Application of Pennsylvania-American Water Company for the Acquisition of the Wastewater Collection and Treatment System Owned by the York City Sewer Authority (the "Authority") and Operated by the City of York (the "City") (collectively "York")

66 Pa. C.S. § 1329
Application Filing Checklist – Water/Wastewater
Docket No. A-2021-3024681

22. Other requirements. Demonstrate compliance with the following:

b. For **wastewater** system acquisitions, provide a copy of the DEP-approved Act 537 Official Sewage Facilities Plans for the affected municipalities.

RESPONSE:

b. See documents pertaining to the DEP-approved Act 537 Official Sewage Facilities Plans for York attached as **Appendix A-22-b**.

Appendix A-22-b

York City Sewer Authority
Regional Act 537 Plan

March 1999

Prepared by:

BUCHART HORN, INC.

Consulting Engineers and Planners
445 W. Philadelphia Street, P.O. Box 15040, York, PA 17405

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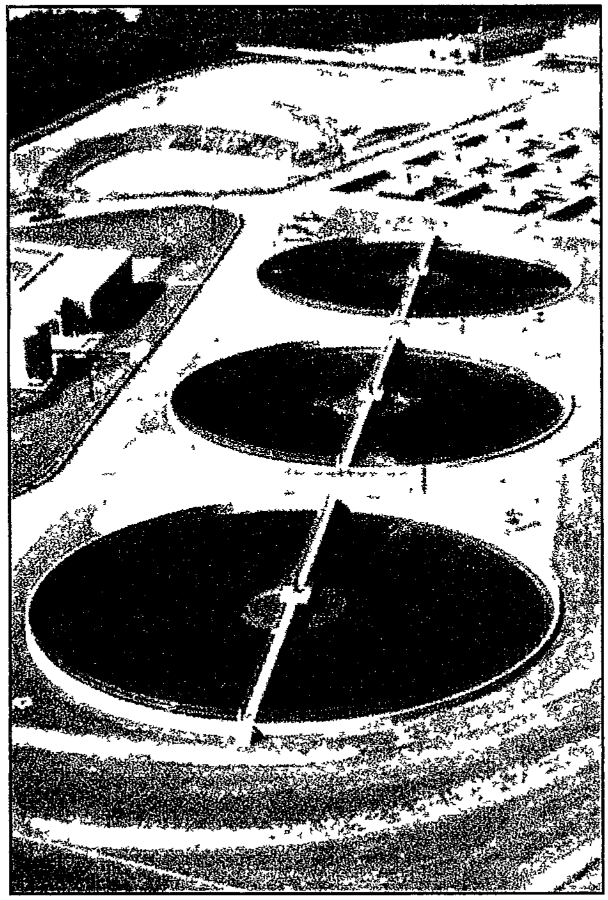

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Executive Summary

The York City Sewer Authority (YCSA) is a lease back authority which owns all of the public sanitary sewage collection and conveyance facilities within the City of York municipal boundary and the treatment facility located in Manchester Township. These facilities are leased to the City of York to operate and maintain.

The sanitary service area currently includes all or portions of the following seven municipalities:

- City of York
- Manchester Township
- North York Borough
- Spring Garden Township
- West Manchester Township
- West York Borough
- York Township

Each municipality owns and operates its own sanitary sewer collection system which is connected to the YCSA system. The City of York reads and maintains flow meters which measure and record wastewater entering the YCSA system from the connected municipalities. The connected municipalities own these meters and pay for maintenance cost.

In June 1998, the City of York entered into an agreement with Springettsbury Township to accept a portion of sewage flow collected in the Springettsbury system for transportation to, and treatment at, the City of York plant. This connection is expected to be completed and in operation by the year 2000.

Background

The YCSA recognized the need to develop a planning tool to properly manage its sewage collection system. Although the available capacity of the wastewater treatment plant is known from the recent upgrade, the capacity of the total collection system was unknown. Additionally, it was determined that for the YCSA to provide sufficient conveyance capacity for the connected municipalities, the future sewage disposal needs of the service area had to be determined.

In order to identify the total system capacity and to prepare for the future, the YCSA directed the preparation of a Regional Act 537 Plan. Included in this Plan preparation is the development of a sanitary sewer computer model for the interceptors located within the City of York and the expansion of the Geographic Information System (GIS) database presently managed by the City of York to include the sewer conveyance system. In addition, a capacity study of the treatment plant for potential redefinition of permitted flow is included to better address future planning.

Act 537 Planning
Act 537 was enacted in 1966 by Pennsylvania Legislature and requires that every municipality in the State develop and maintain an up-to-date sewage facilities plan. The plan should establish and predict current and future sewage disposal needs of the community; identify and evaluate alternatives available to meet those needs; and set forth a program to implement the recommended solutions.

The purposes of the Act 537 Sewage Facilities Plan as set forth by the Pennsylvania Department of Environmental Protection (PADEP) are:

1. *Protect the health, safety, and welfare of the citizens living in the municipality by correcting malfunctioning on-lot septic systems, overloaded treatment plants or sewer lines, and wild cat sewers.*
2. *Prevent future sewage disposal problems.*
3. *Provide for the protection of both the groundwater and surface waters of the Commonwealth.*

The content of the Act 537 Sewage Facilities Plan may be as simple as a program to address malfunctioning on-lot disposal systems for a small village or as complex as a plan to design and construct complete collection, conveyance and treatment facilities to serve an entire region. The scope of an Act 537 Sewage Facilities Plan as developed by PADEP allows a municipality or region to tailor the plan to its specific planning needs.

PADEP has produced "A Guide for Preparing Act 537 Update Revisions" which includes a "General Plan Content Checklist" for the municipality to use in developing its sewage facilities plan. A completed copy of the checklist indicating where each item can be found within this report is provided in Appendix 12.

General Act 537 Plans contain eight sections. Each of the eight sections correspond with the individual tabs of this report. The first four categories establish and predict the current and future disposal needs of the communities and are together called a *Needs Analysis*. The second four categories identify and evaluate alternatives for satisfying the needs of the municipality and, as a group, are called the *Alternatives Analysis*.

This report comprises both a Municipal Act 537 Plan for the City of York and the Regional Act 537 Plan as it relates to the provision of sewage conveyance and treatment for the entire sewer service area.

Responsibilities of the Connected Municipalities
The YCSA requested each municipality provide written flow projections by point of connection for the current, 5-year, 10-year, 20-year and ultimate growth horizons A copy of that correspondence is

provided in Appendix 9. The numbers provided by each municipality were incorporated into the flow projections developed under Section 4 of this plan.

Computer Modeling
A sanitary sewer computer model using the Sansys software system was developed as a part of this plan. The model is a mathematical representation of the existing interceptor system within the City of York capable of analyzing sewer capacities under a variety of weather and growth related scenarios. The model predicts where flows exceed sewer capacities and identifies the extent of the problem areas. It can also be used as a design tool for new sewer systems and create plan and profile sheets.

Flow metering was essential to calibrate the model and verify system flows at various strategic points throughout the collection system. Flow data required to develop a sewer model came from several sources including: equivalent dwelling unit (EDU) counts, zoning information, water usage records and a flow metering program.

The results of the model are key to the alternative analysis for conveyance systems presented herein.

Geographical Information Systems (GIS)
Existing City of York GIS software was used to develop a sewer system database management system. The advantage of using GIS is that graphical objects from sewer system mapping are linked to a database, providing quicker access and a larger array of querying capabilities. The computer model and GIS databases are compatible facilitating pictorial results of various computer model runs. This combination allowed for the development of the most efficient implementation program for the conveyance system.

Plant Capacity Evaluation for Possible Redefinition
A detail treatment plant process capacity evaluation was conducted using current organic loading concentrations and effluent permit limits. The evaluation also included a capacity calculation if a total nitrogen limit of 8 mg/l TKN is placed on the plant. The evaluation addressed thirty-six different liquid and solids treatment plant processes including transfer channels and piping.

Plan Summary

Findings

1. Service Area Needs

The flow metering program in conjunction with the needs assessment of the service area identified the total average daily flow requirement in million gallons per day (MGD) as follows:

Current (1997)	11.0 MGD
5-Year	18.9 MGD
10-Year	19.5 MGD
20-Year	20.4 MGD
Ultimate	23.1 MGD

The peak flow requirement for the treatment plant is identified as 67 MGD. The peak flow conditions within the conveyance system vary and are identified in Section 3 and in Appendix 3.

2. Wastewater Treatment Plant

The treatment plant evaluation identified that sufficient capacity exists to meet the projected ultimate average daily needs of the service area under current effluent discharge limits. Deficiencies were identified, however, in the plant's internal hydraulic transfer capacities and in certain treatment process capacities under peak flow conditions. Alternatives to address these deficiencies are identified and evaluated in Sections 5 and 6.

The evaluation also identified that, if needed, a redefinition of the plant's capacity from 26.0 MGD to 28.6 MGD is potentially possible under currently experienced organic loading concentrations and the current effluent limits. This redefinition should be pursued when the needs of the service area are projected to exceed 26.0 MGD.

In addition, the evaluation identified that the existing plant's rated capacity would be reduced to 18.6 MGD if an effluent total nitrogen limit of 8 mg/l TKN were added to the discharge permit. A major capital improvements project would be required to upgrade the plant for this type total nitrogen limit in order to maintain the current rated capacity of 26.0 MGD.

3. Conveyance System

The flow metering results and future flow projection were used in evaluating the conveyance system capacity in the computer model. Included in this evaluation were additional alternatives developed by York Township.

York Township, which is served by the YCSA system and the Springettsbury Township system, is updating its Act 537 Plan in parallel to this Plan. York Township is studying options of various flow divisions between the two sewer systems. This Plan provides alternative information for the Tyler Run interceptor for the York Township flow scenarios to the YCSA system. The discussion of these findings are presented in Sections 5 and 6.

The computer model results for the 20-year flow conditions identified slight surcharge conditions at various points in the existing interceptors. These surcharge conditions are identified in Appendix 3 and discussed in Section 5.

Infiltration and inflow (I/I) quantities are also estimated from the flow metering results and are presented in detail in Section 3.

Recommendations

1. Wastewater Treatment Plant

Based on the information contained in Sections 5, 6, and 8, Alternative Combination W is recommended for implementation. This alternative Combination includes the following:

a. Upgrade the Train 3 raw pumps and the primary effluent pumps and install a parallel force main to the existing 30" diameter force main.
b. Provide hypochlorite disinfection for the Train 2 peak flow overflow to the stormwater pump station.
c. Retrofit of the existing sand filters.
d. Increase the UV disinfection capacity by adding one additional channel.

The estimated cost of this Alternative Combination is:

Project Cost	$3,251,000
Present Worth	$3,527,000

Refer to Sections 5, 6, and 8 for more detail.

2. Conveyance System

Based on information contained in Sections 5, 6, and 8, the conveyance system recommendations are divided into two groups, recommendations addressing the Tyler Run Interceptor, and recommendations addressing the remaining interceptors.

<u>Tyler Run Interceptor</u>

The York Township Act 537 plan indicates that York Township should not consider conveying more flow to the Tyler Run Interceptor service area than identified by York Township's Alternative No. 1. See Section 5. Therefore, no improvements or upgrades need to be made to the Tyler Run Interceptor to accommodate the 20 year planning period. If future flows were to be conveyed to the Tyler Run Interceptor service area, then the improvements addressed in section 5 and 6 would be necessary.

Remaining Interceptors
The recommended plan for the conveyance system includes the placement and monitoring of surcharge indicators in key manhole locations. Based on the readings recorded by these indicators, a decision can be made as to whether an interceptor should be upgraded or a more intensive effort to reduce I/I should be pursued.

This plan recommends that an I/I evaluation survey be implemented. The areas are identified in Section 3.

Implementation
The institutional arrangements necessary to implement this plan already exist. The Lease Agreement between the YCSA and the City of York and the Intermunicipal Agreements between the City of York and the connected municipalities include provisions for implementing capital improvements to the sewage facilities.

The YCSA has sufficient funds available in its current funds to implement the capital improvements recommended by this plan. No adjustment in the system user fees are anticipated by the implementation of this plan.

Based on correspondence with PADEP, it appears that a Part I NPDES permit modification will be required for the implementation of Alternative 4A. Alternative 4A includes the disinfection of a stormwater and treated effluent discharge to the previous 001 plant outfall during extreme wet weather conditions.

Implementation Schedule
1. Wastewater Treatment Plant
   Implementation of Alternatives 2C, 5C and 6B of the recommended Alternative Combination should occur within the next 18 to 24 months. Implementation of alternative 4A should occur with the Part I NPDES permit renewal.

2. Collection System
   Installation of surcharge monitors and additional I/I evaluation should proceed immediately.

Resolution of Adoption
The Council of the City of York voted 5 to 0 in favor of adopting the York City Sewer Authority Regional Act 537 Plan. Please refer to Appendix 15 for a copy of the adopted resolution. The connected municipalities have also been asked to adopt or provide written concurrence of this plan.

Municipal and Agency Review Comments
Appendix 14 includes a transcript of the comments received from the York County Planing Commission and from the connected municipalities and the responses to these comments.

Proof of Public Notice and 30-Day Comment Period
The public comment period was advertised on February 8, 1999. The Act 537 Plan was available for review at the City Clerk's Office from February 8 to March 9, 1999. There were no comments received from the public. Please refer to Appendix 14 for proof of public notification and letter from the York City Sewer Authority's solicitor confirming that no comments were received.

Complete Project Implementation Schedule

Wastewater Treatment Plant	
Mid to Late - 2000	2C - Upgrade train 3 raw wastewater pumps and primary effluent pums
2001, in conjunction with NPDES renewal	4A- Upgrade storm water discharge and install hypoclorite disinfection
Mid to Late - 2000	5C - Retrofit existing sand filters
Mid to Late - 2000	6B - Increase UV disinfection capacity
Collection System	
March 1999	Installed surcharge monitors
When Needed (to be indicated by surcharge monitoring results)	Improve capacity restrictions

Section 1

Previous Planning

Sewage Facilities Planning

Previous Wastewater Planning
The following wastewater planning studies and activities have been undertaken since 1970 to evaluate the York City Sewer Authority's (YCSA) wastewater treatment, collection, and conveyance facilities:

Wastewater Treatment Plant Planning

April 1972	Advanced Wastewater Treatment Study. Prepared by Albright & Friel, Inc.
July 1977	City of York Regional Wastewater Facilities Plan (Section 201 PL 92-500) - prepared by Betz Environmental Engineers, Inc.
June 1980	Plan of Study for Revisions to York Regional Wastewater Facilities Plan - prepared by Betz Converse Murdoch. Inc.
January 1983	York City Sewer Authority, Wastewater Management Facilities Plan, Final Draft - prepared by Betz Converse Murdoch. Inc.
June 1984	York City Sewer Authority, Wastewater Management Facilities Plan, Addendum - prepared by Betz Converse Murdoch. Inc.
July 1984	Draft Alternative Evaluation Report for Maintenance Facility, Wastewater Treatment Process, Sludge Disposal, Computer Control and Instrumentation - prepared by Buchart-Horn, Inc.
August 1986	Summary of Findings for Advanced Treatment Facilities Proposed for York , PA - prepared by U.S. Environmental Protection Agency Advanced Treatment Task Force

The following paragraphs discuss each of these documents describing the recommendations therein and the status of each.

April 1972, Advanced Wastewater Treatment Study
The study evaluated treatment processes that would meet pending effluent requirements for nitrification and reduced BOD_5. It recommended innovative granular carbon adsorption bed technology for the plant upgrade. This plan was not implemented because of questions about its effectiveness and anticipated high operating costs.

Previous Planning

July 1977, City of York Regional Wastewater Facilities Plan (SECTION 201 PL 92-500)

The City of York Regional Wastewater Facilities Plan was prepared in accordance with Section 201 of the Federal Water Pollution Control Act Amendments of 1972 and was intended to satisfy the requirements of Step I in U.S. Environmental Protection Agency's (EPA) grant program for the construction of publicly owned treatment works.

At the time of that report, the York City Wastewater Treatment Plant (WWTP) expansion was under construction. The plant's capacity was being expanded from 18 to 26 million-gallons-per-day (MGD) by the installation of an 8 MGD pure oxygen plant and a multi-hearth furnace to improve solids handling.

The YCSA had received grant approval from the Pennsylvania Department of Environmental Resources, now Pennsylvania Department of Environmental Protection (PADEP), to expand the WWTP in September 1975. However, the YCSA was also pursuing an EPA grant to upgrade the facility. Therefore, this study was undertaken to evaluate treatment processes for upgrading the newly expanded plant. The study recommended an activated sludge upgrade. The upgrade was delayed because the Authority's project did not have an adequate priority rating to justify an EPA Grant.

June 1980, Plan of Study for Revisions to York Regional Wastewater Facilities Plan

In 1980, the treatment plant upgrade was given a higher rating thus making it eligible for a construction grant. The June 1980 Plan of Study for Revisions to York Regional Wastewater Facilities Plan was accomplished because:

- There were considerable developments in treatment technology since the 1977 study was completed.
- PADEP was evaluating allowable discharges to the Codorus Creek and a change in effluent criteria was expected.
- Limited acreage at the existing WWTP site would require innovative technology to accomplish tertiary treatment.

The June 1980, Plan of Study for Revisions to York Regional Wastewater Facilities Plan became the scope of services for a new WWTP upgrade evaluation.

January 1983, Wastewater Management Facilities Plan Final Draft

The January 1983, Wastewater Management Facilities Plan Final Draft provided an evaluation of alternatives for the upgrade of the wastewater treatment facilities and the possible alternative of moving the discharge point to the Susquehanna River, thus avoiding the more stringent effluent limits.

June 1984, Wastewater Management Facilities Plan Addendum

The June 1984 Plan Addendum provided additional alternatives to meet the proposed effluent limits. An alternative which included a split of the effluent discharge of 8 MGD at the York WWTP site and 18 MGD to a point downstream near the Springettsbury WWTP via a 42 inch diameter pipe was added to the plan. This alternative was tentatively selected as the most cost effective alternative. The Addendum also noted that the alternative for an upgrade of the plant with total discharge at the York plant site would be cost effective if federal funding for the project became available. EPA grant funding did become available and the YCSA ultimately selected the alternative of a total plant upgrade with all 26 MGD being discharged at the York plant site.

July 1984, Draft Alternative Evaluation Report

Once the availability of an EPA grant for the upgrade project was secured, the YCSA proceeded with the design phase. Questions about the findings of the Wastewater Management Facility Plan report were raised along with questions about plant improvement needs that were not addressed by that Plan. The YCSA, therefore, authorized an alternative evaluation study. The July 1984 Draft Alternative Evaluation Report for Maintenance Facility, Wastewater Treatment Process, Sludge Disposal, Computer Control and Instrumentation was accomplished at the request of the YCSA. The July 1984 Report evaluated the facilities required to meet the PADEP imposed effluent requirements, including nitrogen removal, and to provide reliable plant operation and maintenance facilities. The recommendations of that report were the basis for the plant upgrade design.

