equipment	1	LS	$9,000	$9,000			-	-	$4,500	$13,500
Piping	1	LS	$10,000	$10,000			-	-	$5,000	$15,000
Dechlorination Equipment	1	LS	$20,000	$20,000			-	-	$10,000	$30,000
Dechlorination Flash Mixer	1	LS	$7,000	$7,000			-	-	$3,500	$10,500
Dechlorination Piping	360	LF	$20	$7,200						$7,200
Piping & Valve Allowance	1	LS	$7,145	$7,145						$7,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$5,700	5%	$100		5%	$1,700	
Subtotal				$120,400		$1,900			$35,200	**$158,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$12,000	10%	$200		10%	$3,500	
Profit			10%	$12,000	10%	$200		10%	$3,500	
Subtotal				$144,400		$2,300			$42,200	**$189,000**
Contingency										
TOTAL				$144,400		$2,300			$42,200	**$189,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	**Beinhower PS Modification & New PS**	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
New PS Wetwell	34	CY	$750	$25,500						$25,500
Civil										
Excavation	962	CY			$3	$2,887	0.4	$38	$14,627	$17,510
Crushed Stone Bedding	2	CY	$15.00	$31	$3	$6	0.250	$38	$20	$60
Backfill (on-site material)	870	CY			$3	$2,610	0.250	$38	$8,266	$10,880
Hauling	92	CY	$7.30	$673			0.110	$38	$385	$1,060
Misc. Metals										
Access Hatches	16	SF	$60	$960						$960
Equipment										
New PS Pump Equip	1	LS	$75,211	$75,211			-	-	$37,606	$112,820
Beinhower PS Pump Mods	1	LS	$64,420	$64,420			-	-	$32,210	$96,630
New PS Gen w/ ATS	1	LS	$25,000	$25,000						$25,000
New Beinhower Gen w/ ATS	1	LS	$50,000	$50,000						$50,000
Piping & Valve Allowance	1	LS	$17,021	$17,021						$17,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$12,900	5%	$300		5%	$4,700	
Subtotal				$271,700		$5,800			$97,800	**$375,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$27,200	10%	$600		10%	$9,800	
Profit			10%	$27,200	10%	$600		10%	$9,800	
Subtotal				$326,100		$7,000			$117,400	**$451,000**
Contingency										
TOTAL				$326,100		$7,000			$117,400	**$451,000**

NORTHERN AREA WWTP

ALTERNATIVE N-1
SUMMARY OF ESTIMATED COSTS

Fairview Northern Area WWTP BNR Upgrade
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
SBR Conversion	$1,280,000
Headworks	$335,000
New Influent Pumping Station	$340,000
Intermediate Pumping Station	$170,000
Post Aeration	$160,000
Subtotal Capital Costs	**$2,290,000**
Sitework (7%)	$160,000
Electrical (15%)	$344,000
Instrumentation (5%)	$115,000
Subtotal Capital Costs	**$2,910,000**
Mobilization/Demobilization (5%)	$146,000
Subtotal Capital Costs	**$3,060,000**
Contingency (25%)	$765,000
Total Capital Costs	**$3,830,000**
Engineering/Legal/Admin (15%)	$575,000
Total Design & Construction Services	**$4,400,000**
Inflation to construction mid point (2009) (1)	$350,000
Total Project Cost	**$4,800,000**

(3) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Sequencing Batch Reactors	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Tank Modifications	1	LS	$8,000	$8,000						$8,000
Decant Box	4	CY	$1,000	$4,000						$4,000
Civil										
Excavation	267	CY			$3	$800	0.4	$38	$4,053	$4,850
Crushed Stone Bedding	4	CY	$15.00	$56	$3.0	$11.11	0.250			$70
Backfill - on site material	267	CY	incl.		$3	$800.00	0.250			$800
Equipment										
SBR Equipment	1	LS	$564,000	$564,000			-	-	$282,000	$846,000
- Pumps										
- Blowers										
- Mixers										
- Decanting Equipment										
- Valves & Piping										
Methanol Feed System	1	LS	$40,000	$40,000			-	-	$20,000	$60,000
Piping & Valve Allowance	1	LS	$92,372	$92,372						$92,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$35,400	5%	$100		5%	$15,300	
Subtotal				$743,800		$1,700			$321,400	**$1,067,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$74,400	10%	$200		10%	$32,100	
Profit			10%	$74,400	10%	$200		10%	$32,100	
Subtotal				$892,600		$2,100			$385,600	**$1,280,000**
Contingency										
TOTAL				$892,600		$2,100			$385,600	**$1,280,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Headworks (No Building)	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Enclosure Slab	11	CY	$500	$5,556						$5,560
Footings (Enclosure Columns)	4	CY	$650	$2,600						$2,600
Roofing Planck & Membrane	600	SF	$30	$18,000						$18,000
Civil										
Excavation	43	CY			$3	$128	0.4	$38	$649	$780
Crushed Stone Bedding	1	CY	$15.00	$13	$3	$3	0.250	$38	$8	$20
Screenings Dumpster Access	1	LS	$5,000.00	$5,000						$5,000
Misc. Metals										
Stairs	12	RISER	$400.00	$4,800			1.000	$38	$456	$5,260
Handrail	40	LF	$45.00	$1,800			0.400	$38	$608	$2,410
Platform	8	VF	$1,750.00	$14,000					$7,000	$21,000
Structural Steel (Enclosure)	4	TN	$5,500.00	$22,000						$22,000
Equipment										
Screenings Equipment	1	LS	$106,000	$106,000					$53,000	$159,000
Piping & Valve Allowance	1	LS	$24,163	$24,163						$24,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$10,200	5%			5%	$3,100	
Subtotal				$214,100		$100			$64,800	**$279,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$21,400	10%			10%	$6,500	
Profit			10%	$21,400	10%			10%	$6,500	
Subtotal				$256,900		$100			$77,800	**$335,000**
Contingency										
TOTAL				$256,900		$100			$77,800	**$335,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	York County	**Design Status of Estimate:**	Study
Description:	New Influent PS	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	Cost
Concrete										
Wetwell	34	CY	$750	$25,500						$25,500
Enclosure Slab	18	CY	$500	$8,889						$8,890
Civil										
Excavation	1236	CY			$3	$3,709	0.4	$38	$18,790	$22,500
Crushed Stone Bedding	3	CY	$15.00	$43	$3	$9	0.250	$38	$27	$80
Backfill (on-site material)	1116	CY			$3	$3,349	0.250	$38	$10,606	$13,960
Hauling	120	CY	$7.30	$874			0.110	$38	$500	$1,370
Dewatering	1	LS	$10,000	$10,000						$10,000
Misc. Metals										
Access Hatch	16	SF	$60	$960						$960
Equipment										
New PS Pump Equip	1	LS	$110,000	$110,000			-	-	$55,000	$165,000
- Pumps, VFDs, CP										
- Valves & Piping										
- Station Enclosure										
Piping & Valve Allowance	1	LS	$24,826	$24,826						$25,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$9,100	5%	$400		5%	$4,200	
Subtotal				$190,200		$7,500			$89,100	**$287,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$19,000	10%	$800		10%	$8,900	
Profit			10%	$19,000	10%	$800		10%	$8,900	
Subtotal				$228,200		$9,100			$106,900	**$344,000**
Contingency										
TOTAL				$228,200		$9,100			$106,900	**$340,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Intermediate PS	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Pump Bases	4	EA	$750	$3,000						$3,000
Equipment										
Small Intermediate Pumps - Pumps, VFDs, CP	4	EA	$5,000	$20,000					$10,000	$30,000
Intermediate PS CP + VFDs	1	LS	$35,000	$35,000					$17,500	$52,500
Davit Crane	2	LS	$5,000	$10,000					$5,000	$15,000
Piping & Valve Allowance	1	LS	$31,326	$31,326						$31,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$5,000	5%			5%	$1,600	
Subtotal				$104,300					$34,100	**$138,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$10,400	10%			10%	$3,400	
Profit			10%	$10,400	10%			10%	$3,400	
Subtotal				$125,100					$40,900	**$166,000**
Contingency										
TOTAL				$125,100					$40,900	**$170,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Post Aeration Tank	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	Cost
Concrete										
Slab Concrete	33	CY	$500	$16,667						$16,670
Wall Concrete	29	CY	$750	$21,667						$21,670
Civil										
Excavation	228	CY			$3	$684	0.40	$38	$3,466	$4,150
Pipe Excavation		CY			$5		0.50	$38		
Crushed Stone Bedding	8	CY	$15.00	$125	$3	$25	0.25	$38	$79	$230
Backfill (on-site material)	109	CY					0.25	$38	$1,036	$1,040
Hauling	119	CY	$7.30	$868			0.11	$38	$497	$1,370
Dewatering	1	LS	$10,000	$10,000						$10,000
Misc. Metals										
Stairs	16	RISER	$400.00	$6,400			1.00	$38	$608	$7,010
Handrail	78	LF	$70.00	$5,460			0.40	$38	$1,186	$6,650
Equipment										
Aeration Diffusers	1	LS	$9,000	$9,000			-	-	$4,500	$13,500
Aeration Blowers	2	EA	$7,800	$15,600			-	-	$7,800	$23,400
Aeration Piping	1	LS	$10,000	$10,000			-	-	$5,000	$15,000
Piping & Valve Allowance	1	LS	$6,035	$6,035						$6,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$5,100	5%			5%	$1,200	
Subtotal				$106,900		$700			$25,400	**$133,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$10,700	10%	$100		10%	$2,500	
Profit			10%	$10,700	10%	$100		10%	$2,500	
Subtotal				$128,300		$900			$30,400	**$160,000**
Contingency										
TOTAL				$128,300		$900			$30,400	**$160,000**

ALTERNATIVE N-2
SUMMARY OF ESTIMATED COSTS

Fairview Northern Area WWTP BNR Upgrade
Fairview Township Authority
New Cumberland, PA
Project No. 71128

ENGINEER'S ESTIMATE OF PROBABLE COSTS
August 23, 2007

Status of Cost Estimate: Study

Description	Total Cost (Preliminary Estimate)
eMLE Process Tank Modifications	$1,100,000
Headworks	$335,000
New Influent Pumping Station	$340,000
Subtotal Capital Costs	**$1,780,000**
Sitework (7%)	$125,000
Electrical (15%)	$267,000
Instrumentation (5%)	$89,000
Subtotal Capital Costs	**$2,260,000**
Mobilization/Demobilization (5%)	$113,000
Subtotal Capital Costs	**$2,370,000**
Contingency (25%)	$593,000
Total Capital Costs	**$2,960,000**
Engineering/Legal/Admin (15%)	$444,000
Total Design & Construction Services	**$3,400,000**
Inflation to construction mid point (2009) (1)	$270,000
Total Project Cost	**$3,700,000**

(1) Based on a yearly inflation rate of 4%

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	York County	**Design Status of Estimate:**	Study
Description:	eMLE Process Tanks	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Structural										
FRP Baffle Walls	5400	SF	$20	$108,000					$54,000	$162,000
Equipment										
Submersible Mixers	8	EA	$10,000	$80,000					$40,000	$120,000
Nitrate Recycle Pumps	4	EA	$20,000	$80,000					$40,000	$120,000
RAS Pumps	4	EA	$12,000	$48,000					$24,000	$72,000
Aeration Systems	4	EA	$20,000	$80,000					$40,000	$120,000
Reaeration Equipment	4	EA	$6,000	$24,000					$12,000	$36,000
New Aeration Blowers	3	EA	$23,000	$69,000					$34,500	$104,000
Methanol Feed System	1	LS	$40,000	$40,000					$20,000	$60,000
Piping & Valve Allowance	1	LS	$79,400	$79,400						$79,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$30,400	5%			5%	$13,200	
Subtotal				$638,800					$277,700	**$917,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$63,900	10%			10%	$27,800	
Profit			10%	$63,900	10%			10%	$27,800	
Subtotal				$766,600					$333,300	**$1,100,000**
Contingency										
TOTAL				$766,600					$333,300	**$1,100,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	Headworks (No Building)	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Enclosure Slab	11	CY	$500	$5,556						$5,560
Footings (Enclosure Columns)	4	CY	$650	$2,600						$2,600
Roofing Plank & Membrane	600	SF	$30	$18,000						$18,000
Civil										
Excavation	43	CY			$3	$128	0.4	$38	$649	$780
Screenings Dumpster Access	1	LS	$5,000.00	$5,000						$5,000
Misc. Metals										
Stairs	12	RISER	$400.00	$4,800			1.000	$38	$456	$5,260
Handrail	40	LF	$45.00	$1,800			0.400	$38	$608	$2,410
Platform	8	VF	$1,750.00	$14,000					$7,000	$21,000
Structural Steel (Enclosure)	4	TN	$5,500.00	$22,000						$22,000
Equipment										
Screenings Equipment	1	LS	$106,000	$106,000					$53,000	$159,000
Piping & Valve Allowance	1	LS	$24,161	$24,161						$24,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$10,200	5%			5%	$3,100	
Subtotal				$214,100		$100			$64,800	**$279,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$21,400	10%			10%	$6,500	
Profit			10%	$21,400	10%			10%	$6,500	
Subtotal				$256,900		$100			$77,800	**$335,000**
Contingency										
TOTAL				$256,900		$100			$77,800	**$335,000**

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COST

Project:	Fairview Township Southern Area WWTP Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	RCF
Owner:	York County	**Design Status of Estimate:**	Study
Description:	New Influent PS	**Project Number:**	71128

Description	Quantity		Material		Equipment		Labor			Total Cost
	No. Units	Basis	Per Unit	Total	Per Unit	Total	Man Hours	$/Man Hour	Total	
Concrete										
Wetwell	34	CY	$750	$25,500						$25,500
Enclosure Slab	18	CY	$500	$8,889						$8,890
Civil										
Excavation	1236	CY			$3	$3,709	0.4	$38	$18,790	$22,500
Crushed Stone Bedding	3	CY	$15.00	$43	$3	$9	0.250	$38	$27	$80
Backfill (on-site material)	1116	CY			$3	$3,349	0.250	$38	$10,606	$13,960
Hauling	120	CY	$7.30	$874			0.110	$38	$500	$1,370
Dewatering	1	LS	$10,000	$10,000						$10,000
Misc. Metals										
Access Hatch	16	SF	$60	$960						$960
Equipment										
New PS Pump Equip	1	LS	$110,000	$110,000			-	-	$55,000	$165,000
- Pumps, VFDs, CP										
- Valves & Piping										
- Station Enclosure										
Piping & Valve Allowance	1	LS	$24,826	$24,826						$25,000
Cost Escalation										
City Cost Index Adjustment										
General Conditions			5%	$9,100	5%	$400		5%	$4,200	
Subtotal				$190,200		$7,500			$89,100	**$287,000**
Taxes			Tax-Exempt	$0	0%	$0		0%	$0	
Overhead			10%	$19,000	10%	$800		10%	$8,900	
Profit			10%	$19,000	10%	$800		10%	$8,900	
Subtotal				$228,200		$9,100			$106,900	**$344,000**
Contingency										
TOTAL				$228,200		$9,100			$106,900	**$340,000**

APPENDIX E

OPERATION AND MAINTENANCE COST ESTIMATES

Stearns & Wheler LLC *Environmental* *Engineers and Scientists*	Fairview WWTPs Client	8/22/2007 Date	71128 Job No
	Additional O&M Costs - Summary Sheet Subject	JDG Comp. By	Checked By

Additional Annual O&M Costs	Southern Area WWTP				Northern Area WWTP	
	Alternative S-1	Alternative S-2	Alternative S-3	Alternative S-4	Alternative N-1	Alternative N-2
Labor Cost:	62,400	$62,400	$31,200	$0	$31,200	$31,200
Maintenance Cost:	$28,220	$58,000	$13,300	$5,300	$14,800	$10,700
Membrane Replacement Cost	-	$29,000	-	-	-	-
Carbon Source Cost:	$7,000	$7,000	$1,825	$1,825	$3,194	$3,194
Dechlorination Cost:	$4,300	$4,300	$4,300	$4,300	-	-
Coagulant Cost:	$0	$0	$0	$0	$0	$0
Hypochlorite Cost:	-	$2,900	-	-	-	-
Citric Acid Cost:	-	$2,700	-	-	-	-
Power Requirements:	$29,200	$99,300	$10,800	$1,100	$18,400	$27,300
Additional Annual O&M Cost in Year 2007 Dollars	**$131,000**	**$265,000**	**$61,000**	**$12,000**	**$68,000**	**$72,000**

Notes:

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Southern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Alternative S-1: SBR Expansion to 1.0 MGD**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.37 mgd after upgrade is completed.

Assumptions:

Electrical Cost per KWH:	$0.077	Based on current cost including peaking
Labor Cost per Hour with Overhead:	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee:	1	Assumes one additional staff required.
Operations Labor Costs:	$62,400	

Maint. Costs:

New Equipment:		
SBR Equipment	$660,000	
Effluent Filters	$490,000	
Methanol System	$40,000	
Intermediate Pumps	$40,000	
Dechlorination Equipment	$12,000	
Post Aeration	$9,000	
New WWTP Generator	$160,000	
Total Equipment Cost	$1,411,000	
Maintenance Cost/Year:	**$28,220**	2% of equipment cost

Chemical Costs:

Average Methanol Usage/Day:	8
Methanol Usage/Yr:	2,774
Chemical Cost/Unit:	$2.50
Annual Chemical Cost:	$6,935
Sodium Metabisulfite Usage/Day (gal/day):	4
Sodium Metabisulfite Usage/Day (gal/yr):	1,418
Chemical Cost/Unit (per gal):	$3.00
Annual Chemical Cost:	$4,254
Coagulant Usage/Day (gal/day):	0
Coagulant Usage/Day (gal/Year):	0
Chemical Cost/Unit (per gal):	$2.43
Annual Chemical Cost:	$0

Power Requirements

Power Requirement (kW-hr)	379,142	From SBR Electric spreadsheet tab
Annual	$29,194	

Annual Cost Summary:

		Rounded
Annual Additional Operation Labor Cost:	$62,400	$62,000
Annual Maintenance Cost:	$28,220	$28,000
Annual Methanol Cost:	$6,935	$7,000
Annual Sodium Metabisulfite Cost:	$4,254	$4,000
Annual Coagulant Cost:	$0	$0
Annual Power Requirements:	$29,194	$29,000
Total Annual O & M Cost @ Rated Capacity:	$131,003	$131,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only.

Stearns & Wheler Environmental Engineers & Scientist	Fairview Southern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp. By*	71128 *Job No* *Chkd By*

SBR & SAND FILTER - ELECTRICAL USAGE

Objective:
Determine the power usage at a design average day flow of 1.0 mgd

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

Power Cost ($/kW/hr) $0.077

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
SBR Equipment	1							29.0	29.0	24	7	253,344	$19,507
Intermediate Pumps	1							5.4	5.4	24	7	47,174	$3,632
Effluent Filter Compressors	1							14.8	14.8	12	7	64,646	$4,978
Disinfection/Dechlor Mixers	2							0.8	1.6	24	7	13,978	$1,076
Total Connected Power	5												
Annual Power Consumption												379,142	
Total Annual Power Cost													$29,194

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Southern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Proposed MBR - O&M**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.37 mgd after upgrade is completed

Assumptions:

Electrical Cost per KWH	$0.077	Based on curent cost including peaking
Labor Cost per Hour with Overhead	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee	1	Assumes 1 additional instrumentation person required
Operations Labor Costs	**$62,400**	

Maint. Costs:

New Equipment		
Grit Removal	$145,000	
New Screenings Equipment	$150,000	
MBR Equipment	$2,370,000	
Hoisting Equipment	$25,000	
Methanol System	$40,000	
Dechlorination Equipment	$12,000	
Post Aeration	$9,000	
New WWTP Generator	$160,000	
Total Equipment Cost	$2,911,000	
Maintenance Cost/Year:	**$58,000**	2% of equipment cost
Membrane Cost per Module	$811	
Number of Modules	352	
Total Membrane Cost in 2007 dollars	$285,472	
Expected Membrane Life (yrs)	10	
Average Annual Membrane Replacement Cost	**$29,000**	
Total Annual Maintenance Costs	**$87,000**	

Chemical Costs:

Average Methanol Usage/Day	8
Methanol Usage/Yr	2,774
Chemical Cost/Unit	$2.50
Annual Chemical Cost	$6,935
Sodium Metabisulfite Usage/Day (gal/day)	4
Sodium Metabisulfite Usage/Day (gal/yr)	1,418
Chemical Cost/Unit (per gal)	$3.00
Annual Chemical Cost	$4,254
Coagulant Usage/Day (gal/day)	0
Coagulant Usage/Day (gal/Year)	0
Chemical Cost/Unit (per gal)	$0.80
Annual Chemical Cost	$0
Sodium Hypochlorite Usage Year	2,563
Chemical Cost per Gallon	$1.12
Annual Chemical Cost	$2,871
Citric Acid Usage / Year	2,668
Chemical Cost per Gallon	$1.00
Annual Chemical Cost	$2,668

Power Requirements

Power Requirement (kW-hr)	1,290,001	From MBR Electric spreadsheet tab
Annual	**$99,330**	

Annual Cost Summary:

		Rounded
Annual Maintenance Employee Cost	$62,400	$62,000
Annual Maintenance Cost	$87,000	$87,000
Annual Methanol Cost	$6,935	$7,000
Annual Sodium Metabisulfite Cost	$4,254	$4,000
Annual Coagulant Chloride Cost	$0	$0
Annual Sodium Hypochlorite Cost	$2,871	$3,000
Annual Citric Acid Cost	$2,668	$3,000
Annual Power Requirements	$99,330	$99,000
Total Annual O & M Cost:	**$265,458**	$265,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only

Stearns & Wheler Environmental Engineers & Scientist	Fairview Southern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp By*	71128 *Job No* *Chkd By*

MBR OPTION - ELECTRICAL USAGE

Objective:
Determine the power usage at a design average day flow of 1.0 mgd

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

1032

Power Cost ($/kW/hr) $0.077

1926.36

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
Pista Grit	1							3.7	3.7	24	7	32,323	$2,489
SBR Equipment	1							43.0	43.0	24	7	375,648	$28,925
Membrane	1							80.3	80.3	24	7	701,195	$53,992
Mixed Liquor Return Pumps	1							19.1	19.1	24	7	166,858	$12,848
Disinfection/Dechlor Mixers	2							0.8	1.6	24	7	13,978	$1,076
Total Connected Power													
Annual Power Consumption												1,290,001	
Total Annual Power Cost													$99,330

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Southern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Proposed SBR & Filters - O & M (0.75 MGD Expansion)**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.37 mgd after upgrade is completed.

Assumptions:

Electrical Cost per KWH:	$0.077	Based on current cost including peaking
Labor Cost per Hour with Overhead:	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee:	1	Assumes one additional half-time maintenance/laborer staff required.
Operations Labor Costs:	$31,200	

Maint. Costs:

New Equipment:		
SBR Equipment	$435,000	No initial maintenance costs associated with new equipment.
Methanol System	$40,000	
Dechlorination Equipment	$20,000	
Post Aeration	$9,000	
New WWTP Generator	$160,000	
Total Equipment Cost	$664,000	
Maintenance Cost/Year:	**$13,280**	2% of equipment cost

Chemical Costs:

Average Methanol Usage/Day:	2	
Methanol Usage/Yr:	730	
Chemical Cost/Unit:	$2.50	
Annual Chemical Cost:	$1,825	
Sodium Metabisulfite Usage/Day (gal/day):	4	
Sodium Metabisulfite Usage/Day (gal/yr):	1,418	
Chemical Cost/Unit (per gal):	$3.00	
Annual Chemical Cost:	$4,254	
Sodium Aluminate Usage/Day (gal/day):	0	No additional chemical costs
Sodium Aluminate Usage/Day (gal/yr):	0	
Chemical Cost/Unit (per gal):	$2.43	
Annual Chemical Cost:	$0	

Power Requirements

Power Requirement (kW-hr)	140,650	From SBR Electric spreadsheet tab
Annual	$10,830	

Annual Cost Summary:

		Rounded
Annual Additional Operation Labor Cost:	$31,200	$31,000
Annual Maintenance Cost:	$13,280	$13,000
Annual Methanol Cost:	$1,825	$2,000
Annual Sodium Metabisulfite Cost:	$4,254	$4,000
Annual Coagulant Cost:	$0	$0
Annual Power Requirements:	$10,830	$11,000
Total Annual O & M Cost @ Rated Capacity:	$61,389	$61,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only.

Stearns & Wheler Environmental Engineers & Scientist	Fairview Southern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp By*	71128 *Job No.* *Chkd By*

SBR & SAND FILTER - ELECTRICAL USAGE

Objective:
Determine the additional power usage at the current average day flow of 0.37 mgd after completion of the upgrade

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

Power Cost ($/kW/hr) $0.077

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
SBR Equipment	1							14.5	14.5	24	7	126,672	$9,754
Disinfection/Dechlor Mixers	2							0.8	1.6	24	7	13,978	$1,076
Total Connected Power													
Annual Power Consumption												140,650	
Total Annual Power Cost													$10,830

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Southern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Alternative S-4: SBR Upgrade for 0.5 MGD**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.37 mgd after upgrade is completed.

Assumptions:

Electrical Cost per KWH:	$0.077	Based on current cost including peaking
Labor Cost per Hour with Overhead:	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee:	0	Assumes one additional maintenance/laborer staff required.
Operations Labor Costs:	$0	

Maint. Costs:

New Equipment:		
SBR Equipment	$195,000	No initial maintenance costs associated with new equipment.
Methanol System	$40,000	
Dechlorination Equipment	$20,000	
Post Aeration	$9,000	
Total Equipment Cost	$264,000	
Maintenance Cost/Year:	**$5,280**	2% of equipment cost

Chemical Costs:

Average Methanol Usage/Day:	2	
Methanol Usage/Yr:	730	
Chemical Cost/Unit:	$2.50	
Annual Chemical Cost:	$1,825	
Sodium Metabisulfite Usage/Day (gal/day):	4	
Sodium Metabisulfite Usage/Day (gal/yr):	1,418	
Chemical Cost/Unit (per gal):	$3.00	
Annual Chemical Cost:	$4,254	
Sodium Aluminate Usage/Day (gal/day):	0	No additional chemical costs
Sodium Aluminate Usage/Day (gal/yr):	0	
Chemical Cost/Unit (per gal):	$2.43	
Annual Chemical Cost:	$0	

Power Requirements

Power Requirement (kW-hr)	13,978	From SBR Electric spreadsheet tab
Annual	$1,076	

Annual Cost Summary:

		Rounded
Annual Additional Operation Labor Cost:	$0	$0
Annual Maintenance Cost:	$5,280	$5,000
Annual Methanol Cost:	$1,825	$2,000
Annual Sodium Metabisulfite Cost:	$4,254	$4,000
Annual Coagulant Cost:	$0	$0
Annual Power Requirements:	$1,076	$1,000
Total Annual O & M Cost @ Rated Capacity:	$12,435	$12,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only.

Stearns & Wheler Environmental Engineers & Scientist	Fairview Southern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp. By*	71128 *Job No.* *Chkd By*

SBR & SAND FILTER - ELECTRICAL USAGE

Objective:
Determine the additional power usage at the current average day flow of 0.37 mgd after completion of the upgrade

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

Power Cost ($/kW/hr) $0.077

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
Disinfection/Dechlor Mixers	2							0.8	1.6	24	7	13,978	$1,076
Total Connected Power													
Annual Power Consumption												13,978	
Total Annual Power Cost													$1,076

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Northern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Alternative N-1: SBR Conversion for 0.6 MGD**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.38 mgd after upgrade is completed.

Assumptions:

Electrical Cost per KWH:	$0.077	Based on current cost including peaking
Labor Cost per Hour with Overhead:	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee:	1	Assumes one additional maintenance laborer staff required.
Operations Labor Costs:	$31,200	

Maint. Costs:

New Equipment:		
Influent Screen	$106,000	
SBR Equipment	$563,700	No initial maintenance costs associated with new equipment.
Methanol System	$40,000	
Intermediate Pumps	$20,000	
Post Aeration	$9,000	
Total Equipment Cost	$738,700	
Maintenance Cost/Year:	**$14,774**	2% of equipment cost

Chemical Costs:

Average Methanol Usage/Day:	4	
Methanol Usage/Yr:	1,278	
Chemical Cost/Unit:	$2.50	
Annual Chemical Cost:	$3,194	
Ferrous Sulfate Usage/Day (gal/day):	0	No additional chemical costs
Ferrous Sulfate Usage/Day (gal/yr):	0	
Chemical Cost/Unit (per gal):	$2.43	
Annual Chemical Cost:	$0	

Power Requirements

Power Requirement (kW-hr)	238,493	From SBR Electric spreadsheet tab
Annual	$18,364	

Annual Cost Summary:

		Rounded
Annual Additional Operation Labor Cost:	$31,200	$31,000
Annual Maintenance Cost:	$14,774	$15,000
Annual Methanol Cost:	$3,194	$3,000
Annual Coagulant Cost:	$0	$0
Annual Power Requirements:	$18,364	$18,000
Total Annual O & M Cost @ Rated Capacity:	$67,532	$68,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only.

Stearns & Wheler Environmental Engineers & Scientist	Fairview Northern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp By*	71128 *Job No.* *Chkd By*

SBR - ELECTRICAL USAGE

Objective:
Determine the additional power usage at the current average day flow of 0.37 mgd after completion of the upgrade

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

Power Cost ($/kW/hr) $0.077

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
Influent Screen	1							1.8	1.8	8	7	5,242	$404
SBR Mixers	4							5.9	23.7	12	7	103,522	$7,971
Intermediate Pumps	2							7.4	14.85	24	7	129,730	$9,989
Total Connected Power													
Annual Power Consumption												238,493	
Total Annual Power Cost													$18,364

ENGINEER'S ESTIMATE OF PROBABLE OPERATIONS AND MAINTENANCE COST

Project:	Fairview Northern Area WWTP BNR Upgrade	**Computed By:**	JDG
Location:	New Cumberland, PA	**Checked By:**	
Owner:	Fairview Township Authority	**Design Status of Est.:**	Study
Description:	**Alternative N-2: eMLE Upgrade for 0.6 MGD**	**Project No:**	71128

Objective: Calculate annual O&M cost increase at current capacity of 0.38 mgd after upgrade is completed.