August 1986 Summary of Findings for Advanced Treatment Facilities Proposed for York, PA

EPA's August 1986 Summary of Findings for Advanced Treatment Facilities Proposed for York, PA report included the following recommendations:

- Provide federal funding for the proposed A/O process.
- Provide federal funding for the UV disinfection system.
- Defer federal funding for the proposed tertiary filters (the filters were subsequently found eligible for funding after the completion of the construction).
- PADEP should investigate relaxing disinfection requirements during the cold weather months.

Collection and Conveyance System Planning

August 1970	Report and Study on Location and Quantity of Combined Discharges. Prepared by Albright & Friel, Inc.
April 1974	Infiltration/Inflow Analysis Phase I, - prepared by Betz Environmental Engineers, Inc.

Previous Planning

August 1977	Sewer System Evaluation Survey, Phase II Infiltration/Inflow Analysis - prepared by Betz Environmental Engineers, Inc.
March 1979	Sewer System Evaluation Survey, Addendum - prepared by Betz Converse Murdoch. Inc.
October 1982	Interceptor Sewer Capacity Management Study - prepared by Betz Converse Murdoch. Inc.
March 1995	Update of Interceptor Facilities Study of Pennsylvania Avenue Interceptor - prepared by Buchart-Horn, Inc.
June 1996	Roosevelt Avenue Sewer Study, Phase 3, Alternative Evaluation - prepared by Buchart-Horn, Inc.

The following paragraphs discuss each of these documents describing the recommendations therein and the status of each.

August 1970, Report and Study on Location and Quantity of Combined Discharges

This study located combined sewers in York and quantified the flow from these sewers. The combined sewers in downtown York were eventually separated.

April 1974, Infiltration/Inflow Analysis, Phase I

The Infiltration/Inflow Analysis, Phase 1 report analyzed the sewage collection system to determine if extraneous water was entering the system and whether it was infiltration or inflow. The resulting analysis recommended an I/I survey be conducted. The resultant study is discussed below.

August 1977, Sewer System Evaluation Survey, Phase II

The Sewer System Evaluation Survey, Phase II included York City sewers and the tributary sewers to six adjoining municipalities. The following activities were accomplished under this study:

- Physical Survey
- Key Manhole Monitoring
- Physical Inspection
- Inflow Investigation
- Search for Illegal Connections

The recommendations of the report were as follows:

- Apply for a grant to separate the Duke Street combined sewer system.
- No further I/I analysis was recommended as I/I was found to be non-excessive.
- Correct identified sewer deficiencies when performing public work

activities in the defined areas of excess I/I.
- Leave illegal house connections intact.

August 1979, Sewer System Evaluation Survey, Addendum
This survey was an Addendum to the August 1977, Sewer System Evaluation Survey, Phase II. Upon review of the first survey, PADEP, felt there were additional areas where excessive I/I was entering the City's sewer system. The Sewer System Evaluation Survey, Addendum presented the results of the study of the additional areas noted by PADEP, and it included a plan of action. The report confirmed excessive I/I in the Tyler Run subarea, downtown York subareas and the Rathton Road area including part of Spring Garden Township. A complete rehabilitation program that was designed to achieve a 40% reduction in I/I was recommended.

The following activities were accomplished in the early 1980's:
- Performed smoke testing in the downtown area.
- Performed TV inspection and grouting.
- Removed the diversion valve at Mason Ave. and Pershing Ave.
- Eliminated the Clarke Ave. and Beaver St. overflow.
- Eliminated the Duke Street combined sewer system through the construction of new sanitary sewers in 1985.

October 1982, Interceptor Sewer Capacity Management Study
This study provided the results of a computer model analysis of the major interceptors in the York regional sewer system. The model which analyzed both existing and future flows included the following interceptors and findings:

Upper Codorus Creek Interceptor: "Adequate for present and future flows, through 1999, but surcharging in the Lower Codorus Creek Interceptor creates a backwater causing surcharging in the Upper Codorus Creek Interceptor." The Upper Codorus Creek Interceptor replacement was completed in 1994.

Lower Codorus Creek Interceptor: "This interceptor is overloaded downstream of the Tyler Run Interceptor connection." The Codorus Creek Interceptor replacement was completed in 1988.

Tyler Run Interceptor: "Approximately 3,300' of the lower portion of this interceptor is overloaded during peak wet weather conditions." The Tyler Run Interceptor replacement was completed in 1987.

West York Interceptor: "Adequate for present and future flows." The West York Interceptor along Richland Ave. was combined with the City of York's interceptor during the Upper Codorus Creek Interceptor project in 1994.

The study indicated that relief sewers were the "obvious solution to the interceptor overloading problem," however it also stated that an alternative analysis found that 30% of the I/I could be removed thus eliminating the overloading problems. Further study was recommended.

March 1995, Update of Interceptor Facilities Study of Pennsylvania Avenue Interceptor
A study of the available and needed capacity of the Pennsylvania Avenue Interceptor was completed and presented in the March 1995 report. The study concluded that the interceptor was undersized in the area of Route 30 for the existing and the near future additional flow and undersized along Pennsylvania Avenue to Willis Run for ultimate flow. A two-phased approach was recommended for the upgrade of the interceptor. Phase I, which included replacement of the interceptor in the Route 30 area, was completed in 1997. Phase II, which includes the remaining sections of the interceptor studied, will be scheduled once flow increases dictate the need.

June 1996, Roosevelt Avenue Sewer Study, Phase 3, Alternative Evaluation
A study of the available and needed capacity of the Willis Run interceptor and Roosevelt Avenue sewer from the connection point at the Codorus Creek Interceptor to the York Industrial Park north of Route 30 was completed and presented in the February 1996 report. The study concluded that many of the interceptor manhole sections are undersized. A phased approach was recommended. Phase I includes the replacement of the smaller diameter pipe (8", 10", 12") with larger piping. Phase I is scheduled for design and construction 1998 through 1999. Phase II includes replacement of the larger diameter piping and will be scheduled once flow increases dictate the need.

Other Sewage Planning Facilities
Other planning documents include state, county and local planning which control sludge and septage management, water systems management and sewage facilities management.

1993, York County Sludge And Septage Management Plan
The County plan prepared in 1993 included a regional management strategy. It recognized that regional plants, including the York plant, had developed effective management programs, and determined that sludge generators should retain control over these programs. The County Solid Waste and Refuse Authority was to provide public oversight and license and track the collection, transportation, and disposal of York County sludge and septage. The City has operated its program in compliance with the plan. Haulers have been licensed and loads have been manifested in accordance with the plan and the resulting County ordinance.

Previous Planning

1981, York County Water Plan
The York County Water Plan of 1981 addressed water needs in the study area. This plan is largely obsolete and a new plan is currently under preparation by the York County Planning Commission. The 1981 plan and the 1998 draft plan indicate that water resources should not limit growth in the area. The York Water Company is the primary water supplier and draws water from the south and east branches of the Codorus Creek. Two raw water reservoirs, Lake Williams and Lake Redman, on the east branch provide 2.5 billion gallons of reserve capacity. The water company reports that the installation of a bascule gate on the top of the Lake Redman reservoir is the next step to increase storage capacity. This project may be undertaken in the next five years. The supplier has rights to create a third reservoir on the east branch of the Codorus Creek if the need for additional reserve capacity becomes necessary. The supplier also has long term plans for withdrawals from the Susquehanna River if and when the Codorus Creek source becomes inadequate. The potential for development of additional storage and sources is dependent not so much on anticipated growth within the planning area, which is largely served by the water utility, as on the increasing service area of the utility. This service area is extending broadly from the metropolitan area.

Planning Module Revisions
Department of Environmental Protection sewer planning modules and module exemptions for the York City Wastewater Treatment Plant are submitted to the City of York Bureau of Planning and Engineering for review. The City reviews the modules and module exemptions for wastewater treatment capacity and conveyance capacity for a five year horizon to comply with the Pennsylvania Sewage Facilities Act. Collection capacity is reviewed by the municipality within which the proposed subdivision or land development is proposed. Over the past three years the York City service area has averaged twenty-six sewer modules or sewer module exemptions per year.

Municipal Planning Activities

The status of the municipal planning activities of the City of York are discussed in the following sections. Other municipalities tributary to the York City Sewer Authority facilities have entered into inter-municipal agreements with the City of York that provide limits to their contributions. These contributing municipalities are responsible for developing their planning activities in accordance with federal, state and local requirements.

Comprehensive Planning
The following sections summarize planning activities related to the City of York's comprehensive planning, zoning, subdivision and land development processes.

City of York Strategic Comprehensive Plan
The City of York is updating its strategic comprehensive plan, a process that began in 1996 and is expected to be completed in 1998. The City of York's current comprehensive plan dates from 1967.

Utilizing a series of intensive community meetings and subsequent technical advisory committee meetings, the draft updated plan examines and prioritizes community needs and goals for the target year 2015 in the following topical areas: housing, utilities, transportation, land use and historic preservation, community services, economic development and civic infrastructure. A background report documenting existing conditions and a technical advisory committee report documenting research and strategy recommendations were developed for each of the seven topical areas. Action plans and policy to implement the recommended strategies, are currently being developed for each topical area.

The unifying conceptual document for the strategic comprehensive plan is the vision report, which identifies a city-wide vision and visions for four planning areas and four special planning districts. The city-wide vision uses a three-tier ring approach to provide a framework for the more detailed key vision concepts for each planning area and special planing districts. The three-tier rings includes: the downtown expansion area, inner rıng neighborhoods surrounding the downtown and outer ring neighborhoods. The planning areas, created based on socioeconomic data and land uses, and the special planning districts, which may be thought of overlay districts representing areas of the City with specific issues such as the rail corridor or the college area, each have overall, economic and neighborhood visions and goals.

The city-wide vision for 2015 focuses on creating a vibrant urbanized community in which to live, work, play and visit by:

- Providing housing opportunities for an economically and culturally diverse community.
- Providing safe and efficient access to and within the city for all

modes of transportation.
- Creating healthy, safe and attractive neighborhoods, enhancing the quality of life by providing quality public services.
- Creating a healthy local and regional economy.

This city-wide vision will be achieved through economic and neighborhood directives, such as investment opportunities, incentives, public services and infrastructure improvements in the special planning districts, regional cooperation, a competitive labor force, strengthening residential neighborhoods, public space maintenance, promoting historic preservation, enhanced education opportunities, housing preservation and rehabilitation. Technical advisory committee reports and action plans for each of the seven topical areas detail how this vision is to be accomplished.

York County Comprehensive Plan (update 1995-1997)
The York County Comprehensive Plan, a series of six documents finalized between 1995 and 1997, updates the 1992 county comprehensive plan. The documents comprising the York County Comprehensive Plan are: York County Growth Management Plan (1997); York County Transportation (1996); York County Housing (1996); York County Natural Areas Inventory (1996); York County Community Facilities (1995); and York County Growth Trends (1995). The York County Growth trends and the York County Growth Management Plan most closely relate to sewer planning.

York County Growth Trends acknowledges that, historically, York County has consistently experienced population growth, increased development or subdivision activity and subsequent loss of farmable land, especially in recent years. Further, that controlled growth or directed growth is hampered by the, arguably, disjointed planning process in Pennsylvania. In recognition of these difficulties, the comprehensive plan goals include protecting and preserving natural resources, directing growth and development, and coordinating planning at various governmental levels. These goals speak to the desire to permit and encourage development in defined areas, preserve non-urban or development landscapes and provide public services in concert with this aim.

The York County Growth Management Plan presents the county-wide development plan based on the above goals. This overarching land use policy relies on recognizing topographical or environmental limitations, building on existing municipal land use regulations, addressing sprawl into rural areas, and improving governmental cooperation. Growth areas, with a twenty year horizon, have been identified in the county comprehensive plan in an effort to achieve these goals and confine both urban and suburban development. (Rural areas and agricultural lands are also addressed in the plan; however, these two areas are not discussed herein as these land use patterns do not apply to the City of York, or the immediate surrounding metropolitan area.)

The City of York, in addition to portions of twenty surrounding municipalities, is located within a primary growth area. The draft York City Comprehensive Plan is consistent with county comprehensive planning goals. City development visions and goals are intended to capitalize on its central location, available rail service, proximity to centralized economic activity and availability of a sound, viable infrastructure for both utilities and public services. Current zoning promotes a wide variety of land uses in the City in support of the purpose of a primary growth area. Environmentally sensitive areas in the City are primarily associated with the flood plain which, where it is not channelized, is zoned and used for open space and public recreation uses.

The City's land use and development goals are consistent with the county comprehensive plan. (Refer to Drawing No. 2, City of York Land Use Map, 1998, Appendix 1.)

Zoning

The City's amended Zoning Ordinance updates the 1983 Zoning Ordinance. The ordinances were adopted on December 19, 1995. The 1995 Zoning Ordinance identifies fifteen districts: four residential districts, five commercial districts, two industrial districts, two special districts and two overlay districts. The location and purpose of each district is described in the table below, followed by a description of each district. (See Drawing No. 5, City of York Zoning, Appendix 1.)

Table 1-1
Zoning District Location and Purpose

Zoning District	Location of District	Purpose of District
RS1 - Single Family Detached Residential District	Areas where single family detached residential development has already occurred, and in logical extensions to these areas.	To promote and encourage a suitable and safe environment for family life by providing only for single family detached residences and residential support land uses.
RS2 - Single Family Attached Residential District	Areas where the construction of single family attached dwellings has already occurred and is predominant.	To promote and encourage a suitable and safe environment for family life by providing only for single family detached and attached residences and residential support land uses.
RM - Mixed Residential District	In mixed use areas where a high degree of public services, business and office uses are available or could be easily provided, and in which little demand exists for use by retail or industrial interests.	To encourage their development and redevelopment into viable urban areas where a mix of single family and multiple family dwellings and appropriate support and accessory uses are provided.
RO - Residential Office District	Along major streets where offices already exist or residences that are under heavy pressure for commercialization.	To maintain economic and social vitality by encouraging, in addition to residential uses, only those nonresidential uses that are closely compatible with residential uses in both appearance and intensity of use, and by making maximum utilization of existing buildings.
CN - Commercial Neighborhood District	Within residential areas to provide locations for retail sales, personal service and offices.	To provide for the routine shopping needs of surrounding residential areas.
CG - General Commercial District	Along arterial or commercial streets where commercial uses already are predominant and are outside of established retail centers.	To provide for independent retail and business activities that require a central location.
CH - Commercial Highway District	At or near interchanges or intersections of regional arterial highways or along appropriate portions of these same highways.	To provide for free-standing retail and business activities that serve a regional market, are not normally part of a shopping center or complex, or serve the highway retailer.
CBD - Central Business District	At the center of the City in established retail and business areas and extensions thereof.	To provide for business and office activities, tourist and convention activities, and high intensity retail sales activities.
CW - Commercial Waterfront District	To allow for special water-oriented commercial activity in the central area of the City bordering on the Codorus Creek.	To incorporate normal commercial activity and tourist-related commercial activity in an urban park setting of the Codorus Creek.
IH - Industrial Highway District	Areas where industrial development has already occurred and rail freight service is available.	To provide employment to the region and contribute to the tax base of the City, and encouraged by minimal controls on use and intensity of use through accepted standards for environmental and aesthetic control when abutting residential districts.

Table 1-1
Zoning District Location and Purpose

Zoning District	Location of District	Purpose of District
IL - Light Industrial District	Areas lacking rail accessibility and adjacent to established or proposed residential areas.	To provide employment to the region and contribute to the tax base of the City. Development shall be compatible with surrounding or abutting residential districts with suitable open spaces and landscaping to limit external effects on surrounding low intensity development.
I - Institutional Special District	Areas where a major institution, such as a college or hospital, has a significant influence on land use in surrounding areas.	To provide defined areas for the location of parent institutions as well as appropriate accessory and ancillary uses.
OS - Open Space Special District	Areas topographically unsuited to development where public services cannot be reasonably provided, or on large areas of publicly owned land.	To provide public protection against potential flooding, fire or erosion and to prevent intensive development.
EDA - Enterprise Development Area Overlay District	Areas within the rail corridor.	To provide a permissive zone for development of commercial and industrial uses, maximize the development potential of vacant and underutilized industrial, commercial and institutional buildings through adaptive reuse and integrated development, minimize the impact on adjacent residential neighborhoods, and protect from encroachment incompatible land uses.
FP - Flood plain Overlay District	The identified flood plain area subject to inundation by the 100-year flood as identified on Type 15 Flood Insurance Study dated December 1976 and accompanying maps.	To promote health, safety and welfare of the community, encourage utilization of appropriate construction practices to prevent or minimize future flood damages, protect water supply and natural drainage, reduce financial burden on the community, and comply with federal and state requirements.

Residential Districts

The four residential zoning districts comprise 55.6% of the City's land area. The districts are, in order of increasing land use intensity: single family detached, single family attached, mixed residential and residential office.

Single family detached residential districts (RS1) comprise approximately 0.7 square miles, or 13% of the City's area. Permitted uses by right are limited to single family detached dwellings, some limited institutional uses, such as churches, schools and public recreation facilities, and limited utility facilities. Commercial communication transmitting and receiving facilities are permitted by special exception review. Accessory uses such as home offices, are permitted. The minimum lot area for permitted principal uses is 6,000 square feet yielding a maximum density of 7.3 lots/acre.

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Single family attached residential districts (RS2) comprise approximately 1.7 square miles, or 32% of the City's land area. Permitted uses by right include residential condominiums and single family attached and detached dwellings. In addition to the utility and institutional uses permitted in RS1 districts, RS2 districts also permit cultural facilities, nursing facilities, and police and fire stations. This district also provides for more uses by special exception including: multiple family dwellings, conversion of non-residential properties to residential uses, child care centers, home occupations, group homes and rooming houses. Accessory uses, such as adult care homes, bed and breakfasts and home offices, are permitted. Minimum lot areas depend on land use and range from 2,000 square feet to 6,000 square feet resulting in a maximum density of 21.8 to 7.3 lots/acre.

Mixed residential districts (RM) comprise 0.4 square miles, or 7% of the City's land area. Permitted uses by right include those uses permitted in RS1 and RS2 districts, plus additional institutional uses, such as business colleges and trade schools, clubs, and private non-commercial recreation facilities. Business, professional, public service and financial offices and mortuaries are permitted by right. In addition to those uses permitted by special exception in RS1 and RS2 districts, adult care facilities, group quarters, emergency shelters, personal care facilities, mom and pop grocery stores, and home occupations among others are permitted by special exception. Accessory uses include those permitted in RS1 and RS2 districts with a few additions. Minimum lot areas depend on use and range from 1,800 square feet to 6,000 square feet resulting in maximum densities of 24.2 lots/acre to 7.3 lots per acre.

Residential office districts (RO) comprise 0.2 square miles, or 3% of the City's land area, and are the most permissive of the residential zoning districts. All uses permitted in the previously discussed residential districts are permitted as well as medical care buildings and clinics. Minimum required lot sizes range from 2,000 to 6,000 square feet resulting in maximum densities of 21.8 to 7.3 lots/acre.

Commercial Districts

The five commercial zoning districts comprise 15.5% of the City's land area. The districts are, in order of increasing land use intensity: commercial neighborhood, general commercial, commercial waterfront, central business district and commercial highway.