Assumptions:

Electrical Cost per KWH:	$0.077	Based on current cost including peaking
Labor Cost per Hour with Overhead:	$30.00	Includes Benefits

Additional Labor Costs:

Additional Employee:	1	Assumes one additional maintenance/laborer staff required.
Operations Labor Costs:	$31,200	

Maint. Costs:

New Equipment:		
Influent Screen	$106,000	
eMLE Equipment	$333,000	No initial maintenance costs associated with new equipment.
RAS Pumps	$48,000	
Methanol System	$40,000	
Post Aeration	$9,000	
Total Equipment Cost	$536,000	
Maintenance Cost/Year:	**$10,720**	2% of equipment cost

Chemical Costs:

Average Methanol Usage/Day:	4	
Methanol Usage/Yr:	1,278	
Chemical Cost/Unit:	$2.50	
Annual Chemical Cost:	$3,194	
Ferrous Sulfate Usage/Day (gal/day):	0	No additional chemical costs
Ferrous Sulfate Usage/Day (gal/yr):	0	
Chemical Cost/Unit (per gal):	$2.43	
Annual Chemical Cost:	$0	

Power Requirements

Power Requirement (kW-hr)	354,682	From SBR Electric spreadsheet tab
Annual	$27,310	

Annual Cost Summary:

		Rounded
Annual Additional Operation Labor Cost:	$31,200	$31,000
Annual Maintenance Cost:	$10,720	$11,000
Annual Methanol Cost:	$3,194	$3,000
Annual Coagulant Cost:	$0	$0
Annual Power Requirements:	$27,310	$27,000
Total Annual O & M Cost @ Rated Capacity:	$72,424	$72,000

Qualifications:

These costs are not all inclusive and are to be used for comparison of alternatives only.

Stearns & Wheler Environmental Engineers & Scientist	Fairview Northern Area WWTP BNR Upgrade *Client* Electrical Cost Estimates *Subject*	8/22/07 *Date* JDG *Comp By*	71128 *Job No* *Chkd By*

SBR - ELECTRICAL USAGE

Objective:
Determine the additional power usage at the current average day flow of 0.37 mgd after completion of the upgrade

Design Criteria:
Design criteria for piece of equipment is summarized in the table below.
Some power usage supplied by vendors as noted

For Pumps:
Pump horsepower determined with the following equation unless specified by a proposal:
HP = Q(gpm) x THD (ft) / 3956 x (eff%)

Power Cost ($/kW/hr) $0.077

Equipment	Units Operating at average flow (1.0mgd)	Operating Capacity (per unit)	Operating TDH or Discharge Pressure	Efficiency @ Operating Duty Point	Total Brake Horsepower	Motor Efficiency	VFD / Starter Efficiency	Total Input Power Average Conditions (kW)	Total Input Power Average Conditions (kW)	Hours of Operation per Day	Days of Operation Per Week	Power Consumed per Year kW*hr	Power Cost per Year
Influent Screen	1							1.8	1.8	8	7	5,242	$404
Nitrate Recycle Pumps	4							0.8	3.2	24	7	27,955	$2,153
RAS Pumps	4							1.1	4.4	24	7	38,438	$2,960
Submersible Mixers	8							4.1	32.4	24	7	283,046	$21,795
Total Connected Power													
Annual Power Consumption												354,682	
Total Annual Power Cost													$27,310

Appendix O

Fairview Township Ordinances
On-Lot Sewage Management Ordinance (2010-3)
Holding Tank Ordinance (2001-3)

Ordinance 2010-3
On-Lot Sewage Disposal Ordinance

ORDINANCE NO. 2010-3

AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF THE TOWNSHIP OF FAIRVIEW, CHAPTER 18, SEWERS AND SEWAGE DISPOSAL, TO ADD PART 6, ESTABLISHING REGULATIONS FOR THE INSPECTION, MAINTENANCE, OPERATION, AND REHABILITATION OF INDIVIDUAL AND COMMUNITY ON-LOT SEWAGE DISPOSAL SYSTEMS AND THE CREATION OF AN ON-LOT MANAGEMENT PROGRAM

BE IT ENACTED AND ORDAINED by the Board of Supervisors of Fairview Township, York County, Pennsylvania, and IT IS HEREBY ENACTED AND ORDAINED by the authority of the same as follows:

Section 1. Chapter 18, Sewers and Sewage Disposal, of the Code of Ordinances of Fairview Township, is hereby amended to add Part 6, On-Lot Management Program, to read in its entirety as follows:

Part 6

On-Lot Management Program

§601. Title. As mandated by the Clean Streams Law (35 P.S. § 691.1 to 691.1001), and the Pennsylvania Sewage Facilities Act (35 P.S. § 7501. *et seq.*), municipalities have the power and the duty to provide for adequate sewage treatment facilities and for the protection of the public health by preventing the discharge of untreated or inadequately treated sewage. The Official Sewage Facilities Plan for Fairview Township has evaluated the need to implement an On-Lot Management Program to effectively prevent potential water pollution and hazards to the public health caused by improper treatment and disposal of sewage.

§602. Purpose.

1. To bring and keep the municipality within the requirements of the Clean Streams Law (Act of 1937, P.L. 1987, No. 394) and the Pennsylvania Sewage Facilities Act (Act of 1966 P.L. 1535, No. 537, as amended, known as Act 537).

2. To provide for inspection, pumping, maintenance, and rehabilitation of private and public on-lot sewage systems.

3. To establish penalties and appeal procedures necessary for the proper administration of such a management program.

§603. Definitions.

1. *Act 537* – The Act of 1966, P.L. 1535, No. 537, as amended, 35 P.S. Section 750.1 *et. seq.*, known as the Pennsylvania Sewage Facilities Act.

2. *Authorized Agent* – A certified sewage enforcement officer, code enforcement officer, professional engineer, plumbing inspector, Township Manager, or any other qualified or licensed person who is delegated by the Township to carry out the provisions of this Ordinance within specified limits.

3. *Board* – The Fairview Township Board of Supervisors, York County, Pennsylvania.

4. *Cesspool* – A below ground cavity built of loose rock or blocks that provides for the temporary storage of sanitary sewage until the sewage drains into the surrounding area.

5. *Code Enforcement Officer (CEO)* – An authorized agent of the Township to administer and enforce other Ordinances in the Township.

6. *Community Sewage System* – Any system, whether publicly or privately owned, for the collection of sewage from two (2) or more lots, and the treatment and/or disposal of the sewage on one (1) or more lots or at any other site.

7. *DEP* or *Department* – The Department of Environmental Protection of the Commonwealth of Pennsylvania.

8. *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 the Commonwealth of Pennsylvania.

9. *Lot* – A designated parcel, tract, or area of land established by a plat or otherwise as permitted by law and to be used, developed or built upon as a unit.

10. *Malfunction* – The condition occurring when an on-lot sewage system causes pollution to ground or surface waters, contamination of private or public drinking water supplies, nuisance problems or is a hazard to public health. Any treatment or holding tank observed to be leaking, or any instance where sewage is backing up into a building connected to the system is considered a malfunction. Systems shall be considered to be malfunctioning if any of the conditions noted above occur for any length of time during any period of the year.

11. *Municipality* – Fairview Township, York County, Pennsylvania.

12. *Official Act 537 Sewage Facilities Plan* – A comprehensive plan for the provision of adequate sewage disposal systems, adopted by the Township and approved by the Pennsylvania Department of Environmental Protection, as described in and required by the Pennsylvania Sewage Facilities Act. Hereinafter called the "Plan" it shall mean the Fairview Township Act 537 Plan, as amended.

13. *On-Lot Sewage System* – Any system for disposal of sewage involving pretreatment and subsequent disposal of the clarified sewage into the soil for final treatment and disposal; including both individual sewage systems and community sewage systems.

14. *On-Lot Management Program* – A comprehensive set of legal and administrative requirements including this ordinance, the Act, the Clean Streams Law, and all

regulations and requirements adopted by the Board to enforce and administer this ordinance.

15. *Owner* – Any person having an equitable or legal interest in real estate in Fairview Township.

16. *Person* – Any individual, association, partnership, public or private corporation whether for profit or not-for-profit, trust, estate, or other legally recognized entity.

17. *Pumping Certification* – A properly executed York County Solid Waste and Refuse Authority Sludge/Septage Manifest. Add

18. *Qualified Pumper/Hauler* - A person or organization licensed by the York County Solid Waste Authority to conduct septage pumping and hauling within York County.

19. *Rehabilitation* – Work done to modify, alter, repair, enlarge, or replace an existing on-lot disposal system.

20. *Septage* – Any human excrement, other domestic or restaurant waste, or other material or substance removed from a portable toilet, septic tank, seepage pit, treatment tank, cesspool, or other enclosure used for the storage or decomposition of sewage, but does not include liquid industrial waste.

21. *Septic System Report* – Township form to be completed by the pumper/hauler for each individual tank and forwarded to the Township after each inspection and/or pumping.

22. *Septic Tank* – A watertight tank that provides for the treatment of sanitary sewage prior to its discharge to an absorption area.

23. *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 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. 94), known as "The Clean Streams Law", as amended.

24. *Sewage Enforcement Officer (SEO)* – An agent of the Township, DEP certified, to issue and review permit applications and conduct such investigations and inspections as are necessary to implement Act 537 and the rules and regulations promulgated there under.

25. *Sewage Facilities* – Any method of sewage collection, conveyance, treatment, and disposal, which will prevent the discharge of, untreated or inadequately treated sewage into the waters of this Commonwealth or otherwise provide for the safe and sanitary treatment and disposal of sewage.

26. *Sewage Management District* – Any area or areas of the Township designated in the 537 Plan adopted by the Board as an area where sewage management is to be implemented.

27. *Township* – Fairview Township, York County, Pennsylvania.

§604. Applicability. From the effective date of this Ordinance, its provisions shall apply to every owner of a lot served by an on-lot sewage system within Fairview Township and all persons or businesses servicing on-lot sewage systems (constructing, pumping, inspecting, or repairing on-lot sewage systems) within the Township.

§605. Maintenance.

1. The Township shall notify all owners of property served by an on-lot sewage system that their system must be pumped and inspected by the end of the calendar year in which the letter is received The Township shall follow a schedule whereby a quarter of all of the owners of properties within the Township served by on-lot sewage systems are notified annually of the pumping and inspection requirement, such that all owners are notified at least once every four years. Any person owning a building served by an on-lot sewage system within the Sewage Management District, which contains a treatment tank, shall have the tank pumped by a qualified pumper/hauler. The property owner must have his system pumped within the time period specified in the Township's notification letter, unless he can provide the Township with a receipt, or other written evidence satisfactory to the Township showing that his tank has been pumped within one (1) year prior to the date of the Township's letter

2. Property owners within the Sewage Management District must return a fully completed Septic System Report, completed by the qualified pumper/hauler, to the Township within thirty (30) days of the date of pumping. The property owner shall mail or hand-deliver the Septic System Report to the Township municipal building at 599 Lewisberry Road, New Cumberland PA 17070.

3. Commencing from the date of pumping as prescribed in subsection 1 above, removal of septage or other solids from treatment tanks shall be performed every four (4) years or whenever an inspection program reveals the treatment tanks are filled with solids in excess of 1/3 of liquid depth of the tank or filled with scum in excess of 1/3 the liquid depth of the tank.

4. The required pumping frequency may increase at the determination of the SEO for the following reasons:

5.
   a. If the tank is undersized;

   b. If solids buildup in the tank is above average;

   c. If the hydraulic load on the system increases significantly above average;

   d. If a garbage grinder is used in the building; or

   e. If the system malfunctions or for other good cause "not shown" or "not listed above" (as determined by the SEO).

6. Treatment tanks to be pumped more frequently than the required four (4) years must have a Septic System Report prepared and provided to the Township within 30 days of each pumping occurrence.

7. The Township may allow a treatment tank to be pumped less than once every four (4) years if it is demonstrated to the satisfaction of the Township that the system will operate to its maximum efficiency with less frequent pumping. In no case shall the period extend beyond eight (8) years. Such a request may be made after the initial pumping and inspection. Requests must be in writing with all supporting documents attached. The Township, in making its determination, shall take into account the information submitted by the applicant, the sewage permit issued by the Township SEO upon installation or rehabilitation of the system and supporting documentation, reports of inspection and maintenance of the system including documentation that the sludge depth and/or scum layer is less than one third (1/3) of the tank capacity as determined by a pumper/hauler, and other relevant information, and may conduct an on-site inspection. The applicant shall bear the cost of any inspection, surface or subsurface, and soil or wastes sampling conducted for the purposes of evaluating the request. The applicant shall receive a decision within thirty (30) days of accumulation of all necessary information by the Township.

8. Tanks shall be deemed to be pumped when all organic solids are removed and the total average liquid depth remaining in the tank is less than one inch.

9. Holding tanks shall be pumped out at intervals that prevent the overflow, leakage, back up, and other malfunctions characteristic of an overloaded system.

10. The owner of a property upon which an on-lot sewage system is constructed shall maintain the area around such system so as to provide convenient access for inspection, maintenance, and pumping; and divert surface water and downspouts away from the absorption area and other on-lot sewage system components.

11. Tanks shall only be pumped from/through the manhole/access port, i.e. the largest tank opening. Tanks shall not be pumped from/through the observations port.

12. Any person owning a building served by an alternate system or on-lot sewage system that 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 Township in response to the initial notification in accordance with Section 605.1. Thereafter, service receipts shall be submitted to the Township at the intervals specified by the manufacturer's recommendations. In no case may the service or pumping intervals exceed those required for septic tanks.

13. The Township may require additional maintenance activity as needed including, but not necessarily limited to:

    1. Cleaning and unclogging of piping;
    2. Servicing and repair of mechanical equipment;
    3. Leveling of distribution boxes, tanks, and lines;
    4. Removal of obstructing roots or trees;
    5. The diversion of surface water away from the disposal area; or

6. Other acceptable means to the SEO and DEP.

§606. Inspections.

1. An inspection shall be conducted whenever an on-lot sewage system is pumped in accordance with this Ordinance. It shall be the property owner's responsibility to schedule the inspection with a qualified pumper/hauler for the same time as the system is pumped.

2. The person completing the inspection shall prepare a written report on the inspection findings using the Fairview Township Septic System Report form and immediately provide the completed form to the property owner.

3. An authorized agent of the Township shall inspect systems known to be or alleged to be malfunctioning. Should said inspection reveal that the system is indeed malfunctioning; the Township's authorized agent shall take action to require the correction of the malfunction.

4. Any on-lot sewage system may be inspected by the Township's SEO at any reasonable time as of the effective date of this Ordinance.

5. The inspection may include a physical tour of the property, the taking of samples from surface water, wells, other groundwater sources, the sampling of the contents of the sewage system itself and/or the introduction of a traceable substance into the interior plumbing of the structure served to ascertain the path and ultimate destination of wastewater generated in the structure. The owner will bear the cost of the inspection and the analysis of any sample(s).

§607. Operation. Only normal domestic wastes shall be discharged into any on-lot sewage system. The following shall not be discharged into the system:

1. Industrial wastes;

2. Automobile oil and other non-domestic oil;

3. Toxic or hazardous substances or chemicals, including but not limited to, pesticides disinfectants, acids, paints, thinners, herbicides, gasoline and other solvents;

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

§608. Ground Markers. Any person who shall install new or rehabilitated on-lot sewage systems shall provide a marker or markers at ground level locating all major subsurface component of the system. The Township SEO shall establish marker types and required locations. In addition, a riser or access hatch shall be constructed so as to enable easy access to the waste disposal tank, and prevent odors from escaping and to prevent children from removing the hatch. Accessibility for visual inspection and maintenance shall be provided in the drainage fields via 4-inch vertical, non-perforated PVC pipe connected directly to the drain tile at a minimum of four (4) locations in the drainage field and such installation shall be subject to Township SEO approval.

§609. System Rehabilitation.

1. The Township's SEO shall have the authority to require the repair of any malfunction by the following methods:

   a. Cleaning, repair or replacement of components of the existing system;

   b. Adding capacity or otherwise altering or replacing the existing systems treatment tank;

   c. Expanding the existing disposal area;

   d. Replacing the existing disposal area;

   e. Replacing a gravity distribution system with a pressurized system;

   f. Replacing the system with a holding tank; and

   g. Other alternatives as appropriate for the specific site or building.

2. In lieu of, or in combination with, the remedies described above, the SEO may require the installation of water conservation equipment and the institution of water conservation practices in structures served. Water using devices and appliances in the structure may be required to be retrofitted with water saving appurtenances. Wastewater regeneration in the structure may also be reduced by requiring changes in water usage patterns in the structure served.

§610. Liens. The Township, upon written notice from the SEO that an imminent health hazard exists due to failure of a property owner to maintain, repair or replace an on-lot sewage 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 SEO. The owner shall be charged for the work performed and, if necessary, a lien shall be entered therefore in accordance with law. The Township reserves the right to pursue all other lawful remedies.

§611. Disposal of Septage.

1. All septage originating within the Township shall be disposed of at sites or facilities approved by DEP

2. Only pumpers/haulers licensed to operate within York County shall be utilized.

3. Septage pumpers/haulers operating within the Township 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).

§612. Administration.

1. The Township shall employ or contract with qualified individuals to carry out the provisions of this ordinance.

2. All permits, records, reports, files and other written material relating to the installation, operation and maintenance and malfunction of on-lot sewage systems in the Township shall become the property of the Township. Existing and future records shall be available for public inspection during required business hours at the Township office. All records pertaining to sewage permits, building permits, occupancy permits and all other aspects of the municipality's on-lot management program shall be made available, upon request. A fee for copying may be charged.

3. The Township Supervisors shall establish all administrative procedures necessary to properly carry out the provisions of this ordinance.

4. The Supervisors may establish a fee schedule, and subsequently collect fees, to cover the cost to the Township of administering this program.

§613. Appeals. Any person aggrieved with the actions of the Sewage Enforcement Officer or any other authorized agent of the Township may file an appeal in accordance with Act 537 (see, 35 P.S. §750.16

§614. Penalties.

1. Any person who shall violate or fail to comply with any provision of this Ordinance shall, upon conviction thereof by a summary proceeding action brought before a Magisterial District Judge in the same manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure, be sentenced to pay a fine of not less that One Hundred ($100) Dollars, nor more than One Thousand ($1,000) Dollars, plus all court costs, or imprisonment, all pursuant to the purposes and mandate of Act No. 172 of 1996, as amended. Each day's continuance of a violation of this Ordinance shall constitute a separate offense.

2. The discharge by the Township of its obligations as set forth in this Ordinance shall create no liability upon the Township, its officials, employees or agents.

3. All reports, inspections, appraisals, certifications or records required or produced by the Township, its officials, employees or agents, as required by this Ordinance, shall be for the use and benefit of the Township only and shall not be accepted, utilized or relied upon by any other person or party by way of certification or otherwise.

Section 2. All ordinances or parts of ordinances inconsistent with the provisions of this ordinance are hereby repealed to the extent of such inconsistency.

Section 3. Severability. If any sentence, clause, section or part of this Ordinance is for any reason found to be unconstitutional, illegal, or invalid, such unconstitutionality, illegality or invalidity shall not affect or impair any of the remaining provisions, sentences, clauses, sections or parts of this Ordinance. It is hereby declared as the intent of the Board of Supervisors that this ordinance would have been adopted had such unconstitutional, illegal or invalid sentence, clause, section or part thereof not been included herein.

Section 4. Effective Date. This Ordinance shall become effective five (5) days after adoption by the Board of Supervisors.

ENACTED and ORDAINED by the Board of Supervisors of the Township of Fairview, York County, Pennsylvania this 28th day of June, 2010.

FAIRVIEW TOWNSHIP BOARD OF SUPERVISORS

By:_____

By:_____

By:_____

By:_____

By:_____

ATTEST:

Donna L. Nissel
Secretary

Ordinance 2001-3
Fairview Township Maintenance and use of Retaining Tanks

Part 1

Maintenance and Use of Retaining Tanks

§101. Short Title. This Part shall be known as the "Fairview Township Maintenance and Use of Retaining Tanks Ordinance." (Ord. 2001-3, 3/26/2001, §1)

§102. Purpose. The purpose of this Part is to establish procedures for the use and maintenance of existing and new retaining tanks designed to receive and retain sewage whether from residential or commercial use and it is hereby declared that the enactment of this Part is necessary for the protection, benefit and preservation of the health, safety and welfare of the inhabitants of this Township. (Ord. 2001-3, 3/26/2001, §2)

§103. Definitions. Unless the context specifically and clearly indicates otherwise, the meaning of terms used in this Part shall be as follows:

OWNER - any person vested with ownership, legal or equitable, sole or partial, of any property located in the Township.

PROPERTY - any property within the Township upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and from which structure sewage shall or may be discharged.

RETAINING TANK - a watertight receptacle that receives and retains sewage and is designed and constructed to facilitate ultimate disposal of the sewage of another site. Retaining tanks include, but are not limited to, the following:

HOLDING TANK - a watertight tank, whether permanent or temporary, to which sewage is conveyed by a water carrying system.

PRIVY - a watertight tank designed to receive sewage where water under pressure is not available.

SEWAGE - any substance that contains any of the waste products or excrement or other discharge from the bodies of human beings or animals or and any noxious or deleterious substance 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. The term includes any substance that constitutes pollution under the Clean Streams Law.

SEWAGE ENFORCEMENT OFFICER - an official of the local agency who reviews permit applications and sewage facilities planning modules, issues permits as authorized by the Pennsylvania Sewage Facilities Act and conducts investigations and inspections that are necessary to implement the act and the regulations thereunder.

SEWAGE FACILITIES - a system of system collection, conveyance, treatment and disposal that will prevent the discharge of untreated or inadequately treated sewage or other waste into waters of this Commonwealth or otherwise provide for the safe and sanitary treatment and disposal of sewage or other waste.

TOWNSHIP - Fairview Township, York County, Pennsylvania.

(Ord. 2001-3, 3/26/2001, §3)

§104. Rights and Privileges Granted. The Fairview Township Board of Supervisors have exclusive authority for approval of use of retaining tanks and are hereby authorized and empowered to undertake within the Township the control and methods of retaining tank sewage disposal and the collection and transportation thereof, as specifically authorized through Pa. Code, Title 25, Chapter 71, §71.63. (Ord. 2001-3, 3/26/2001, §4)

§105. Rules and Regulations. The Township hereby requires that all retaining tanks be constructed, installed and maintained in accordance with Federal and State laws and regulations including, without limitation, the regulations contained in Title 25 of the Pennsylvania Code, Chapter 71 and 73. (Ord. 2001-3, 3/26/2001, §5)

§106. Application Process. Application for the installation of a retaining tank, whether a new installation or a replacement of an existing installation, shall be made as follows:

A. No application shall be filed until all requirements under Federal and State laws and regulations have been met including, but not limited to, the obtaining by the applicant written approval from the Department of Environmental Protection, as required under Title 25, Pa. Code §73.61.

B. The applicant shall submit a letter of application to the Township Sewage Enforcement Officer.

C. The applicant shall be responsible for all costs incurred by the Township in the review of the application.

D. The property owner shall submit a plan with the proposed location and design detail of the holding tank for review by the Sewage Enforcement Officer and approval by the Township prior to installation or construction.

E. Maintain the retaining tank in conformance with this Part or any ordinance of this Township, the provisions of any applicable law and the rules and regulations of any administrative agency of the Commonwealth of Pennsylvania.

F. The Sewage Enforcement Officer shall review the application for compliance with applicable laws and regulations and shall submit a written report and recommendation to the Board of Supervisors within thirty (30) days of receipt of the application.

G. The Board of Supervisors shall vote on the application at the meeting following receipt of the written report and recommendation from the Sewage Enforcement Officer. The Sewage Enforcement Officer shall attend the meeting of the Board of Supervisors upon request of the Board of Supervisors or its designee.

(Ord. 2001-3, 3/26/2001, §6)

§107. Rates and Charges. The Township shall have the right and power to fix, alter, charge and collect rates, assessments and other charges. (Ord. 2001-3, 3/26/2001, §7)

§108. Exclusiveness of Rights and Privileges.

1. The Township will receive, review and retain pumping receipts from permitted retaining tanks.

2. The Township will receive, review and retain annual inspection reports for each permitted retaining tank.

3. The Township, its Sewage Enforcement Officer or other designee shall have the right of access for inspection of the retaining tank or correction, if necessary, of any malfunction.

(Ord. 2001-3, 3/26/2001, §8)

§109. Duties of Improved Property Owner. The owner of an improved property that is granted Township approval for a retaining tank shall enter into an agreement with the Township to include, at a minimum, the following conditions:

A. The collection and transportation of all sewage from any improved property utilizing a retaining tank shall be contracted by the owner and approved by the Township and the disposal thereof shall be made only at such site or sites as may be approved by the Department of Environmental Protection of the Commonwealth of Pennsylvania.

B. Provide the Township with pumping receipts for the permitted retaining tank.

C. Perform an annual inspection of the permitted retaining tank by the Township or anyone acting under the direction or approval of the Township and submit a written inspection report to the Township.

D. Allow Township access to the retaining tank for inspection or correction, if necessary, of any malfunction.

E. The owner shall be responsible for all costs incurred by the Township associated with the retaining tank.

F. Provide financial security for a term of one (1) year in an amount based upon an estimate, approved by the Township, for the cost of the installation, construction and maintenance, including pumping, of the retaining tank to ensure the owner's obligations in accordance with this Part. Although the Board of Supervisors may accept an alternative type of financial security, commonly accepted forms of financial security are irrevocable letters of credit and escrow accounts posted with a bonding company or Federal or Commonwealth chartered lending institution chosen by the party posting the financial security, providing said bonding company or lending institution is authorized to conduct such business in the Commonwealth of Pennsylvania.

(Ord. 2001-3, 3/26/2001, §9)

§110. Abatement of Nuisances. In addition to any other remedies provided in this Part, any violation of §105 and §109 above, shall constitute a nuisance and shall be abated by the Township by either seeking mitigation of the nuisance or seeking appropriate equitable or legal relief from a court of competent jurisdiction. (Ord. 2001-3, 3/26/2001, §10)

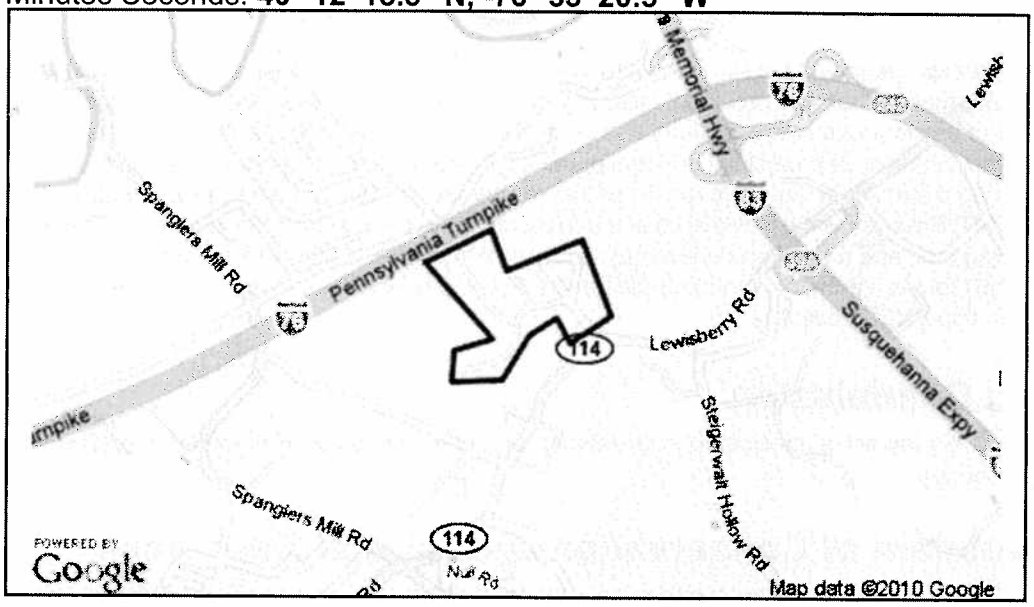
§111. Enforcement. Any person found to be in violation of this Part shall pay a fine of not more than one thousand dollars ($1,000.00). The person specifically authorized by the Board of Supervisors of Fairview Township shall determine in each instance whether a violation has occurred under this Part. Upon determination that a violation has occurred, the officer or other person designated by the Board of Supervisors shall impose a fine upon the violator and shall give the violator written notice by United States mail or in person of the violation and the imposition of the fine. If the violator fails to pay the fine within the time specified in the notice of violation, the authorized person may institute a civil enforcement proceeding on behalf of the Township and any person found to be in violation shall pay the fine as set forth above plus all court costs and reasonable attorney's fees incurred by the Township in the civil enforcement proceeding. Each day that a violation of this Part continues shall constitute a separate offense. (Ord. 2001-3, 3/26/2001, §11)

Appendix P

PNDI Project Planning Environmental Review

1. PROJECT INFORMATION

Project Name: **Timber Ridge Area**
Date of review: **3/12/2010 2:42:33 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewer line (new - construction in new location)**
Project Area: **49.9** acres
County: **York** Township/Municipality: **Fairview**
Quadrangle Name: **LEMOYNE** ~ ZIP Code: **17070**
Decimal Degrees: **40.204312 N, -76.889019 W**
Degrees Minutes Seconds: **40° 12' 15.5" N, -76° 53' 20.5" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for one year** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special

concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: Tim Nolt
Company/Business Name: Gannett Fleming
Address: P.O. Box 67100
City, State, Zip: Harrisburg PA 17106
Phone: (717) 763-7211 Fax: (717) 763-1808
Email: tnolt@gfnet.com

8. CERTIFICATION

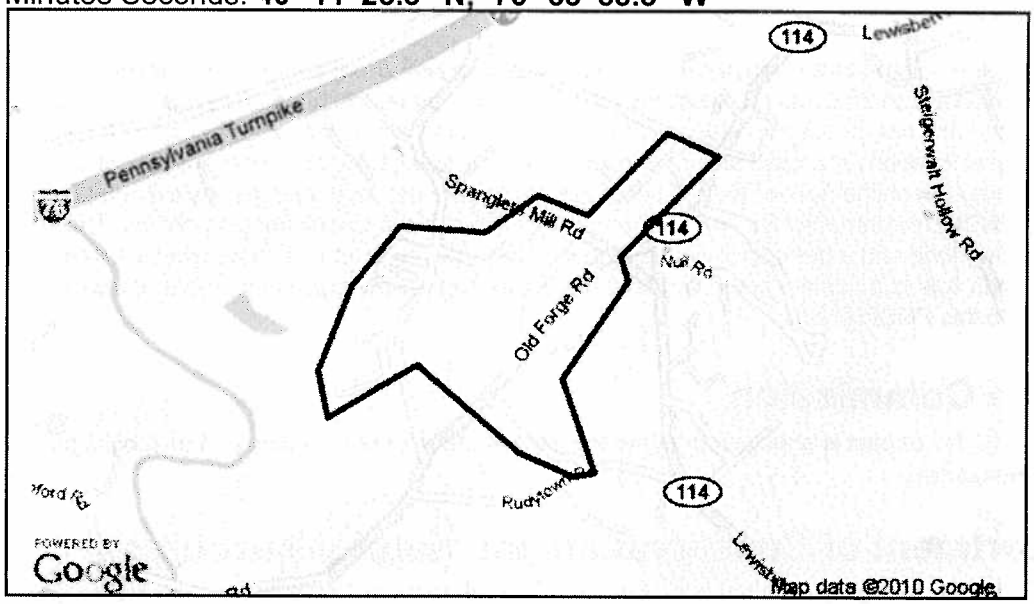
I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

3/12/2010
date

1. PROJECT INFORMATION

Project Name: **Fairview Farms- Revised**
Date of review: **3/12/2010 3:10:42 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewer line (new - construction in new location)**
Project Area: **195.7** acres
County: **York** Township/Municipality: **Fairview**
Quadrangle Name: **LEMOYNE** ~ ZIP Code: **17070**
Decimal Degrees: **40.190348 N, -76.899576 W**
Degrees Minutes Seconds: **40° 11' 25.3" N, -76° 53' 58.5" W**



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Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

3. AGENCY COMMENTS

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PA Game Commission

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Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: Tim Nolt
Company/Business Name: Gannett Fleming
Address: P.O. Box 67100
City, State, Zip: Harrisburg PA 17106
Phone: (717) 763-7211 Fax: (717) 763-1808
Email: tnolt@gfnet.com

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applicant/project proponent signature

3/12/2010
date

Appendix Q

PHMC Inquiry and Response

Gannett Fleming
Your Trusted Advisor Since 1915

GANNETT FLEMING, INC.
P.O. Box 67100
Harrisburg, PA 17106-7100
Location:
207 Senate Avenue
Camp Hill, PA 17011
Office: (717) 763-7211
Fax: (717) 763-1808
www.gannettfleming.com

March 24, 2010

CERTIFIED MAIL NO. 7008 0150 0000 5983 4668
RETURN RECEIPT REQUESTED

Pennsylvania Historical & Museum Commission
Bureau of Historic Preservation
Commonwealth Keystone Building, Second Floor
400 North Street
Harrisburg, PA 17120-0093

RE: Notification of Potential Effect of Proposed Action
On Archaeological and Historical Resources
Fairview Township, York County

Ladies and Gentlemen:

Gannett Fleming is currently assisting Fairview Township with planning under the Pennsylvania Sewage Facilities Act. The planning has progressed to the point where several alternatives have been developed specifically for the collection and conveyance of wastewater generated in the Township. The Act 537 planning regulations require Fairview Township to determine what impact the alternatives will have on archaeological or historical resources.