Commercial neighborhood districts (CN) comprise 0.1 square miles, or 2% of the City's land area. Retail sales, personal services, offices, and eating establishments are permitted commercial uses in this district. Apartments combined with a commercial use, condominiums and single family dwellings are permitted as well as institutional uses such as churches, clubs, police and fire stations and certain care facilities. A wider variety of utility and transportation uses are permitted in this district compared to the residential zoning districts. Special exception uses are similar to those permitted in residential office districts. Minimum required lot sizes range depend upon land use and range from 1,000 to 2,000 square feet resulting in maximum densities of 43.6 to 21.8 lots/acre.

General commercial districts (GC) comprise 0.2 square miles, or 4% of the City's land area. This district permits additional residential, commercial and institutional uses than the commercial neighborhood district and also permits some industrial uses, such as warehousing and distribution and wholesaling, industrial parks, self-storage, and a variety of utility or transportation uses. Special exception uses include multiple family dwellings, emergency shelters, and some commercial uses, such as vehicle repair and service stations. Minimum required lot sizes vary with land use and range from none to 4,000 square feet.

Commercial waterfront districts (CW) comprise 0.1 square miles, or 2% of the City's land area. This district allows, by right, a variety of residential uses and institutional uses and limited commercial uses that focus on office, retail, and eating establishments. Special exception review is required for hotels and motels, multiple family dwellings and personal care facilities. Minimum required lot areas range from none to 1,800 square feet depending upon the land use.

The central business district (CBD) comprises 0.2 square miles, or 4% of the City's land area. Permitted uses by right include a variety of institutional uses, various commercial retail uses, shopping centers, parking garages and transportation terminals. Special exception review is required for the establishment of multiple family dwellings, group homes, conversion apartments, certain institutional care facilities, hotels and motels, warehousing distribution and wholesaling and self-storage. Minimum required lot areas range from none to 1,600 square feet.

Commercial highway districts (CH) comprise 0.2 square miles, or 3% of the City's land area. Permitted uses by right or special exception include a wide variety of intense commercial retail and sales uses, including eating establishments, vehicles sales and repair, shopping centers, limited institutional uses, such as clubs and police and fire stations, and the industrial uses of warehousing and distribution and self-storage. Residential uses are limited to apartments combined with commercial uses. The minimum required lot area is 20,000 square feet.

Industrial Districts

The two industrial zoning districts comprise 18.7% of the City's land area. The districts are, in order of increasing land use intensity: light industrial and heavy industrial.

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Light industrial districts (LI) comprise 0.5 square miles, or 9.5% of the City's land area. This district limits the types of residential and commercial uses, and permits some utility or transportation uses. Permitted uses include: crematoriums, industrial condominiums, light manufacturing, self-storage, warehousing and distribution and wholesaling, vehicle sales and rental, repair service stations, and research and testing laboratories. Some uses, such as mobile home parks, child care centers, eating establishments and industrial parks are permitted by special exception. The minimum required lot area for a permitted principal use is 20,000 square feet.

Heavy industrial districts (IH) comprise 0.5 square miles, or 9.2% of the City's land area. This district permits some commercial uses, some institutional uses such as business colleges and jails, and a wider variety of utility and transportation uses. In general, the same industrial uses permitted in light industrial districts are permitted in this district as well as bulk plants, heavy manufacturing and scrap yards. The minimum required lot area for a permitted principal use is 20,000 square feet.

Special Districts
There are two special districts, institutional and open space, which together comprise 10% of the City's land area.

Institutional districts (I) comprise 1% of the City's area, approximately 0.1 square miles, and permit limited residential uses, such as dormitories, group homes and retirement villages, and provide for a wide variety of institutional uses. The only permitted commercial use is the professional office. Special exception review is required for the conversion of non-residential structures to dwellings, and the establishment of eating and personal care facilities. The minimum required lot area for a permitted principal uses is 6,000 square feet.

Open space districts (OS) comprise 0.5 square miles, or 8.9% of the City's area, and permit only a limited number of uses. Horticulture, public buildings, and public recreation and entertainment facilities are permitted principal uses by right. Animal husbandry may be permitted by special exception review, and accessory uses, such as crop farming, kennels and stables are permitted by right. Most of the 100-year flood plain not channelized within Army Corps of Engineers structures is located within the open space zoning district.

Overlay Districts
Two overlay districts, the Enterprise Development Area and 100-year flood plain, supplement the underlying zoning districts. The two overlay districts affect approximately 0.8 square miles or 15% of the City's land area.

The enterprise development area-district (EDA) comprises approximately 0.6 square miles, or 12% of the City's land area, and is generally located adjacent to rail lines. Permitted uses are governed by the underlying zoning district with industrial recycling, single family dwellings and multiple family dwellings requiring special exception review. Certain nuisance uses, like fat rendering plants, landfills and junkyards are specifically prohibited. There is no required minimum lot area for this overlay district.

The floodplain district (FP) comprises approximately 0.2 square miles, or 3% of the City's land area, and coincides with the City's federally identified 100-year flood plain adjacent to Codorus Creek, Willis Run, Mill Creek and Tyler Run. Permitted uses are governed by the underlying zoning district. This overlay district regulates the use of flood plain areas by requiring additional planning for uses, safety and construction requirements for structures, and a rigorous review process for proposed activities located in this area. Most of the City's flood plain district is located within Army Corps of Engineers structural facilities or is zoned open space and is used for public recreation areas.

City of York Ordinances Regulating Sewer Provision

The City of York is an older urban community. Most of its lands are currently developed. The City of York does not establish lot sizes related to sewer disposal or service; all uses are required to tap into the City of York public sewer system. §932.09 of the City of York Codified Ordinances specifically prohibits draining or depositing sewage into cesspools, wells, septic tanks, drain fields or other sewage or drainage receptacles, and prescribes that such facilities must be cleaned, filled and sealed. No on-lot sewer systems are permitted in the City, nor are any in operation to the knowledge of City staff. §932.10 prohibits the construction of such facilities.

Further, Part Nine, Streets, Utilities and Public Services Code, Title Three, Public Sewers, details how connection may be made to the public sewer system to ensure compliance with federal and state regulations and provide for public health. §1336.07 of the City of York subdivision and land development ordinances requires developers to provide a complete sanitary sewer system to connected to the City sanitary sewer system. §1306.06 of the Zoning Ordinance addresses sanitary sewer connections as well. New subdivisions must have sanitary sewer lateral connection (unless waived by the City Engineer, as may occur for parking lots) and requires that private and public lines meet the construction standards of the York City Sewer Authority.

Land Use Planning and Zoning and Its Consistency With Protecting Environmentally Sensitive Areas

(With special attention to: public ground-surface water supply sources; recreational water use areas; groundwater recharge areas; industrial water use; and wetlands.)

The City of York, due to its historically dense population and development patterns, does not have large tracts of undisturbed environmentally sensitive lands. Most of the City is developed with the exception of approximately fifty-four acres in the York City Business and Industry Park.

As previously discussed on lot sewage disposal is not permitted in the City. §1308, Environmental Standards, of the Zoning Ordinance references the stormwater and erosion and sediment control ordinances, the state Clean Stream Law, and wetlands among other non-water related topics. The City has adopted the Commonwealth Solid Waste Management Act as its own, including any legislation that may be promulgated from that Act. In addition, the City code references the handling of hazardous waste under 40 CFR 261. Design standards of the subdivision and land development ordinance require natural drainage ways or watercourses to be preserved *via* drainage easements. As previously mentioned, the Codorus Creek is channelized as are portions of Willis Run and Poor House Run. Sections of the smaller watercourses in the City are located in public parks, such as Willis Run and Poor House Run, and are accessible to the public. Title Three, Public Sewers, regulates the use of the sewer system by residential and non-residential users, and assists the York City Wastewater Treatment Plant meet its effluent requirements.

§1302.122 of the zoning ordinance defines wetlands as "an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adopted for life in saturated soil condition, including swamps, marshes, bogs, swales and similar areas. §1308.12 of the zoning ordinance further defines the functions and purpose of wetlands, and references state and federal regulations governing wetlands and their use. Wetland areas are required to be identified on any land development plan whether or not any impact is proposed. There are no federally recognized wetlands in the City, although some very small wetlands areas have been identified during the subdivision and land development process.

The City of York draft strategic comprehensive plan includes a vision for cross-town greenway linkages between neighborhoods, community parks and facilities through:

- Revitalization of the Codorus waterway area,
- Enhanced water and greenway opportunities as amenities, and
- Use of the Codorus Creek Greenway as the spine through the City and using other streams as greenway fingers which reach into neighborhoods.

The draft comprehensive plan also establishes a vision for the community's public lands that states that streams, recreation facilities and parks and open spaces shall be clean and aesthetically pleasing.

Limitations and Plans Related to Floodplain and Stormwater Management and Special Protection Areas

Floodplain
The City of York Zoning Ordinance regulates the 100-year floodplain, as defined by the federal government, as an overlay district. The regulated 100-year floodplain affects areas adjacent to Codorus Creek, Tyler Run, Willis Run and Mill Creek. The majority of the regulated 100-year floodplain is confined within the Army Corps of Engineers retaining structure along Codorus Creek. The majority of the remaining portion that is not structurally contained is zoned as an Open Space district with the remaining portions located within RS2 and IH districts. Of the City's approximately 19,673 principal and accessory structures, approximately 93 residential structures and 33 non-residential structures are located within the regulated floodplain (0.6%).

The overlay district distinguishes between the floodway area, the general floodplain area and floodway fringe area with prohibitions, restrictions or requirements defined for each. Numerous restrictions regulate land uses, development, construction, principal or accessory structures, or activities that may be permitted in the 100-year floodplain. Plans must show a variety of hydrologic, design and construction information to determine if the proposed activity is permissible. The subdivision and land development ordinance also references requirements for floodplain use and further requires that any low lying areas or areas subject to inundation shall be preserved and retained in their natural state as drainage ways.

The underlying zoning district governs which land uses are permitted, provided that the requirements of the floodplain overlay district can be met. In accordance with Commonwealth regulation, special permits, plan review and technical requirements are required for hospitals, jails or prisons, manufactured homes and nursing homes. In addition, the variance criteria and special exception general provisions of the City of York Zoning Ordinance, which determines the review procedure for the Zoning Hearing Board, specifically cross-reference the floodplain overlay district for regulatory compliance.

Stormwater
Stormwater management is regulated by the subdivision and land development ordinance and the zoning ordinance. §1336.05 of the City's subdivision and land development ordinance requires storm drainage improvements. Design standards must accommodate potential runoff from its entire upstream drainage area whether such area is inside

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or outside the proposed development. Title Six, Stormwater Management and Erosion and Sedimentation Control, of the City's subdivision and land development ordinance details stormwater management requirements and applies to the following activities: land development, subdivision, earthmoving, construction of new or additional impervious or semi-pervious surfaces, construction of new buildings or additions to existing buildings, diversion or piping of any natural or man-made stream channel, and installation of stormwater systems or appurtenances. No increase in the rate of stormwater from any activity is permitted than would have occurred from the land prior to development activity. Design is for the 50-year storm.

Section 2

Physical and Demographic Analysis

Municipal Boundaries and Management Area

The City of York Base Map, Drawing 1, shows the municipal boundaries for the City of York and the surrounding municipalities. The City of York, which occupies an area of approximately 5.4 miles, is located in the central portion of York County. Surrounding the City of York, clockwise from the north, are the following municipalities: North York Borough, Spring Garden Township, Springettsbury Township, York Township, West Manchester Township West York Borough, and Manchester Township.

The York City Sewer Authority owns the 26 MGD York City WWTP, and the Authority leases the WWTP to the City of York to operate. This wastewater treatment plant serves the City of York and all or portions of the following surrounding municipalities: North York Borough, Spring Garden Township, York Township, West Manchester Township, West York Borough and Manchester Township.

Topography and Physiography

The City of York is located within the Conestoga Valley Section and Piedmont Uplands Section of the Appalachian Mountain Piedmont Physiographic Province (Lloyd and Growitz, 1972). Topography within York City is typically highest at the southeast end of the city boundary (near Spring Garden Memorial Park) and the northwest portion of the city (near York City Business and Industrial Park area). A localized topographic high is situated around Farquar Park. The topography slopes off towards the middle of the City towards Codorus Creek, with its lowest point at approximately 355 feet above mean sea level. The Codorus bisects York City, flowing from south to north.

Soils

Soils in the planning area are of importance in sewage facility planning, zoning and ordinances that allow on lot sewage disposal. As previously mention the City of York's ordinances do not allow on lot systems, however, soil descriptions were included for future use.

The majority of York City is underlain by Urban soils (map symbol Uc) or mixtures of native soils with Urban soils. Other soil types have been mapped in and around the study area. Drawing 4 in Appendix 1 shows the soils mapped by the York County Soil Conservation District. The remaining soil types include the following:

Table 2-1
Soil Formations

Map Symbol	Soil Name	Location
CeB	Chester silt loam	North of Wastewater Treatment Plant
CkA	Clarksburg silt loam	North of Route 30; East of Codorus Creek at Wastewater Treatment Plant
CnB	Conestoga silt loam	Penn Park
DuB, DuC	Duffield silt loam	West of Texas Avenue and north of Carlisle Avenue; North of Willis Road and east of Pennsylvania Avenue
HaA, HaB	Hagerstown silt loam	North of Route 30; North of Willis Road and east of Pennsylvania Avenue
KnE	Klinesville channery silt loam	North of Route 30
Lw	Lindside silt loam	Along unnamed tributary in Southeastern York City; Along Codorus Creek; North of Willis road and west of Beaver Street
MOC, MOD	Mt. Airy and Manor Soils	Farquhar Park; North of Willis Road and east of Pennsylvania Avenue North of Route 30
MPD	Mt. Airy and Manor Soils, very stony	Southeastern York City
NaB	Neshaminy channery silt loam	North of Route 30
PeB	Penn silt loam	North of Route 30
Pt	Pits and Quarries	West of Texas Avenue and north of Carlisle Avenue; North of Willis Road and east of Pennsylvania Avenue; West of Sherman Street
StD	Steinsburg channery sand loam	North of Route 30
UdB	Urban Land - Chester Complex	North of Route 30
UeB	Urban Land - Conestoga Complex	Southeastern York City; South of Springettsbury Avenue; North of Route 30
UfC	Urban Land - Mt. Airy Complex	Southeastern York City

Table Based on: United States Department of Agriculture, 1995, *Soil Survey of York County*

Soil descriptions have also been obtained from the York County Soil Conservation District. The soil series are described below.

Physical and Demographic Analysis

Table 2-2
Soil Descriptions and Location

Soil Series	Location
Chester	Chester soils are very deep and very well-drained. The subsoil ranges from a silt loam to a silty clay loam. Beneath the subsoil is a silty clay loam and loam.
Clarksburg	Clarksburg soils are very deep and moderately well-drained. They are commonly found on uplands. The subsoil is a silt loam to silty clay loam. Mottling can be found as shallow as 28 inches below grade. The substratum is typically a gravelly silty clay loam, also mottled
Conestoga	Conestoga soils are deep and well-drained and found on uplands. The subsoil is a silt loam to silty clay loan, underlain by a loam to channery loam. Bedrock is commonly found at 5 feet below grade.
Duffield	Soils classified as Duffield soils are very deep to deep. They are well-drained and found on uplands. The subsoil is a silty clay loam, underlain by a shaly silt loam.
Hagerstown	These soils are deep and well-drained. They are usually located on uplands. A clay to silty clay extends from the plow layer to bedrock. The bedrock is typically a limestone so sinkholes can be present.
Klinesville	Klinesville soils are shallow. They can usually be found on uplands. The subsoil is a very shaly silt loam. The average depth to bedrock is 19 inches.
Lindside	Lindside soils are deep and moderately well-drained. These soils are found on flood plains. Mottling is present. The surface layer is a silt loam and the subsoil is a silt loam to silty clay loam.
Manor	These soils are very deep and well-drained to somewhat excessively-drained soils. They are located on uplands. Both the subsoil and substratum are a loam.
Mt. Airy	Mt. Airy soils are moderately deep and somewhat excessively drained. They can be located on uplands. The subsoil is a very channery silt loam. The substratum consists mainly of schist fragments.
Neshaminy	The soils classified as Neshaminy soils are deep and very deep, well-drained soils.. They are also located on uplands. The subsoil ranges from a clay loam to a sandy clay loam. Bedrock is typically 4 ½ feet below grade.
Penn	Penn series are moderately deep and well drained soils, commonly found on uplands. The soil is a shaly silt loam in both the subsoil and the substratum.
Pits and Quarries	Pits and quarries are areas in which the soil cover has been removed.
Steinsburg	These soils are moderately deep and well-drained soil. They are typically present on uplands. The subsoil is a sandy loam, becoming a gravelly sandy loam in the substratum. Bedrock can be found at 30 inches below ground surface.
Urban Land	Soils classified as urban land are those soils in which the soil has been reworked so that its original characteristics can no longer be determined. It also includes those areas covered by man-made structures (i.e. streets, buildings, parking lots).

Table Based on: United States Department of Agriculture, 1995, *Soil Survey of York County*

Physical and Demographic Analysis

Geology
The geology of the planning region is of importance to sewage facilities planning in that it provides an idea of geological formations to be encountered when designing and constructing sewage facilities. Drawing 6 in Appendix 1 is a geological map of the City of York.

The bedrock underlying York City is comprised mostly of carbonate materials deposited during the Cambrian and Ordovician periods. The bedrock has since been folded and faulted through various tectonic processes. The City is bordered to the south by the Stoner Overthrust. The Gnatstown Overthrust bisects York from northeast to southwest.

Carbonate rocks (i.e., limestones and dolomites) can be dissolved through the groundwater interacting with the calcium carbonate. Where the bedrock has been dissolved, features such as bedrock pinnacles, sinkholes, and solution channels may form.

The bedrock has been classified into the following formations. The descriptions have been obtained directly from Plate 1, Environmental Geology of the Greater York Area, York County, Pennsylvania.

Table 2-3
Geological Formations and Descriptions

Formation (youngest to oldest)	Description
Conestoga Formation	Gray, thin- to medium-bedded, impure limestone, sandy and granular; thin shale partings; limestone conglomerate at base.
Ledger Dolomite	Light-gray to pink, coarsely crystalline, thick-bedded, pure dolomite that has a chert horizon . . . near the top; where it is well exposed . . .the Ledger is brittle and highly fractures. The thickness is estimated to be about 1000 feet.
Kinzers Formation (divided into the Earth Buff Limestone Member, Pure Limestone Member, and Shale Member)	
Earthy Buff Limestone Member	Gray-brown to tan, sandy, porous, leached limestone containing dark, argillaceous and shaly interbeds.
Pure Limestone Member	Dark-gray to blue-gray crystalline limestone of variable composition, some of which is pure high-calcium rock. Altered to white marble in places and can be dolomitic elsewhere. . . Weathers light gray.
Shale Member	Dark-gray, buff-weathering, iron-stained, fissile shale. The thickness of the formation . . .averages about 200 feet.
Vintage Formation	Blue-gray knotty dolomite, dark-gray fine-grained interbedded dolomite and limestone, massive gray dolomite, and some light-gray laminated marble. Its [thickness] averages about 500 feet thick.