In conjunction with the Fairview Township Act 537 Plan, a number of developments currently served by on-lot wastewater systems were designated to be served by the Fairview Township North Wastewater Treatment Plant (WWTP). Sewer extensions will be required to serve these areas. The majority of these sewer mains will be located in existing streets or the right-of-ways of existing streets.

The approximate project area is shown on the enclosed excerpt of the Lemoyne 7.5-minute USGS topographic map (Map 1). Enclosed Map 2 includes aerial photography of the project location, and the proposed sewer extensions necessary to serve the Fairview Farms and Timber Ridge areas. The locations of pumping facilities are not shown on Map 2, as their locations are based on the selected approach. The estimated amount of earth disturbance, as shown in Table 1, accounts for the construction of 23,000 feet of sewer, and four pumping stations for the two areas.

Individual homeowners will be required to construct a sanitary sewer lateral from the dwelling to the right-of-way or sewer main. However, no major modifications to existing buildings are anticipated as part of the Project. Table 1 includes the estimated size of the project areas, as shown on Map 1, as well as the estimated amount of earth disturbance for the proposed sewer extensions, assuming all components of the project are undertaken by the Township.

TABLE 1
ESTIMATED EARTH DISTURBANCE FOR SEWER EXTENSION PROJECTS

Area		Estimated Total Acreage of Project Area	Estimated Length of Potential Sewer Extension	Estimated Amount of Earth Disturbance (1)
1	Fairview Farms	165 acres	16,000 feet	2.0 acres
2	Timber Ridge	85 acres	7,000 feet	1.0 acres

Notes:

(1) Approximate amount of disturbance required for construction of new facilities, based on initial estimates of 21,000 feet of sanitary sewer and up to 4 pumping stations.

This letter, enclosed mapping, and Cultural Resource Notice form are to notify the Commission 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, Section 501-502. We understand the Commission will advise the Township within 60 days of the receipt of this notice if the proposed projects will not affect a known archaeological or historical resource or, if a significant known archaeological or historical resource, as determined by the Commission using Secretary of Interior criteria for determining resource significant, requires protection or if a "high probability archaeological area" could be affected by the proposed sewage facilities.

While a commitment has not been made to undertake any of these extensions, this information will be incorporated in the planning assessments under the Pennsylvania Sewage Facility Act and in specific alternative proposals.

If you have any questions questions regarding the Act 537 plan, please contact me at (717) 763-7212, Ext. 2690.

Very truly yours,

GANNETT FLEMING, INC.
Environmental Resources Division

JOSEPH A. STRAUCH, P.E.*
Senior Project Manager
Water and Wastewater Practice
**Registered in PA, OH, WV*

Enclosures

cc: Stephen F. Smith, Fairview Township Manager

0120-PM-PY0003 Rev. 5/2006
NOTICE

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received

Read the instructions before completing this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name: Fairview Township

Street Address: 599 Lewisberry Road

City: New Cumberland State: PA Zip: 17070

Telephone Number: (717) 901-5200

Project Title: Act 537 Plan- Proposed Sewer Extensions

SECTION B. LOCATION OF PROJECT

Municipality: Fairview Township County Name: York DEP County Code: 67

SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested:

Anticipated federal permits:

- ☐ Surface Mining
- ☐ Army Corps of Engineers
- ☐ 401 Water Quality Certification
- ☐ 404 Water Quality Permit
- ☐ Federal Energy Regulatory Commission
- ☐ Other: _____

SECTION D. GOVERNMENT FUNDING SOURCES

- ☒ State: (Name) PennVest
- ☐ Federal: (Name) _____
- ☒ Local: (Name) Existing Authority Funds
- ☐ Other: (Name) _____

SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

DEP Regional Office Responsible for Review of Permit Application

- ☐ Southeast Regional Office (Norristown)
- ☒ Southcentral Regional Office (Harrisburg)
- ☐ Southwest Regional Office (Pittsburgh)
- ☐ District Mining Office: _____
- ☐ Central Office (Harrisburg)
- ☐ Northeast Regional Office (Wilkes-Barre)
- ☐ Northcentral Regional Office (Williamsport)
- ☐ Northwest Regional Office (Meadville)
- ☐ Oil & Gas Office: _____

SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District: York County Conservation District

Telephone Number, if known: (717) 840-7430

SECTION G. CONSULTANT

Consultant, if applicable: Gannett Fleming, Inc.

Street Address: P.O. Box 67100

City: Harrisburg State: PA Zip: 17106-7100

Telephone Number: (717) 763-7212

SECTION H. PROJECT BOUNDARIES AND DESCRIPTION

REQUIRED

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity.

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

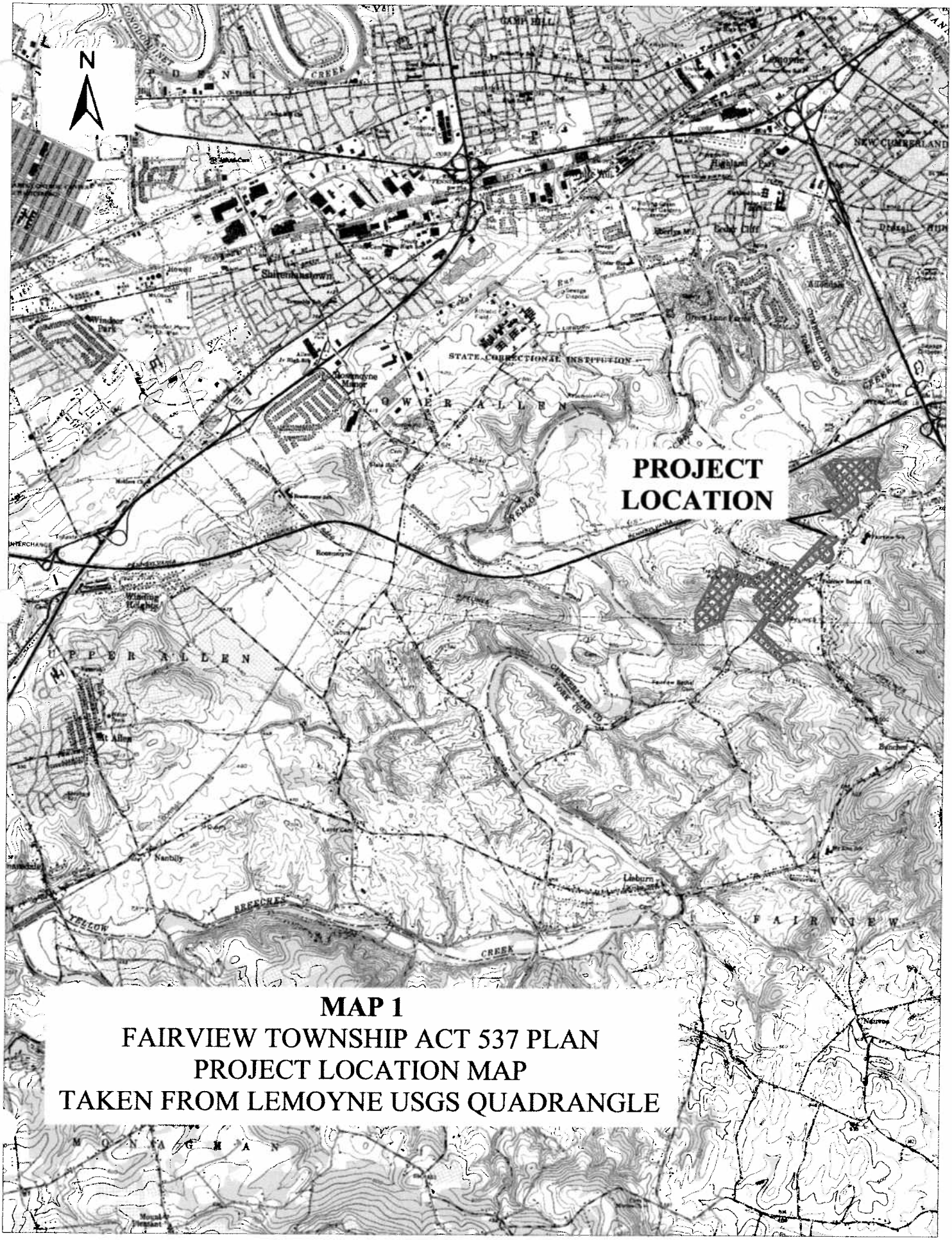
REQUESTED

Attach photographs of any building over 40 years old.

Attach site map, if available.

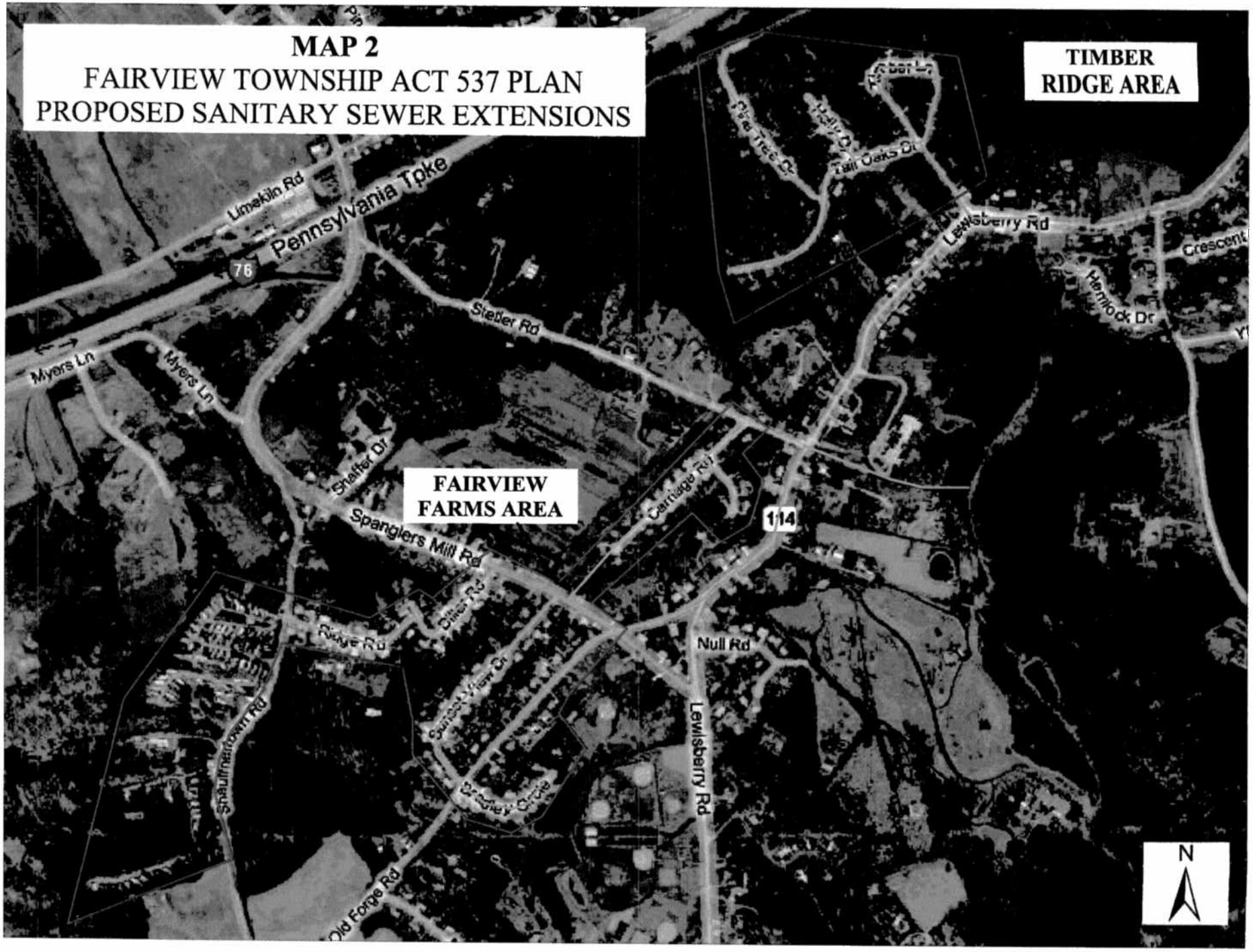
SECTION I. SIGNATURE BLOCK

Joseph A. Strano	3/24/10
Applicant's Signature	Date of Submission of Notice to PHMC



MAP 1
FAIRVIEW TOWNSHIP ACT 537 PLAN
PROJECT LOCATION MAP
TAKEN FROM LEMOYNE USGS QUADRANGLE

MAP 2
FAIRVIEW TOWNSHIP ACT 537 PLAN
PROPOSED SANITARY SEWER EXTENSIONS



PHMC Response Letter

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

May 5, 2010

Joseph A. Strauch, P.E.
Gannett Fleming, Inc.
P.O. Box 67100
Harrisburg, PA 17106-7100

Re: File No. ER 2010-1285-133-A
PV: Act 537 Plan-Proposed Sewer Extensions, Wastewater Collection & Conveyance, Fairview Twp., York Co.

Dear Mr. Strauch:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

There may be historic buildings, structures, and/or archaeological resources located in the project area. In our opinion the activities described in your proposal should have no effect on these resources. Should you become aware, from any source, that unidentified historic buildings, structures, and or archaeological resources are located at the project site, or that the project activities will have an effect on these properties, the Bureau for Historic Preservation should immediately be contacted.

If you need further information regarding archaeological survey please contact Doug McLearen at (717) 772-0925. If you need further information concerning historic structures please consult Ann Safley at (717) 787-9121.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology & Protection

cc: DEP, Southcentral Regional Office

DCM/tmw

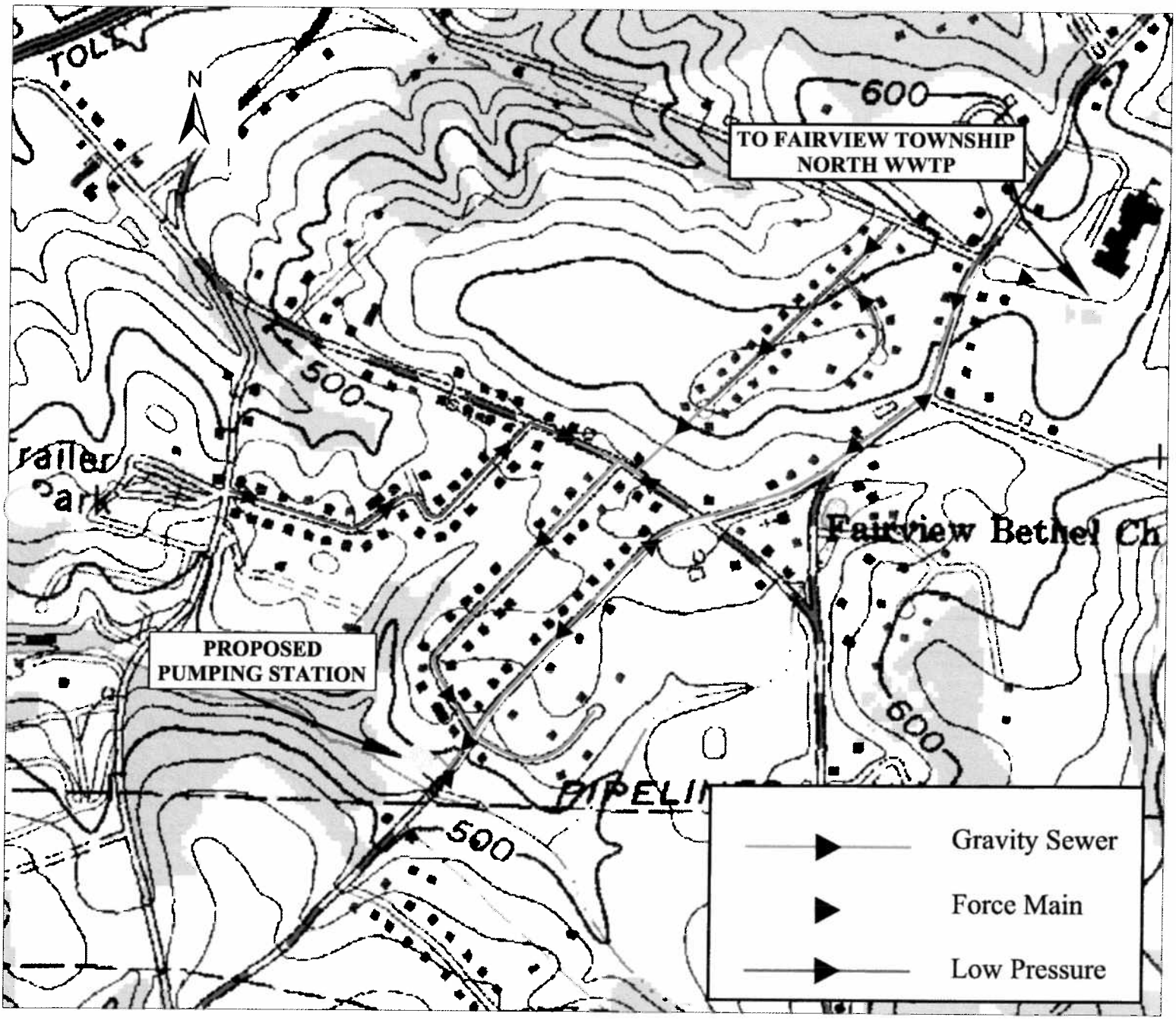
Appendix R

Fairview Farms Area Analysis

Preliminary Project Cost Estimate

TABLE 1
ALTERNATIVE 1 FOR FAIRVIEW FARMS NEEDS AREA
CONNECT TO NORTH WWTP SERVICE AREA SEWER

ALT 1-FAIRVIEW FARMS ONLY				Probable Project Costs	
Item No.	Estimated Quantities		Item Description	Unit Price	Total Amount 2010 Dollars
Furnishing and Laying Force Main Pipe;					
1	3,700	Lin. Ft.	4-Inch DIP Force Main, in street, complete in place	$77	$284,900
2	1,100	Lin. Ft.	4-Inch DIP Force Main, in R-O-W, complete in place	$44	$48,400
2	1	Each	Connection of new force main to existing manhole	$1,100	$1,100
3	10	Each	Terminal/Cleanout/Air Release Manhole, Complete	$5,500	$55,000
4	1	Each	Pumping Station Rt 114	$300,000	$300,000
Furnishing and Laying Gravity Sewer Pipe					
5	6,100	Lin. Ft.	8-Inch PVC Sewer Main, in street, complete in place	$110	$671,000
6	400	Lin. Ft.	8-Inch PVC Sewer Main, in R-O-W complete in place	$77	$30,800
7	1,540	Lin. Ft.	6-Inch PVC Service Connections	$11	$16,940
8	77	Each	6-Inch PVC Service Connections and Test Tees	$61	$4,659
Construction of Precast Concrete Manholes, Complete in Place;					
9	20	Each	4-Foot Diameter Bases	$2,200	$44,000
10	160	VF	4-Foot Diameter Walls	$110	$17,600
11	20	Each	Manhole Frame and Cover Assemblies	$660	$13,200
Pressure Sewer					
12	3,400	Lin. Ft.	2" Pressure Main, in Street, complete in place	$55	$187,000
13	2,000	Lin. Ft.	2" Pressure Main, in ROW complete in place	$33	$66,000
14	870	Lin. Ft.	1-1/2" Pressure Service Connections, Complete in place	$220	$191,400
15	58	Each	Curbstop, Box and Check Valve Service Set	$550	$31,900
16	58	Each	Grinder Pumps	$5,500	$319,000
17	11	Each	Terminal/Cleanout Manhole, Complete	$3,850	$42,350
Miscellaneous Expenses					
18	3,500	Lin. Ft.	Acquisition of R-O-W	$11	$38,500
19	1	Each	Purchase of Land for Pumping Stations	$11,000	$11,000
20	1	Each	Stream Crossing	$5,500	$5,500
				Subtotal- Construction Cost	**$2,380,200**
				20% Other Project Cost (Engineering, Legal, Financial)	**$476,040**
				15% Contingency	**$357,030**
				Total Project Cost	**$3,213,000**



Fairview Farms Alternative #1

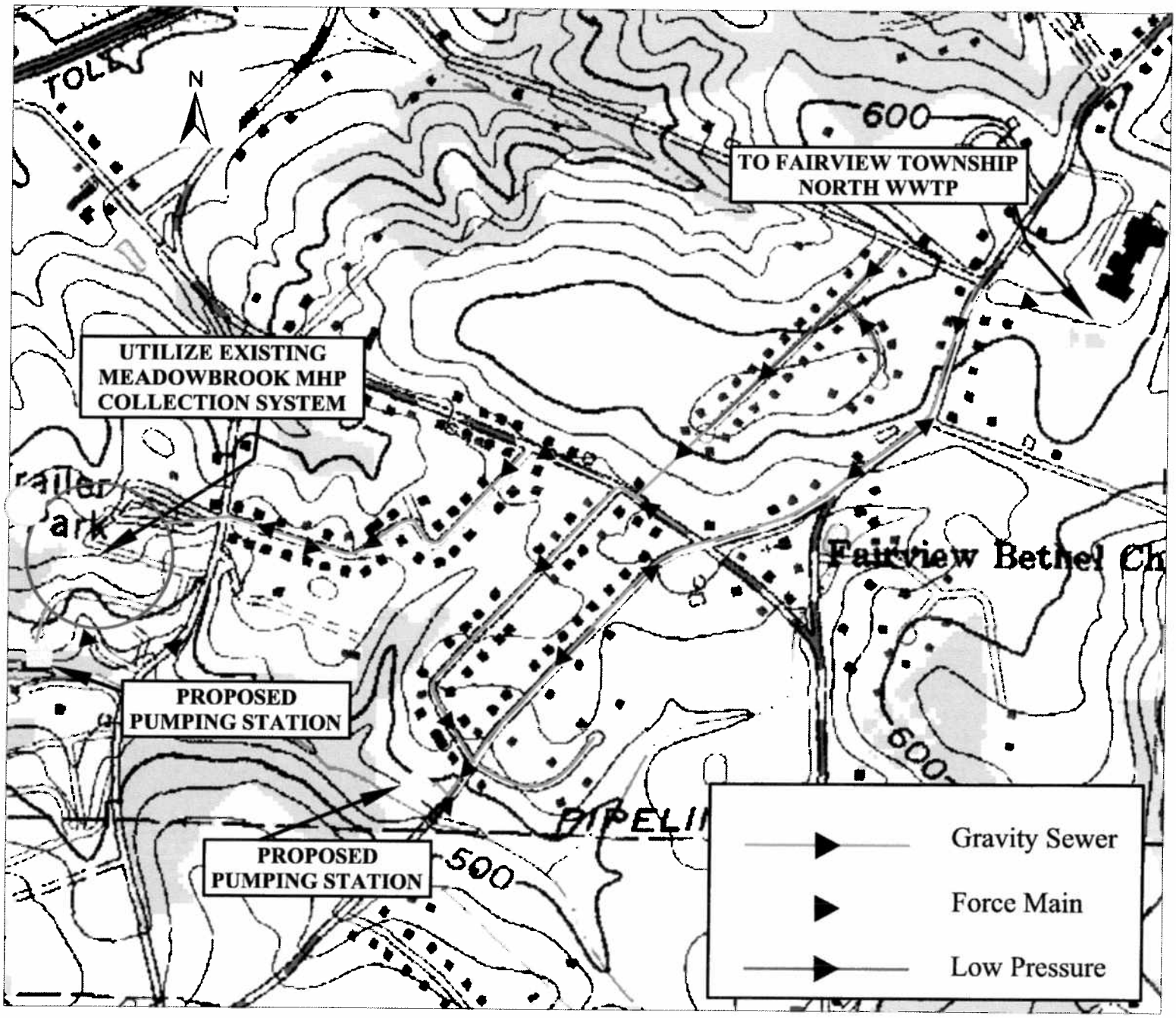
TABLE 2
ALTERNATIVE 2 FOR FAIRVIEW FARMS NEEDS AREA
INCLUDING MEADOWBROOK MOBILE HOME PARK-PUBLIC SYSTEM

ALT 2-FAIRVIEW FARMS & MEADOWBROOK MHP (1)				Probable Project Costs	
Item No.	Estimated Quantities		Item Description	Unit Price	Total Amount 2010 Dollars
Furnishing and Laying Force Main Pipe;					
1	7,400	Lin. Ft.	4-Inch DIP Force Main, in street, complete in place	$77	$569,800
2	1,650	Lin. Ft.	4-Inch DIP Force Main, in R-O-W, complete in place	$44	$72,600
2	1	Each	Connection of new force main to existing manhole	$1,100	$1,100
3	18	Each	Terminal/Cleanout/Air Release Manhole, Complete	$5,500	$99,000
4	1	Each	Pumping Station Rt 114	$300,000	$350,000
5	1	Each	Pumping Station- Meadowbrook MHP	$250,000	$300,000
Furnishing and Laying Gravity Sewer Pipe					
6	7,900	Lin. Ft.	8-Inch PVC Sewer Main, in street, complete in place	$110	$869,000
7	400	Lin. Ft.	8-Inch PVC Sewer Main, in R-O-W complete in place	$77	$30,800
8	2,140	Lin. Ft.	6-Inch PVC Service Connections	$11	$23,540
9	107	Each	6-Inch PVC Service Connections and Test Tees	$61	$6,474
Construction of Precast Concrete Manholes, Complete in Place;					
10	27	Each	4-Foot Diameter Bases	$2,200	$59,400
11	216	VF	4-Foot Diameter Walls	$110	$23,760
12	27	Each	Manhole Frame and Cover Assemblies	$660	$17,820
Pressure Sewer					
13	1,700	Lin. Ft.	2" Pressure Main, in Street, complete in place	$55	$93,500
14	2,000	Lin. Ft.	2" Pressure Main, in ROW complete in place	$33	$66,000
15	420	Lin. Ft.	1-1/2" Pressure Service Connections, Complete in place	$220	$92,400
16	28	Each	Curbstop, Box and Check Valve Service Set	$550	$15,400
17	28	Each	Grinder Pumps	$5,500	$154,000
18	10	Each	Terminal/Cleanout Manhole, Complete	$3,850	$38,500
Miscellaneous Expenses					
19	4,050	Lin. Ft.	Acquisition of R-O-W	$11	$44,550
20	2	Each	Purchase of Land for Pumping Stations	$11,000	$22,000
21	1	Each	Stream Crossing	$5,500	$5,500
				Subtotal- Construction Cost	**$2,955,144**
				20% Other Project Cost (Engineering, Legal, Financial)	**$591,029**
				25% Contingency(2)	**$738,786**
				Total Project Cost	**$4,285,000**

Note:

(1) Assuming the sanitary sewer system serving Meadowbrook MHP is in a condition that it can be used and will not need to be replaced in its entirety.