Wilshusen, J.P , 1979, *Environmental Geology of the Greater York Area, York County*

Groundwater
As mentioned above, York City is mostly underlain by carbonate rocks. In general, groundwater flow direction mimics topography and will flow downhill. However, fractures in the carbonate bedrock may have been widened through groundwater migrating through it. The groundwater interacts with the carbonate material and dissolves the carbonates. Where fractures have been widened, the groundwater may flow preferentially through these solution channels because the openings present a path of lesser resistance. The solution channels will not necessarily be aligned "downhill", but may direct the groundwater flow in unexpected directions.

Groundwater flow is typically very slow and diffuse. Solution channels in carbonate rocks may be wide enough or large enough so that groundwater may flow quickly. The rapid rates may allow contaminants within the subsurface to migrate quickly (thereby reducing dilution) and for relatively large distances.

Lloyd and Growitz summarized the general groundwater parameters in the area. They are summarized below.

Table 2-4
Geological Impact on Ground Water

Formation	median pH	Median hardness (mg/l)	Water type	Median Specific Conductivity (microohms)	Median Nitrate (mg/l)
Conestoga	7.0	220	Calcium bicarbonate	550	33
Ledger	7.2	270	Calcium bicarbonate	625	5.4
Kinzers - limestone	7.2	200	Calcium bicarbonate	525	17
Kinzers - shales	6.6	120	Calcium bicarbonate	330	16 (1 sample)
Vintage Formation	7.2	190	Calcium bicarbonate	410	17

Lloyd, O B , Jr , and D J Growitz, 1977, *Ground-Water Resources of Central and Southern York County, Pennsylvania, Pennsylvania Geologic Survey Water Resource Report* 42, 93 p.

In the York City area, groundwater pH values typically average 7.0. The groundwater commonly has a hardness ranging from 120 mg/l to 220 mg/l, and are calcium bicarbonate water types. The median specific conductivity values in the area ranges from 330 mg/l: in shales to 625 mg/l in the Ledgers, with an average of 490 mg/l. The nitrates are relatively high and may show skewing due to agricultural activities adjacent to York City.

Potable Water Supplies
The City of York receives public water from the York Water Company. The State Water Plan, Subbasin 7, Lower Susquehanna River of February 1980, places the York Water Company supply in watershed H, the Codorus Creek. According to the State Water Plan, the York Water Company's 21 MGD supply comes from the South Branch of the Codorus Creek with augmentation from the Lake Williams and Lake Redman filtration plant.

The State Water Plan identified the following deficiencies:
2020Yield - 25.800 MGD
1990 Allocation - 4.568 MGD
2020 Allocation - 14.940 MGD

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1990 Filtration -	5.388 MGD
2020 Filtration -	13.305 MGD

Recommended solutions for these deficiencies included:
1. Implement industrial and commercial water conservation programs.
2. Meter gravity connections.
3. Increase the allocation by expanding the South Branch Codorus Creek filtration plant.
4. Construct a third reservoir in the Codorus Creek Watershed or install bascule gates on the Lake Redman Spillway.

Water consumption has been effectively reduced through the installation of water and sewage meters, especially in industrial connections. The York Water Company has implemented solutions 1, 2 and 3.

A new York County Water Supply Plan, now in draft form, indicates the following:

Current Safe Yield -	28.815 MGD
Current Maximum Daily Demand -	22.409 MGD
Projected 2010 Maximum Daily Demand -	25.664 MGD

The supplier has long term plans to increase its safe yield to meet demands associated with expansion of the system. Planned projects include: 1) bascule gates on Lake Redman; 2) a third reservoir on the Codorus Creek watershed; and 3) an intake on the Susquehanna River.

Wetlands

The National Wetland Inventory Mapping of the York and West York Quadrangles indicates that the wetlands within the City of York and near existing sewage facilities are limited to existing water bodies such as the Codorus Creek, Willis Run, Tyler Run and a portion of Poor House Run. These wetlands are classified as riverine, permanent open water for the first three listed above, and palustrine emergent, temporary for the last listed above. Neither the wastewater treatment plant, nor any of the collection or conveyance system, pose an existing or future threat to these wetlands. However, any future sewage facility design would include delineation of potential wetlands in those areas impacted by the sewage facility.

Population

In 1990, the City of York's population was recorded at 42,192 persons by the Bureau of the Census (Table 2-5,1995 Population Estimates). The 1990 figure was re-calibrated in September 1992 by the Bureau of the Census yielding an estimated 43,393 persons. York County's population in 1990 was 339,574. York City comprises approximately 12.7% of York County's population.

Physical and Demographic Analysis

The City of York's most current population estimate, prepared by the Bureau of the Census in 1995, was 45,657 persons. Equifax National Decision Systems, a business that develops and distributes demographic and business data, estimated York's City's population in 1995 to be 43,537 persons, a 3.2% increase since 1990, and York County's population to be 362,604, a 6.8% increase since 1990.

Table 2-5
1995 Population Estimates

Population Projection	1990*	1992 Recalibration	1995 Population Estimate	Average Annual Change****
U.S. Census Bureau	42,192	43,393	45,657**	1.04%
Equifax National Decision Systems	42,192	43,393	43,537***	0.64%

*Source - U.S. Census Bureau, 1990
** Source - U.S. Census Bureau, 1995
*** Source - Equifax National Decision Systems, 1995
**** Based on 1992 Recalibration

According to the 1990 Census, there were 18,451 housing units in the City of York (Table 2-6, Housing Units), of which 16,931 are occupied and 1,520 are vacant. The 1990 housing unit vacancy rate is approximately 8.2%. However, the housing unit estimates were not recalibrated along with the population in 1992. Using 1990 Census figures, the average number of persons per household for the City of York is 2.3. To adjust the housing units to be consistent with the recalibrated population, the population (43,393) was divided by 2.3 persons per housing unit to arrive at an adjusted housing units number of 18,974. The number of housing units in 1995 was determined in the same manner (45,657/2.3).

Table 2-6
Housing Units

Year	Adjusted Total Housing Units	Vacancy Rate
1990	18,974	8.2%
1995	19,851	8.2%

Population Trends
According to Bureau of the Census data, the City of York's population has declined from 1960 through 1990. An overall loss of 11,111 persons (20.39%) from the 1960 population of 54,504, resulted in an average

loss of 0.68% per year (Table 2-7, Historic Population). During the same thirty year period, York County has demonstrated an overall population growth of 42.5%, averaging increases of 1.42% per year.

Table 2-7
Historic Population

Municipality	1960	1970	1980	1990	Average Annual Change
York City	54,504	50,335	44,619	43,393	-0.68%
York County	238,336	272,603	312,963	339,574	1.42%

Source: U.S. Census Bureau.

The most recent estimates of York City's population (Table 2-5, 1995 Population Estimates), as determined by the Bureau of the Census in 1995 and Equifax National Decision Systems, shows a reversal of the declining population with gains between 1990 and 1995 of 5.2% and 0.33%, respectively. The average annual gains are 1.04% and 0.07%, respectively.

County & Local Population Projections
The York County Planning Commission (YCPC) develops population projections for York County, the City of York (Table 2-8, Population Projections), and its other municipalities. The latest Planning Commission population projections, updated in 1998, show that York City will lose approximately 2,843 persons, or 6.7 % of its population, over the next thirty year period. The City's projected rate of population loss decreases over time with a loss of 4.7% between 1990 and 2000, a loss of 1.6% between 2000 and 2010, and a minimal loss of 0.6% between 2010 and 2020. YCPC projects York County will gain approximately 104,458 persons over the thirty year period starting in 1990, for a total population increase of 30.8%. The County's projected rate of population growth decreases over time with an increase of 11.0% between 1990 and 2000, 9.3% between 2000 and 2010 and 7.6% between 2010 and 2020. As documented in the York County Comprehensive Plan, the Greater York urbanized area will continue to comprise approximately 60% of York County's population to the year 2010.

Table 2-8
Population Projections

Municipality	1990*	2000	2010	2020	Average Annual Change (1990-2000)
York City	42,192	40,216	39,583	39,349	-0.47%
York County	339,574	377,243	412,545	444,032	1.11%

Source: York County Planning Commission, 1998.

The City of York does not prepare population projections; rather it has relied on York County Planning Commission projections and Bureau of the Census projections or population estimates. However, York City suspects that certain hard to reach population groups were under-counted in the 1990 Census, and that the City has in fact increased its population since 1990.

In order to determine the most accurate representation of recent population trends in the City of York, population estimates and projections were obtained from the following sources; YCPC, BonData, Equifax National Decision Systems, and the U.S. Census Bureau.

YCPC
As discussed earlier, the figures shown in Table 2-8, Population Projections suggest a continued population decrease. The reduction of 2,843 persons from 1990 to 2020 (-7.23%) is based on the historical trends reported in the census data information.

BonData (a Harrisburg based Census Data Source)
The BonData estimate for 1996 (Table 2-9, BonData Population Data) also projects a decline (1,413 persons) in population, from 42,192 in 1990 to 40,779 in 1996. This figure is "calculated by using the change in the number of housing units" and multiplying it times the number of persons per housing unit. The average annual population change from 1990-1996 (-0.56%) is consistent with the YCPC average annual population change from 1990-2000 (-0.47%).

Physical and Demographic Analysis

Table 2-9
BonData Population Data

Year	Population	Average Annual Change
1990	42192	
		-0.56%
1996	40779	

Source: BonData, "Local Population (1996) Estimates for Pennsylvania, Counties, & Minor Civil Divisions (MCDs)"

Equifax National Decision Systems
Equifax National Decision Systems, a private business that develops and distributes demographic and business data, estimated York City's population (Table 2-10, Equifax National Decision Systems Population Data) in 1995 to be 43,537 and projects the City's 2000 population to reach 45,941, given a population increase of 3.19% from 1990 to 1995, and 5.52% between the 1995 and 2000 population estimates. The resulting average annual population increases are 0.64% and 1.10% respectively.

Table 2-10
Equifax National Decision Systems Population Data

Year	Population	Average Annual Change
1990	42,192	
		0.64%
1995	43,537	
		1.10%
2000	45,941	

Source: Equifax National Decision Systems, 1995

U.S. Census Bureau
The most recent estimate by the U.S. Census Bureau, 45,657 in 1995, indicate an average annual increase in population of 0.64% (see Table 2-5, 1995 Population Estimates) between 1990 and 1995.

Section 3

Existing Sewage Facilities

Location, Size and Ownership of Public Treatment Facilities

City of York Wastewater Treatment Facilities (General)
The York City Wastewater Treatment Plant is owned by the York City Sewer Authority and operated by the City of York through a lease-back agreement. The plant is permitted to discharge 26 million gallons per day (MGD) of effluent into the Codorus Creek by NPDES Permit PA 0026263. This permit was most recently renewed on June 12, 1996 and is valid until June 12, 2001. The permit limits require advanced treatment of wastewater, which is achieved through physical and biological processes.

The plant is located on 41.6 acres of land on Toronita Street in Manchester Township, York County. The Authority owns an additional 16 acres of land with structures that are currently being leased for use as a trucking terminal. The plant was originally constructed in 1916 and has been variously enlarged and upgraded over time. From 1978 to 1981 the plant was expanded to provide the currently rated capacity of 26 MGD and upgraded to provide chemical removal of phosphorus. This expansion project included construction of an 8 MGD pure oxygen treatment system now designated as Train 1. A new effluent discharge, outfall 002, with an aerating cascade was also installed during this expansion project. Outfall 002 is now the primary point of discharge. In 1987 to 1991 the plant was upgraded to provide nitrification, biological removal of phosphorus, and a higher level of removal of BOD. The upgrade consisted of two projects. The first project included construction of a new treatment system, Train 3. The second project included the conversion of an existing contact-stabilization treatment system, Train 2, to an anaerobic/oxic activated sludge system. The second project also included the construction of a sand filtration system and replacement of chlorine disinfection with an ultraviolet disinfection system.

Table 3-1, NPDES Permit Effluent Limits, provides a summary of the current monthly effluent average concentration limits from the NPDES permit.

Table 3-1
NPDES Permit Effluent Limits

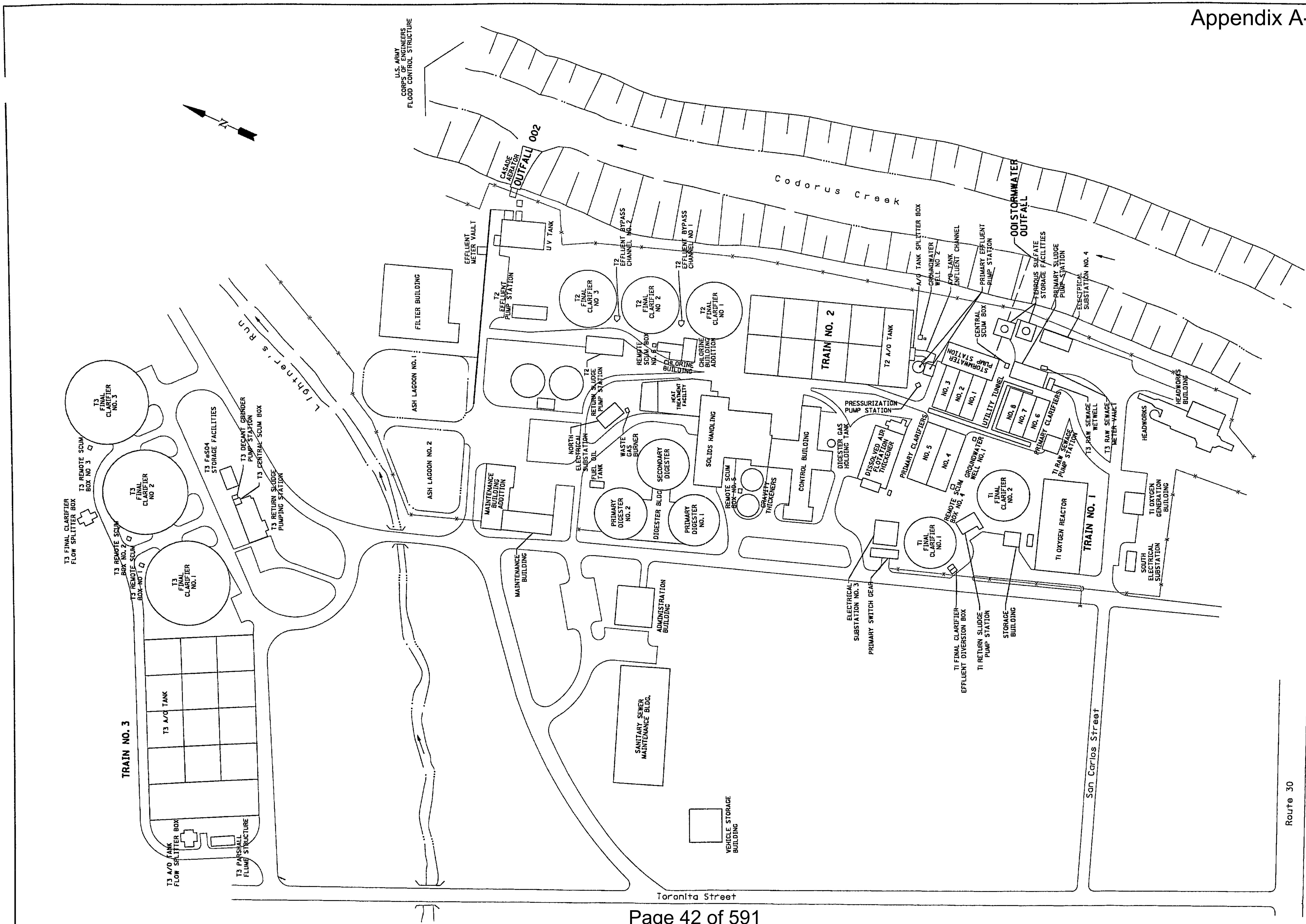
Parameter	Discharge Limitations
pH	6 to 9 standard units at all times
Dissolved Oxygen	5 mg/l minimum at all times
Total Suspended Solids	30 mg/l maximum monthly average
5-day CBOD (May-October)	15 mg/l maximum monthly average
5-day CBOD (November-April)	20 mg/l maximum monthly average
NH3-N (May-October)	1.7 mg/l maximum monthly average
NH3-N (November- September)	2.1 mg/l maximum monthly average
Phosphorus	2.0 mg/l maximum monthly average
Fecal Coliform (May-September)	200/ 100 ml maximum monthly average
Fecal Coliform (October- April)	2000/100 ml maximum monthly average

A review of the performance from 1991 through 1996 indicates that, from a regulatory view point, the plant has had excellent performance. Table 3-2, Plant Performance 1997, summarizes the performance for 1997. The 1997 performance data is typical of that reported since 1991.

Table 3-2
Plant Performance 1997

Parameter	Average Concentration
pH	7.1 to 8.1
Dissolved Oxygen	9.4 mg/l
Total Suspended Solids	3 mg/l
CBOD 5 day Effluent	1 mg/l
NH3	0.2 mg/l
Phosphorus	0.3 mg/l
Fecal Coliform	5 per 100 ml

Figure 3-1 provides a site layout and Figures 3-2, 3-3 and 3-4 provide flow schematic drawings of the treatment units as designed for the plant upgrade in 1987. The plant includes facilities for purifying the wastewater and processing the solids generated.

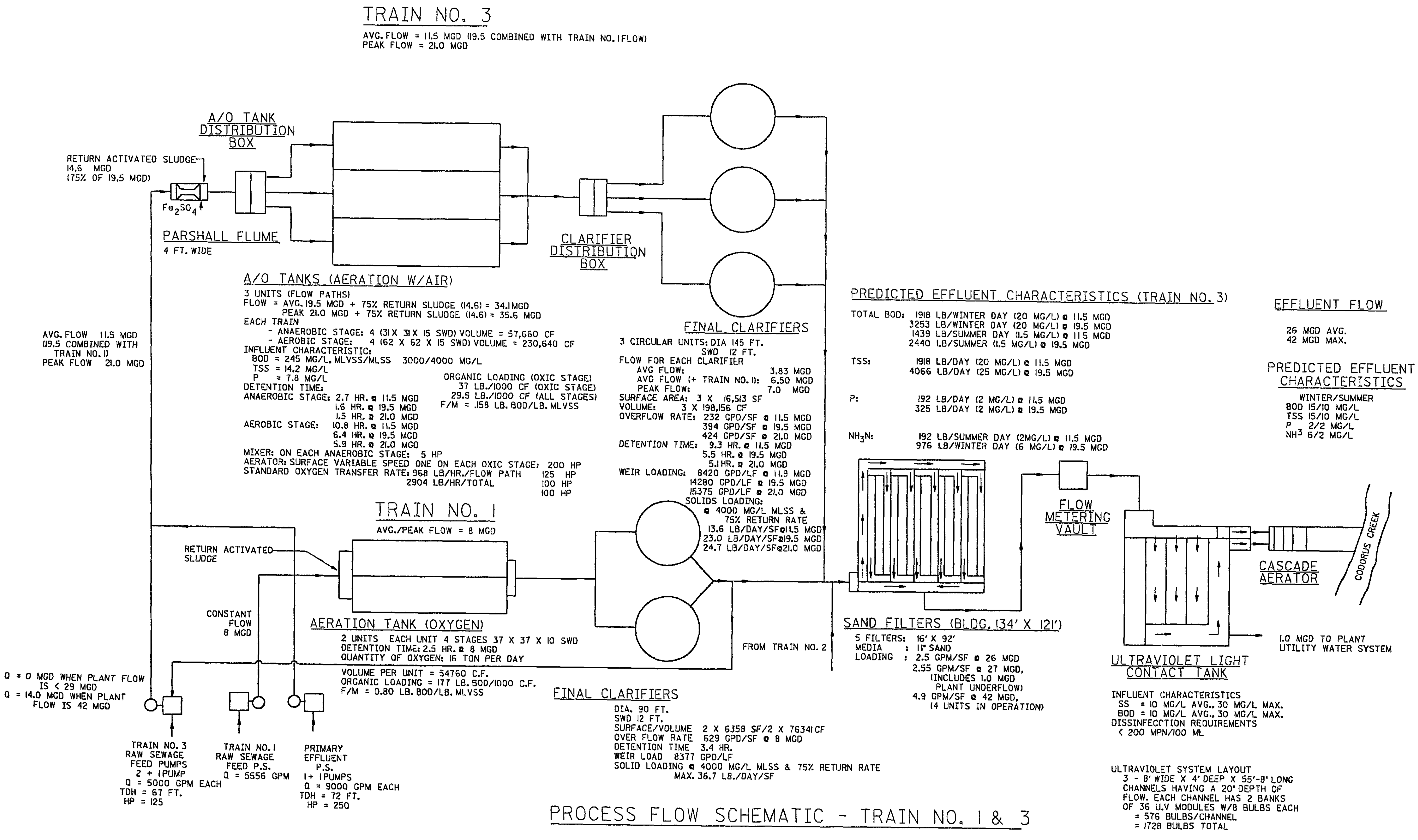


CITY OF YORK WASTEWATER TREATMENT PLANT
1985 DESIGN CRITERIA

YORK CITY SEWER AUTHORITY ACT 537 PLAN

FIG. 3-1

BUCHART HORN, INC.
Consulting Engineers and Planners

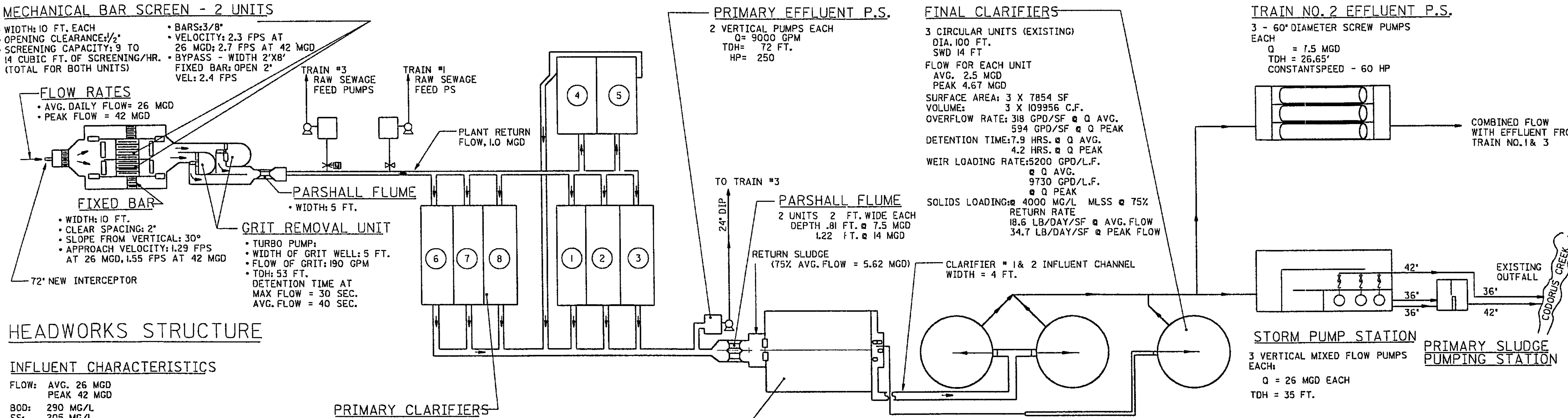


PROCESS FLOW SCHEMATIC TRAIN NO. 1 & 3
1985 DESIGN CRITERIA

YORK CITY SEWER AUTHORITY ACT 537 PLAN

FIG. 3-2

BUCHART HORN, INC.
Consulting Engineers and Planners



HEADWORKS STRUCTURE

INFLUENT CHARACTERISTICS

FLOW: AVG. 26 MGD
PEAK 42 MGD

BOD: 290 MG/L
SS: 205 MG/L
NH_3-N: 15 MG/L
PO_4-P: 7 MG/L

PRIMARY CLARIFIERS

FLOW: Q AVG = 14 MGD
Q PEAK= 21 MGD

NO. OF UNIT: 8 UNITS
#1,3 = 19.667 X 62.8 X 14.417 SWD
#2 = 20 X 62.8 X 14.417 SWD
#4,5 = 34 X 95 X 11 SWD
#6,7,8 = 20.83 X 69.67 X 13.167 SWD

SURFACE/VOLUME
#1,3 = 1235 SF, 17805 CF
#2 = 1256 SF, 18108 CF
#4,5 = 3230 SF, 35530 CF
#6,7,8 = 1451 SF, 19150 CF

FLOW FOR EACH TANK
AVG, PEAK, MGD
TANK #1,3 = 1.1966 MGD, 1.7949 MGD
#2 = 1.2058 MGD, 1.8087 MGD
#4,5 = 3.1295 MGD, 4.6943 MGD
#6,7,8 = 1.3807 MGD, 2.0710 MGD

OVERFLOW RATE
AVG. FLOW
TANK #1,3 = 969 GPD/SF
#2 = 960 GPD/SF
#4,5 = 969 GPD/SF
#6,7,8 = 951 GPD/SF
PEAK FLOW
TANK #1,3 = 1453 GPD/SF
#2 = 1440 GPD/SF
#4,5 = 1453 GPD/SF
#6,7,8 = 1427 GPD/SF

DETENTION TIME FOR
AVERAGE FLOW
TANK # 1,2,3 = 2.7 HRS.
#4, 5 = 2.1 HRS.
#6, 7,8 = 2.5 HRS.
PEAK FLOW
TANK # 1,2,3 = 1.8 HRS.
#4, 5 = 1.4 HRS.
#6, 7,8 = 1.7 HRS.

WEIR LOADING (LENGTH OF WEIR)

A/O TANKS

2 FLOW PATHS
EACH FLOW PATH
ANAEROBIC STAGE:
4 (30'X20' X15' SWD) VOLUME = 2 X 36,000 CF
OXIC STAGE:
4 (60'X60' X15' SWD) VOLUME = 2 X 216,000 CF

FLOW: AVG = 7.5 MGD - 75% RETURN SLUDGE (5.62 MGD) = 13.12 MGD
PEAK = 14 MGD - 75% RETURN SLUDGE (10.5 MGD) = 24.5 MGD

INFLUENT CHARACTERISTICS

BOD_5 = 245 MG /L
S. S. = 142 MG/L
NH3N = 15.6 MG/L
P = 7.8 MG/L

DETENTION TIME: ANAEROBIC STAGE: 1.7 HRS. @ Q AVG. = 7.5 MGD
.9 HRS. @ Q PEAK = 14 MGD
AEROBIC STAGE: 10.3 HRS. @ Q AVG.
5.5 HRS. @ Q PEAK

MIXERS: 1 ON EACH ANAEROBIC STAGE 5 HP
AERATORS: 1 ON EACH OXIC STAGE: 1X 125 HP
1X 75 HP
1X 60 HP
1X 50 HP

STANDARD OXYGEN TRANSFER RATE: 840 LBS./HR./FLOW PATH
1680 LBS./HR./TOTAL

ORGANIC LOADING
(OXIC STAGE) 35 LB./1000 C.F.
(ALL STAGES) 30 LB./1000 C.F.

MLVSS/MLSS 3000/4000 MG/L
FM .158 LB. BOD/LB. MLVSS

PROCESS FLOW SCHEMATIC - TRAIN NO. 2

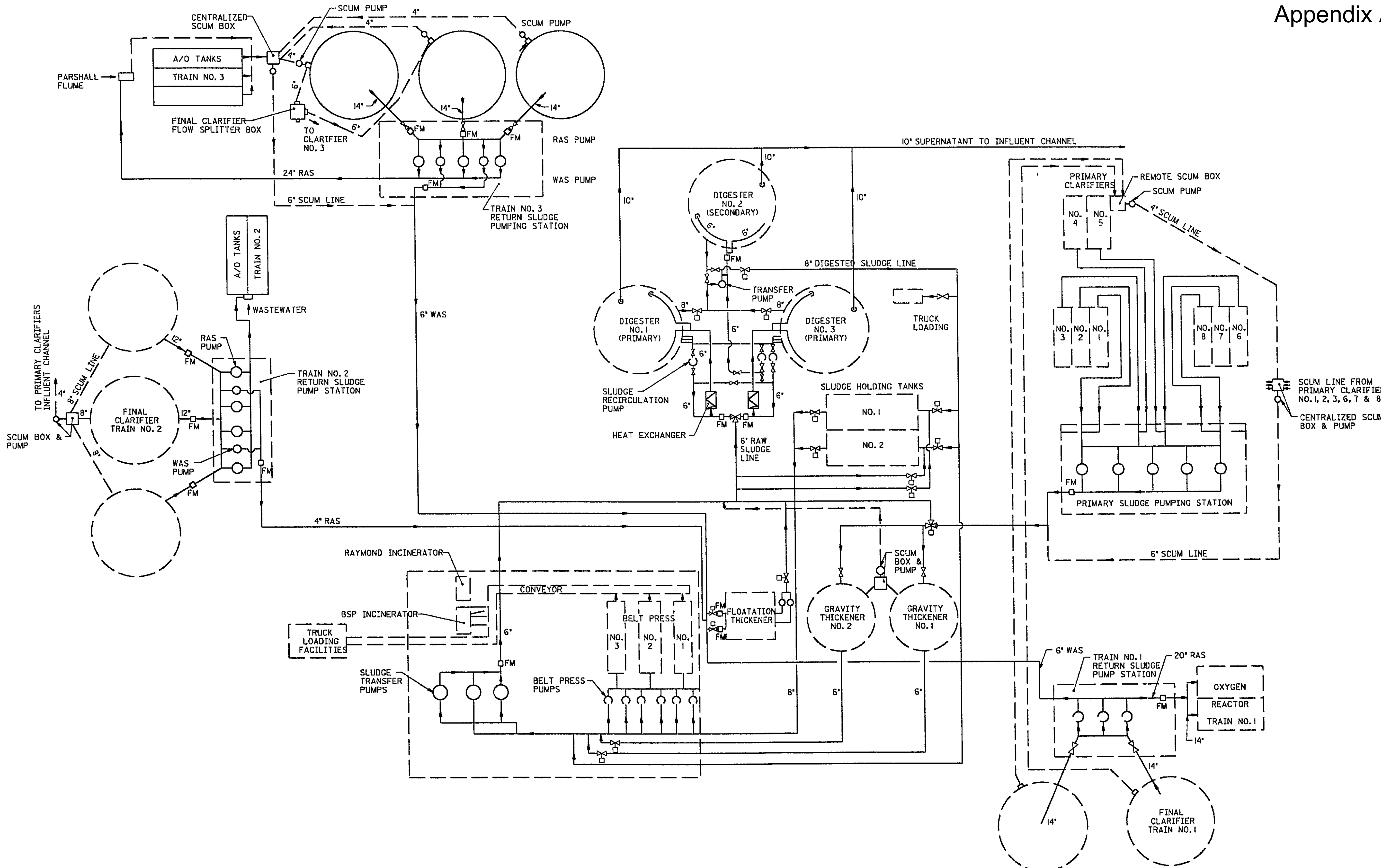
SCALE: NONE

PROCESS FLOW SCHEMATIC TRAIN NO. 2
1985 DESIGN CRITERIA

YORK CITY SEWER AUTHORITY ACT 537 PLAN

FIG. 3-3

BUCHART HORN, INC.
Consulting Engineers and Planners



PROCESS SLUDGE SCHEMATIC
1985 DESIGN CRITERIA

YORK CITY SEWER AUTHORITY ACT 537 PLAN

FIG. 3-4

BUCHART HORN, INC.
Consulting Engineers and Planners

Existing Sewage Facilities

The plant provides tertiary treatment of wastewater to meet stringent water quality based effluent limits. The plant has preliminary and post-treatment units and three parallel biological treatment flow paths designated as Train 1, Train 2, and Train 3. The preliminary treatment units include bar screens and vortex degritters. The primary treatment facilities (eight rectangular clarifiers) have capacity to treat only part of the wastewater flow. They are used to treat all of the flow to Train 2 and part of the flow to Train 3. Train 1 includes two pure oxygen activated sludge reactor tanks and two clarifiers. Train 2 and Train 3 include anaerobic/oxic (A/O) activated sludge reactor tanks (two at Train 2 and three at Train 3) and three clarifiers each. The post-treatment units consist of gravity sand filters, an ultraviolet light disinfection system, and a cascade aerator. The post-treatment units process the combined flows from the three trains. The plant discharges effluent into the Codorus Creek, a warm water fishery.

Screenings and grit are dewatered and landfilled. Facilities are in place to digest and dewater primary and secondary process solids to produce biosolids meeting federal land application requirements. The plant produces Class B biosolids which the City contracts for disposal through beneficial use. The solids processing equipment includes two gravity thickeners, two floatation thickeners, two primary anaerobic digesters, one secondary anaerobic digester, three belt filter presses, and a lime addition system. The biosolids are conveyed to a storage bin that is used to load truck trailers that convey the material to disposal.

The excellent performance of the plant with regard to meeting effluent limits has been matched by performance in other areas of the operation. The City conducts a federally approved pretreatment program that has controlled organic loading and resulted in clean sludges that are processed to obtain high quality biosolids than can be disposed of through application to agricultural land. The City does not accept septage or trucked wastes for disposal except under rare and special circumstances and has avoided the odor, solids, and grease problems that are often associated with such wastes.

Odor control devices were installed during the most recent upgrade project to prevent odors from leaving the site. An increase in flows should not markedly increase the generation of odors if present procedures are maintained. Increasing encroachment of housing and increasing sensitivity of the public to odors may, however, lead to the need for more sophisticated odor control systems particularly in the headworks and solids processing areas. This plan does not recommend the installation of such systems at this time.

The City operates and maintains the facilities using an assortment of tools, including computer based monitoring and control systems, computer based maintenance and inventory control systems, and a modern in-house laboratory. Operators record voluminous data and monitor performance twenty-four hours a day. City staff provides much of the maintenance and repair of equipment. The City contracts for instrumentation services and for other specialized maintenance and repairs. City personnel collect samples and conduct many of the required influent and effluent tests and also conduct tests to insure efficient process control. The City contracts for certain testing, in particular organics analysis of wastewater and general analysis of biosolids.

The City contracts for the disposal through beneficial use of the digested and dewatered biosolids obtained from the treatment process. The City most recently entered into a five year contract to begin in June of 1998. The City anticipates no limit to the quantity of biosolids that can be disposed of by this means. To insure a smooth transition between contracts, the City bids biosolids disposal approximately 15 months prior to the end of a contract period. In the unlikely event that a contractor cannot be found to provide this service, the City is prepared to contract for disposal by landfilling or other means. The City monitors the disposal industry and will take steps if necessary to plan for new facilities if contract disposal ceases to be a viable long-term means of disposal.

Over the last ten years, the plant has experienced a striking reduction in biosolids production. This reduction has resulted from the implementation of pretreatment requirements that caused several industries to provide at least the equivalent of primary treatment of their wastes. In some cases, industries have implemented biological treatment.

Table 3-3, Organic Loading and Biosolids Production: 1987-1997, shows the organic loading and biosolids production for the last eleven years.

Table 3-3
Organic Loading and Biosolids Production: 1987 through 1997

YEAR	BOD Annual Avg. (Lbs/Day)	BOD Annual Avg. (mg/l)	Biosolids Production (Dry Metric Tons)
1987	45,203	335	5298
1988	43,490	348	5826
1989	26,770	212	5241
1990	20,702	179	4388
1991	18,082	198	3854
1992	17,937	200	3655
1993	17,194	163	3286
1994	16,467	174	2664
1995	16,034	172	2972
1996	16,951	146	2644
1997	16,293	181	2460

The decline in BOD loading and biosolids production now appears to have ceased. The production of solids is anticipated to increase with hydraulic loading, but existing solids management facilities are considered adequate for projected growth during the next twenty years.

Liquid Treatment Facilities
Wastewater received at the York plant is screened, degritted, processed through one of three biological treatment systems, filtered, disinfected, aerated, and discharged into the Codorus Creek. This section of the plan discusses the various units. Appendix 2 of this plan includes a process capacity evaluation.

Preliminary Treatment Units
The headworks structure receives the flow of wastewater from the 72-inch diameter Codorus Creek Interceptor. The headworks was constructed under the upgrade project and placed into operation in 1988. The structure includes two automatic bar screens, two pista grit removal systems and a parshall flume with a flow meter. A disposal receptacle is available to accept grit collected by the sewer maintenance vacuum trucks. The trucks unload their contents into a hopper. Liquid runs immediately into the channel. Grit and other solids are fed into the influent channel slowly through a screw conveyor.

The automatic bar screens have ½ inch openings which effectively remove debris from the influent. The screenings collected are raked and conveyed to a compactor which dewaters and transfers them to a dumpster. The grit removal system consists of two vortex type grit chambers. Collected grit is pumped from the chamber, dewatered across a screen, and deposited into a dumpster. The screenings and grit are trucked to a landfill for disposal. The preliminary treated flow is metered through a parshall flume.

An influent channel conveys flow from the headworks to the Train 1 wet well, to the Train 3 wet well and to the primary clarifiers.

Primary Treatment Units
The Primary Treatment Units consist of eight rectangular clarifiers with plastic scrapers which collect primary sludge and scum. Access to the sludge piping is available through a pipe gallery tunnel constructed between the clarifiers. The scum from the clarifiers is collected in two scum boxes from which it is pumped to gravity thickeners or digesters. Effluent from the primary clarifiers flows by gravity to Train 2 or is pumped to Train 3 via the Primary Effluent Pump Station. Primary sludge can be pumped to thickeners or directly to digesters.