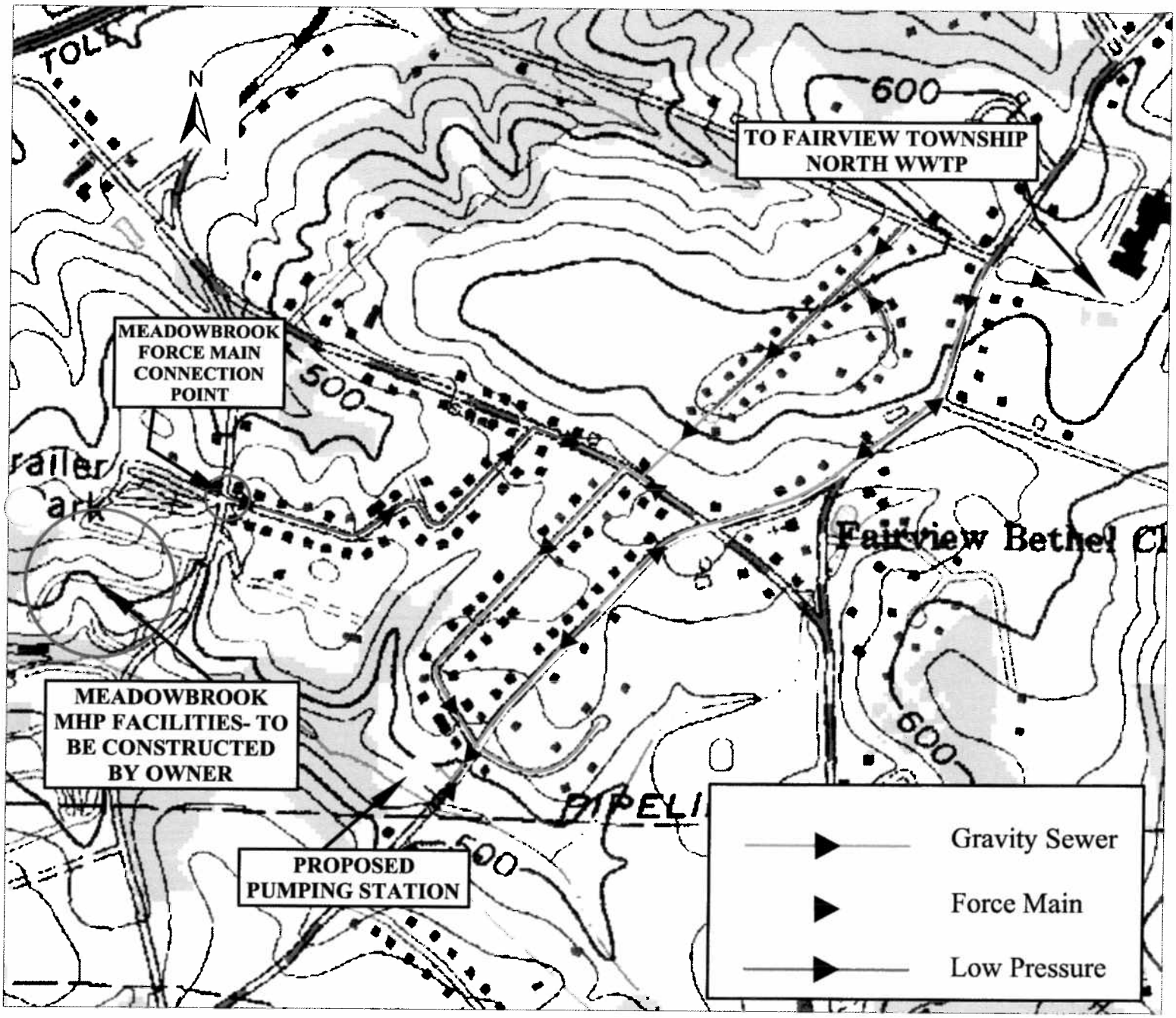
(2) Additional contingency due to unknown conditions of collection system serving Meadowbrook MHP.



Fairview Farms Alternative #2

TABLE 3
ALTERNATIVE 3 FOR FAIRVIEW FARMS NEEDS AREA
INCLUDING MEADOWBROOK MOBILE HOME PARK- PRIVATE SYSTEM

ALT 1-FAIRVIEW FARMS ONLY				Probable Project Costs	
Item No.	Estimated Quantities		Item Description	Unit Price	Total Amount 2010 Dollars
Furnishing and Laying Force Main Pipe;					
1	3,700	Lin. Ft.	4-Inch DIP Force Main, in street, complete in place	$77	$284,900
2	1,100	Lin. Ft.	4-Inch DIP Force Main, in R-O-W, complete in place	$44	$48,400
2	1	Each	Connection of new force main to existing manhole	$1,100	$1,100
3	10	Each	Terminal/Cleanout/Air Release Manhole, Complete	$5,500	$55,000
4	1	Each	Pumping Station Rt 114	$350,000	$350,000
Furnishing and Laying Gravity Sewer Pipe					
5	6,100	Lin. Ft.	8-Inch PVC Sewer Main, in street, complete in place	$110	$671,000
6	400	Lin. Ft.	8-Inch PVC Sewer Main, in R-O-W complete in place	$77	$30,800
7	1,540	Lin. Ft.	6-Inch PVC Service Connections	$11	$16,940
8	77	Each	6-Inch PVC Service Connections and Test Tees	$61	$4,659
Construction of Precast Concrete Manholes, Complete in Place;					
9	20	Each	4-Foot Diameter Bases	$2,200	$44,000
10	160	VF	4-Foot Diameter Walls	$110	$17,600
11	20	Each	Manhole Frame and Cover Assemblies	$660	$13,200
Pressure Sewer					
12	3,400	Lin. Ft.	4" Pressure Main, in Street, complete in place	$77	$261,800
13	2,000	Lin. Ft.	4" Pressure Main, in ROW complete in place	$44	$88,000
14	870	Lin. Ft.	1-1/2" Pressure Service Connections, Complete in place	$220	$191,400
15	58	Each	Curbstop, Box and Check Valve Service Set	$550	$31,900
16	58	Each	Grinder Pumps	$5,500	$319,000
17	11	Each	Terminal/Cleanout Manhole, Complete	$3,850	$42,350
Miscellaneous Expenses					
18	3,500	Lin. Ft.	Acquisition of R-O-W	$11	$38,500
19	1	Each	Purchase of Land for Pumping Stations	$11,000	$11,000
20	1	Each	Stream Crossing	$5,500	$5,500
				Subtotal- Construction Cost	**$2,527,000**
				20% Other Project Cost (Engineering, Legal, Financial)	**$505,400**
				15% Contingency	**$379,050**
				Total Project Cost	**$3,411,000**



Fairview Farms Alternative #3

Letters to Owners of Private Systems

Established 1805
FAIRVIEW TOWNSHIP

BOARD of SUPERVISORS
Perry Albert, *Chairman*
John W. Mickle, III, *Vice-Chairman*
John C. Minito, *Supervisor*
Mario D. Pirritano, *Supervisor*
William C. Brown, *Supervisor*

MANAGER
Stephen F. Smith

July 16, 2010

Dr. Jemry Small
Superintendent of Schools
West Shore School District
P.O. Box 803
New Cumberland PA 17070-0803

RE: Act 537 - Fairview Elementary School and Fairview Township

Dear Dr. Small:

The Pennsylvania Department of Environmental Protection requires Fairview Township to evaluate sewage disposal systems within the corporate boundaries of the Township.

After reviewing the relevant information, the Township is now required to develop a plan to address existing and future sewage disposal needs, which in some cases, may include connection of certain homes, businesses and areas to the public sanitary sewer system.

DEP has indicated that the Township's plan should consider that the system currently operated by the West Shore School District at Fairview Elementary School should be connected to the Township Sanitary Sewer System not later than 2015. The Township is advising you at this time so that you may begin to work with us on this project.

Previously the Township has offered this connection to the West Shore School District. Various individuals have advised us that for economic reasons the District has chosen not to connect the Fairview Elementary School. (See attached correspondence dating back to 2000).

The engineered design and capability to make this connection was prepared in 2000. It appears your discharge to the unnamed stream is approximately 140 feet from the Sanitary Sewer Manhole that was designed specifically to accommodate the school.

Please contact me directly so that the Township and the School District can meet to discuss this matter.

Sincerely,

Stephen F. Smith
Township Manager
717.901.5215

CC: BOS
CC: Authority
CC: DEP
CC: Alex Chiaruttini, Stock and Leader
CC: David Jones, Stock and Leader

Attachments

Established 1803
FAIRVIEW TOWNSHIP

BOARD of SUPERVISORS
Perry Albert, *Chairman*
John W. Mickle, III, *Vice-Chairman*
John C. Minito, *Supervisor*
Mario D. Pitritano, *Supervisor*
William C. Brown, *Supervisor*

MANAGER
Stephen F. Smith

July 16, 2010

91 7108 2133 3937 8602 4302

Mr. Ernest Kerstetter
314 Erford Road
Camp Hill Pa, 17011

RE: Meadowbrook Mobile Home Park, Act 537 and Fairview Township

Dear Mr. Kerstetter:

The Pennsylvania Department of Environmental Protection requires Fairview Township to evaluate sewage disposal systems within the corporate boundaries of the Township.

After reviewing the relevant information, the Township is now required to develop a plan to address existing and future sewage disposal needs, which in some cases, may include connection of certain homes, businesses and areas to the public sanitary sewer system.

DEP has indicated that the Township's plan should consider connection of your Mobile Home Park to the Township Sanitary Sewer System not later than 2015. The Township is advising you at this time so that you may begin to work with us on this project.

Prior to the construction of the connection and necessary infrastructure to provide public service, you will be required to enter into a written agreement with the Township and the Authority that obligates you to:

- Collect the sanitary wastes from your Mobile Home Park and convey your discharge to our system. This may include the need to construct and permit a pump station.
- Make any necessary repairs/improvements to the park's sewer system to eliminate infiltration and inflow (I&I) of ground water into the sanitary system.
- Install any appropriate sampling locations as determined by the Authority/Township to assure that your discharge complies with statutory requirements.
- You will be responsible for installing a meter at the connection location and maintaining that meter in accordance with Township requirements.

Your tapping fee will be determined at the time the construction project is completed. For you to begin to budget and estimate the economic impact to you and your residents, you should consider that the current tapping fee is approximately $9,000.00 +/- per EDU (equivalent dwelling unit). We feel that this cost does not fully reflect the cost of new construction at this time and only serves as a starting point until the full cost is determined. Our preliminary findings indicate that you may have 85+/- units in the Mobile Home Park. The costs to your and your residents for not only the connection, but also your cost of conveyance to our system and any permitting fees and closure requirements associated with your existing system and treatment plant will be significant.

Due to regulatory requirements, we need to meet with you not later than August 10, 2010 to begin discussing the steps necessary to complete the sanitary sewer connection and the costs thereof. I will call you in the next few days to schedule this meeting.

Sincerely,

Stephen F. Smith
Township Manager

CC: BOS
CC: Authority
CC: DEP
CC: Alex Chiaruttini, Stock a
CC: David Jones, Stock and

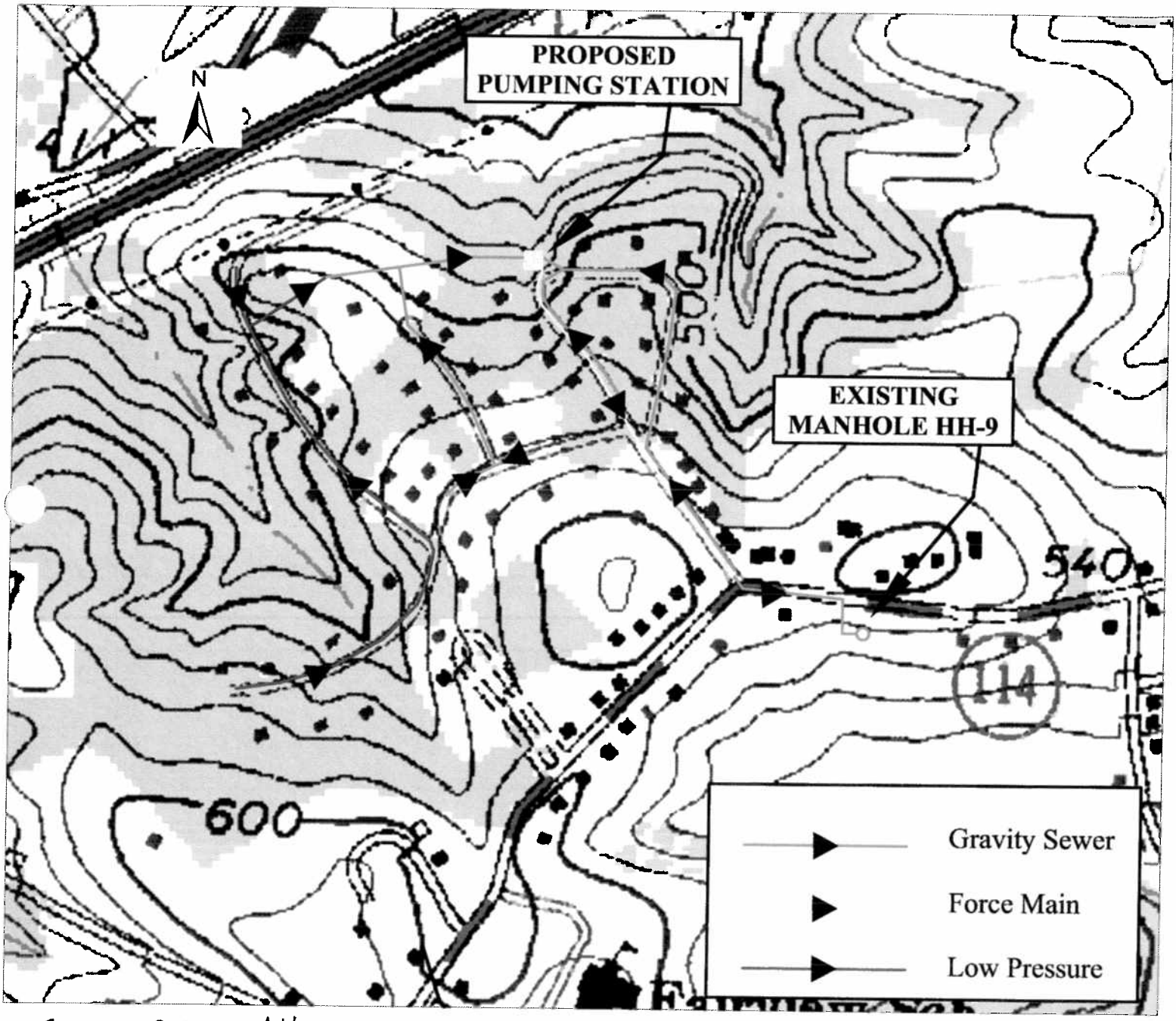
ERNEST KERSTETTER
314 ERFORD ROAD
CAMP HILL PA 17011

Appendix S

Timber Ridge Area Analysis

TABLE 1
ALTERNATIVE 1 FOR TIMBER RIDGE NEEDS AREA
CONNECT TO NORTH WWTP SERVICE AREA SEWER- EXISTING MH 9

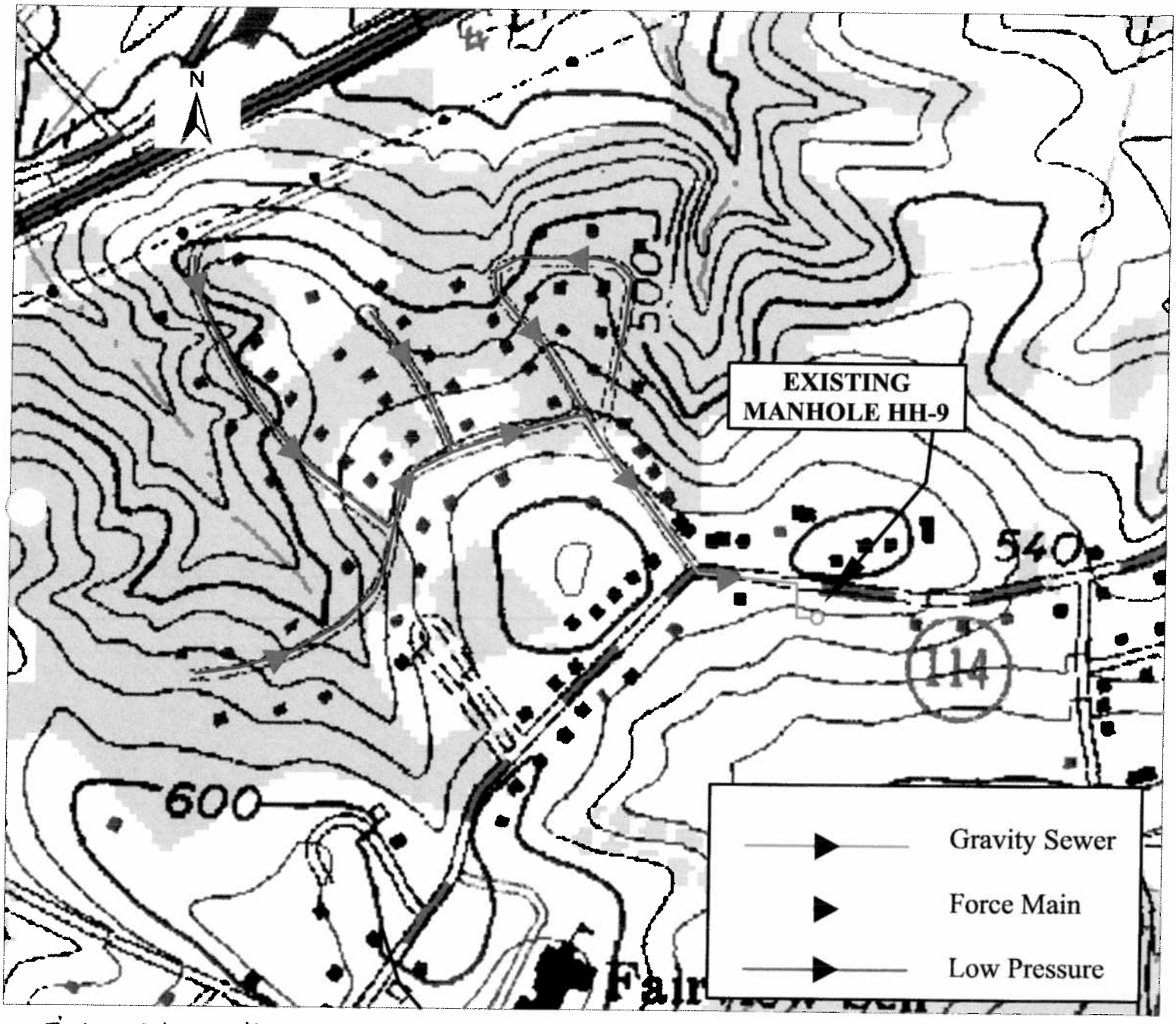
ALT 1-GRAVITY SEWER EXTENSION				Probable Project Costs	
Item No.	Estimated Quantities		Item Description	Unit Price	Total Amount 2010 Dollars
Furnishing and Laying Force Main Pipe;					
1	1,200	Lin. Ft.	4-Inch DIP Force Main, in street, complete in place	$77	$92,400
2	-	Lin. Ft.	4-Inch DIP Force Main, in R-O-W, complete in place	$44	$0
2	-	Each	Connection of new force main to existing manhole	$1,100	$0
3	2	Each	Terminal/Cleanout/Air Release Manhole, Complete	$5,500	$11,000
4	1	Each	Pumping Station- Pine Tree Drive	$200,000	$200,000
Furnishing and Laying Gravity Sewer Pipe					
5	3,675	Lin. Ft.	8-Inch PVC Sewer Main, in street, complete in place	$110	$404,250
6	1,000	Lin. Ft.	8-Inch PVC Sewer Main, in R-O-W complete in place	$77	$77,000
7	740	Lin. Ft.	6-Inch PVC Service Connections	$11	$8,140
8	37	Each	6-Inch PVC Service Connections and Test Tees	$61	$2,239
Construction of Precast Concrete Manholes, Complete in Place;					
9	17	Each	4-Foot Diameter Bases	$2,200	$37,400
10	136	VF	4-Foot Diameter Walls	$110	$14,960
11	17	Each	Manhole Frame and Cover Assemblies	$660	$11,220
Pressure Sewer					
12	2,250	Lin. Ft.	2" Pressure Main, in Street, complete in place	$55	$123,750
13	-	Lin. Ft.	2" Pressure Main, in ROW complete in place	$33	$0
14	270	Lin. Ft.	1-1/2" Pressure Service Connections, Complete in place	$220	$59,400
15	18	Each	Curbstop, Box and Check Valve Service Set	$550	$9,900
16	18	Each	Grinder Pumps	$5,500	$99,000
17	6	Each	Terminal/Cleanout Manhole, Complete	$3,850	$23,100
Miscellaneous Expenses					
18	1,000	Lin. Ft.	Acquisition of R-O-W	$11	$11,000
19	1	Each	Purchase of Land for Pumping Stations	$11,000	$11,000
				Subtotal- Construction Cost	**$1,195,800**
				20% Other Project Cost (Engineering, Legal, Financial)	**$239,160**
				15% Contingency	**$179,370**
				Total Project Cost	**$1,614,000**



Timber Ridge Alternative #1

TABLE 2
ALTERNATIVE 2 FOR TIMBER RIDGE NEEDS AREA
CONNECT TO NORTH WWTP SERVICE AREA SEWER- EXISTING MH 9

ALT 1-LOW PRESSURE SEWER EXTENSION				Probable Project Costs	
Item No.	Estimated Quantities		Item Description	Unit Price	Total Amount 2010 Dollars
Furnishing and Laying Force Main Pipe;					
1	-	Lin. Ft.	4-Inch DIP Force Main, in street, complete in place	$77	$0
2	-	Lin. Ft.	4-Inch DIP Force Main, in R-O-W, complete in place	$44	$0
2	-	Each	Connection of new force main to existing manhole	$1,100	$0
3	-	Each	Terminal/Cleanout/Air Release Manhole, Complete	$5,500	$0
4	-	Each	Pumping Station- Pine Tree Drive	$200,000	$0
Furnishing and Laying Gravity Sewer Pipe					
5	450	Lin. Ft.	8-Inch PVC Sewer Main, in street, complete in place	$110	$49,500
6	400	Lin. Ft.	8-Inch PVC Sewer Main, in R-O-W complete in place	$77	$30,800
7	100	Lin. Ft.	6-Inch PVC Service Connections	$11	$1,100
8	5	Each	6-Inch PVC Service Connections and Test Tees	$61	$303
Construction of Precast Concrete Manholes, Complete in Place;					
9	3	Each	4-Foot Diameter Bases	$2,200	$6,600
10	24	VF	4-Foot Diameter Walls	$110	$2,640
11	3	Each	Manhole Frame and Cover Assemblies	$660	$1,980
Pressure Sewer					
12	5,500	Lin. Ft.	2" Pressure Main, in Street, complete in place	$55	$302,500
13	-	Lin. Ft.	2" Pressure Main, in ROW complete in place	$33	$0
14	750	Lin. Ft.	1-1/2" Pressure Service Connections, Complete in place	$220	$165,000
15	50	Each	Curbstop, Box and Check Valve Service Set	$550	$27,500
16	50	Each	Grinder Pumps	$5,500	$275,000
17	15	Each	Terminal/Cleanout Manhole, Complete	$3,850	$57,750
Miscellaneous Expenses					
18	400	Lin. Ft.	Acquisition of R-O-W	$11	$4,400
19	-	Each	Purchase of Land for Pumping Stations	$11,000	$0
				Subtotal- Construction Cost	**$925,100**
				20% Other Project Cost (Engineering, Legal, Financial)	**$185,020**
				15% Contingency	**$138,765**
				Total Project Cost	**$1,249,000**



Timber Ridge Alternative #2

Appendix T

Agreement with Red Barn Trading Company for Nitrogen Credits

COPY

4/10/08

AGREEMENT OF SALE

THIS AGREEMENT OF SALE (this "*Agreement*") is made this 10th day of April, 2008, by and between RED BARN TRADING COMPANY, a Pennsylvania limited liability company, with an address at P.O. Box 155, East Petersburg, PA 17520 ("*Red Barn*" or "*Seller*"), THE FAIRVIEW TOWNSHIP AUTHORITY, a municipal authority under the laws of the Commonwealth of Pennsylvania, with an address at 599 Lewisberry Road, New Cumberland, PA 17070 (the "*Authority*"), and THE TOWNSHIP OF FAIRVIEW, YORK COUNTY, a Township of the Second Class under the laws of the Commonwealth of Pennsylvania, with an address at 599 Lewisberry Road, New Cumberland, PA 17070 (the "*Township*") (the Authority and the Township being hereinafter sometimes collectively referred to as the "*Buyer*").

WITNESSETH:

WHEREAS, the Authority is a municipal authority located in Fairview Township, York County, Commonwealth of Pennsylvania, and governed by the Municipality Authorities Act, 53 P.S. § 5601 et seq. (the "*Authorities Act*"); and

WHEREAS, the Township is a Township of the Second Class located in York County, Commonwealth of Pennsylvania, and governed by the Second Class Township Code, 53 P.S. § 65101 et seq. (the "*Township Code*"); and

WHEREAS, the Authority owns and the Township operates a certain wastewater treatment facility located at 57 Fairview Road, New Cumberland, Pennsylvania (the "*Facility*"); and

WHEREAS, the Authority has been issued NPDES Permit No. 0081868 (the "*Permit*") by the Pennsylvania Department of Environmental Protection ("*DEP*"); and

WHEREAS, the Permit requires the Authority to meet certain "Chesapeake Bay Nutrient Requirements" with respect to the Facility, as more particularly described in the Permit (the "*Requirements*"); and

WHEREAS, the Permit is under appeal by the Authority and the resolution of such appeal contemplates, among other things, the Authority's purchase of nutrient credits to meet the Requirements; and

WHEREAS, Red Barn has developed projects and practices that have been certified by DEP as generating water quality nutrient credits; and

WHEREAS, Buyer desires to purchase from Seller, and Seller desires to sell to Buyer, certain Nitrogen water quality nutrient credits for a period of 15 years, in the amounts shown on Exhibit "A" attached hereto and made a part hereof (the "*Credits*"), on the terms and conditions hereinafter provided.

NOW, THEREFORE, in consideration of mutual promises set forth herein, the sufficiency of which is hereby acknowledged, and intending to be legally bound, the parties hereto agree as follows:

1. Sale and Purchase of the Credits. Red Barn hereby agrees to sell, and the Buyer hereby agrees to purchase, the Credits, upon the following terms and conditions:

1.1. The base purchase price for the Credits is $5 per Credit, subject to adjustment as shown on Exhibit "A" attached hereto and made a part hereof (the "*Purchase Price*"). The Purchase Price is exclusive of all sales, use, excise, or similar taxes, which shall be paid (to the extent applicable) solely by Buyer.

1.2. Simultaneous with execution of this Agreement by all parties hereto, Buyer shall pay to Red Barn an amount equal to $375,000, by certified check (the "*Deposit*"). The parties acknowledge and agree that (i) a portion of the Deposit shall be refundable to Buyer in accordance with Section 1.5 below, (ii) the Deposit is intended to be held by Red Barn in order to secure performance by Buyer, and (iii) subject to Buyer's compliance with the terms and conditions of this Agreement, the Deposit shall be returned to the Township at the end of this Agreement; provided, however, that Buyer shall have the right to elect to apply a portion of the Deposit against the Purchase Price each year against the Purchase Price, as shown on Exhibit "A."

1.2.1. Red Barn agrees to keep $187,500 of the Deposit amount in a segregated account with a federally-insured financial institution, pending disposition in accordance with this Agreement. Red Barn shall be entitled to interest earned on said amount, and to withdraw such interest from time to time.

1.3. On August 1, 2010, Buyer shall pay to Red Barn the amount of the Purchase Price shown on Exhibit "A" as being due and owing for the 2010 year, by check.

1.3.1. Within thirty (30) days of receipt of this payment, Red Barn will commence performance (or cause to be performed) such work and do such things as to cause the particular Credits to be generated for the applicable water year. Red Barn will promptly thereafter (i) provide documentation thereof in accordance with the Requirements, and (ii) provide Buyer with evidence (reasonably satisfactory to Buyer) that the particular Credits have been generated for the applicable water year. Attached hereto as Exhibit "B" and made a part hereof is a description of one method for generating certified water quality nutrient credits, but Red Barn shall not be limited to such method in generating the Credits.

1.3.2. Upon verification of the particular Credits by DEP, Red Barn will transfer the particular Credits to the Authority by executing and delivering a Bill of Sale in the form attached hereto as Exhibit "C" and made a part hereof, or in such other form reasonably required or approved by DEP.

1.4. On each subsequent August 1, (i) Buyer shall pay Red Barn the amount of the Purchase Price shown on Exhibit "A" as being due and owing for the particular year, by check, and (ii) Red Barn shall generate and transfer the particular Credits in accordance with Sections 1.3.1 and 1.3.2 above.

1.5. Any failure by Buyer to pay any amounts due under this Agreement within ten (10) days after written notice of such failure shall give Red Barn the right (at Red Barn's sole option) to terminate this Agreement (with no right of cure by Buyer) and retain the Deposit and all other amounts paid by Buyer hereunder as liquidated damages and Buyer shall forfeit any further rights to the Credits; provided, however, that if (i) DEP terminates DEP's nutrient credit trading program, described as DEP's "Final Trading of Nutrient and Sediment Reduction Credits – Policy and Guidelines", including any codification thereof or future revisions or amendments thereto (the "*Program*"), and/or (ii) DEP modifies the Permit to eliminate Buyer's ability to comply with the Requirements through the purchase of water quality nutrient credits (each, a "*Regulatory Change*"), then in either case Buyer shall have the right to terminate this Agreement, and Red Barn, as its exclusive remedy, shall retain all amounts paid by Buyer hereunder as liquidated damages other than $187,500 of the Deposit, which shall be promptly refunded to the Township. Except as otherwise expressly provided in this Agreement, Red Barn shall have no liability of any kind whatsoever to Buyer in the event of a Regulatory Change, regardless of whether Red Barn is otherwise unable to perform its obligations under this Agreement as a result of a Regulatory Change.

1.6. Buyer acknowledges and agrees that (i) the Credits may only be used for the Facility, and may not be assigned, conveyed, or transferred in any fashion (whether by operation of law or otherwise) by Buyer without Red Barn's prior written consent, which consent may not be unreasonably withheld by Red Barn, (ii) Red Barn is not making any, and has made no, representation, warranty, or covenant regarding (A) the suitability of the Credits for the Facility, (B) the likelihood of the Credits satisfying the requirements of the Permit (or any successor permit), or (C) the viability or status of the Program, and (iii) Red Barn has, and shall have, no duty, liability, or responsibility in any way relating to or arising out of the Facility. The foregoing notwithstanding, the Authority shall have the right to (i) use the Credits for any other treatment plant owned by it or that serves residents of the Township (including plants owned by the Authority in Lewisberry Borough and Lower Allen Township), and (ii) sell the Credits to developers within the Township, so long as the purchase price for such a sale (A) is not less than the applicable purchase price under this Agreement, and (B) is not more than the applicable purchase price under this Agreement, other than a reasonable administrative fee. The Authority shall provide ten (10) days' prior written notice of any such use or sale (and administrative fee, if applicable).