Train 1 Treatment System
Train 1 is a pure oxygen activated sludge wastewater treatment system designed by Air Products Corporation for an average daily flow of 8 MGD. Train 1 includes two oxygen reactors and two clarifiers. This treatment system was designed to efficiently reduce BOD and suspended solids, but the system was not designed for nitrification nor biological phosphorus removal. Ferrous sulfate can be added to the system to provide chemical phosphorus removal and to assist with solids settlement. Nitrification can be achieved, but only at a much reduced flow rate. Train 1 was originally equipped with an oxygen generation system, but this system has not been utilized for eight years and has been determined to be inoperable. In the absence of an oxygen generator, Train 1 can be operated using purchased oxygen but storage is limited. Train 1 can also be operated using air instead of oxygen but at a much reduced capacity. The flow of effluent from the oxygen reactor passes into a pair of 90 foot diameter clarifiers. The clarifier effluent continues by gravity to the post treatment units. Waste sludge is pumped from the clarifiers to the floatation thickeners. Train 1 is set up to receive only pumped preliminary treated wastewater and there is currently no means to pump primary treated wastewater to this treatment system.

The capacity of Train 1 to achieve the currently required level of treatment including nitrification can be achieved by diverting its effluent flow to Train 3. A diversion pipe is in place to direct effluent to the Train 3 raw sewage wet well. Train 1 can provide BOD and phosphorus reduction to an average flow of 8.0 MGD without use of the diversion.

The plant capacity evaluation included in Appendix 2 identifies the average capacity of Train 1 to meet all current limits, including nitrification limits, without diversion to Train 3 as 1.8 MGD. Train 1 was in continuous service from 1982 to 1990 and has been in intermittent service in recent years.

Train 2 Treatment System
Train 2 is an activated sludge treatment system originally designed for an average daily flow of 7.5 MGD. Train 2 provides nitrification and biological phosphorus removal as well as an efficient reduction of BOD. The treatment system consists of two parshall flumes, two aeration tanks, three clarifiers and three effluent screw lift pumps. Primary treated effluent passes by gravity to Train 2. A pair of parshall flumes and depth meters installed in the influent channels measure the flow to each of two aeration tanks. Each aeration tank consists of four anaerobic and four oxic zones for biological treatment. Each of the anaerobic zones are equipped with a 5 hp mixer. The first stage oxic zone has a 125 hp surface aerator, the second stage has a 75 hp aerator, the third stage has a 60 hp aerator, and the fourth stage has a 50 hp aerator.

The effluent from the aeration tanks drains to three secondary clarifiers. The clarifiers are 100 ft in diameter. Two are equipped with rake scraper mechanisms and the third is equipped with a hydraulic mechanism for sludge removal. Surface skimmers are provided for scum removal on all three clarifiers. The waste activated sludge is pumped to floatation thickeners. The scum from each clarifier is piped to a scum collection vault from which it is pumped to the primary clarifier influent channel. The option also exists to pump scum to the central scum pit. The effluent from the clarifiers is pumped by three Archimedes screw lift pumps to the post treatment units. The pumps have a capacity of 7.5 MGD each.

The plant capacity evaluation based on the reduced influent organic concentration (see Appendix 2) has determined that Train 2 could achieve the currently required level of treatment including nitrification at an average daily flow of 12.4 MGD.

Train 2 has been in continuous service in all or in part since 1991.

Train 3 Treatment System
Train 3 is a treatment system originally designed to provide nitrification and phosphorus removal as well as efficient BOD reduction to an average flow of 11.5 MGD. Train 3 includes a parshall flume and depth meter for flow measurement, three aeration tanks, and three clarifiers. The aeration tanks each have four anaerobic and four oxic zones. Each

anaerobic zone is equipped with a 5 hp mixer. The first stage oxic zone has a 200 hp surface aerator, the second stage has a 125 hp surface aerator, and the third and forth stages have 100 hp surface aerators. The flow from the aeration tanks drains to the secondary clarifiers. The three secondary clarifiers are 145 foot diameter and are equipped with rake scraper mechanisms and surface scum removal. The waste sludge is pumped to the floatation thickeners. The scum from each clarifier is piped to a scum collection vault from where it is pumped to the waste activated sludge line. The clarifier effluent flows by gravity to the post treatment units.

The plan of operation includes alternatives for treatment at Train 3 of preliminary treated effluent, primary treated effluent, and secondary treated (Train 1) effluent. The plant capacity evaluation based on the reduced influent organic concentration has determined that Train 3 can treat a combination of preliminary and primary treated effluent to achieve the currently required level of treatment including nitrification at an average daily flow of up to 14.4 MGD (see Appendix 2).

Train 3 has been utilized in all or in part continuously since 1988.

Filtration System

The effluents from Trains 1, 2, and 3 combine and pass through a sand filtration system. The filters were designed to insure compliance with an original CBOD limit of 12.5 mg/l and a total suspended solids limit of 20 mg/l. After installation of the filters the summer permit CBOD limit was relaxed to 15 mg/l. The filters have generally provided effluent with pollutant concentrations of less than 5 mg/l. A filter building houses five automatic backwash sand filters. The filters were designed for an average daily flow of 26 MGD. Based on the PADEP criteria and the manufacturer's recommendations, the filters should be able to process peak flows up to 42 MGD. In practice operators have experienced difficulties maintaining flows in excess of 20 MGD. When the flow exceeds the capacity of the filters, overflow weirs allow excess flow to bypass the filters.

Disinfection and Finished Water Aeration Systems

The York plant is equipped with disinfection and aeration systems designed to condition the biologically treated and filtered effluent. A greenhouse style building encloses an ultraviolet light (uv) disinfection system. The uv system includes controls, lamp ballasts, and three channels each containing two banks of horizontally mounted ultraviolet lights (total of 1,728 uv lights). The system was designed for a peak flow of 42 MGD and has been very effective in meeting the fecal coliform limits. A multi-step cascade aerates the disinfected effluent prior to discharge into the Codorus Creek raising the dissolved oxygen concentration of the effluent above the minimum requirement of 5.0 mg/l.

Existing Sewage Facilities

Hydraulic Considerations
The existing plant design allows for a peak flow of 42 MGD. The peak flow identified from the flow metering program and the future flow projections is 67 MGD. The process capacity evaluation, Appendix 2, includes an assessment of the hydraulic and treatment capacity of the biological treatment units, pumps, effluent filters, and ultraviolet disinfection channels to process a peak flow of 67 MGD. The peak flow rates used for the calculations were 31 MGD for Train 2 and 36 MGD for Train 3. Return sludge flow rates of 8.6 MGD for Train 2 and 14.5 MGD for Train 3 were included in the calculations.

Generally, hydraulic capacity is found to be adequate; however, hydraulic calculations indicate four potential flow restrictions that are discussed below.

1. Effluent Filters Influent Piping
At a peak plant flow of 67 MGD, flow would back up into the Train 2 screw pumps discharge well and the Train 3 final clarifier effluent weirs. This surcharge condition can be avoided if excess flow is bypassed around the filters through the use of an existing bypass gate. The existing filter units cannot process a flow of 67 MGD and excess flow will overflow the filters even if the gate is left closed.

Section 5 discusses alternatives that increase filtration capacity. Implementation of one of the filter capacity alternatives would eliminate or reduce the need to bypass the filters to prevent a surcharge.

2. Train 2 Pipe from A/O Effluent Launder to Clarifier No. 3
At a peak flow of 31 MGD to Train 2, this 36-inch pipe will limit the passage of flow to Clarifier No. 3. This limitation will result in the distribution of excess flow to Clarifiers No. 1 and No. 2. Such an uneven distribution of flow can be tolerated at extreme peak flow conditions and no action is necessary to correct this condition.

3. Ultraviolet Disinfection Flow Channels and Discharge Piping
At a peak flow of 67 MGD, the two 36-inch discharge pipes from the ultraviolet light disinfection effluent channel will cause a surcharge of the ultraviolet disinfection treatment channels and flood the automatic level control gates within the treatment channels. Section 5 discusses alternatives that address correction of this hydraulic problem.

4. The 72-inch pipe connecting the sand filters and the ultraviolet treatment system would also cause a slight backup of the filter effluent weirs (0.3 feet), but this surcharge should not cause problems and no changes are recommended.

Solids Processing and Disposal

The York plant is provided with processing equipment to thicken, stabilize, and dewater sewage sludges to generate a cake-like material meeting land application criteria (biosolids). Sludges are collected from the primary clarifiers and from the secondary clarifiers at the end of the three biological trains. Sludges are concentrated, treated, and stored in various units including two gravity thickeners, two floatation thickeners, three anaerobic digesters, two sludge holding tanks, three belt-filter presses, a lime addition system, and a cake storage bin. Biosolids are removed from the plant by a contractor and utilized as a soil conditioner and fertilizer.

A lime addition system exists but is currently not used. Anaerobic digestion provides the stabilization needed to meet land application standards for the biosolids produced at the plant.

The plant also has obsolete solids processing equipment including a heat treatment system, a flash dryer/incinerator, and a multi-hearth furnace incinerator. These units were abandoned for reasons of safety, odor control, and economy. The heat treatment system was used to condition sludge prior to dewatering on vacuum filters. The system was very costly to operate. It also produced odiferous supernatant and filtrates with high concentrations of BOD that had to be returned to the wastewater treatment process. These liquids created operational problems. The units were abandoned when a polymer conditioning system and the first belt press was installed in 1984. The incinerators were previously used to reduce the volume of residuals. Sludge ash was landfilled after incineration. Incinerators became increasingly expensive to operate in the 1990's as maintenance, energy, and air quality regulatory costs increased. The City discontinued incineration in 1993. The City has no plans to obtain a permit for or to use any of these units.

Sludge Thickeners

The plant is equipped with two gravity thickeners and two floatation thickeners. The gravity thickeners are 45 feet in diameter and have a 12 foot side wall water depth. The units are seldom used because of odors associated with their operation. If necessary these units can be used to condense primary treatment sludges. The floatation thickeners are utilized to condense waste activated sludges. They consist of two tanks, each 82 x 16 feet in area. The units currently process some 65 gpm each or about one fourth of their theoretical capacity based on surface area. In practice the capacity of the units is probably limited by pressurized water capacity to much less than their theoretical capacity, but their capacity is adequate for the plant's design flow and can be increased through the use of polymers if necessary.

Existing Sewage Facilities

Digesters

The plant is equipped with three anaerobic digesters. The digesters are 90 feet in diameter and are provided with complete mix systems. The City currently operates two digesters in primary mode and one in secondary (storage) mode. Based on PADEP standards, sludge characteristics, and historical generation rates, the digesters have capacity to match an average plant flow of 21 MGD. Conversion of the third digester to primary mode would increase capacity to match a plant flow of 31 MGD. Such a conversion would require modification of the heating system. Use of the existing lime addition system also provides an alternative or a supplement to digestion to increase processing capacity.

Dewatering Units

The plant is equipped with three 2.5 meter belt filter presses capable of dewatering biosolids prior to disposal. One of these units was installed in 1984 and the other two units were installed in 1986. The current evaluation has determined that these units can process the solids generated by plant flows of up to 44 MGD. The oldest press is nearing the end of its useful life. The City plant operating staff is reviewing options for replacement including a centrifuge of the same or additional capacity. Currently two presses are operated two shifts per day and five days per week. Biosolids dewatering production can be readily increased by increasing the number of units in operation and the number of shifts and days worked. A polymer mixing and feed system is used to condition the digested sludge to improve the removal of water from the solids. The biosolids cake produced generally has a solids concentration of 13 to 16%.

Existing Sewage Facilities

Location, Size and Ownership of Public Collection and Conveyance Facilities

The York City Sewer Authority owns and the City of York maintains only those sewers located within the City of York, and the portion of the Codorus Creek Interceptor which passes through Spring Garden Township, North York Borough and Manchester Township.

Pump Stations
There is only one pump station within the City of York municipal boundary. This pump station serves the north-eastern portion of the York City Industrial Park.

This duplex pump station was installed in 1979. The pump station consists of two 7.5 horsepower centrifugal pumps designed to operate as a single pump and standby pump. The pump station is capable of pumping 310 gpm at a Total Dynamic Head of 40 feet.

There is a backup power generator and telemetry system. The generator and telemetry are maintained and tested on a weekly basis.

Conveyance Facilities
The YCSA sewer system consists of approximately 453,000 linear feet of collector sewers and 71,100 linear feet of conveyance sewers within the City of York boundary. This is a combined total of 524,100 linear feet or 109 miles. Table 3-4 lists the approximate lengths of each pipe diameter in the City of York sewer system. Refer to Drawing 3, Appendix 1, for location of conveyance facilities in the City of York.

Table 3-4
City of York Sewer System Approximate Lengths by Diameter

Sewer Diameter (in.)	Total Length (ft.)
8	391,000
10	34,300
12	28,600
15	12,900
18	7,700
20	2,300
21	3,200
22	1,200
24	7,700
27	8,700
30	7,000
36	2,900
39	100
42	3,700
48	6,000
54	1,800
72	5,000
TOTAL	524,100

Existing Sewage Facilities

The sewers range in materials and age. Portions of the public sanitary sewer systems date back to the early 1900's. There were older private sewers that were incorporated into the public sewer system. Some of these pnvate sewer were constructed in the late 1800's.

The sewer system is constructed of vitrified clay (VCP), ductile iron, reinforced concrete and PVC pipe. Some of the older large diameter interceptors are constructed of brick. The manholes are constructed of either brick or precast concrete with cast or ductile iron frames and covers. Many of the major interceptors have been replaced or updated in the last 10 years.

Capacity and Contribution
The following is a list and description of each major interceptor and specific data regarding its condition, capacity and existing problems.

Table 3-5
CODORUS CREEK INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
72	1988	CONCRETE	19.851
54	1988	CONCRETE	21.474
48	1988	CONCRETE	9.522
WILLIS RUN SIPHON	1988	CONCRETE	53.727
MASON ST. BOX CULVERT	1988	CONCRETE	21.334
GENERAL CONDITION - GOOD The Codorus Creek Interceptor is the main interceptor that conveys flows from all the other interceptors to the York City Wastewater Treatment Plant. This interceptor flows from central York City to the WWTP along the west side of the Codorus Creek EXISTING PROBLEMS The Mason Street Box Culvert and the interceptor immediately downstream are flow restrictions during peak flows. Based on a survey of manhole inverts from the confluence of the Tyler Run Interceptor to George St., 5 segments had a negative slope. THE INTERCEPTOR SERVES: THE CITY OF YORK, MANCHESTER TWP., NORTH YORK BOROUGH, SPRING GARDEN TWP., WEST MANCHESTER TWP., WEST YORK BOROUGH AND YORK TWP.			

Table 3-6
POOR HOUSE RUN INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
SIPHON (TWO 24" BARRELS)	1914	CAST IRON	33.546
39	1950?	VCP*	8.009
30	1950?	VCP	19.017
27	1950?	VCP	4.144
24	1950?	VCP	7.356
21	1950?	VCP	7.983
15	1950?	VCP	3.963

GENERAL CONDITIONS - UNKNOWN
The Poor House Run Interceptor follows Poor House Run from the Spring Garden Township line in the south eastern side of the City of York to its confluence with the Codorus Creek in the north central portion of the City.
EXISTING PROBLEMS
Approximately 4,400 feet of the interceptor is under a box culvert, and the box culvert is located under a major railroad spur. The interceptor in this location is for the most part inaccessible.
THE INTERCEPTOR SERVES: THE CITY OF YORK, AND SPRING GARDEN TWP.

Table 3-7
UPPER CODORUS CREEK INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
42	1994	CONCRETE	8.733
30	1994	CONCRETE	7.266
24	1994	CONCRETE.	8.623

GENERAL CONDITIONS - GOOD
The Upper Codorus Interceptor conveys sewage from the intersection of Richland Ave. and Poplar St. along Richland Ave. until it reaches the Codorus Creek. It then follows the Codorus Creek and ties in with the Codorus Creek Interceptor at the Tyler Run Siphon.
EXISTING PROBLEMS - NONE
THE INTERCEPTOR SERVES: THE CITY OF YORK, SPRING GARDEN TWP., WEST YORK BOROUGH, AND WEST MANCHESTER TWP.

Existing Sewage Facilities

Table 3-8
WILLIS RUN INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
36	1979	CONCRETE	11.273
30	1979	CONCRETE	10.530
12	1979	CONCRETE	1.092
10	1979	CONCRETE	0.918

GENERAL CONDITION - GOOD
The Willis Run Interceptor follows Willis Run from the intersection of Roosevelt Ave. and Rt. 30 until it meets the Codorus Creek Interceptor at Small's Athletic Fields
EXISTING PROBLEMS
Several sources of infiltration have been visually verified in several interceptor manholes.
THE INTERCEPTOR SERVES: THE CITY OF YORK, WEST MANCHESTER TWP., MANCHESTER TWP AND NORTH YORK BOROUGH.

Table 3-9
PENNSYLVANIA AVENUE INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
18	1984	CONCRETE	2.056
15	1997	CONCRETE	2.269
12	1984	CONCRETE	1.086

GENERAL CONDITION - GOOD
A portion of the Pennsylvania Avenue Interceptor flows originate in the York City Industrial Park. The Interceptor flows through the Fireside residential development to Pennsylvania Ave. It then follows Pennsylvania Ave and Willis Road and intersects with the Willis Run Interceptor near the intersection of Willis Run and North George Street
EXISTING PROBLEMS - NONE
THE INTERCEPTOR SERVES: THE CITY OF YORK, MANCHESTER TWP AND NORTH YORK BOROUGH.

Existing Sewage Facilities

Table 3-10
TYLER RUN INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
SIPHON	1987	Ductile Iron	19.000
24	1987	CONCRETE	8.300
21	1987	CONCRETE	8.339
GENERAL CONDITION - GOOD The Tyler Run Interceptor follows Tyler Run from the York Township Boundary until it ties in with the Upper Codorus Creek and Codorus Creek Interceptors EXISTING PROBLEMS - NONE THE INTERCEPTOR SERVES: THE CITY OF YORK, SPRING GARDEN TWP. AND YORK TWP.			

Table 3-11
ARCH STREET INTERCEPTOR

DIAMETERS (in.)	DATE OF CONSTRUCTION	MATERIAL	MAXIMUM CAPACITY (Based on segment/size restricted capacity) (MGD)
27	?	VCP	4.783
24	?	VCP	4.460
18	?	VCP	2.560
15	?	VCP	4.900
GENERAL CONDITION - POOR The Arch Street Interceptor serves the Downtown area of York City. EXISTING PROBLEMS These sewers are typically the oldest in the city, constructed between late 1800's and 1930. This sewer sub-basin has a high peaking factor indicating that storm water inflow is a problem. THE INTERCEPTOR SERVES: THE CITY OF YORK			

Other smaller diameter interceptors referred to in this plan include: Philadelphia Street Interceptor, King Street Interceptor, Hay Street Interceptor, Gas Alley, and Prospect Street Interceptor. Each of these interceptors carry flows from both the City of York and/or various municipalities. These interceptors are in good condition, and there are no known problems, including overflows or surcharges, under present conditions.

Existing Sewage Facilities

Operations and Maintenance
The City of York is currently staffed for maintaining the sanitary sewers within the city. The maintenance staff addresses flow blockages on an as needed basis, and performs regular maintenance tasks such as hydro cleaning sewers, tree root removal, video inspections of sewers, and raising manholes.

The sewer maintenance staff has been using a drainage basin approach to manage maintenance tasks. The staff has been cleaning and video taping various drainage basins throughout the city. By targeting drainage basins with suspected or historical problems first, the staff is attempting to provide a higher degree of preventive maintenance to the collection and conveyance system than in past years.