1.7. Buyer (i) has provided Red Barn with a true, correct, and complete copy of the Permit, attached hereto as Exhibit "D" and made a part hereof, and (ii) shall provide Red Barn with copies, within fifteen (15) business days of receipt by Buyer, of any written correspondence or material from DEP reasonably related to the Permit and/or the Credits.

1.8. The parties agree that the annual sale and purchase obligations described in this Agreement shall be treated and reported as separate sale and purchase transactions, and not in any way treated or reported as a single installment sale of the Credits.

1.9. Each party agrees to execute any documents and take such other actions as the other party may reasonably request in order to consummate the transactions provided for herein and to accomplish the purposes of this Agreement.

2. Additional Representations and Warranties.

2.1. Buyer hereby represents and warrants to and with Red Barn that: (i) each Buyer has power and authority to enter into this Agreement and to consummate the transactions contemplated hereby; (ii) the Township has complied with all requirements of the Township Code and other applicable laws, rules, and requirements in entering into and delivering this Agreement; (iii) the Authority has complied with all requirements of the Authorities Act and other applicable laws, rules, and requirements in entering into and delivering this Agreement; (iv) Buyer is entering into this Agreement and purchasing the Credits due to the necessity of securing a long-term source for water quality nutrient credits; (v) the residents of the Township and customers of the Facility will be benefited by Buyer's entering into this Agreement and securing a long-term source for water quality nutrient credits; (vi) Buyer's entering into this Agreement and securing a long-term source for water quality nutrient credits involves and constitutes a legislative or governmental function; (vii) the Facility (and each additional treatment plant for which the Credits may be used) is located within the Susquehanna River Basin; (viii) neither the execution nor delivery of this Agreement nor the consummation of the transactions contemplated hereby will violate any contract, agreement or other understanding to which Buyer is party or by which it is bound; and (ix) this Agreement, when executed and delivered by Red Barn, shall constitute a valid and legally binding obligation of Buyer enforceable in accordance with its terms, except to the extent that the same may generally be rendered unenforceable by reason of any bankruptcy, reorganization or insolvency laws generally affecting creditors' rights and remedies.

2.2. Red Barn hereby represents and warrants to and with Buyer that: (i) Red Barn has power and authority to enter into this Agreement and to consummate the transactions contemplated hereby; (ii) neither the execution nor delivery of this Agreement nor the consummation of the transactions contemplated hereby will violate any contract, agreement or other understanding to which Red Barn is party or by which it is bound; and (iii) this Agreement, when executed and delivered by Buyer, shall constitute a valid and legally binding obligation of Red Barn enforceable in accordance with its terms, except to the extent that the same may generally be rendered unenforceable by reason of any bankruptcy, reorganization or insolvency laws generally affecting creditors' rights and remedies.

3. Termination.

3.1. Buyer may terminate this Agreement upon the default of Red Barn; provided, however, that Buyer first provides Red Barn with written notice thereof, and thirty (30) days to correct such default. If the default is not capable of being corrected within such 30-day period, then Buyer may not terminate this Agreement if Red Barn commences to cure the default and thereafter diligently pursues prosecution of the cure, unless Red Barn has failed to cure the default within ninety (90) days after the expiration of said 30-day period.

3.2 In addition to the termination rights provided to Red Barn elsewhere in this Agreement (e.g., Section 1.5 above), Red Barn may terminate this Agreement upon the default of Buyer; provided, however, that Red Barn first provides Buyer with written notice thereof, and thirty (30) days to correct such default. If the default is not capable of being

corrected within such 30-day period, then Red Barn may not terminate this Agreement if Buyer commences to cure the default and thereafter diligently pursues prosecution of the cure, unless Buyer has failed to cure the default within ninety (90) days after the expiration of said 30-day period.

4. Limitation on Red Barn's Liability. Buyer agrees that it would be impractical or extremely difficult to fix, prior to signing this Agreement, the actual damages which would be suffered by Buyer if Seller fails to perform its obligations under this Agreement. Therefore, notwithstanding anything to the contrary set forth in this Agreement, Seller's sole and exclusive liability to Buyer, and Buyer's sole and exclusive remedies against Seller, shall be: (i) in the event of a breach of, or default under, this Agreement by Seller arising out of a disallowance, de-certification, or similar action by DEP (other than in connection with a Regulatory Change) with respect to a "best management practice" that had been previously certified by DEP, Buyer's sole and exclusive remedy against Seller shall be the right to receive a refund from the Deposit of $187,500, as liquidated damages; and (ii) in the event of any other breach of, or default under, this Agreement by Seller, Buyer's sole and exclusive remedy against Seller shall be the right to receive a refund from the Deposit of $250,000, as liquidated damages. Upon refund of such amount to Buyer, Seller shall be fully, absolutely, and unconditionally released from any further liability to Seller, including (without limitation intended), any liability for special, indirect, incidental, multiple, consequential (including lost profits or revenues, business interruption damages and lost business opportunities), exemplary or punitive damages. The provisions of this Section 4 shall survive any termination, cancellation, expiration, or suspension of this Agreement.

5. Miscellaneous.

5.1. This Agreement contains the entire agreement and understanding between the parties concerning the subject matter hereof, and supersedes any and all prior understandings or agreements, written or oral, between the parties respecting the subject matter hereof.

5.2. This Agreement may not be amended, modified, superseded, cancelled, renewed or extended, nor may any term or condition hereof be waived, except by a written instrument or document signed by all parties hereto or, in the case of a waiver, signed by the party sought to be charged therewith. No waiver by any party of the breach of any provision hereof shall be deemed to constitute a waiver of any continuing or subsequent breach of such provision or any other provision hereof. Except as otherwise provided herein, the rights and remedies expressly granted hereunder shall be cumulative with respect to, and shall not be deemed to exclude, any other rights and remedies to which any party shall be entitled at law or in equity.

5.3. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns, but (subject to Section 1.6 above) shall not be assigned by any party without the prior written consent of the other parties (which consent shall not be unreasonably withheld or delayed), as well as any necessary consent(s) or approvals of the applicable regulatory authorities.

5.4. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania. The parties agree that jurisdiction and venue for any questions or disputes hereunder shall only be in the Court of Common Pleas for Dauphin County, Pennsylvania, and/or the United States District Court serving such County.

5.5. Headings have been set forth for convenience of reference only and shall not be used in construing this Agreement. References to persons or things shall be deemed to refer to such persons or things in the singular or plural and in the masculine, feminine or neuter gender as the context shall require.

5.6. This Agreement shall be deemed to be severable, so that if any provision hereof shall be determined by a court of competent jurisdiction to be invalid or unenforceable, the remaining provisions hereof shall continue to remain valid and enforceable in accordance with their terms.

5.7. All notices shall be in writing, shall be sent to the address contained in the introductory section and shall be considered as delivered: (i) on the next business day, if sent by telex, telecopy, telegram or overnight carrier; or (ii) three (3) days after the postmark, if sent by first class mail.

5.8. Nothing in this Agreement shall be deemed to create any agency, partnership, joint venture, or fiduciary relationship (or duties) between the parties.

5.9. This Agreement may be executed in any number of counterparts (and delivered by overnight express mail, or by fax with confirmation in writing delivered by overnight express mail), each of which shall be deemed to be an original as against any party whose signature appears thereon, and all of which shall together constitute one and the same instrument. This Agreement shall be binding when one or more counterparts hereof, individually or taken together, shall bear the signatures of all of the parties reflected on this Agreement as the signatories.

[SIGNATURES APPEAR ON FOLLOWING PAGE]

IN WITNESS WHEREOF, intending to be legally bound, this Agreement of Sale has been duly executed by the parties hereto as of the day and year first above written.

WITNESS:

RED BARN:
RED BARN TRADING COMPANY, a Pennsylvania limited liability company

By: _____(seal)
Peter J. Hughes, President

ATTEST:

BUYER:

THE FAIRVIEW TOWNSHIP AUTHORITY

By: _____(seal)
Robert P. Stanley, Jr, its Chairman

THE TOWNSHIP OF FAIRVIEW, YORK COUNTY

By: _____(seal)
PERRY ALBERT, its CHAIRMAN

COMMONWEALTH OF PENNSYLVANIA :

COUNTY OF York : SS

On this 11th day of April, 2008, before me, the undersigned officer, personally appeared Peter J. Hughes, known to me or satisfactorily proven to be the person whose name is subscribed to the within instrument, who acknowledged himself to be the President of Red Barn Trading Company and, being authorized to do so, acknowledged that he executed the within document for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Tammy L Jones

Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
TAMMY L. JONES, Notary Public
Fairview Township York County
My Commission Expires May 19, 2011

COMMONWEALTH OF PENNSYLVANIA :

COUNTY OF York : SS

On this 10th day of April, 2008, before me, the undersigned officer, personally appeared R. Stanley, known to me or satisfactorily proven to be the person whose name is subscribed to the within instrument, who acknowledged himself to be the chairman of The Fairview Township Authority, and, being authorized to do so, acknowledged that he/she executed the within document for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Tammy L. Jones
Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
TAMMY L. JONES, Notary Public
Fairview Township York County
My Commission Expires May 19, 2011

COMMONWEALTH OF PENNSYLVANIA :

COUNTY OF York : SS

On this 10th day of April, 2008, before me, the undersigned officer, personally appeared Perry Albert, known to me or satisfactorily proven to be the person whose name is subscribed to the within instrument, who acknowledged himself to be the chairman of Fairview Township, York County, and, being authorized to do so, acknowledged that he/she executed the within document for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Tammy L. Jones
Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
TAMMY L. JONES, Notary Public
Fairview Township York County
My Commission Expires May 19, 2011

EXHIBIT "A"

NUMBER OF CREDITS, CALCULATION OF PURCHASE PRICE						
	YEAR	NITROGEN CREDIT (POUNDS)	ANNUAL CREDIT PRICE	PURCHASE PRICE	LESS REFUNDABLE DEPOSIT	ANNUAL PURCHASE PRICE
1	2010	20000	$5.00	$100,000.00	$12,500.00	$87,500.00
2	2011	20000	$5.15	$103,000.00	$12,500.00	$90,500.00
3	2012	20000	$5.30	$106,090.00	$12,500.00	$93,590.00
4	2013	20000	$5.46	$109,272.70	$12,500.00	$96,772.70
5	2014	20000	$5.63	$112,550.88	$12,500.00	$100,050.88
6	2015	20000	$5.80	$115,927.41	$12,500.00	$103,427.41
7	2016	20000	$5.97	$119,405.23	$12,500.00	$106,905.23
8	2017	20000	$6.15	$122,987.39	$12,500.00	$110,487.39
9	2018	20000	$6.33	$126,677.01	$12,500.00	$114,177.01
10	2019	20000	$6.52	$130,477.32	$12,500.00	$117,977.32
11	2020	20000	$6.72	$134,391.64	$12,500.00	$121,891.64
12	2021	20000	$6.92	$138,423.39	$12,500.00	$125,923.39
13	2022	20000	$7.13	$142,576.09	$12,500.00	$130,076.09
14	2023	20000	$7.34	$146,853.37	$106,250.00	$40,603.37
15	2024	20000	$7.56	$151,258.97	$106,250.00	$45,008.97

TOTAL CREDITS	300000	
25% CREDITS	75000	
PURCHASE PRICE	$5.00	
DEPOSIT AMOUNT	$375,000.00	$187,500.00

Exhibit "B"

Representative Method of Generating Credits

Red Barn has identified nutrient-depleted land(s) and has made arrangements with producers that are interested in importing poultry manure to nutrient-depleted cropland outside of the Chesapeake Bay Watershed (the "Watershed") and, in some cases, outside of Pennsylvania. Nutrient balance plans will be developed as required for all importing farms/lands located outside of the Watershed prior to land application outside of the Watershed and all manure application will be accomplished in accordance with all applicable state laws and regulations.

A manure analysis will be taken from every three trucks removed from the subject poultry operation with the actual analysis used for the credit generation calculation. This will allow Red Barn to maintain accurate accounting of actual pounds of nitrogen and phosphorous removed in any given year. A manure analysis will be provided with credit documentation to credit purchasers.

All trucks will be weighed on a certified scale documenting the actual weight of manure removed from the Watershed. All weight slips will be provided with credit documentation to credit purchasers.

All manure will be exported through Red Barn Consulting, Inc. (a PA Certified Manure Broker) and hauled by a PA Certified Manure Hauler, as confirmed and subcontracted by Red Barn. Broker and hauling license information will be provided with credit documentation to credit purchasers.

All records will be retained on file by Red Barn for a minimum of three years.

Exhibit "C"

BILL OF SALE

THIS BILL OF SALE is made this 10th day of APRIL, 2008, by Red Barn Trading Company, a Pennsylvania limited liability company ("*Red Barn*"), to The Fairview Township Authority ("*Buyer*").

WITNESSETH:

WHEREAS, Red Barn and Buyer have entered into a certain Agreement of Sale dated April 10th, 2008 (the "*Agreement*"); and

WHEREAS, Red Barn is executing and delivering this Bill of Sale to Buyer in order that Buyer shall be in possession of an instrument evidencing transfer to and vesting title in Buyer of water quality nutrient credits in the amount of 20,000 pounds of Nitrogen (the "*Annual Credits*"), as contemplated by the Agreement.

NOW, THEREFORE, by this Bill of Sale, Red Barn, for the consideration described in the Agreement, and subject to the terms and conditions of the Agreement, does hereby grant, bargain, sell, assign, alienate, remise, release, convey, set over and confirm unto Buyer, the Annual Credits.

IN WITNESS WHEREOF, Red Barn, intending to be legally bound hereby, has caused this Bill of Sale to be executed as of the day and year first above written.

WITNESS:

Paula F. Leigh

RED BARN:
RED BARN TRADING COMPANY, a Pennsylvania limited liability company

By: Peter J. Hughes (seal)
Peter J. Hughes, President

Exhibit "D"

[Copy of Permit]

Appendix U

Budget Information

2008
Preliminary Fairview Township
Summary of Operating Funds

Fund	Estimated Fund Balance at Beginning of 2008 (net of Carry Forward)	2008 Budget Sources of Funds	2008 Budget Uses of Funds	Estimated Fund Balance	Carry Forward	Adjusted Balance
General	26,875	5,074,495	5,316,676	(215,306)	219,850	4,544
Street Light	(18,000)	48,125	31,100	(975)		(975)
Fire Hydrant	22,000	31,875	40,000	13,875		13,875
Wastewater	235,000	3,227,852	3,666,801	(203,949)	55,000	(148,949)
Refuse	189,000	1,230,520	1,313,088	106,432		106,432
Capital Reserve	400,000	8,000	207,850	200,150		200,150
Cap Projects (cable)	177,000	167,000	149,000	195,000		195,000
LST	241,000	312,400	382,850	170,550		170,550
Liquid Fuels	675,000	365,000	700,000	340,000		340,000
Fire Station	0	346,500	445,546	(99,046)		(39,046)
Fire	125,000	118,889	112,766	131,123		131,123
Ems	26,000	144,000	161,480	8,520		8,520
	2,098,875	11,074,656	12,527,157	646,375	274,850	981,225

Notes:
Street Light and Fire Hydrant. Carry forward is required to make 4 payments in 2008.
Fund Balances are estimates only. Taking year to date receipts and expenses comparing them to anticipated year end amounts thus estimating year end cash balance.
Amounts in excess of Fund Balance transferred to appropriate funds reserve account.
Developer escrowed funds/Pension and realted benefit accounts are excluded form above summary.
Amount are presented on a cash basis.
All amounts are rounded.
Amounts subject to audit.

2008
Fairview Township
Capital Improvements Summary

Department	Description	Cost
Building	Detail	$329,000
Recreation	Detail (Includes Debt Payment)	$138,755
Highway	Detail (Includes Debt Payment)	$145,796
Police	Detail	$58,850
Refuse	Detail	$38,000
Wastewater	Detail (includes Debt Payment)	$260,300
MS4	Detail included with Highway	$21,500
Total Capital Projects & Debt Payment		$970,701

Note:
The cost for repaying for this Capital is being funded from the various operating reserves of the Township it will be repaid with the exception of the Salt Storage building in a period not to exceed 3 years with an imputed interest rate of 4%. There will be not bond fees or legal fees associated with the capital items.

Above amounts include the debt amortization of the various departments. In many cases the amounts reflect not only new purchases but the cost of debt.

2008 Wastewater Capital

10/31/2007 7:49 AM

USE	AMOUNT	Funding Source
New Roof South Plant	$ 75,000	Rate Payers (2008)
Pump Station Enclosures - Cornhill	$ 25,000	Rate Payers (2007)
Utility truck	$ 46,400	Rate Payers (2008)
Pump Station Enclosures - Beinhower	$ 100,000	Rate Payers (2007)
Camera 50%	$ 10,000	Rate Payers (2008)
Small Pick up (3 year payback)	$ 3,900	Rate Payers (2008)
	$ 260,300	

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.341.01. SEWER/INTEREST EARNED		42879.91	35000.00	19113.85	20000.00		
08.342.10. SEWER/LAND RENTAL FEES		18015.25	17500.00	15476.50	17500.00		
08.351.00. SEWER/FEDERAL GRANTS		.00	.00	.00			
08.354.01. SEWER/STATE GRANTS		.00	.00	20000.00	80000.00		
08.360.03. SEWER/ENG FEE REIMBMNT		.00	.00	.00			
08.360.04. SEWER/CHARGES-LEGAL FEES		11060.32	25000.00	2293.72	25000.00		
08.360.06. SEWER/LEGAL DEBT COLLECTN		.00	.00	.00			
08.364.01. SEWER/RENTAL CHARGES - 1		325266.00	340000.00	311136.96	384478.00		
08.364.02. SEWER/RENTAL CHARGES - 2		1518239.35	1400000.00	1596953.19	1583053.00		
08.364.03. SEWER/RENTAL CHARGES - 3		826227.51	750000.00	412996.47	848071.00		
08.364.04. SEWER/UNEARNED REVENUE		-360.84	.00	551.51	250.00		
08.364.05. SEWER/PENALTIES & INTERES		54384.56	35000.00	19357.30	22000.00		
08.364.11. SEWER/PERMIT FEES		128450.00	246000.00	115.00			
08.364.12. SEWER/INSPECTION FEES		5845.00	1500.00	1770.00	1500.00		
08.364.14. SWR/LA BASIN CAPACITY FEE		1540.00	.00	770.00			
08.364.15. SWR/N BASIN CAPACITY FEE		15210.00	.00	6084.00			

Fairview ship
BUDGET WOR ET
SEWER
2008 FISCAL BUDGET

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.364.16. SWR/S BASIN CAPACITY FEE		250896.00	246000.00	85125.00	246000.00		
08.364.17. SWR/LA COLLECTION FEE		.00	.00	.00			
08.364.18. SWR/N BASIN COLLECTN FEE		.00	.00	.00			
08.364.19. SWR/S BASIN COLLECTN FEE		.00	.00	.00			
08.364.21. SEWER/PERMIT RESERVE		.00	.00	.00			
08.364.24. SEWER/LA BASIN RESERVE		-150096.00	.00	.00			
08.364.25. SEWER/N BASIN RESERVE		.00	.00	.00			
08.364.26. SEWER/S BASIN RESERVE		.00	.00	.00			
08.364.93. SWR/CONTRACTED DISP FEES		.00	.00	.00			
08.364.94. SWR/CONTRACTED LAB FEES		.00	.00	.00			
08.380.IN. SEWER/MISC INSURANCE REVE		1459.47	.00	.00			
08.380.00. SEWER/MISC REVENUE		925.28	.00	16223.02			
08.381.00. SEWER/DISCOUNTS EARNED		56.56	.00	78.40			
08.391.10. SEWER/SALE OF FIXED ASSET		3120.00	.00	.00			
08.392.89. SEWER/INTRF FRM WW DEBT R		.00	.00	.00			
08.393.13. SEWER/PROCEEDS OF NOTE		.00	.00	.00			

Fairview ship
BUDGET WOR ET
SEWER
2008 FISCAL BUDGET

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.393.15.							
SEWER/65 BOND EXCESS ESCR		.00	.00	.00			
08.395.00.							
SEWER/PRIOR YR EXPN REFND		509.60	.00	990.50			
TOTALS FOR SEWER		3053627.97	3096000.00	2509035.42	3227852.00		
TOTALS FOR REVENUES		3053627.97	3096000.00	2509035.42	3227852.00		

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.429.130.OT SEWER/OPERATOR WAGES-OT		.00	.00	20302.70	20000.00		
08.429.130.00 SEWER/OPERATOR SALARIES		212885.65	214384.00	161377.52	268110.00		
08.429.135.00 SEWER/PROFESSIONAL SALARY		.00	.00	.00			
08.429.14H.OT SEWER/HIGHWAY SUPPORT-OT		.00	.00	947.69	1000.00		
08.429.14H.00 SEWER/HWY PERSNL SALARIES		11323.08	17996.00	11558.01	15484.00		
08.429.140.OT SEWER/ADMIN WAGES-OT		.00	.00	3906.48	2000.00		
08.429.140.0C SEWER/I & I SALARIES		8394.66	8000.00	95.02			
08.429.140.00 SEWER/ADMIN SALARIES		120378.23	157557.00	108331.09	186115.00		
08.429.141.00 SEWER/MECHANIC SALARIES		1356.80	2494.00	1538.82	432.00		
08.429.142.00 SEWER/MOWING SALARIES		1562.43	6810.00	1556.12	6387.00		
08.429.149.00 SEWER/SALARIES-PARTTIME		4032.00	13200.00	7563.50	13977.00		
08.429.153.00 SEWER/ADD & LTD INSURANCE		2278.22	2201.00	1877.58	2725.00		
08.429.154.00 SEWER/STD INSURANCE		1031.20	1456.00	870.89	4265.00		
08.429.158.00 SEWER/LIFE INSURANCE		1074.31	1200.00	907.30	120.00		
08.429.159.PR SEWER/PR MEDICAL		59091.32	69793.00	69793.00	440.00		
08.429.159.00 SEWER/HEALTH INSURANCE		43188.92	72405.00	28108.44	686.00		

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.429.160.00 SEWER/PENSION		80023.70	91209.00	81248.00	20.00		
08.429.161.00 SEWER/SOC SEC BENEFIT		25030.34	27060.00	21010.16	33099.00		
08.429.162.00 SEWER/UNEMPLOYMENT COMP		1010.48	1233.00	507.75	1000.00		
08.429.163.00 SEWER/MEDICARE BENEFIT		5853.43	6329.00	4913.65	7741.00		
08.429.169.00 SEWER/MEDICAL REIMBRSMNT		9000.00	9000.00	6.01	10500.00		
08.429.170.00 SEWER/LEAVE SALARIES		32490.72	20000.00	21128.98	20000.00		
08.429.200.00 SEWER/ADMIN SUPPLIES		4859.28	3500.00	11118.70	3500.00		
08.429.220.00 SEWER/OPERATING SUPPLIES		15671.07	13500.00	21970.34	21000.00		
08.429.222.00 SEWER/CHEMICAL SUPPLIES		56117.41	42000.00	70760.73	65000.00		
08.429.230.00 SEWER/LAB SUPPLIES		12649.45	10000.00	9537.14	10000.00		
08.429.231.00 SEWER/GASOLINE		7107.17	6950.00	5342.76	7000.00		
08.429.232.00 SEWER/DIESEL FUEL		2780.75	3950.00	2481.60	4000.00		
08.429.238.00 SEWER/UNIFMS SHOES ETC		4020.68	5500.00	2852.68	5500.00		
08.429.245.00 SEWER/HWY MAINT SUPPLIES		.00	1000.00	629.60	1000.00		
08.429.250.00 SEWER/VEHICLE MAINT		4542.95	3000.00	1645.68	3000.00		
08.429.251.00 SEWER/MOWER PARTS-REPAIRS		60.72	500.00	.00	650.00		

Fairview ' ship
BUDGET WOR ET
SEWER
2008 FISCAL BUDGET

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.429.260.00 SEWER/TOOLS & EQUIPMENT		1789.04	4000.00	832.37	4000.00		
08.429.300.00 SEWER/BANK SERVICES		.00	.00	.00			
08.429.310.00 SEWER/PROFFESIONAL SERV		21651.82	14000.00	26137.12	25000.00		
08.429.311.00 SEWER/AUDIT		4500.00	7000.00	2750.00	7000.00		
08.429.313.00 SEWER/ENGINEER FEES		33560.23	45000.00	94456.09	30000.00		
08.429.313.37 SEWER/ACT 537 ENG FEES		6020.08	10000.00	11347.52	7500.00		
08.429.314.00 SEWER/LEGAL FEES		23622.36	25000.00	36739.53	25000.00		
08.429.315.00 SEWER/SAFETY & MED SERV		3905.90	4200.00	3285.91	4200.00		
08.429.320.00 SEWER/COMMUNICATIONS		13642.92	10000.00	7602.01	10000.00		
08.429.321.00 SEWER/PHONE SERVICE		29734.91	22000.00	24814.79	22000.00		
08.429.330.00 SEWER/FUEL		.00	.00	.00			
08.429.331.00 SEWER/TIRES		995.34	1000.00	350.40	1000.00		
08.429.340.00 SEWER/ADVERTISING		.00	.00	101.36			
08.429.350.00 SEWER/INSURANCE		.00	.00	.00			
08.429.351.AI SEWER/VEHICLE INSURANCE		5549.73	6110.00	4859.52	6200.00		
08.429.351.CI SEWER/CRIME INSURANCE		48.80	52.00	41.50	50.00		

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.429.351.PI SEWER/PROPERTY INSURANCE		18151.00	20000.00	11684.46	12000.00		
08.429.351.TI SEWER/TOOLS-EQUIP INSURAN		.00	.00	15001.54	15000.00		
08.429.351.00 SEWER/DO NOT USE]		.00	.00	.00			
08.429.352.00 SEWER/ERRORS & OMMISSIONS		7066.00	7800.00	7072.00	7800.00		
08.429.353.00 SEWER/BOND INSURANCE		6946.36	3000.00	.00	3000.00		
08.429.354.00 SEWER/WORKERS' COMP INSUR		15055.47	21797.00	13132.33	22000.00		
08.429.360.00 SEWER/UTILITIES		176731.39	180000.00	138319.43	195000.00		
08.429.370.0C SEWER/COLLECTION MAINT		.00	.00	.00			
08.429.370.0D SEWER/DISPOSAL MAINT		.00	.00	.00			
08.429.370.00 SEWER/MAINT & REPAIRS		115763.51	165000.00	88495.93	165000.00		
08.429.380.00 SEWER/TOILET RENTAL		.00	.00	65.00			
08.429.381.00 SEWER/LAND LEASE		.00	.00	.00			
08.429.384.00 SEWER/COMPUTER SYSTEM		27859.93	23500.00	20597.94	26000.00		
08.429.390.00 SEWER/DEP FEES		1300.00	1300.00	.00	1300.00		
08.429.400.00 SEWER/DIST COURT FEES		.00	.00	.00			
08.429.410.00 SEWER/JUDGEMENTS, DAMAGES		18.70	.00	.00			

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.429.420.00 SEWER/DUES, SEMINARS		4909.78	4100.00	3561.08	4100.00		
08.429.430.00 SEWER/TAX PAYMENTS		.00	.00	.00			
08.429.450.00 SEWER/CONTRACTED SERVICES		189786.91	110000.00	145448.81	145000.00		
08.429.699.00 SEWER/NEW VW CAP CONSTRTN		.00	.00	.00	191000.00		
08.429.700.00 SEWER/CAPITAL PURCHASE		7203.31	200000.00	7317.81	260300.00		
08.429.800.00 SEWER/DEPRECIATION		475447.77	.00	.00			
08.429.851.0C SEWER/LOWER ALLEN CAP PRO		13345.39	15000.00	.00			
08.429.851.00 SEWER/LOWER ALLEN EXPENSE		168173.43	175000.00	105456.24	175000.00		
08.429.852.00 SEWER/TWP AUTHORITY EXP		25950.53	26000.00	5637.00	26000.00		
TOTALS FOR EACT 429		2126545.58	1913086.00	1448995.63	2105201.00		
08.471.000.00 SEWER/DEBT PRINCIPAL		.00	.00	.00			
08.471.200.01 SEWER/DEBT PRIN 2001-21		.00	640000.00	665000.00	640000.00		
08.471.200.08 SEWER/NP BAY IMPRVMNTS		.00	.00	.00	260438.00		
08.471.200.96 SEWER/LOAN 83 PRIN-TRUCK		.00	.00	.00			
08.471.200.97 SEWER/LOAN 91 PRINCIPAL		.00	.00	.00			
TOTALS FOR EACT 471			640000.00	665000.00	900438.00		

ACCOUNT NUMBER / ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
08.472.000.00 SEWER/DEBT INTEREST		.00	.00	.00			
08.472.200.01 SEWER/DEBT INT 2001-2021		595561.10	595817.00	571177.50	596000.00		
08.472.200.08 SEWER/NP BAY IMPRVMNTS		.00	.00	.00	159000.00		
08.472.200.96 SEWER/LOAN 83 INT-TRUCK		.00	.00	.00			
08.472.200.97 SEWER/LOAN 91 INTEREST		1770.31	1500.00	586.31			
TOTALS FOR EACT 472		597331.41	597317.00	571763.81	755000.00		
08.487.156.00 SEWER/MEDICARE		.00	.00	.00			
08.487.160.00 SEWER/PENSION		.00	.00	.00			
08.487.161.00 SEWER/SOCIAL SECURITY		.00	.00	.00			
TOTALS FOR EACT 487							
08.491.000.00 SEWER/PRIOR YR FEE REFND		.00	.00	4555.00			
TOTALS FOR EACT 491				4555.00			
08.492.300.00 SEWER/INTRFND-CAP RESERVE		.00	.00	.00			
08.492.890.00 SEWER/INTRF TO WW DEBT RE		.00	.00	.00	-93838.00		
TOTALS FOR EACT 492					-93838.00		
TOTALS FOR SEWER		2723876.99	3150403.00	2690314.44	3666801.00		

Fairview ship
BUDGET WOR ET
SEWER
2008 FISCAL BUDGET

ACCOUNT NUMBER ACCOUNT DESCRIPTION	MONTH	2006 ACTUAL	2007 BUDGET	2007 ACTUAL	Staff	Staff	Board
TOTALS FOR EXPENDITURES		2723876.99	3150403.00	2690314.44	3666801.00		
EXCESS OF REVENUE OVER EXPENDITURES FOR SEWER		329750.98	-54403.00	-181279.02	-438949.00		

Appendix V

Request for Comments on Draft Plan

Pennsylvania Department of Environmental Protection

909 Elmerton Avenue
Harrisburg, PA 17110-8200
January 13, 2010

Southcentral Regional Office

717-705-4707
FAX - 717-705-4760

CERTIFIED MAIL NO. 7009 0820 0001 3921 9355

Fairview Township
c/o Township Secretary
599 Lewisberry Road
New Cumberland, PA 17070

Re: Act 537 Planning
APS ID No. 699044
DEP Code No. C1-67919-ACT
Fairview Township, York County

Ladies and Gentlemen:

The Department of Environmental Protection (Department) reviewed your June 2009 Act 537 Update Revision, received on July 23, 2009, and determined that it is incomplete for the following reasons:

1. Section 71.11 of 25 Pa. Code requires that Official Plans "provide for the resolution of existing sewage disposal problems, provide for the future sewage disposal needs of new land development, and provide for the future sewage disposal needs of the municipality." It is our determination that the Plan fails to contain sufficient information to demonstrate that the chosen alternatives can adequately provide for the resolution of existing sewage disposal problems and provide for the future disposal needs of the municipality.

2. The implementation schedule must be a complete project implementation schedule with specific milestone dates. Table 1 on page 7 appears to be the implementation schedule; however, it is titled "Tentative Milestone Schedule." It must be clear in the text of the Plan and the title of the Implementation Schedule that it is not tentative but final. The Milestone dates for the adoption and implementation of the on-lot management program are out of date.

3. In the Sandspur Estates area, the Township was going to "issue repair notices to the residents with failing on-lot systems in the Sandspur area in 2009." What was the result of those notices? Did the Township have to file any charges against property owners or initiate any compliance actions against property owners with malfunctions? How many systems were repaired? How were the systems repaired; i.e., conventional, alternate, experimental, or best technical guidance systems? Please discuss the resolution of the malfunctions in the Sandspur area and provide the on-lot sewage permit for each repair.

4. The well water sample results in Appendix E do not match the results plotted on the well water sampling maps. Eight samples, Respone Nos. 280-287, all with nitrate-nitrogen levels greater than 5.0 mg/L taken on Collina Drive and San Remo Place, are not depicted on the well water sampling maps. Three properties on Collina Drive and San Remo Place are depicted on the map as having been sampled, Test Sample Nos. 130, 140, and 467, but they are shown as having results less than 5 mg/L nitrate-nitrogen. The well water sample table must be keyed directly to the test number on the well water sampling maps and all of the samples taken must be accurately depicted on the maps. The well water sample maps must also include a ¼ mile radii around all of the sampled wells with nitrate-nitrogen results greater than 5 mg/L.

5. The Plan fails to provide a map depicting the geologic features of the Township. The Plan fails to identify, through analysis, the relation between geologic features and existing or potential nitrate-nitrogen pollution. The Plan must discuss whether or not there appears to be a correlation between elevated nitrate-nitrogen levels in the groundwater and the identified geologic features. The Plan must identify *areas* where existing nitrate-nitrogen levels are in excess of 5mg/L. Quarter mile radius circles may not represent the complete extent of the elevated nitrate areas.

6. The Plan fails to adequately address the nitrate-nitrogen groundwater contamination problem documented by the well samples. The Plan fails to indicate correctly how this information will impact new land development. The plan must acknowledge that planning exemptions (25 Pa. Code Chapter 71, Section 71.51) and exceptions (Minor Subdivision Modules - Section 71.55) are not acceptable within the ¼ mile radius of wells sampled at 5 mg/L of nitrate-nitrogen and may not be used for subdivision or new land development planning in those areas. New land development planning in these areas must be accomplished in accordance with the requirements of Section 71.62 (regarding preliminary hydrogeologic evaluations). The Plan must acknowledge that, in accordance with Act 537, planning exemptions are not acceptable in areas underlain by carbonate geologic features.

7. The Plan fails to provide complete sanitary survey information. There is no indication that permit records were reviewed to determine what types of on-lot repairs have been done. "Best Technical Guidance" repairs are considered confirmed malfunctions. Any repaired on-lot system is considered a potential malfunction. The Plan must identify the on-lot repairs that have been done.

8. The draft on-lot maintenance ordinance provided in the Plan indicates that a ¼ of all owners of properties within the Township served by on-lot sewage systems will be notified annually of the septic tank pumping and inspection requirement. How will the Township administer the program, four zones, or just a ¼ of the Township's on-lot

systems chosen randomly? The Department recommends that the Township be broken into four zones to lessen public confusion and administrative oversight; i.e., it is clear that everyone in this zone gets pumped the same year. If the intent is to provide four on-lot maintenance zones, a map depicting the four zones should be included with the Plan along with a copy of the draft pumper and SEO inspection report forms.

9. The Water Sampling Maps and Soil Suitability Map also indicate which properties are served by public sewer and which are served by on-lot sewage systems. There are a lot of on-lot sewage systems depicted within dense subdivisions served by public sewer. Is this really accurate? If so, wouldn't these properties fall within the Township's minimum sewer connection distance? The accuracy of which properties are and are not served by public sewer should be verified.

10. The Lewisberry sewage service area is not depicted on the Existing Sewer Area map.

11. The Plan does not adequately address or provide for the future sewage disposal needs of new land development in the south sewer plant area. The plan on page 3 of the executive summary admits that "There is no more capacity available at the facility to serve other needs after these current capacity commitments are meet." However, according to Table 2-2 on page 2-5 of the Plan, the residential village, commercial neighborhood, commercial highway, and limited industrial zoned areas of the south sewer plant area must be sewered. The Plan on page 2-6 indicates that the current Subdivision and Land Development Ordinance requires that "any building or development that is within 1,000 feet of existing or approved plans for a public sanitary sewer system, there must be provided a complete sanitary sewer system connected to the existing or proposed system." The Plan must address how future growth and land development projects in the south sewer plant area will be served with adequate wastewater treatment.

12. The Plan correctly identifies the Fairview Farms and Terrace Acres area as a needs area. According to page 6-10 over 50 percent of the wells sampled were contaminated with fecal or total coliform and nitrate-nitrogen greater than 5mg/L, 68 percent of the lots were less than 0.5 acre in size and 12.5 percent of the surveyed properties were confirmed malfunctions. However, the Meadowbrook Mobile Home Park STP, which the Plan documents in appendix L as having had numerous compliance issues in the past and which continues to not meet its effluent limits, is immediately adjacent to the Fairview/ Terrace needs area, but is not evaluated as needing public sewer. Also, the Bunker Hill Road area is immediately adjacent to the planning area, appears to also have very small lots, but is not evaluated or included in the analysis. Both the Bunker Hill Road Area and the Meadowbrook Mobile Home Park must be included in and evaluated as part of the Fairview Farms and Terrace Acres need area. Given the identified sewage needs in this area, it is apparent that this is an existing need area and should be served within five years.

13. The Plan evaluates two alternatives to serve the Fairview Farms and Terrace Acres needs area but does not select one alternative to serve the sewage need. The Plan must chose one alternative which best meets the wastewater treatment needs of the study area.

14. The Plan does not designate and describe the capital financing plan chosen to implement the selected alternative for the Fairview Farms and Terrace Acres needs area. The Plan must also designate and describe the chosen backup financing plan.

15. The evaluation of alternatives to serve the Fairview Farms and Terrace Acres needs area must be evaluated for consistency with respect to the requirements of Chapter 71.21.a.5.i-vi. Please see Section VI-Evaluation of Alternatives in the Act 537 Plan Content and Environmental Assessment Checklist.

16. The Plan must include a map which depicts the results of the sanitary survey table found in Appendixes F and K. This information should meet the requirements found in the Department's publication titled Sewage Disposal Needs Identification.

17. The Plan on page 5 of the executive summary and page 8-2 provides for the support of the extension of public sewer from new developments in the "southern portion" of the Township to the Newberry Township sewer system. What is defined as the "southern portion"? Does Newberry Township have capacity and agree to provide capacity to Fairview Township? Is there an intermunicipal agreement between Newberry and Fairview Townships to provide sewer service? This appears to conflict with the statement on page 8-2 that areas outside of the sewer service areas will continue to rely on on-lot sewage disposal.

The deficiencies identified in this letter must be addressed and a plan resubmitted to the Department within 90 days of the date of this letter.

The 120-day review period for this Plan will not begin until the Department has received a complete plan submission. Please submit three complete copies of all plan resubmissions.

If you have any questions concerning this letter, please call me at 717-705-4766.

Sincerely,

David W. Gates
Sewage Planning Specialist
Water Management Program

cc: Joseph Strauch, P.E., Gannett Fleming, Inc.
York County Planning Commission

Response to PADEP
Comments on Fairview Township Act 537 Plan Update
From Letter Dated January 13, 2010

We have repeated PADEP's comments from the January 13, 2010 comment letter below in bold font, and we offer the following responses in regular font for the PADEP's consideration.

1.) **Section 71.11 of 25 Pa. Code requires that Official Plans "provide for the resolution of existing sewage disposal problems, providing for future sewage disposal needs of new land development, and provide for the future sewage disposal needs of the municipality." It is our determination that the Plan fails to contain sufficient information to demonstrate that the chosen alternatives can adequately provide for the resolution of existing sewage disposal problems and provide for the future disposal needs of the municipality.**

   Comment noted. The revisions to the Township's Act 537 Plan contain sufficient information to demonstrate that the chosen alternatives can adequately provide for the resolution of existing sewage disposal problems and provide for the future disposal needs of the municipality.

2.) **The implementation schedule must be a complete project implementation schedule with specific milestone dates. Table 1 on page 7 appears to be the implementation schedule; however, it is titled "Tentative Milestone Schedule." It must be clear in the text of the Plan and the title of the Implementation schedule that it is not tentative but final. The Milestone dates for the adoption and implementation of the on-lot management program are out of date.**

   The implementation schedule in the Executive Summary and Chapter 7 has been revised to be titled "Final Implementation Schedule."

3.) **In the Sandspur Estates area, the Township was going to "issue repair notices to the residents with failing on-lot systems in the Sandspur area in 2009." What was the result of these notices? Did the Township have to file any charges against property owners or initiate any compliance actions against property owners with malfunctions? How many systems were repaired? How were the systems repaired; i.e., conventional, alternate, experimental, or best technical guidance systems? Please discuss the resolution of the malfunctions in the Sandspur area and provide the on-lot sewage permit for each repair.**

   The Township did not issue repair notices to the residents with failing on-lot wastewater system in the Sandspur area in 2009. As noted in the revised implementation schedule, the Township plans to issue these notices by Spring 2011.

4.) **The well water sample results in Appendix E do not match the results plotted on the well water sampling maps. Eight samples, Response Nos. 280-287, all with nitrate-nitrogen levels greater than 5.0 mg/L taken on Collina Driver and San Remo Place, are not depicted on the well water sampling maps. Three properties on Collina Drive and San Remo Place are depicted on the map as having been sampled, Test Sample Nos. 130, 140, and 467, but they are shown as having results less than 5 mg/L nitrate-nitrogen. The well water sample table must be keyed directly to the test number on the well water sampling maps and all of the samples taken must be accurately depicted on the maps. The well water sample maps must also include ¼ mile radii around all of the sampled wells with nitrate-nitrogen results greater than 5 mg/L.**

An error was discovered on the data source for the Well Water Sampling Maps. The error was fixed, and the mapping is now consistent with the well water sampling program conducted as part of this Plan. Additionally, the maps were revised to include ¼ mile radii around all of the sampled wells with nitrate-nitrogen results greater than 5 mg/L.

5.) **The Plan fails to provide a map depicting the geological features of the Township. The Plan fails to identify, through analysis, the relation between geological features and existing or potential nitrate-nitrogen pollution. The Plan must discuss whether or not there appears to be a correlation between elevated nitrate-nitrogen levels in the groundwater and the identified geological features. The Plan must identify areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. Quarter mile radius circles may not represent the complete extent of the elevated nitrate areas.**

Two maps were added to the Plan that depict the geological features of the Township. Appendix G contains mapping from the Department of Conservation and Natural Resources showing the physiographic provinces of Pennsylvania. Additionally, Map 6 in Appendix G, taken from the York County Comprehensive Plan, shows the geological formations within the Township. Section 1.8.1 of the Plan includes a correlation between elevated nitrate-nitrogen levels in the groundwater and the identified geological features from these mapping products. Section 1.6 of the Plan includes an updated discussion on the geological features in the Township.

6.) **The Plan fails to adequately address the nitrate-nitrogen groundwater contamination problem documented by the well samples. The Plan fails to indicate correctly how this information will impact new land development. The Plan must acknowledge that planning exemptions (25 Pa. Code Chapter 71, Section 71.51) and exemptions (Minor Subdivision Modules – Section 71.55) are not acceptable within ¼ mile radius of wells sampled at 5 mg/L of nitrate-nitrogen and may not be used for subdivision or new land development planning in those areas. New land development planning in these areas must be accomplished in accordance with the requirements of Section 71.62 (regarding preliminary hydrogeologic evaluations). The Plan must acknowledge that, in accordance with Act 537, planning exemptions are not acceptable in areas underlain by carbonate geologic features.**

Chapter 1.8 of the updated Plan acknowledges that planning exemptions and exemptions are not acceptable within ¼ mile radius of wells sampled at 5 mg/L or nitrate-nitrogen and may not be used for subdivision or new land development planning in those areas. Additionally, this section provides a description of hydrogeologic evaluations and planning exemptions in areas underlain by carbonate geological features.

7.) **The Plan fails to provide complete sanitary survey information. There is no indication that permit records were reviewed to determine what types of on-lot repairs have been done. "Best Technical Guidance" repairs are considered confirmed malfunctions. Any repaired on-lot system is considered a potential malfunction. The Plan must identify the on-lot repairs that have been done.**

Table 3-9 in Chapter 3.10 of the Plan includes a summary of the repair permits issued within the Township since 2004. According to the Township SEO Records, there were 6 repair permits classified as BTG repairs. There are currently no sewage holding tanks in the Township. Table 3-10 includes the sewage disposal needs assessment groupings. The repaired on-lot systems are now included as potential malfunctions.

8.) **The draft on-lot maintenance ordinance provided in the Plan indicates that a ¼ of all owners of properties within the Township served by on-lot sewage systems will be notified annually of the septic tank pumping and inspection requirements. How will the Township administer the program, four zones, or just a ¼ of the Township's on-lot systems chosen randomly? The Department recommends that the Township be broken into four zones to lessen public confusion and administrative oversight; i.e., it is clear that everyone in this zone gets pumped the same year. If the intent is to provide four on-lot maintenance zones, a map depicting the four zones should be included with the Plan along with a copy of the draft pumper and SEO inspection report forms.**

Appendix O of the Plan includes a map depicting the four initial maintenance zones, along with a copy of the draft pumper and SEO inspection report forms. The Township plans on sending out notifications to property owners located in Zone 1 in March 2011.

9.) **The Water Sampling Maps and Soil Suitability Map also indicate which properties are served by public sewer and which are served by on-lot sewage systems. There are a lot of on-lot sewage systems depicted within dense subdivisions served by public sewer. Is this really accurate? If so, wouldn't these properties fall within the Township's minimum sewer connection distance? The accuracy of which properties are and are not served by public sewer should be verified.**

This data was based on the York County Tax Assessment Database and required some revision. The Township reviewed the mapping with available records and made the appropriate revisions.

10.) **The Lewisberry sewage service area is not depicted on the Existing Sewer Area map.**

The Existing Sewage Facilities Map (Plate 2) was revised to include the area of the Township served by the Lewisberry WWTP.

11.) **The Plan does not adequately address or provide for the future sewage disposal needs of new land development in the south sewer plant area. The plan on page 3 of the executive summary admits that "There is no more capacity available at the facility to serve other needs after these current capacity commitments are meet." However, according to Table 2-2 on page 2-5 of the Plan, the residential village, commercial neighborhood, commercial highway, and limited industrial zoned areas of the south sewer plant area must be sewered. The Plan on page 2-6 indicates that the current Subdivision and Land Development Ordinance requires that "any building or development that is within 1,000 feet of existing or approved plans for a public sanitary sewer system, there must be provided a complete sanitary sewer system connected to the existing proposed system." The Plan must address how future growth and land development projects in the south sewer plant area will be served with adequate wastewater treatment.**

Chapter 3.6 includes a summary of the rerate evaluation for the South WWTP, which is enclosed in Appendix K of the Plan. Based on the information in this evaluation, it appears that an additional 96,000 gpd of capacity could be achieved at the South WWTP with modifications but significant cost. If the Township warrants that capacity is available, any additional costs will be funded by future developers. This additional capacity would adequately serve the residential village, commercial neighborhood, comercial highway and limited industrial zoned areas of the South WWTP area that must be sewered.

12.) **The Plan correctly identifies the Fairview Farms and Terrace Acres area as a needs area. According to page 6-10 over 50 percent of the wells sampled were contaminated with fecal or total coliform and nitrate-nitrogen greater than 5 mg/L, 68 percent of the lots were less than 0.5 acre in size and 12.5 percent of the surveyed properties were confirmed malfunctions. However, the Meadowbrook Mobile Home Park STP, which the Plan documents in Appendix L as having had numerous compliance issues in the past and which continues to not meet its effluent limits, is immediately adjacent to the Fairview/Terrace needs area, but is not evaluated as needing public sewer. Also, the Bunker Hill Road area is immediately adjacent to the planning area, appears to have very small lots, but is not evaluated or included in the analysis. Both the Bunker Hill Road Area and the Meadowbrook Mobile Home Park must be included in and evaluated as part of the Fairview Farms and Terrace Acres need area. Given the identified sewage needs in the area, it is apparent that this is an existing need area and should be served within five years.**

The Fairview Farms/Terrace Acres needs, collectively referred to as the "Fairview Farms Area" was revised to include the Meadowbrook Mobile Home Park (MHP). However, the analysis in Section 5.1.1 demonstrates the lack of any public health or water pollution needs in the Bunker Hill area. This area was not included in the analysis as part of this Plan. However, the Township will re-evaluate the Bunker Hill area during preliminary design of facilities to serve the Fairview Farms/Terrace Acres area to determine if sewer service should be provided to this area.

It is the Township's intent to provide public sewer service to the Fairview Farms/Terrace Acres needs area by 2016. A capital financing plan and a complete alternative analysis were completed for this area, as addressed in comment response numbers 14 and 15 below.

13.) The Plan evaluates two alternatives to serve the Fairview Farms and Terrace Acres needs area but does not select one alternative to serve the sewage need. The Plan must chose one alternative which best meets the wastewater treatment needs of the study area.

The Plan provides three alternatives to serve the Fairview Farms needs area, with Alternative 3 as the selected approach, as noted in Chapter 6.2.1. Additionally, the selected approach was included in the advertisement.

14.) The Plan does not designate and describe the capital financing plan chosen to implement the selected alternative for the Fairview Farms and Terrace Acres needs area. The Plan must also designate and describe the chosen backup financing plan.

The Plan describes the capital financing plan in Chapter Section 6.4. The selected capital financing plan is a General Obligation Bond in the name of the Township. The chosen backup financing plans are PENNVEST Funding or obtaining a bank loan.

15.) The evaluation of alternatives to serve the Fairview Farms and Terrace Acres needs area must be evaluated for consistency with respect to the requirements of Chapter 71.21.a.5.i-vi. Please see Section VI-Evaluation of Alternatives in the Act 537 Plan Content and Environmental Assessment Checklist.

The updated Plan provides an evaluation for consistency with respect to the requirements of Chapter 71.21.a.5.i-vi in Chapters 6.1.1 through 6.1.13. A PNDI search was completed on March 12, 2010 and a PHMC inquiry was submitted on March 24, 2010. The inquiries to PNDI and PHMC are included in Appendix sections P and Q respectively.

16.) The Plan must include a map which depicts the results of the sanitary survey table found in Appendixes F and K. This information should meet the requirements found in the Department's publication titled Sewage Disposal Needs Identification.

The updated Plan includes Plate 7, Malfunction Classification mapping, which depicts the results of the Sewage Disposal Needs Identification. This mapping meets the requirements found in the Department's publication titled Sewage Disposal Needs Identification.

17.) **The Plan on page 5 of the executive summary and page 8-2 provides for the support of the extension of public sewer from new developments in the "southern portion" of the Township to the Newberry Township sewer system. What is defined as the "southern portion"? Does Newberry Township have capacity and agree to provide capacity to Fairview Township? Is there an intermunicipal agreement between Newberry and Fairview Townships to provide sewer service? This appears to conflict with the statement on page 8-2 that areas outside of the sewer service areas will continue to rely on on-lot sewage disposal.**

The southern portion of the Township refers to the service area of the South WWTP. The Township would entertain an intermunicipal agreement for the extension of public sewers from new developments in the southern portion of the Township. However, since the previous Plan adoption, the potential for an intermunicipal agreement between Newberry and Fairview Township does not appear likely. Accordingly, this statement was removed from the Plan. The future developers would need to initiate an agreement with Newberry and pay for all applicable fees.

Gannett Fleming
Your Trusted Advisor Since 1915

GANNETT FLEMING, INC.
P.O. Box 67100
Harrisburg, PA 17106-7100
Location:
207 Senate Avenue
Camp Hill, PA 17011
Office: (717) 763-7211
Fax: (717) 763-1808
www.gannettfleming.com

October 13, 2010

York County Planning Commission
28 East Market Street, 3rd Floor
York, PA 17401

RE: Fairview Township
Act 537 Sewage Facilities Plan Update

Ladies and Gentlemen:

On behalf of the Fairview Township Board of Supervisors, we are submitting for your review and comment a copy of the draft Fairview Township 2010 Act 537 Sewage Facilities Plan Update (2010 Plan). In accordance with the Pennsylvania Department of Environmental Protection (PADEP) regulations, please submit any comments on the Plan to our office within 60 days.

Fairview Township adopted a Sewage Facilities Plan Update on June 29, 2009 (2009 Plan). The Plan was submitted to the PADEP on July 23, 2009. The PADEP issued a comment letter on January 13, 2010, stating that the 2009 Plan failed to adequately provide for the resolution of existing sewage disposal problems. The PADEP determined that the Township will need to revise the selected wastewater management approach, and consequently, a second round of public comment, planning agency review and another Plan adoption is necessary.

The Township's 2009 Plan was submitted to the York County Planning Commission (YCPC) on September 23, 2008. The YCPC responded in a letter dated November 7, 2008 with numerous comments. We would like to thank the YCPC for their time and effort in providing meaningful review comments on the 2009 Plan. Enclosed is the response letter from YCPC, along with an explanation of how each comment was incorporated into the 2009 Plan that was submitted to PADEP. Please note that the recommendations of the 2010 Plan have changed substantially in order to address PADEP's concerns.

We have also provided a copy of the draft Plan to the Fairview Township Planning Commission for its review and comment. The Township intends to undertake the required 30-day public review period on the draft Plan in October 2010. All written comments received will be addressed and incorporated into the final Plan which will be submitted to the PADEP.

If you have any questions regarding the draft Plan, please do not hesitate to call me at (717) 763-7212, Ext 2690.

Very truly yours,

GANNETT FLEMING, INC.
Environmental Resources Division

JOSEPH A. STRAUCH, P.E.*
Senior Project Manager
Water and Wastewater Practice
**Registered in PA, OH, WV*

Enclosures

cc: Stephen Smith, Manager (w/o Enclosures)

Gannett Fleming
Your Trusted Advisor Since 1915

GANNETT FLEMING, INC.
P.O. Box 67100
Harrisburg, PA 17106-7100
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207 Senate Avenue
Camp Hill, PA 17011
Office: (717) 763-7211
Fax: (717) 763-1808
www.gannettfleming.com

October 13, 2010

Fairview Township Planning Commission
599 Lewisberry Road
New Cumberland, PA 17070

RE: Fairview Township
Act 537 Sewage Facilities Plan Update

Ladies and Gentlemen:

On behalf of the Fairview Township Board of Supervisors, we are submitting for your review and comment a copy of the draft 2010 Fairview Act 537 Sewage Facilities Plan Update (2010 Plan). In accordance with the Pennsylvania Department of Environmental Protection (PADEP) regulations, please submit any comments on the Plan to our office within 60 days.

As you know, Fairview Township adopted a Sewage Facilities Plan Update on June 29, 2009 (2009 Plan). The Plan was submitted to the PADEP on July 23, 2009. The PADEP issued a comment letter on January 13, 2010, stating that the 2009 Plan failed to adequately provide for the resolution of existing sewage disposal problems. The PADEP determined that the Township needs to revise the selected wastewater management approach, and consequently, a second round of public comment, planning agency review and another Plan adoption is necessary.

We have also provided a copy of the draft 2010 Plan to the York County Planning Commission for its review and comment. The Township intends to undertake the required 30-day public review period on the draft Plan in October 2010. All written comments received will be addressed and incorporated into the final Plan which will be submitted to the PADEP.

If you have any questions regarding the draft Plan, please do not hesitate to call me at (717) 763-7212, Ext 2690.

Very truly yours,

GANNETT FLEMING, INC.
Environmental Resources Division

JOSEPH A. STRAUCH, P.E.*
Senior Project Manager
Water and Wastewater Practice
*Registered in PA, OH, WV

Enclosure
cc: Stephen Smith, Manager (w/o Enclosure)

A Tradition of Excellence

Established 1803
FAIRVIEW TOWNSHIP

BOARD of SUPERVISORS
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John W. Mickle, III, *Vice-Chairman*
John C. Minito, *Supervisor*
Mario D. Pirritano, *Supervisor*
William C. Brown, *Supervisor*

MANAGER
Stephen F. Smith

December 13, 2010

Joseph A. Strauch
Gannett Fleming, Inc.
207 Senate Avenue
Camp Hill PA 17011

RE: Act 537 Sewage Facilities Plan Update
Fairview Township, York County

Dear Mr. Strauch:

The above referenced matter has been reviewed by the members of the Fairview Township Authority.

Please be advised that the Authority has no comments on the plan update.

Sincerely,

FAIRVIEW TOWNSHIP AUTHORITY

Donna L. Nissel

Donna L. Nissel
Secretary/Treasurer

Cc: Authority Members

599 LEWISBERRY ROAD • NEW CUMBERLAND, PA 17070-2399 • TELEPHONE 717-901-5200 • FAX 717-901-5233 • www.twp.fairview.pa.us

Established 1803
FAIRVIEW TOWNSHIP

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William C. Brown, *Supervisor*

MANAGER
Stephen F. Smith

November 30, 2010

Gannett Fleming
Attn: Joe Strauch
207 Senate Avenue
Camp Hill, PA 17011

RE: Act 537 Plan - Fairview Township Planning Commission

Mr. Strauch,

The draft as well as the revisions of the Sewage Facilities Act 537 were presented to the Fairview Township Planning Commission at their October 7, 2008, November 5, 2008 and most recently at their November 3, 2010 meeting. The Planning Commission expressed the following comments based on their review of the latest revision to the plan:

- The Planning Commission agrees with and acknowledges the report's findings.
- The Planning Commission expressed concerns with the cost and funding for the installation the proposed improvements.

Based on the comments above, the Planning Commission recommended approval of the Act 537 plan as it was submitted.

If you should need any additional information regarding their action on the plan, please feel free to contact me.

Sincerely,

Stephen M. Waller
Codes Administration Director

cc. S. Smith, Township Manager
file

599 LEWISBERRY ROAD • NEW CUMBERLAND, PA 17070-2399 • TELEPHONE 717-901-5200 • FAX 717-901-5233 • www.twp.fairview.pa.us

YORK COUNTY PLANNING COMMISSION

28 EAST MARKET STREET, YORK, PENNSYLVANIA 17401
TELEPHONE: (717) 771-9870 FAX: (717) 771-9511

December 9, 2010

Mr. Joseph A. Strauch
Gannett Fleming Inc.
P. O. Box 67100
Harrisburg PA 17106-710

Re: Fairview Township Act 537 Sewage Facilities Plan
Act 537 Sewage Facilities Plan Update
YCPC Project # 10-077

Dear Mr. Strauch:

The above referenced matter was reviewed by the York County Planning Commission at its regular meeting held on Tuesday, December 7, 2010.

By formal action the Commission adopted the attached report as constituting its comments on this matter in accordance with Section 304 of the Pennsylvania Municipalities Planning Code.

You are reminded that the Pennsylvania Municipalities Planning Code requires the submission of a copy of any adopted municipal Zoning Ordinance, Subdivision and Land Development Ordinance, Comprehensive Plan or any amendments to such documents to the York County Planning Commission with thirty days (30) days following the date of adoption.

Very truly yours,

Felicia S. Dell

Felicia S. Dell
Director of Planning

FSD/jb
Enc.
cc: Fairview Twp. Brd. of Supr
c/o Stephen Smith, Mgr.

TERRY L. DUNLAP, CHAIRMAN • WALTER A. KUHL, VICE CHAIRMAN • MARY E. COBLE, SECRETARY • MARY KAY REED, TREASURER
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EQUAL OPPORTUNITY EMPLOYER

ACT 537 SEWAGE FACILITIES PLAN UPDATE
FAIRVIEW TOWNSHIP
YCPC PROJECT #10-077

PROJECT DESCRIPTION

A proposed Act 537 Sewage Facilities Plan Update for Fairview Township has been submitted to the York County Planning Commission for review and comment, as required by Section 304 of the Pennsylvania Municipalities Planning Code (PA MPC), and Section 71.31(b) of the Pennsylvania Sewage Facilities Act, Act 537.