Computer Modeling
Computer modeling was performed to analyze interceptor capacities under present and future conditions. The model was developed using the City of York's comprehensive plans, interceptor record drawings and survey data. The model was further calibrated using sanitary sewer flow metering data. A GIS system was developed by the City of York to maintain the flow data, model data and layout of the sewer system.

Sansys sanitary sewer modeling software was used for the sewer modeling. Sansys is a static model. This means that the model looks at a snapshot in time, rather than performing multiple iterations over time. This software will be easy for the sewer maintenance, planning and GIS staff to use and understand. Also, the City of York, Planning and Engineering Bureau is incorporating the use of their GIS software, ArcView, for storing the data used in the model and for graphically querying the results.

Flow metering was used to determine actual flow rates, depth of flow, flow velocities, infiltration and inflow rates and peaking factors. This data was then used to compare model results and to determine roughness coefficients for calibrating the model.

Actual field surveys were performed to verify sewer inverts in areas where available data was nonexistent or not available. This data was also incorporated into the model.

Once the model was fully developed, both the model results and meter data were used to determine sewer capacities and probable locations of existing and future overloaded sewers. The model and metering results were also used to determine sources of infiltration and inflow (I/I). Appendix 3 contains tables generated by the model which indicate sewer capacities for existing and future sewage flow scenarios.

Sanitary Flow Metering
From March 29, 1997 to March 29, 1998 a sewer flow metering program was operated within the City of York. In addition to the 9 permanent flow meters used by the City to monitor the major inter-municipal connection points, four new long term meters (LTM) and 12 short term meters (STM) were installed to more closely monitor the sanitary sewer flows. Table 3-12, Summary of Flow Metering Results, contains a summary of the flow data obtained during this metering period.

Dry Weather Base Flow
The lack of rain during most of 1997 enabled the determination of an accurate dry weather base flow. This base flow is considered the actual flow discharged by users of the system and excludes excessive infiltration and inflow. The flow metering information for the period of June through October 1997 was selected to establish this base flow since groundwater levels were low and rain events were minimal during this time. Table 3-12, Summary of Flow Metering Results, lists the dry weather base flow for the treatment plant, major interceptors and municipal meters.

Peaking Factors
Peaking factors are required to calculate the peak flow for the existing and projected average daily flow. Where specific meter data is available, peaking factors are calculated as the maximum instantaneous flow divided by the dry weather base flow. In cases where meter data is not available, PADEP's interceptor peaking factor guideline of 2.5 is used. Flows which are pumped into the system are peaked using a 4.0 factor to simulate the actual pumping rate. In all cases, the peak flow is calculated as the average daily flow times the peaking factor.

Infiltration and Inflow
Infiltration and Inflow (I/I) is a common problem with all aging sewer collection systems. The York City collection system as well as the connected municipalities' systems experience I/I. Even though the City of York and it's surrounding municipalities are making and will continue to make cooperative efforts to remediate as much I/I as possible, there are several areas which are suspect of having excessive I/I. The following paragraphs discuss excessive Infiltration and inflow.

Table 3-12
Summary of Flow Metering Results
* Flows Based on Meter Records from April 1997 to March 1998

Flow Meter	Municipality	Avg. Flow (MGD) April-March*	Base Flow (MGD) June-October	Peaking Factor
WWTP	Total System	11.918	9 690	2.59
LTM01	City of York, W Manchester Twp, Manchester Twp and North York Borough	2.726	2 242	2.08
LTM02	City of York, W York Borough, W Manchester Twp, York Twp, and Spring Garden Twp	6.327	5.192	2.32
LTM03	City of York	0.550	0.506	5.12
LTM04	City of York, and Spring Garden Twp	2 470	1.998	2.61
MN01	Manchester Twp	0 602	0.431	3.04
MN02	Manchester Twp	0.101	0.103	2.50
NY01	North York Borough	0.118	0.108	2.91
SG01	Spring Garden Twp	0.267	0.157	4.89
SG02A	Spring Garden Twp	0.144	0.110	3.56
SG03	Spring Garden Twp	0.245	0.185	4 64
WM01	West Manchester Twp	0.793	0.771	1.91
WY01	West York Borough and W Manchester Twp	1.371	1 157	2.06
YT01	York Twp	1.521	1.278	2.34
STM01	York Industrial Park, Fireside and Colony Park Residential Areas	0.444	0 512	1.75
STM02	Fireside Residential Area	0.164	0.119	2.91
STM03	York Industrial Park, West Manchester Twp, Manchester Twp and all areas serviced by WM01	1.261	1.065	1.99
STM04	City of York, Roosevelt Ave, Gas Ave and Vicinity	0.618	0.508	2.58
STM05	City of York, Philadelphia St, Market St and King St west of the Codorus Creek	0 461	0 395	5.00
STM07	Southern York City, George Street and Vicinity	0.319	0.257	2.69
STM08	Spring Gardent Twp, and Southern York City	0.419	0.385	2.67
STM09	Western York City, West York Borough and W Manchester Twp	2.146	1.820	2.06
STM10	Eastern York City, and Spring Garden Twp	0.266	0.254	3.50
STM11	City of York, Philadelphia Street east of Geroge St	0 322	0.095	2.60
STM12	City of York, King Street east of George St	0 144	0.157	2.78
STM13	City of York, Prospect Street Vicinity and Spring Garden Twp	0 749	0.564	2.80

Existing Sewage Facilities

Infiltration

Infiltration has been estimated from the average non-rain day flow meter readings for April 1997, January, February and March 1998. The groundwater was considered to be at near normal or greater levels during these four months. The estimated infiltration rates are calculated as the difference between the average monthly non-rain day flow for these four months and the dry weather base flow. Table 3-13, Summary of Infiltration Results, lists the estimated infiltration rates for each meter location during periods of high groundwater levels.

Throughout each service area, the volume of infiltration obviously increases as the length of piping exposed to high groundwater levels increases. Some service areas have larger volumes and should be further investigated for excessive infiltration. Based on the information in Tables 3-12 and 3-13, the following service areas had infiltration rates that were 60% or more of their base flows.

These service areas include.

- Willis Run Interceptor - Fireside Service Area
- Codorus Creek Interceptor - Spring Garden Township SG01 Service Area
Manchester Township MN01 Service Area
- Poor House Run Interceptor - Prospect Street Service Area
King Street Service Area
Spring Garden Township SG02A Service Area
Spring Garden Township SG03A Service Area

Inflow

Inflow throughout the collection and conveyance system was analyzed by looking at the rain event days. The inflow quantity is estimated in MGD and is calculated as the total daily flow minus the dry weather base flow minus the estimated infiltration. There is no average inflow; inflow fluctuates from storm event to storm event. Peaking factors and analysis of individual storm events provide the best indication of inflow problems. This plan, however, provides a generalized evaluation of inflow quantity.

Table 3-12, Summary of Flow Metering Results, indicates average daily flows, base flows and peaking factors. The peaking factor was determined by dividing the maximum daily flow by the dry weather base flow. Those basins that have inflow problems typically have larger maximum daily flows, and therefore have greater peaking factors during rain events. An acceptable peaking factor for interceptors is 2.5 as per PADEP *Domestic Wastewater Facilities* Manual. Based on the metering results presented in Table 3-12, Summary of Flow Metering Results, the

Existing Sewage Facilities

Arch Street, Poor House Run, Clarke Avenue, Hay Street and Spring Garden service areas have greater than acceptable peaking factors. Therefore, each of these interceptors is suspect for excessive stormwater inflow.

The analysis of rain events identified that rainfalls of at least 0.5 inches did significantly increase the total daily flow. Table 3-14, Inflow Rates for Storms with Greater than 0.5 Inches of Rain, shows monthly average inflow rates by meter location for the months of January, February and March 1998. These were the only months during the metering period in which significant rainfall events occurred on a consistent basis.

Based on the information in Tables 3-12 and 3-14, the following service areas had inflow rates that were 40% or more of their base flows, and/or had peaking factors greater than 3.0. These areas should be further investigated for inflow. This investigation should include further flow metering, smoke testing and wet weather visual inspections.

These service areas include:

- ♦ Willis Run Interceptor - West Manchester Township WM01 Service Area
- ♦ Codorus Creek Interceptor - Spring Garden Township SG01 Service Area
  Manchester Township MN01 Service Area
  Clark Avenue Service Area
- ♦ Poor House Run Interceptor - Spring Garden Township SG02A Service Area
  Spring Garden Township SG03A Service Area
  York City Entire Service Area
- ♦ Arch Street Interceptor - Entire Service Area

Prioritization of Areas for Further I/I Analysis

Three factors which indicate excessive I/I are quantity of infiltration, quantity of inflow and peaking factors. In order to determine a ranking of the service areas for priority of further evaluation, a weighted point system was employed. The infiltration and inflow quantities were weighted based on a point value assigned to a range of the percent of base flow as follows:

Infiltration		Inflow	
Percent of Base Flow	Weighted Points	Percent of Base Flow	Weighted Points
0 to 30	1	0 to 20	1
31 to 60	2	21 to 40	2

Existing Sewage Facilities

Infiltration		Inflow	
Percent of Base Flow	Weighted Points	Percent of Base Flow	Weighted Points
61 to 100	3	41 to 60	3
> 100	4	61 to 80	4

The peaking factors were assigned a point value equal to the peaking factor from Table 3-12, Summary of Flow Metering Results, rounded to the nearest whole number.

Table 3-15, Prioritization of Areas for Further I/I Analysis, identifies the priority ranking of the service areas based on this point system. The priority score is used to rank the severity of the I/I in each of the service areas from 1, the most severe, to 9, the least severe. Service areas that have a severity of 1 to 5 are recommended for further I/I investigation and ultimate I/I remediation.

The service areas recommended for further analysis are listed in the following and are shown in Exhibit 5 in Appendix 5.

Service Area	Priority Rank
Spring Garden Twp.	1
Spring Garden Twp.	2
City of York	3
Spring Garden Twp.	3
City of York, Philadelphia St, Market St. and King St. west of the Codorus Creek	3
Manchester Twp.	4
City of York, and Spring Garden Twp	5
Fireside Residential Area	5
City of York, Prospect Street Vicinity and Spring Garden Twp	5

Existing Sewage Facilities

Table 3-13
Infiltration Rates

Flow Meter	Municipality	April (MGD)	January (MGD)	February (MGD)	March (MGD)	Average Infiltration (MGD)	Base Flow	Percent of Base Flow
LTM01	City of York, W Manchester Twp, Manchester Twp and North York Borough	0.518	0.633	1.709	2.138	1 250	2.242	56%
LTM02	City of York, W York Borough, W Manchester Twp, York Twp, and Spring Garden Twp	1.036	1.704	3.384	4.366	2.622	5.192	51%
LTM03	City of York	0.036	0.037	0.045	0.075	0 048	0.506	9%
LTM04	City of York, and Spring Garden Twp	0.694	0 680	1.265	1.780	1.105	1.998	55%
MN01	Manchester Twp	0.131	0.320	0.581	0 636	0.417	0.431	97%
MN02	Manchester Twp	0 000	0 000	0.000	0.000	0.000	0.103	0%
NY01	North York Borough	0.010	0.011	0.021	0.043	0 021	0.108	20%
SG01	Spring Garden Twp	0.058	0 171	0.327	0.542	0.274	0 157	174%
SG02A	Spring Garden Twp	0.057	0 022	0 086	0 186	0.088	0 110	80%
SG03	Spring Garden Twp	0.075	0 077	0.095	0.239	0 122	0.185	66%
WM01	West Manchester Twp	0.218	0.222	0.193	NA	0.158	0 771	21%
WY01	West York Borough and W Manchester Twp	0.221	0.333	0.627	0 831	0.503	1.157	43%
YT01	York Twp	0.353	0.250	0.497	1.369	0.617	1 278	48%
STM01	York Industrial Park, Fireside and Colony Park Residential Areas	0.064	0.000	0.000	0 000	0 016	0 512	3%
STM02	Fireside Residential Area	0 028	0 072	0.155	0 248	0.126	0.119	106%
STM03	York Industrial Park, West Manchester Twp, Manchester Twp and all areas serviced by WM01	0.265	0.329	0.634	0.681	0.478	1.065	45%
STM04	City of York, Roosevelt Ave, Gas Ave and Vicinity	0.124	0.168	0 313	0.369	0.243	0.508	48%
STM05	City of York, Philadelphia St, Market St and King St. west of the Codorus Creek	0.129	0.060	0.133	0 176	0 124	0.395	31%
STM07	Southern York City, George Street and Vicinity	0.122	0.080	0.138	0.164	0.126	0 257	49%
STM08	Spring Gardent Twp, and Southern York City	0.030	0.000	0.130	0.303	0.116	0.385	30%
STM09	Western York City, West York Borough and W Manchester Twp	0.470	0.434	1.027	1.063	0.748	1.820	41%
STM10	Eastern York City, and Spring Garden Twp	0.000	0.000	0.027	0.123	0.037	0.254	15%
STM11	City of York, Philadelphia Street east of Geroge St	0.023	0.017	0.019	0 023	0.021	0.095	22%
STM12	City of York, King Street east of George St.	0.391	NA	NA	NA	0.098	0 157	62%
STM13	City of York, Prospect Street Vicinity and Spring Garden Twp	0.388	0 266	0.464	0.583	0.425	0.564	75%

NA - No Meter Data Available

Table 3- 14
Inflow for Storms with Greater Than 0.5 in of Rain

Flow Meter	Municipality	January (MGD)	February (MGD)	March (MGD)	Average Inflow (MGD)	Base Flow	Percent of Base Flow
LTM01	City of York, W Manchester Twp, Manchester Twp and North York Borough	1 005	0 192	0 745	0 647	2.242	29%
LTM02	City of York, W York Borough W Manchester Twp, York Twp, and Spring Garden Twp	2 112	1 115	2 927	2 051	5 192	40%
LTM03	City of York	0 415	0 233	0 346	0 331	0 506	65%
LTM04	City of York, and Spring Garden Twp	0 835	0.528	1 071	0 811	1 998	41%
MN01	Manchester Twp	0 250	0 038	0 386	0 225	0 431	52%
MN02	Manchester Twp	0 020	0 004	0 017	0 014	0 103	13%
NY01	North York Borough	0 034	0 019	0 039	0 031	0 108	28%
SG01	Spring Garden Twp	0.129	0 062	0 118	0 103	0 157	65%
SG02A	Spring Garden Twp	0 055	0 028	0 076	0 053	0 110	48%
SG03	Spring Garden Twp	0 138	0 117	0 170	0 142	0 185	76%
WM01	West Manchester Twp	0 361	0 315	NA	0 338	0 771	44%
WY01	West York Borough and W Manchester Twp	0 291	0 170	0 372	0 277	1 157	24%
YT01	York Twp	0 510	0 437	0 509	0 485	1 278	38%
STM01	York Industrial Park, Fireside and Colony Park Residential Areas	0 000	0 000	0 000	0 000	0 512	0%
STM02	Fireside Residential Area	0 033	0 000	0.000	0 011	0 119	9%
STM03	York Industrial Park, West Manchester Twp Manchester Twp and all areas serviced by WM01	0 405	0 192	0.000	0 199	1 065	19%
STM04	City of York, Roosevelt Ave, Gas Ave and Vicinity	0 183	0 092	0 000	0 092	0 508	18%
STM05	City of York, Philadelphia St, Market St. and King St. west of the Codorus Creek	0 277	0 173	0 104	0 184	0 395	47%
STM07	Southern York City, George Street and Vicinity	0 095	0 065	0 023	0 061	0 257	24%
STM08	Spring Gardent Twp, and Southern York City	0 076	0 090	0 149	0 105	0 385	27%
STM09	Western York City, West York Borough and W Manchester Twp	0 586	0 195	0 000	0 260	1 820	14%
STM10	Eastern York City, and Spring Garden Twp	0 031	0 085	0 000	0 038	0 254	15%
STM11	City of York, Philadelphia Street east of Geroge St	0 005	0 006	0 000	0 004	0 095	4%
STM12	City of York, King Street east of George St.	NA	NA	NA	NA	0 157	NA
STM13	City of York, Prospect Street Vicinity and Spring Garden Twp	0 266	0 147	0 000	0 137	0 564	24%

NA - No Meter Data Available

Existing Sewage Facilities

Table 3-15
I/I Investigation/Remediation Prioritiztion
Scoring System

Flow Meter	Approximate Service Area	Infiltration % of Base Flow	Inflow % of Base Flow	Peaking Factor	Priority Score	Priority Rating
LTM01	City of York, W Manchester Twp, Manchester Twp and North York Borough	2	2	2	6	7
LTM02	City of York, W York Borough, W Manchester Twp, York Twp, and Spring Garden Twp	2	2	2	6	7
LTM03	City of York	1	4	5	10	3
LTM04	City of York, and Spring Garden Twp	2	3	3	8	5
MN01	Manchester Twp	3	3	3	9	4
MN02	Manchester Twp	1	1	2	4	9
NY01	North York Borough	2	2	3	7	6
SG01	Spring Garden Twp	4	4	5	13	1
SG02A	Spring Garden Twp	3	3	4	10	3
SG03	Spring Garden Twp	3	4	5	12	2
WM01	West Manchester Twp	1	3	2	6	7
WY01	West York Borough and W Manchester Twp	2	2	2	6	7
YT01	York Twp	2	2	2	6	7
STM01	York Industrial Park, Fireside and Colony Park Residential Areas	1	1	2	4	9
STM02	Fireside Residential Area	4	1	3	8	5
STM03	York Industrial Park, West Manchester Twp, Manchester Twp and all areas serviced by WM01	2	1	2	5	8
STM04	City of York, Roosevelt Ave, Gas Ave and Vicinity	2	1	3	6	7
STM05	City of York, Philadelphia St, Market St. and King St. west of the Codorus Creek	2	3	5	10	3
STM07	Southern York City, George Street and Vicinity	2	2	3	7	6
STM08	Spring Gardent Twp, and Southern York City	1	2	3	6	7
STM09	Western York City, West York Borough and W Manchester Twp	2	1	2	5	8
STM10	Eastern York City, and Spring Garden Twp	1	1	4	6	7
STM11	City of York, Philadelphia Street east of Geroge St.	1	1	3	5	8
STM12	City of York, King Street east of George St.	3		3	6	7
STM13	City of York, Prospect Street Vicinity and Spring Garden Twp	3	2	3	8	5

Refer to Appendix 5, Exhibit 5 for map of I/I Required Action Areas

Priority Ratings 1 - Highest Priority, to 9 - Lowest Piority, A rating of 6 to 9 does not require immediate action

Existing Sewage Facilities

Location, Size and Ownership of Individual On-Lot Sewage Disposal Facilities

Individual On-Lot Sewage Disposal Facilities are not permitted by law in the City of York. There are no known existing on-lot disposal systems in the City of York. As previously mentioned in Section 1, City Codes will not allow any future on-lot disposal facilities.