PROJECT DISCUSSION

Background: This project was previously reviewed as Project #08-90. The previous review noted that the proposed alternatives were consistent, however the Township was in the process of updating it's Comprehensive Plan. Therefore, a recommendation was made for the proposed Act 537 not to be adopted until the Township's Comprehensive Plan Update was completed and taken into consideration. The Plan was subsequently adopted and submitted, in 2009, to the Pennsylvania Department of Environmental Protection (PA DEP) which noted that the submission failed to adequately provide for the resolution of existing sewage disposal problems. PA DEP determined the Township would need to revise the selected wastewater management approach and go through another round of review. Prior to the 2009 submission to PA DEP, Fairview Township last updated it's Act 537 Sewage Facilities Plan in 1987.

The planning area for the proposed Plan includes all of Fairview Township. Approximately 62% of the developed properties in the Township are currently served by public sewer. Wastewater generated in the Township is conveyed and treated at one (1) of four (4) public wastewater treatment plants (WWTP). The WWTP's providing service include Lower Allen WWTP, Fairview Township North WWTP, Fairview Township South WWTP, and the Lewisberry WWTP. Additionally, the United States Department of Defense Distribution Depot operates its own WWTP and there are five (5) private systems.

For the purpose of assessing wastewater collection, conveyance, and treatment needs, the Township was divided into five (5) areas. Four (4) are based on the service areas of each of the public WWTPs, identified above, and the fifth consists of the remainder of the Township which is considered mostly rural. The proposed Plan is divided into eight (8) chapters along with support documentation and mapping. The first four (4) chapters establish the current and predict the future wastewater treatment needs in the Township. The last four (4) chapters develop and evaluate alternatives for addressing existing and projected need. The proposed Plan covers a time frame of 20 years to the year 2028.

Problems and Issues to be Addressed: The following issues and problems have been identified by the proposed Plan:

1) The North WWTP will not be able to meet the new requirements for removing nitrogen and phosphorus under the 2008 NPDES permit.
2) The South WWTP will only be able to provide for a portion of the projected WWTP needs. An additional 315.000 gpd of capacity may be needed to provide public sewer service in the future.
3) Based on the levels of treatment at the Fairview Township North and South WWTPs, it is estimated that an additional 10,000 to 20,000 pounds of nitrogen per year will need to be removed to meet the nitrogen caps imposed through the Pennsylvania Chesapeake Bay Tributary Strategy by PA DEP.
4) The Lower Allen and Lewisberry WWTPs will require upgrades to comply with their nutrient cap loads.

5) Fairview Farms (includes Fairview Acres, Fairview Estates) in northwestern Fairview Township and the Timber Ridge Area in the northern portion of the Township have been confirmed as public sewer needs areas.
6) The Meadow Brook MHP WWTP has failed to comply with NPDES discharge limits 31 times since 1992. PA DEP has requested that the Township consider serving the Meadowbrook MHP and the Fairview Elementary School with public wastewater treatment and abandoned any on-lot systems.
7) Sampling conducted as part of the proposed Plan identified large areas of Fairview Township with nitrate-nitrogen levels above 5 mg/L. Preliminary hydrogeologic studies will need to be conducted for new on-lot systems within a quarter mile of these systems.

Selected Alternatives: Fairview Township has selected the following approach to meet its existing and projected 20-year wastewater conveyance and treatment needs:
1) Negotiate and execute an agreement for the long-term (15 years) purchase of nutrient credits to enable the Township to comply with its nutrient cap load. This task has already been completed and represents approximately a 75% savings as compared to WWTP upgrades.
2) Adjust sewer rates and tapping fees to generate sufficient revenue to fund the operation and maintenance of the public sewer system and purchase of nutrient credits. This has already been completed. The rates were adjusted by $9.00 a quarter for residential customers. Tapping fees will need to be evaluated based on market conditions every three (3) years.
3) Participate with Lower Allen Authority and Lewisberry Joint Authority to upgrade their facilities, as needed, to comply with the Chesapeake Bay Tributary Strategy.
4) Develop and implement an on-lot management program to assure the regular maintenance and inspection of all on-lot systems. Four (4) initial maintenance districts were adopted in June, 2010.
5) Construct a sanitary sewer extension from the Fairview Township North WWTP to the Fairview Farms to provide public sewer service to this area by the spring of 2016. Projected cost is $2,634,000 to be financed through PENNVEST.
6) Work with the Meadowbrook MHP owner to allow the private sewer system serving the MHP to connect to the sanitary sewer extension to the Fairview Farms area.
7)Construct a sanitary sewer extension form the North WWTP to the Timber Ridge area to provide public sewer service to this area by the spring of 2016. Projected cost is $1,393,000 to be financed through PENNVEST.
8) Continue to rely on on-lot systems for properties outside of sewer service areas.
9) Require new developments outside the public sewer service area to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their developments. Documentation will be required for any new wastewater treatment systems to ensure necessary administration, operation, and maintenance programs are fully established.
10) Promote development within the Fairview Township North WWTP service area where capacity is available rather than in the Fairview Township South WWTP service area where capacity has been fully committed.
11) Consider amending Subdivision and Land Development Ordinance to clarify requirement for preliminary hydrogeologic evaluations.

Other Alternatives: Other alternatives considered by the Plan include the following:
1) Conventional Treatment Systems - The Township intends to continue to rely on the existing WWTP's

and no new WWTP's are proposed.
2) Individual Sewage Disposal Systems- The Township intends to continue the use of on-lot systems for developed parcels outside the sewer service areas and rely on an on-lot management program to keep those systems in working order. See selected alternatives #4 and #8 above.
3) Small Flow Treatment Facilities- There are currently no small flow treatment systems in the Township. See selected alternative #9 above.
4) Community Wastewater Treatment Facilities- There is currently one (1) community wastewater treatment facility in the Township. See selected alternative #9 above.
5) Holding Tanks- There are currently no holding tanks in use in the Township. The Township does have a Holding Tank Ordinance to govern their use.
6) Sewage Management Program- See selected alternative #4 above.
7) Non-Structural Comprehensive Planning Activities- The Township currently implements a Zoning Ordinance, Subdivision and Land Development Ordinance (SALDO), employs codes enforcement and sewage enforcement officers, and will be requiring hydrogeologic evaluations in certain instances as part of the SALDO. See selected alternative #11 above.
8) No Action- Due to the negative impacts of the no action alternative, it was eliminated from future consideration.
9) Waste Water Conveyance- The existing conveyance systems appear to be adequate. Two(2) extensions of public sewer are proposed and there is the potential for a third. See selected alternatives #5,#6,and #7.

RECOMMENDATION

Fairview Township is to be commended for its efforts to address its future sewage disposal needs. The Township is being very proactive by participating in nutrient credit trading to meet the cap loads on nitrogen and phosphorus. All of the proposed alternatives appear to be consistent with the York County Comprehensive Plan. The comments below focus more on clarification, than consistency. It is therefore recommended that the Fairview Township Act 537 Sewage Facilities Plan Update **be adopted** conditioned upon consideration and where applicable implementation of the comments as provided below.

COMMENTS

General Comments:

1) The selected alternative(#9 above) placing full responsibility on developers for providing sewage treatment outside of public sewer areas should be clarified to indicate that this only applies to areas not designated for public sewer within the Established Primary Growth Areas. As it reads now, this alternative could be misconstrued to include all other areas outside the designated sewer service areas which is inconsistent with this Plan and the Township's Comprehensive Plan.

2) Page 5, of the Executive Summary, identifies working with the Meadowbrook MHP owner to allow the private sewer system to connect to the Fairview Farms sewer extension. However, this approach is not identified as part of the Selected Approach (Section 8.1, pages 8-1 to 8-3). This action should be listed in both the Executive Summary and Section 8.1 for consistency.

3) On page 2-6, it is noted in Table 2-2 that public sewer is permitted in the Rural Residential zoning district which is mostly located outside of the Established Primary Growth Area. It is noted that the Township Comprehensive Plan was recently updated and the Township is in the process of beginning an

update to the current Zoning Ordinance for implementation of the Plan. However, to prevent any inconsistencies, there should be a specific recommendation in this Plan that as part of the Zoning Ordinance update public sewer availability be limited to identified growth areas, except when necessary to address a public health, safety, and welfare issue. This approach is supported several times throughout the Comprehensive Plan (Sections 4.4 and 6.0), within the proposed Act 537 Plan, and is generally supported by selected alternative #8, as numbered and listed above.

4) On page 2-6, it is noted that the Township Zoning Ordinance allows for minimum lot sizes of 20,000 sq. ft. in the Residential Single and Muli-family Districts if the site investigation does not reveal any problems. Given the limited capacity of the Fairview Township South WWTP, the recorded malfunctions and potential malfunctions, and noted small lots that are an issue in areas like the Fairview Acres/Fairview Terrace, Township Officials should require that an alternate on-site location be provided for all new residential lots proposing the use on-lot sewage disposal systems.

5) On page 2-7, it is noted that the SALDO requires any building or development within 1,000 feet of an existing or proposed public sanitary to be connected. Given the recent adoption of the Primary and Secondary Growth Areas by the Township in it's Comprehensive Plan and the policies of this Plan, Township Officials should include a recommendation in the Plan for the SALDO to be amended to provide for such extensions only within the adopted Primary Growth Areas, except in cases of public health, safety, and welfare. The same would also be true for the requirement of community systems within Established Rural Areas.

6) Plate 2, the Existing Sewer Service Map, identifies a large area of existing sewer service south of Lewisberry Road and west of I-83. A majority of this area was not included in the Established Primary Growth Area due to the topography. Township Officials should include a discussion of this inconsistency and how sewer service will be handled for this area in the future as part of Section 2.3. Given the topography concerns and intention of the Comprehensive Plan not to encourage higher density development in the area, it would appear that sewer service to this area should only be considered in the future based on public health, safety, and welfare concerns.

7) All of the maps and figures contained within the proposed Plan should include road names to make it easier to identify the area being depicted.

***The preceding comments were prepared by the York County Planning Commission and constitute a professional planning review, not a legal opinion.**

****Please forward the adopted and PA DEP approved version of the Plan to the York County Planning Commission. This will help to keep our files up to date when reviewing future applications regarding Act 537 planning.**

Response to York County Planning Commission
Comments on Fairview Township Act 537 Plan Update
From Letter Dated December 9, 2010

Comment 1:
The selected alternative (#9 above) placing full responsibility on developers for providing sewage treatment outside of public sewer areas should be clarified to indicate that this only applies to areas not designated for public sewer within the Established Primary Growth Areas. As it reads now, this alternative could be misconstrued to include all other areas outside the designated sewer service areas which is inconsistent with this Plan and the Township's Comprehensive Plan.

Township Response:
This statement has been clarified throughout the Plan.

Comment 2:
Part 5, of the Executive Summary, identifies working with the Meadowbrook MHP owner to allow the private sewer system to connect to the Fairview Farms sewer extension. However, this approach is no identified as part of the Selected Approach (Section 8.1, pages 8-1 to 8-3). This action should be listed in both the Executive Summary and Section 8.1 for consistency.

Township Response:
Additional clarification was added to Section 8.1 of the Plan.

Comment 3:
On page 2-6, it is noted in Table 2-2 that public sewer is permitted in the Rural Residential zoning district which is mostly located outside of the Established Primary Growth Area. It is noted that the Township Comprehensive Plan was recently updated and the Township is in the process of beginning an update to the current Zoning Ordinance for implementation of the Plan. However, to prevent any inconsistencies, there should be a specific recommendation in this Plan that as part of the Zoning Ordinance update public sewer availability be limited to identified growth areas, except when necessary to address a public health, safety, and welfare issue. This approach is supported several times throughout the Comprehensive Plan (Sections 4.4 and 6.0), within the proposed Act 537 Plan, and is generally supported by selected alternative #8, as numbered and listed above.

Township Response:
The Township Officials will consider these revisions to the Zoning Ordinance, required as part of the Comprehensive Plan update.

Comment 4:
On page 2-6, it is noted that the Township Zoning Ordinance allows for minimum lot sizes of 20,000 sq. ft. in the Residential Single and Multi-family districts if the site investigation does not reveal any problems. Given the limited capacity of the Fairview Township South WWTP, the recorded malfunctions and potential malfunctions, and noted small lots that are an issue in areas like the Fairview Acres/Fairview Terrace, Township Officials should

require that an alternate on-site location be provided for all new residential lots proposing the use of on-lot sewage disposal systems.

Township Response:
Comment noted. The Township Officials will consider this recommendation.

Comment 5:
On page 2-7, it is noted that the SALDO requires any building or development within 1,000 feet of an existing or proposed public sanitary to be connected. Given the recent adoption of the Primary and Secondary Growth Areas by the Township in its Comprehensive Plan and the policies of this Plan, Township Officials should include a recommendation in the Plan for the SALDO to be amended to provide for such extensions only within the adopted Primary Growth Areas, except in cases of public health, safety, and welfare. The same would also be true for the requirement of community systems within Established Rural Areas.

Township Response:
Comment noted. The Township Officials will consider this recommendation.

Comment 6:
Plate 2, the Existing Sewer Service Map, identifies a large area of existing sewer service south of Lewisberry Road and west of I-83. A majority of this area was not included in the Established Primary Growth Area due to the topography. Township Officials should include a discussion of this inconsistency and how sewer service will be handled for this area in the future as part of Section 2.3. Given the topography concerns and intention of the Comprehensive Plan not to encourage higher density development in the area, it would appear that sewer service to this around should only be considered in future based on public health, safety, and welfare concerns.

Township Response:
This area is part of the existing Lewisberry WWTP Sewer Service area, as described in Section 3.1.3 of the Plan.

Comment 7:
All of the maps and figures contained within the proposed Plan should include road names to make it easier to identify the area being depicted.

Township Response:
Comment noted. Major roads are depicted on the mapping products.

Appendix W

Proof of Public Notice

The Patriot-News Co.
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Suite 300
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[illegible]LAND PA 17070

NOTICE

NOTICE IS HEREBY GIVEN that the Fairview Township Board of Supervisors, York County, Pennsylvania, has caused to be prepared and proposes the adoption of revisions to its official sewage facilities plan in accordance with a document entitled ACT 537 SEWAGE FACILITIES PLAN UPDATE, OCTOBER 2010 (The Plan).

Written comments are invited from the public. Such comments may be submitted until November 19, 2010 to the following address:

Fairview Township
599 Lewisberry Road
New Cumberland, PA 17070

The Plan will be available for inspection on weekdays during regular business hours until November 19, 2010 at the Fairview Township building located at the above address.

The planning area includes all of Fairview Township (the "Township"). The Plan addresses sewage facilities needs for the Township through the year 2028 and states that additional sewage conveyance and treatment capacity is required to meet the projected needs of the Township. Options were developed and evaluated to satisfy the projected Township needs. The options were evaluated with respect to cost, operability and various environmental factors. They were also evaluated for consistency with the goals and objectives of various planning, environmental, and natural resource laws and policies of the Commonwealth of Pennsylvania.

Major recommendations of the Plan are as follows:

- Negotiate and execute an agreement for the long-term (15 years) purchase of nutrient credits to enable the Township to comply with its nutrient cap load. This task has been completed. The purchase of credits represents a savings of approximately 75% over the estimated cost to upgrade the North WWTP.
- Adjust sewer user rates and tapping fees to generate sufficient revenue to fund the operation and maintenance of the public sewer system and the purchase of nutrient credits. A sewer user rate adjustment will be necessary prior to construction of the sewer system extensions from the North WWTP. The preliminary estimated rate increase is from $147 to $165 per quarter, depending on the financing approach. Tapping fees should be updated at least every 3 years to keep the rates current with market conditions.
- Participate with Lower Allen Authority and the Lewisberry Joint Authority to upgrade their facilities, as needed, to comply with the Chesapeake Bay Tributary Strategy.
- Develop and implement an On-Lot Management Program to assure the regular maintenance and inspection of all on-lot systems.
- Construct a sanitary sewer extension from the North WWTP to the Fairview Farms area to provide public sewer service to this area by the spring of 2016.
- Work with the Meadowbrook Mobile Home Park owner to allow connection of the private facilities into the sanitary sewer extension to the Fairview Farms area.
- Construct a sanitary sewer extension from the North WWTP to the Timber Ridge area to provide public sewer service to this area by the spring of 2016.
- Continue to rely on on-lot systems for properties outside the sewer service areas and the aforementioned areas to be served by sanitary sewer extensions.
- Require new developments outside the public sewer service area to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their development with either on-lot systems, a community wastewater system, or an extension to the public sewer system if the developer has financed all necessary improvements to the public conveyance and treatment facilities needed to serve his development. Developers proposing a community wastewater system or a new wastewater treatment system must provide documentation that the necessary administration, operation, and maintenance programs are fully established and funded to sustain the long-term operation of the proposed facilities.
- Promote the development of lands within the North WWTP service area where WWTP capacity is available rather than within the South WWTP service area, where all available capacity has been fully committed.

FAIRVIEW TOWNSHIP
Donna L. Nissel - Secretary

THE PATRIOT NEWS
THE SUNDAY PATRIOT NEWS

Proof of Publication

Under Act No. 587, Approved May 16, 1929
Commonwealth of Pennsylvania, County of Dauphin} ss

[illegible]ly sworn according to law, deposes and says:

[illegible]ccountant of The Patriot News Co., a corporation organized and existing under the laws of the [illegible]ania, with its principal office and place of business at 812 to 818 Market Street, in the City of [illegible]in, State of Pennsylvania, owner and publisher of The Patriot-News and The Sunday Patriot-News [illegible]lation, printed and published at 812 to 818 Market Street, in the City, County and State aforesaid; that [illegible]unday Patriot-News were established March 4th, 1854, and September 18th, 1949, respectively, and [illegible]ublished ever since;

[illegible]ce or publication which is securely attached hereto is exactly as printed and published in their regular [illegible]editions which appeared on the date(s) indicated below. That neither she nor said Company is [illegible]ter of said printed notice or advertising, and that all of the allegations of this statement as to the time, [illegible]cation are true; and

[illegible]nal knowledge of the facts aforesaid and is duly authorized and empowered to verify this statement on [illegible]Co. aforesaid by virtue and pursuant to a resolution unanimously passed and adopted severally by the [illegible]irectors of the said Company and subsequently duly recorded in the office for the Recording of Deeds [illegible]uphin in Miscellaneous Book "M", Volume 14, Page 317.

This ad # 0002102711 ran on the dates shown below:

October 20, 2010

Hally Blain

Sworn to and subscribed before me this 28 day of October, 2010 A.D.

Sherrie L. Kisner

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Sherrie L. Kisner, Notary Public
Lower Paxton Twp., Dauphin County
My Commission Expires Nov. 26, 2011
Member, Pennsylvania Association of Notaries

Appendix X

Resolution of Plan Adoption

FAIRVIEW TOWNSHIP
YORK COUNTY, PENNSYLVANIA

RESOLUTION NO. 2011-1

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require Fairview Township (referred to sometimes herein as "the Township") to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said Plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, Gannett Fleming, Inc. has prepared a report to the Fairview Township Board of Supervisors entitled "Act 537 Sewage Facilities Plan Update" (Plan Update), which evaluates various alternatives for meeting the projected long-term wastewater treatment needs of the municipality; and

WHEREAS, the alternatives of choice to be implemented by the Township as described in the Plan Update include the following:

- Negotiate and execute an agreement for the long-term (15 years) purchase of nutrient credits to enable the Township to comply with its nutrient cap load. This task has been completed. The purchase of credits represents a savings of approximately 75% over the estimated cost to upgrade the North WWTP.
- Adjust sewer user rates and tapping fees to generate sufficient revenue to fund the operation and maintenance of the public sewer system and the purchase of nutrient credits. A sewer user rate adjustment will be necessary prior to construction of the sewer system extensions from the North WWTP. The preliminary estimated rate increase is from $147 to $165 per quarter, depending on the financing approach. Tapping fees should be updated at least every 3 years to keep the rates current with market conditions.
- Participate with Lower Allen Authority and the Lewisberry Joint Authority to upgrade their facilities, as needed, to comply with the Chesapeake Bay Tributary Strategy.
- Develop and implement an On-Lot Management Program to assure the regular maintenance and inspection of all on-lot systems.
- Construct a sanitary sewer extension from the North WWTP to the Fairview Farms area to provide public sewer service to this area by the spring of 2016.
- Work with the Meadowbrook Mobile Home Park owner to allow connection of the private facilities into the sanitary sewer extension to the Fairview Farms area.
- Construct a sanitary sewer extension from the North WWTP to the Timber Ridge area to provide public sewer service to this area by the spring of 2016.
- Continue to rely on on-lot systems for properties outside the sewer service areas and the aforementioned areas to be served by sanitary sewer extensions.

- Require new developments outside the public sewer service area to design, permit, finance and construct, at their total cost, the wastewater facilities needed to serve their development with either on-lot systems, a community wastewater system, or an extension to the public sewer system if the developer has financed all necessary improvements to the public conveyance and treatment facilities needed to serve his development. Developers proposing a community wastewater system or a new wastewater treatment system must provide documentation that the necessary administration, operation, and maintenance programs are fully established and funded to sustain the long-term operation of the proposed facilities.

- Promote the development of lands within the North WWTP service area where WWTP capacity is available rather than within the South WWTP service area, where all available capacity has been fully committed.

WHEREAS, the Township finds that the Plan Update described above conforms to applicable zoning, subdivision, other municipal ordinances and plans, and to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of Fairview Township hereby adopts and submits to the Pennsylvania Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Plan Update. The Township will employ its best efforts, under all the circumstances that will prevail from time to time, to implement the plan as stated therein, and acknowledges the authority of the Department to enforce that schedule pursuant to the Sewage Facilities Act.

Resolution adopted this 31st day of January, 2011.

Attest:

Donna L. Nissel
Secretary

FAIRVIEW TOWNSHIP
BOARD OF SUPERVISORS

By: Jerry Allebaugh
Chairman

By: John Mulley

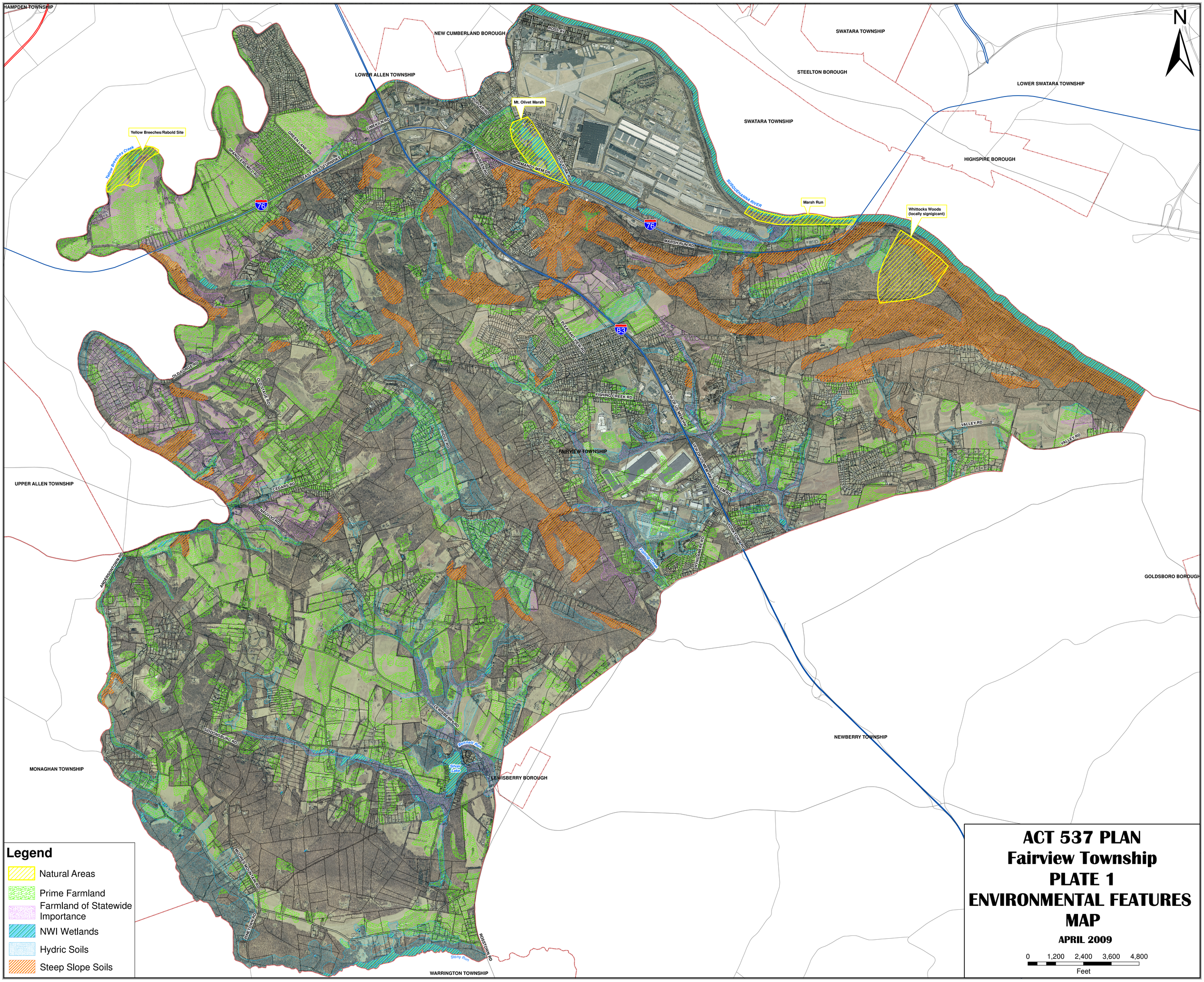
By: Marie Richards

By: William Cobb

By: John Minnich

I, Donna L. Nissel, Secretary of the Fairview Township Board of Supervisors, hereby certify that the foregoing is a true copy of the Township's Resolution No. 2011-1, adopted January 31, 2011.

Plates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SWATARA TOWNSHIP
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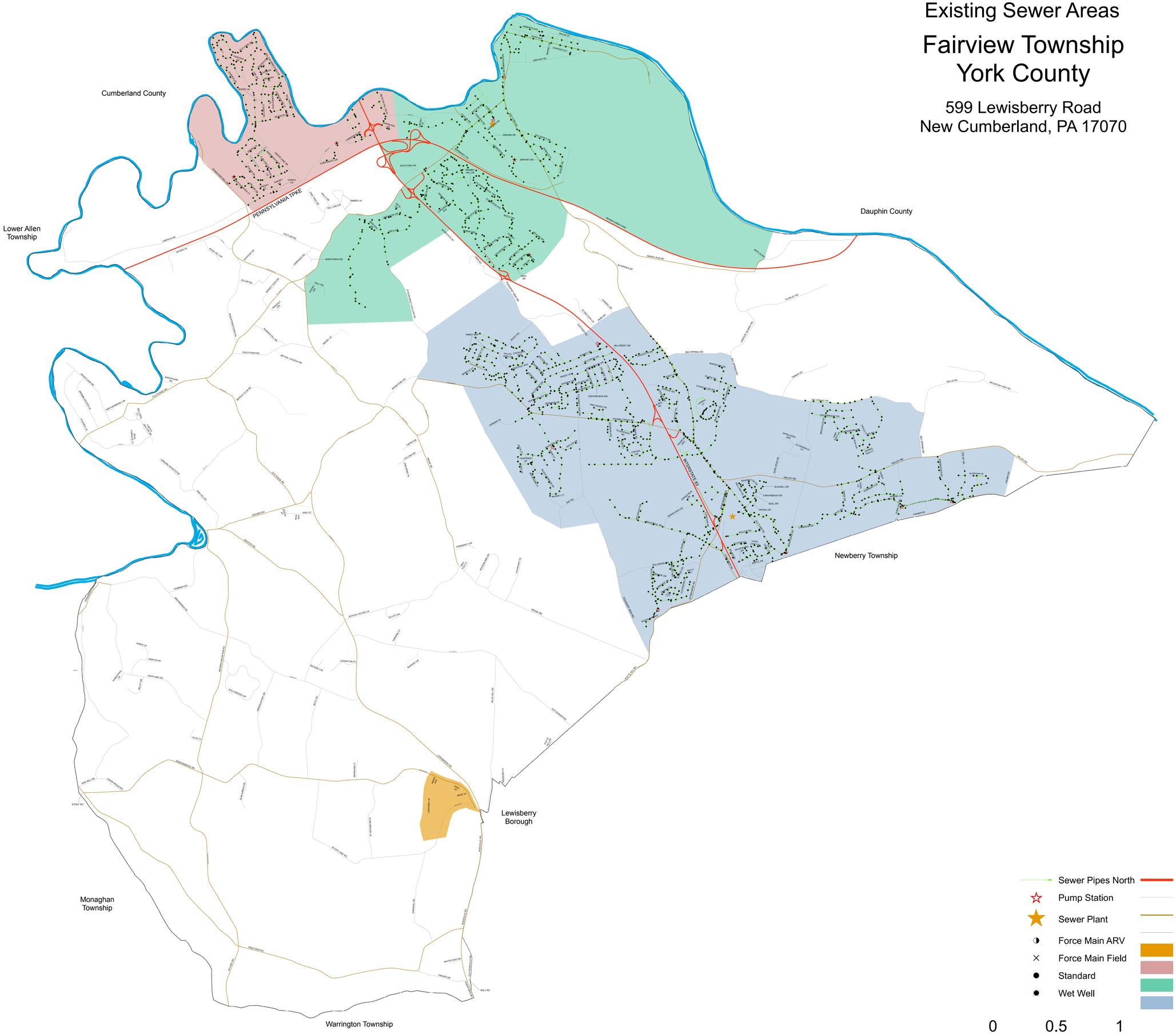
SWATARA TOWNSHIP
ROSS AV
POPLAR RD
LIMEKILN RD
GREEN LANE DR
SPANGLERS MILL RD
EAST WEST TURNPIKE
STEPHEN RD
NORMANDY MEM DR
OLD CAMP RD
Mt. Olivet Marsh
Yellow Breeches/Rabold Site
Yellow Breeches Creek
SUSQUEHANNA RIVER
Marsh Run
Whittocks Woods
(locally signigicant)
MARSH RUN RD
76
83
PLEASANT VIEW RD
OLD FORGE RD
OLD STAGE RD
FISHING CREEK RD
LEWISBERRY MEM HW
VALLEY RD
RUNKE RD
PAIRVIEW TOWNSHIP
UPPER ALLEN TOWNSHIP
CEDARS RD
MAUVOO RD
SALEM RD
YORKTOWN RD
LYNDALE RD
Fishing Creek
ANDERSONTOWN RD
GOLDSBORO BOROUGH
LEWISBERRY RD
SIDDONSBURG RD
Bennett Run
Silver Lake
NEWBERRY TOWNSHIP
MONAGHAN TOWNSHIP
LEWISBERRY BOROUGH
MOORES MOUNTAIN RD
PINE TOWN RD
ROSSTOWN RD
Stony Run
WARRINGTON TOWNSHIP
Legend
Natural Areas
Prime Farmland
Farmland of Statewide Importance
NWI Wetlands
Hydric Soils
Steep Slope Soils
ACT 537 PLAN
Fairview Township
PLATE 1
ENVIRONMENTAL FEATURES MAP
APRIL 2009
0 1,200 2,400 3,600 4,800
Feet

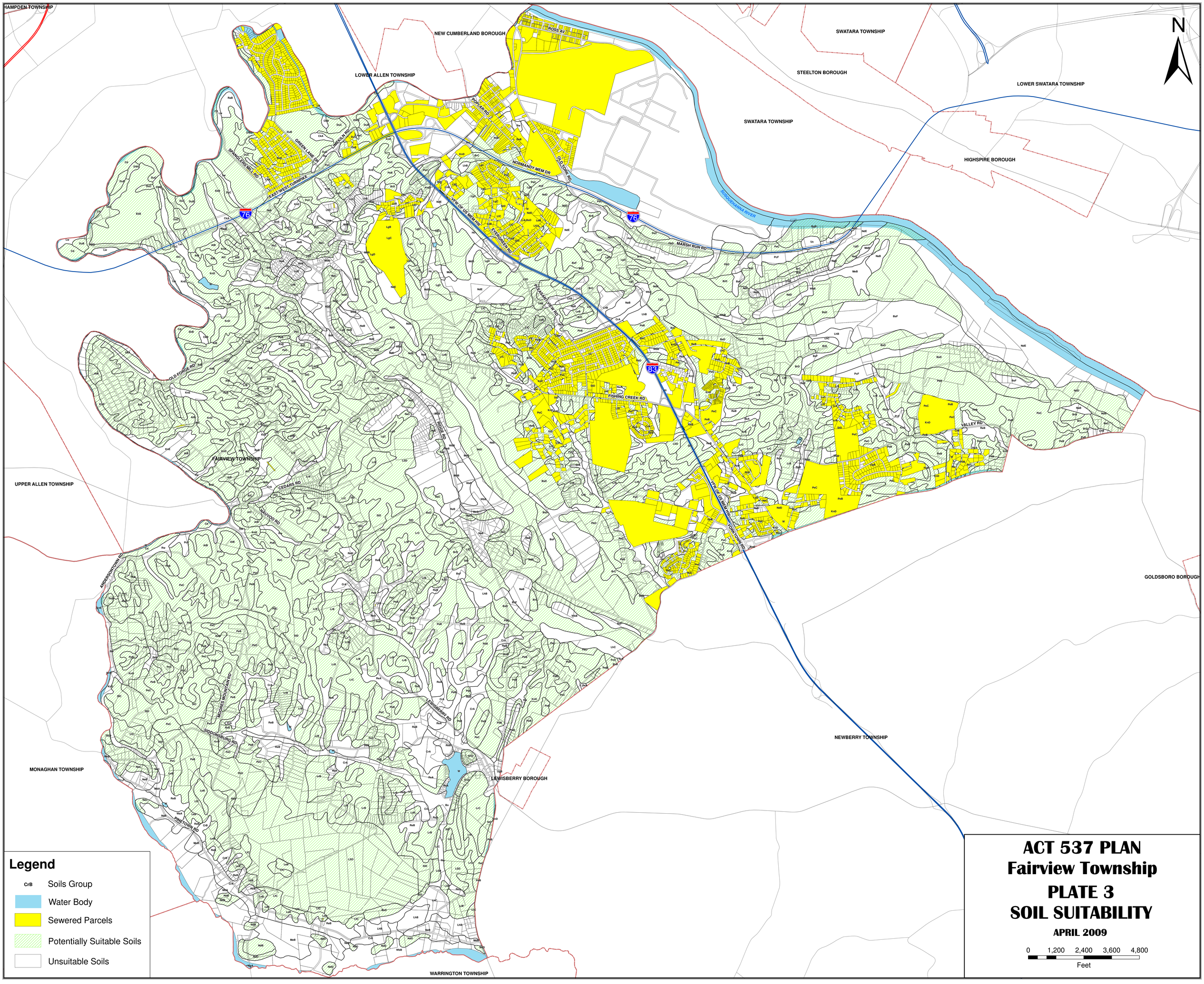
ACT 537
Existing Sewer Areas

Fairview Township
York County

599 Lewisberry Road
New Cumberland, PA 17070



Revised May 5, 2009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SUSQUEHANNA RIVER
ROSS AV
POPLAR RD
GREEN LANE DR
LINDEKILN RD
SPANGLESS MILL RD
EAST-WEST TURNPIKE
NORMANDY MEM DR
OLD YORK RD
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EVERGREEN RD
MARSH RUN RD
PLEASANT VIEW RD
OLD FORGE RD
FISHING CREEK RD
VALLEY RD
RIDGE RD
FAIRVIEW TOWNSHIP
UPPER ALLEN TOWNSHIP
CEDARS RD
HAUWOO RD
ANDERSONTOWN RD
YORKTOWN RD
GOLDSBORO BOROUGH
MOORES MOUNTAIN RD
LEWISBERRY RD
SIDDONSBURG RD
NEWBERRY TOWNSHIP
MONAGHAN TOWNSHIP
LEWISBERRY BOROUGH
PINETOWN RD
WARRINGTON TOWNSHIP
Legend
CrB Soils Group
Water Body
Sewered Parcels
Potentially Suitable Soils
Unsuitable Soils
ACT 537 PLAN
Fairview Township
PLATE 3
SOIL SUITABILITY
APRIL 2009
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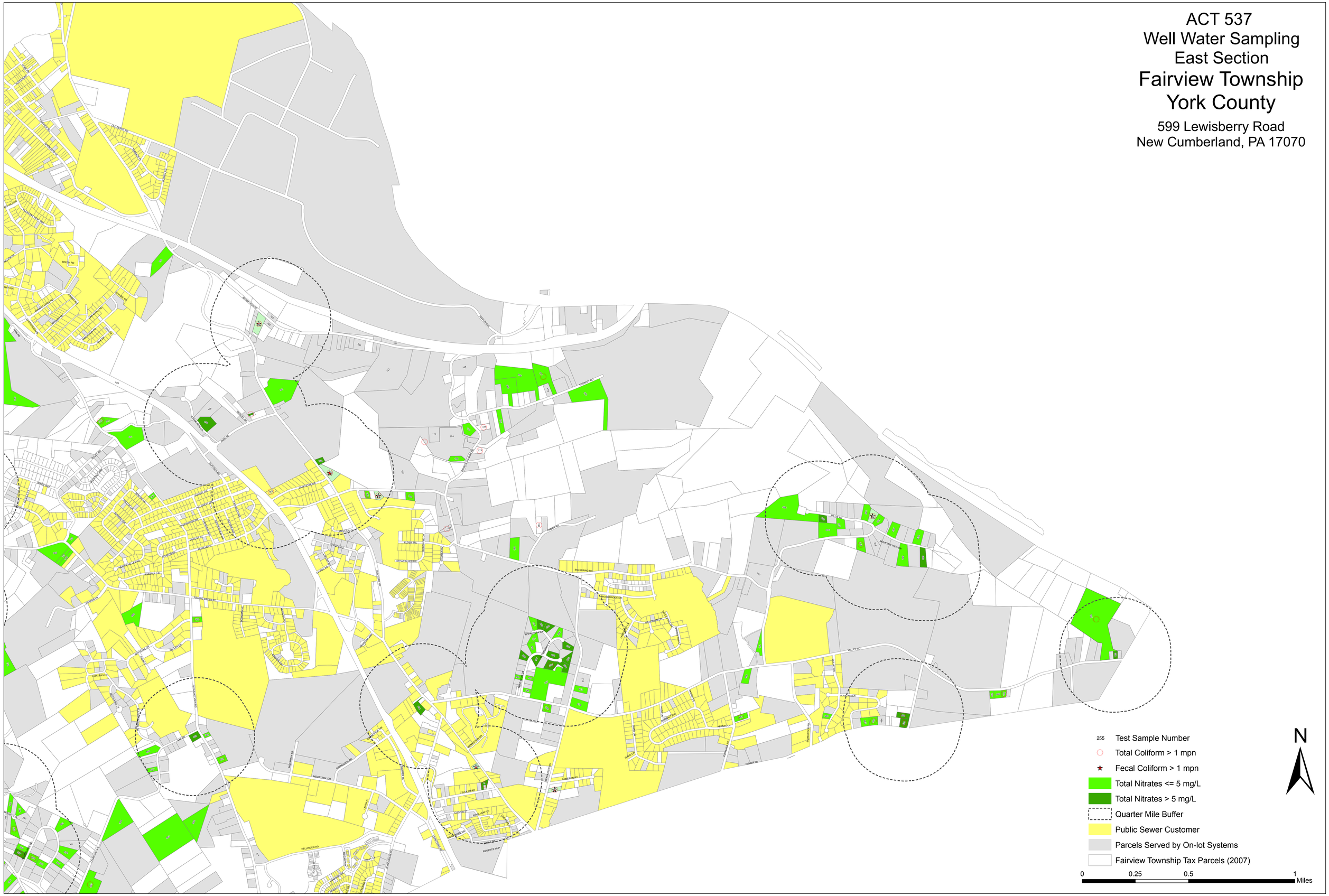
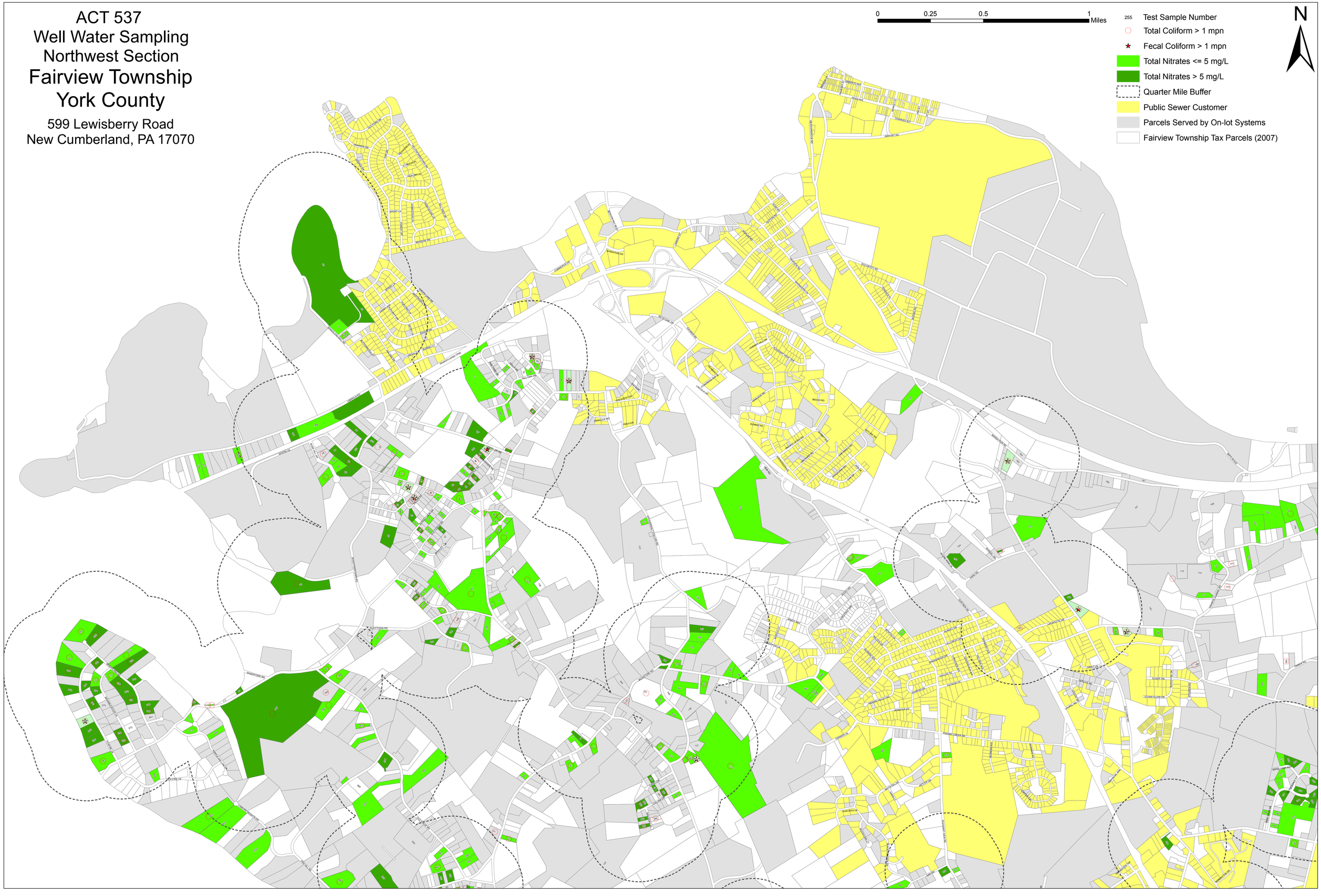
ACT 537
Well Water Sampling
East Section
Fairview Township
York County

599 Lewisberry Road
New Cumberland, PA 17070



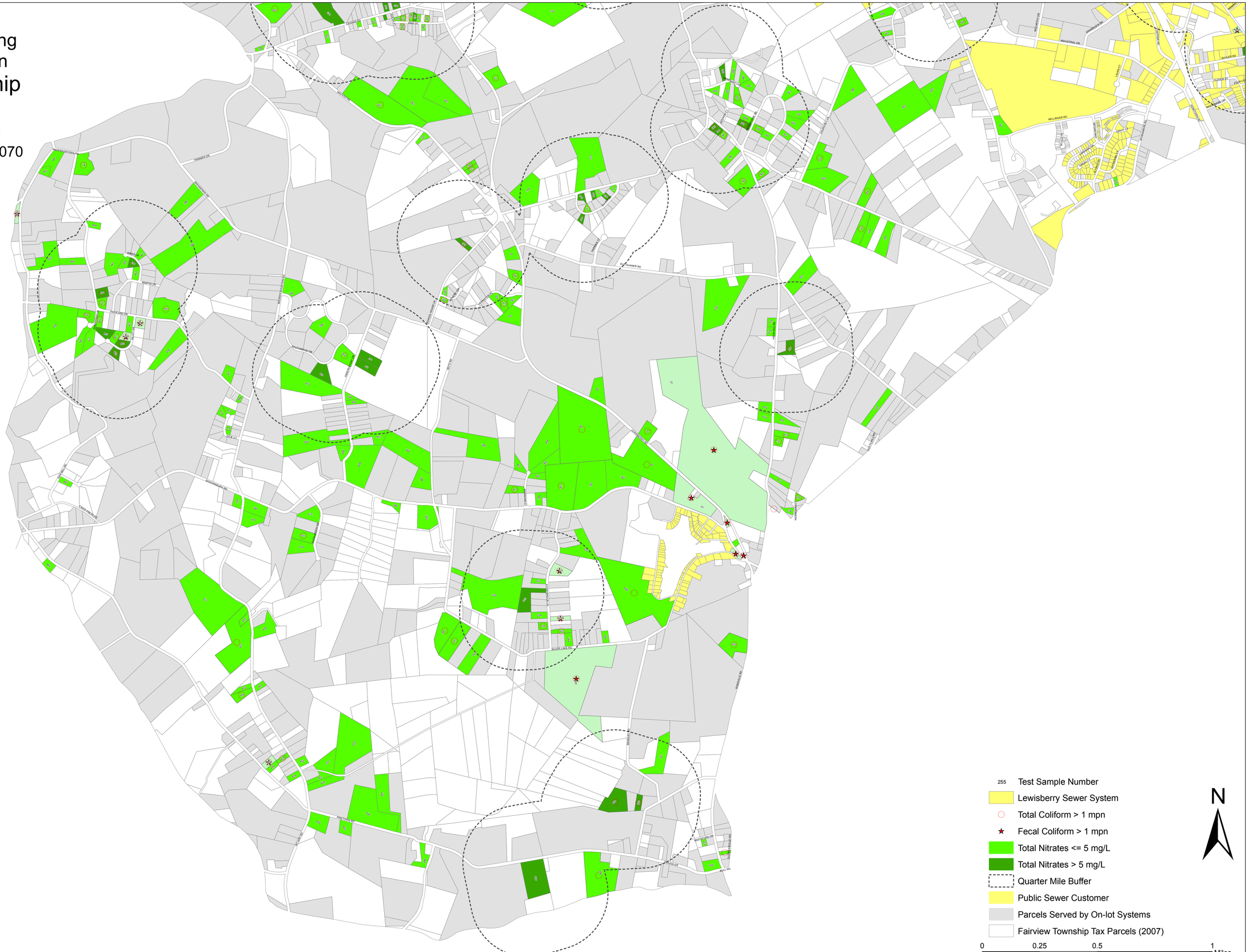
ACT 537
Well Water Sampling
Northwest Section
Fairview Township
York County

599 Lewisberry Road
New Cumberland, PA 17070



ACT 537
Well Water Sampling
Southwest Section
Fairview Township
York County

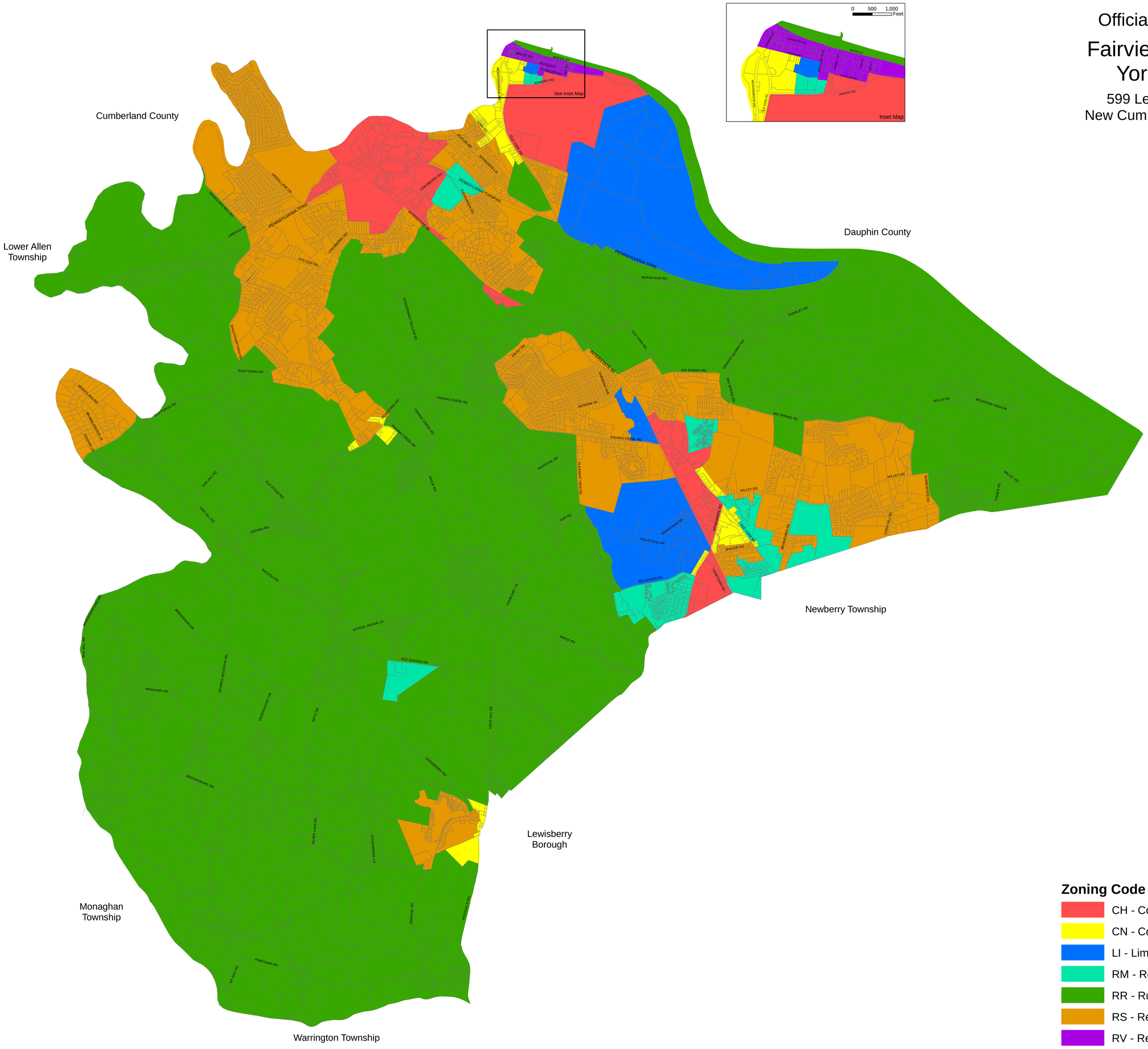
599 Lewisberry Road
New Cumberland, PA 17070



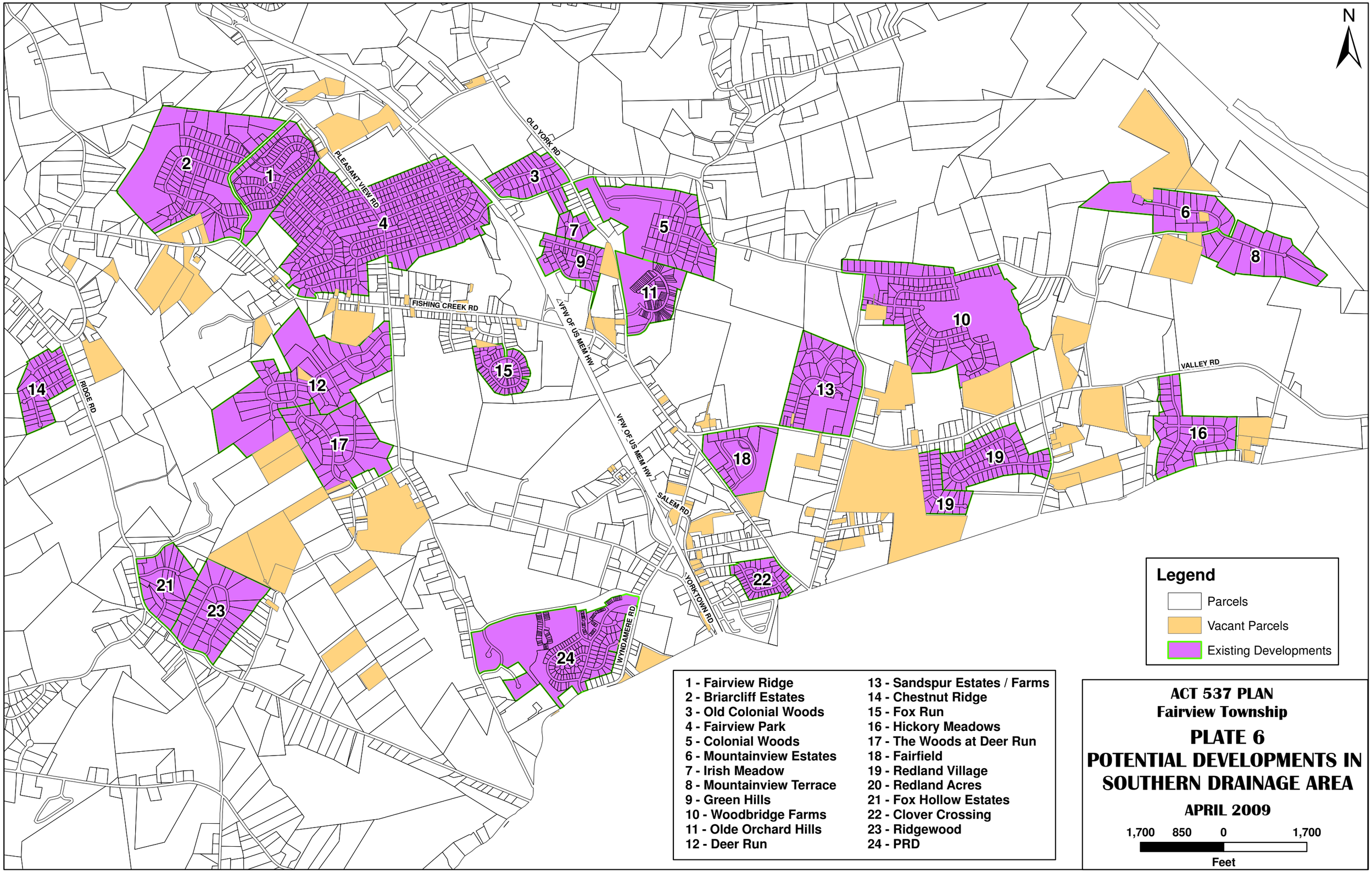
Official Zoning Map

Fairview Township
York County

599 Lewisberry Road
New Cumberland, PA 17070

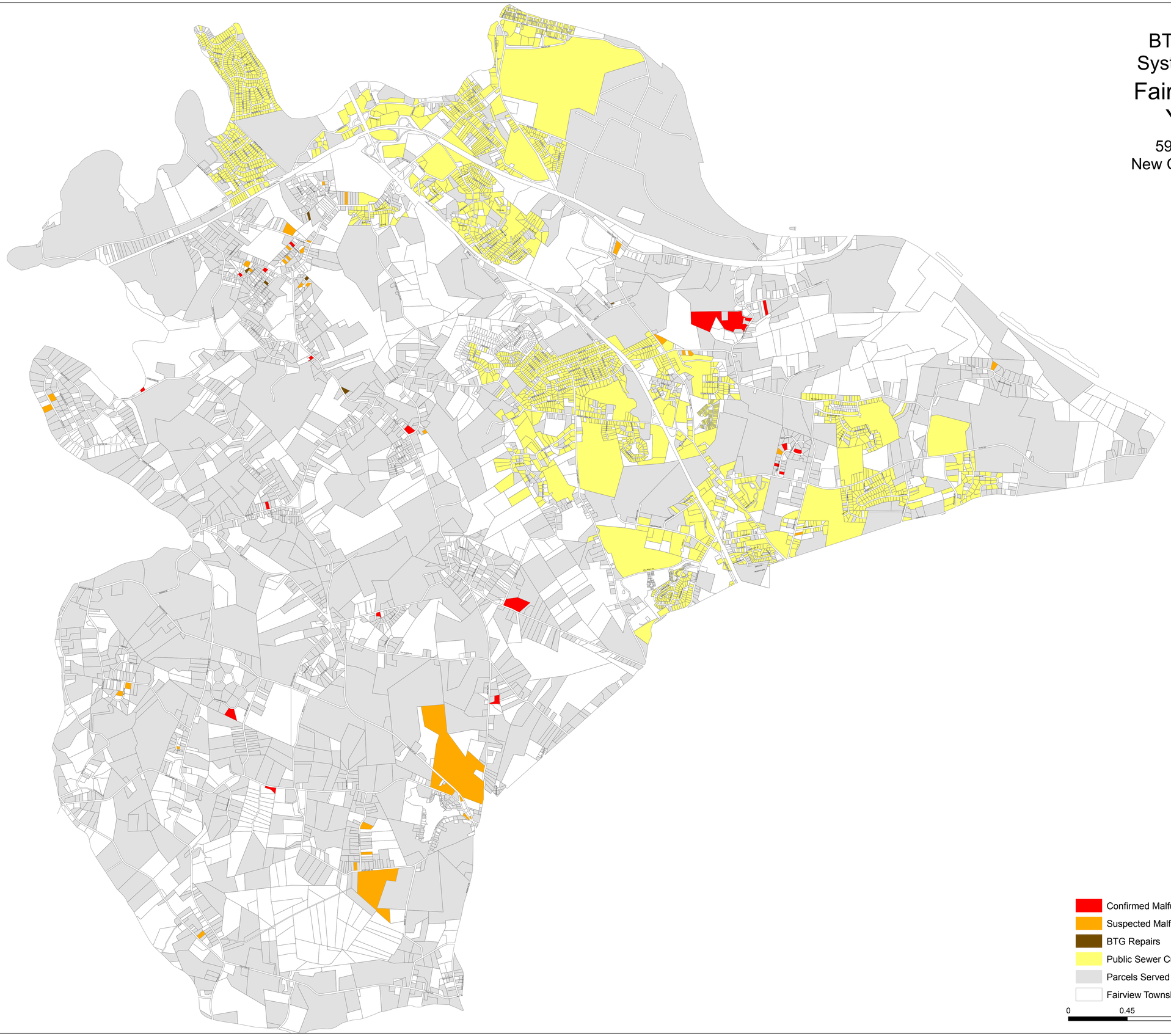


Revised April 7, 2008


N
OLD YORK RD
PLEASANT VIEW RD
FISHING CREEK RD
VFW OF US MEM HW
VALLEY RD
RIDGE RD
SALEM RD
YORKTOWN RD
WYNDAMERE RD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
19
21
22
23
24
Legend
Parcels
Vacant Parcels
Existing Developments
1 - Fairview Ridge
2 - Briarcliff Estates
3 - Old Colonial Woods
4 - Fairview Park
5 - Colonial Woods
6 - Mountainview Estates
7 - Irish Meadow
8 - Mountainview Terrace
9 - Green Hills
10 - Woodbridge Farms
11 - Olde Orchard Hills
12 - Deer Run
13 - Sandspur Estates / Farms
14 - Chestnut Ridge
15 - Fox Run
16 - Hickory Meadows
17 - The Woods at Deer Run
18 - Fairfield
19 - Redland Village
20 - Redland Acres
21 - Fox Hollow Estates
22 - Clover Crossing
23 - Ridgewood
24 - PRD
ACT 537 PLAN
Fairview Township
PLATE 6
POTENTIAL DEVELOPMENTS IN
SOUTHERN DRAINAGE AREA
APRIL 2009
1,700 850 0 1,700
Feet

ACT 537
BTG's and On-Lot System Malfunctions
Fairview Township
York County

599 Lewisberry Road
New Cumberland, PA 17070



N

- Confirmed Malfunctions
- Suspected Malfunctions
- BTG Repairs
- Public Sewer Customer
- Parcels Served by On-lot Systems
- Fairview Township Tax Parcels (2007)

0 0.45 0.9 1.8 Miles