Section 4

Future Growth and Development

City of York land development activities expected to occur within a five year horizon, 1998 through 2002, have been identified in the 1997 Chapter 94 report for the York City Wastewater Treatment Facility. These development activities and the projected sewage flow in gallons per day (GPD) are listed in Table 4-1, York City Projected Additional Sewage Needs, 1998-2002. In addition to the listed potential development activities, the City has identified opportunity sites throughout the City and approximately 300 acres in the rail corridor, or Enterprise Development Area zoning district. (Refer to Appendix 4, Review of Ultimate Sewage Needs). The scattered opportunity sites in the City are often an acre or less in size, may be vacant or occupied, and represent properties that have the potential to make a positive impact on surrounding neighborhoods through their redevelopment. The rail corridor is a continuous geographic area of variously sized properties that, in the past, have been mostly used for industrial activities, although many residential properties exist in the corridor as well. The size of sites in the rail corridor ranges from 3,000 square feet to approximately 10 acres. Residential, commercial and industrial uses may result from the long-term redevelopment of this area. The reuse of these properties was identified during the City's comprehensive planning process. The City will inventory rail corridor sites and develop a prioritized list of redevelopment opportunities during 1998.

Table 4-1
York City Projected Additional Sewerage Needs: 1998-2002

Development Location or Name	Additional Flow (GPD)
City of York Business and Industry Park, Phase III	54,014
Kenneth Road and Route 30, three lots	4,200
Smokestack tract (Grant and Philadelphia Streets)	1,320
250-252 South George Street	400
Old Penn Hotel Site (Philadelphia and George Streets)	3,000
Eberts Lane and railroad tracks	595
Miscellaneous residential infill development	35,000
Downtown Visitor's Center	350
Oak Lane residential redevelopment (15 single family lots)	4,200
George and College, west side (Gerber lot)	310
Post Office Annex (George and Hope)	320
346 South George Street (Rescue Fire Station)	110
Railroad freight office (N George and railroad tracks, west side)	370
Boundary and George, SE institutional use	820
Boundary and George, NE office/retail	2,280
Boundary and George, NW residential	21,000
York Industrial Plaza	390
454 E Princess Street (ACCO site)	3,500

Future Growth and Development

Table 4-1 York City Projected Additional Sewerage Needs: 1998-2002	
200 N Broad Street (Graybill property)	4,000
226 West Market Street (Swingers)	300
Baseball stadium	9,000
Ice skating rink	4,310
Total	149,789

Source 1997 Chapter 94 Municipal Wasteload Management Report

Subdivision Activity

Since 1995, twenty-two subdivisions and ten subdivisions combined with land development have been processed by the City of York. Most subdivision activity in the City does not create separate smaller developable parcels, as often occurs in suburban or rural township locations, but separates multiple uses that have historically occurred on a single parcel of land (i.e., a series of row homes on a single deed, or multiple commercial-industrial uses on a single parcel with or without residential uses). It is expected that this pattern of subdivision activity, which does not greatly impact housing unit counts or population, will continue in the future. Reverse subdivision, or the creation of larger lots from multiple parcels, is expected to occur over the long term in the rail corridor to create parcels that are of sufficient size to support potential commercial and industrial uses and possibly some residential cluster uses.

Redevelopment Activity

Since 1995, forty-five land development plans have been processed by the City of York, ten of which were combined with subdivisions. Most expected land development in the City will involve the redevelopment or reuse of existing sites. By far, the majority of land development plans received are for structural additions to existing commercial, industrial or institutional buildings, or for addressing changes in the internal allocation of leasehold spaces. The exception to this is the recent opening of Phase III of the City of York Business and Industry Park, which comprises thirteen lots, two of which have been developed. Since 1995, approximately nine land development plans were submitted for undeveloped properties, all of which were located in the York City Business and Industry Park with the exception of one parcel of land located along Route 30. The largest redevelopment opportunity in the City is lands located within the rail corridor, as previously discussed. Reverse subdivisions, or the creation of larger lots from multiple parcels, are expected to occur over the long term in the rail corridor to create parcels that are of sufficient size to support potential modern commercial and industrial uses.

Commercial and Industrial Development Activity

As previously discussed, the majority of commercial and industrial development occurs on sites that are already developed. It is expected that the City will more aggressively pursue economic development of underutilized sites in the rail corridor over the next fifteen to twenty year period in accordance with the community goals and visions established through the comprehensive planning process.

Population and EDU Projections

Section 2 lists various sources for population projections. For the purpose of projecting sewage need of this Plan, the vacancy adjustment rate method is used. The City has estimated a long-term goal of reducing its housing unit vacancy rate from the 1995 rate of 8.2% to approximately 5% by the year 2020, an increase of 635 (19,851 x .032) occupied units. At an average of 2.3 persons per household and assuming no housing units are constructed or razed, this reduced vacancy rate would increase the City's population 1,461 persons from 45,657 in 1995 to 47,482 by the year 2020. This projected population change represents a total increase of 4.0% over the 25 year period or an average annual increase of 0.16%. Table 4-2, City of York, Act 537 Plan Population Projections, lists the population increase based on vacancy reduction.

Table 4-2
City of York
Act 537 Plan Population Projections

Year	Population Projection Due to Vacancy Reduction (based on an increase of 0.16% per year)
1995	45,657
2000	46,022
2010	46,752
2015	47,117
2020	47,482

In order to estimate the current number of equivalent dwelling units (EDU's), the City of York searched of available data bases and other source information. The EDU's were estimated by combining information from the Housing Condition Land Use database, the tax information database, informational databases on York City businesses, the PADEP Chapter 73 guidelines for estimating EDU's, and actual research on commercial and industrial users. The results of this EDU survey indicate that in 1997 there were 22,938 EDU's within the City of York.

Future Growth and Development

The existing average gallons per day for each EDU was determined by dividing the City's five year annual average flow (1993-1997) by the number of EDU's existing in the City as determined by the survey. The average gallon per day per EDU is 250 (5.774 MGD ÷ 22,938 EDU's). To project future flow, this average flow per EDU is multiplied by the projected number of future EDU's.

The *September 1997 City of York Review of Ultimate Sewage Needs Report* contained in Appendix 4 identified the projected annual average increase in sewage flow to be 15,000 gpd. For the purpose of projecting the additional future flow within the City for this plan, this estimated 15,000 gpd per year will be used. At 250 gpd/EDU, this annual increase in flow equates to 60 EDU's per year or 300 EDU's every five years.

The population calculations based on vacancy rate reduction, identified 635 additional occupied units occurring from 1995 to 2020. Considering each occupied unit to be an EDU, the number of future EDU's for the vacancy adjustment population increase would be 25.4 EDU's per year or 127 EDU's per five years.

The number of EDU's associated with other development activities within the City would be 300 total EDU's minus 127 EDU's or 173 EDU's per five years.

Table 4-3, City of York Act 537 Plan Projected Flows, summarizes the projected flow to the year 2020.

Future Growth and Development

Table 4-3
City of York
Act 537 Plan Projected Flows

YEAR	EDUs FROM ULTIMATE SEWAGE NEEDS STUDY		TOTAL PROJECTED EDUs	PROJECTED FLOWS (gpd)
	EDUs FROM POPULATION INCREASES FOR VACANCY REDUCTION	EDU's FROM OTHER DEVELOPMENT		
1995	----------	----------	22,938	5,774,000*
2000	127	173	23,238	5,809,500
2005	127	173	23,538	5,884,500
2010	127	173	23,838	5,959,500
2015	127	173	24,138	6,034,500
2020	127	173	24,438	6,109,500
*5 year average 1993-1997				

The ultimate sewage flow projection as developed in the September 1997 *City of York Review of Ultimate Sewage Needs* is 8.92 MGD. This ultimate flow is based on total redevelopment of the Rail Corridor, successful vacancy adjustments, build-out of miscellaneous infill sites and an allocation for industrial users. The *City of York Review of Ultimate Sewage Needs Report* estimates that it would take in excess of 90 years to reach this ultimate flow of 8.92 MGD. Therefore, the ultimate need was reduced to 8.580 MGD by the City of York so the City could sell 3.5 MGD of its allocated capacity to Springettsbury Township and relieve a regional capacity issue.

EDU Projections for the Connected Municipalities
Each of the connected municipalities used flow meter data and existing EDU counts to determine their existing flow contributions. This information was used to develop Table 4-4, Existing and Projected Flows. The connected municipalities also provided flow projections for the years 2005, 2010, 2020 and ultimate sewer service area build out. The flow projections in Table 4-4 have been approved by each of the connected municipalities. Refer to Appendix 8 for approval letters.

Future Growth and Development

Table 4-4
Existing and Projected Municipal Flows
(gallons per day)

Muncipality	1997 Annual Average Flows	Proposed 5 Year	10 Year	20 Year	Ultimate	Based on Current Permits of 26 MGD: ALLOCATED FLOWS	ALLOCATED EXCESS OR (DEFFICIENCIES)
MANCHESTER	1,000,971	2,191,351	2,288,425	2,483,425	2,594,325	2,434,900	(159,425)
NORTH YORK	206,649	215,049	220,299	230,799	236,049	515,800	279,751
SPRINGETTSBURY *		3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0
SPRING GARDEN	1,214,960	1,667,160	1,934,510	2,315,710	2,361,960	3,011,500	649,540
WEST MANCHESTER	1,862,303	2,269,203	2,362,203	2,513,703	2,531,203	4,594,200	2,062,997
WEST YORK	814,690	836,740	843,740	857,740	864,740	1,200,500	335,760
YORK TWP	1,605,689	2,351,509	2,357,059	2,426,534	2,451,034	2,163,000	(288,034)
CITY OF YORK	4,276,506	5,884,500	5,959,500	6,109,500	8,580,000	8,580,100	100
TOTALS	10,981,768	18,915,512	19,465,736	20,437,411	23,119,311	26,000,000	2,880,689

YORK TWP. ALTERNATIVES

Alternative 2 & 3	1,605,689			3,000,000	3,024,500	2,163,000	(861,500)
TOTALS	10,981,768			21,010,877	23,692,777	26,000,000	2,307,223
Alternatives 4 & 5	1,605,689			4,100,000	4,124,500	2,163,000	(1,961,500)
TOTALS	10,981,768			22,110,877	24,792,777	26,000,000	1,207,223

* Added to Table 4-5 based on the June 1998 agreement between the City of York and Springettsbury Township

Section 5

Alternatives

Wastewater Treatment
The plant process capacity evaluation (Appendix 2) finds that the existing York City Wastewater Treatment Plant has a rated and permitted capacity of 26 MGD and a potential redefined capacity of 28.6 MGD. The projected ultimate average annual flow need of the system is 23.1 MGD. Please refer to Section 4. This ultimate flow need includes 3.5 MGD from Springettsbury Township. The use of the York plant to treat a portion of Springettsbury's flow provides a practical and rapid solution to Springettsbury Township's current shortage of capacity noted below. The 23.1 MGD ultimate need leaves some 2.9 MGD of estimated unused capacity. This capacity may be used to meet currently unrecognized needs of municipalities within the planning area.

Springettsbury Township recently completed a facilities plan that found a need for 6.5 MGD of additional treatment capacity. That plan also found that peak flows may overload sections of its interceptor system. Springettsbury Township faced the prospect of providing expanded facilities to meet projected needs. An alternative to immediate expansion of the Springettsbury plant is the use of excess treatment capacity at the York plant for a portion of the Springettsbury Township flow. The diversion of flow to the York plant would reduce the average and/or peak loadings at the Springettsbury plant and the Springettsbury Codorus Creek interceptor to preclude overloading of these facilities.

It must be cautioned that both the York and Springettsbury systems experience increased flows during wet weather. Control of infiltration and inflow (I/I) is necessary to minimize peak loadings that could overload the collection, conveyance, and treatment facilities. Transferring flow to the York system will not eliminate the need for such control, but will reduce the immediate impact of I/I and provide time to implement controls forestalling expansion of the Springettsbury facilities. If I/I cannot be controlled to achieve this objective, then either or both York and Springettsbury may have to provide wet weather treatment or storage facilities.

The success of diverting Springettsbury flow to the York system to eliminate overloads depends on the ability of the York plant to accommodate the Springettsbury system average and peak flows to be transferred. During dry weather, flows in both systems are well below the design capacities. During wet weather, the collection and treatment facilities may be stressed. The excess capacity in the York plant provides a short-term, and possibly a long-term means, of addressing the Springettsbury overload, but only if the York plant can manage peak flows provided by both systems.

Alternatives

A June 1998 agreement between the City of York and Springettsbury Township allows Springettsbury to convey 3.5 MGD daily and up to 5.0 MGD during wet weather periods to the York plant. This plan evaluates alternatives to insure that the York plant has the capacity to process the increased average and peak flows associated with planned growth in the York system and the flows to be conveyed from the Springettsbury system.

Design Flows

The feasibility of the Springettsbury flow diversion project rests on the ability of the York plant to manage the increased flows. The Domestic Wastewater Facilities Manual (the Manual) provides guidance on the design flow of treatment facilities (Section 43.4). The current design flow of the York plant is 26.0 MGD. This Annual Average (AA) Flow capacity has been confirmed by examining the treatment units and design parameters. The Manual states that the AA flow is to be used for water quality modeling to calculate limits for NPDES permits. This is technically distinct from the Maximum Monthly Average (MMA) Flow that is to be used for planning purposes. At the York plant the MMA flow has averaged 1.25 times the AA flow in the past five years.

The Manual states that the MMA flow is to be used to:

- Determine the overall hydraulic design of the facility;
- Evaluate Act 537 plan updates and planning modules;
- Evaluate "hydraulic capacity" for Chapter 94 determinations; and
- Establish the monthly average flow limitation on the NPDES permit.

The MMA flow is the design flow included in annual wasteload management (Chapter 94) reports. Recognizing that monthly flows can vary with precipitation, it is actually the Maximum Three-month Average Flow that is compared to the MMA flow capacity. In accordance with federal policy, the NPDES permits do not currently have flow limits. The MMA flow is therefore no longer necessary to set flow limits. The MMA flow remains critical for planning purposes, but if facilities have the capacity to process a given flow for a month, then they can also process the same flow for a year. Therefore, the AA flow capacity of 26 MGD has been used in the York Chapter 94 reports. A reasonable use of this design flow for planning and permitting purposes is critical to the management of the York discharge and this plan. If additional capacity is needed at the York plant, it will probably be MMA flow capacity. If this condition is made clear when a permit is requested, it may be possible to expand the plant to process additional MMA flow without changing the water quality based NPDES permit effluent limits.

Alternatives

Need for Alternatives
Simply having unit capacities to process an AA flow or MMA flow does not insure that the plant can process the peak flows. This Plan evaluated the capacity of the York City Wastewater Treatment Plant to process maximum anticipated flows. The Manual recommends that the Peak Hourly Flow be used for designing comminutors, pump stations, piping, and units subject to peak flow conditions and that the Peak Instantaneous Flow be used for designing pump stations and other units sensitive to excessive detention times. In a large system, the distinction between these peaks is relatively small and not distinguishable. The flow analysis prepared in Section 3 finds that a peaking factor of 2.59 is applicable to the treatment plant. The ability to process Peak Instantaneous Flow of this magnitude is necessary to avoid flooding the treatment facilities. The treatment units, pumping, and piping were evaluated for their ability to process such Peak Instantaneous Flows.

A Peak Instantaneous Capacity of approximately 67 MGD (2.59 x 26 MGD) was selected to match the design loading of 26 MGD. Evaluation of the treatment facilities found that the plant can not manage an instantaneous flow of 67 MGD. Peak instantaneous flows in recent years have exceeded the plant's designed peak flow capacity of 42 MGD. During these events treatment was maintained using Trains 2 and 3 only. All three of the Train 2 effluent pumps (one is considered a reserve pump) were used to avoid or limit flooding. The storm water pumps designed to convey effluent from Train 2 to the creek during emergencies were not utilized because the City has not kept disinfection agents on hand for this discharge. With the installation of the ultraviolet light disinfection system the City no longer needed chlorine for routine disinfection and removed the chlorine cylinders for safety reasons. These cylinders were the intended source of chlorine to be used during emergencies. A concern has been raised that with additional flow from Springettsbury Township, the frequency of flows in excess of 42 MGD will increase and the probability of reaching a flow level that cannot be properly conveyed or treated will also increase. Alternatives to increase the capacity of the plant to manage peak flows of approximately 67 MGD were developed and evaluated, and are discussed below.

Alternatives
Based on the plant capacity evaluation, three alternatives to increase peak instantaneous plant capacity to 67 MGD were considered. It must be recognized that the estimated frequency of such flows should be very low during the planning period. In 1997, a dry year (precipitation of 33.6"), the maximum daily flow was 19 MGD. In 1996, an extremely wet year, (precipitation of 58.87") daily flows exceeded 30 MGD on 22 days. The maximum daily flow of 47 MGD occurred twice in 1996. It should be recognized that 1996 had an all time record precipitation. Precipitation in 1996 exceeded the next highest level in the previous ten years by six inches. Precipitation has been above normal in 1998. The

average flow for the first quarter of 1998 was 16.7 MGD. A peak instantaneous flow of 45.8 MGD occurred in March 1998. Providing a peak flow capacity of 67 MGD will not absolutely assure that the plant will never flood. A capacity in this range should, however, prevent flooding under all but extraordinary conditions. Inflow control efforts could reduce the peaking factor and the need for such a high peak flow capacity.

Alternatives were developed to provide an Instantaneous Maximum Flow capacity of 67 MGD through Trains 2 and 3, since Train 1 is typically out of service. Distributing this needed peak capacity in proportion to the treatment capacity of these units defines a needed peak flow capacity of 31 MGD for Train 2 and 36 MGD for Train 3. The ability to convey these rates of flow through Trains 2 and 3 is currently limited by pumping capacity. Effluent filtration and disinfection capacity are also inadequate to process the instantaneous rate of flow.

Alternatives are developed and evaluated to address these limitations and include:

- Alternative 1. No Action Alternative
- Alternative 2. Increase Capacity to Convey Raw/ Primary Treated Sewage to Train 3
- Alternative 3. Increase Capacity to Convey Effluent from Train 2
- Alternative 4. Provide Disinfection to Train 2 Overflow
- Alternative 5. Enlarge Effluent Filtration System
- Alternative 6. Increase UV Disinfection Capacity

Alternatives 2 and 3 provide additional pumping capacity. Alternative 4 makes use of existing stormwater pumping capacity and an existing second effluent discharge point to Codorus Creek. Alternatives 5 and 6 provide additional post-treatment units and may be considered separately from Alternatives 1, 2, 3, and 4 and from each other. Disinfection facilities must be adequate to process all reasonably expected peak flows, but if Alternative 4 is selected, additional UV disinfection capacity for the plant's normal discharge point would be unnecessary. Filtration facilities may not be needed to process 100% of treated flows at all times.

Estimated costs provided for the various alternatives include the project costs and the annual operations and maintenance costs. The project costs include the construction costs plus 25% for associated legal, engineering, and financial costs.

Alternative 1. No Action Alternative
Under the No Action Alternative, flows would be managed with existing facilities. The No Action Alternative would subject the plant to an increasing frequency of unpermitted overflows when Peak

Alternatives

Instantaneous Flows exceed the hydraulic capacity of the plant. Since raw sewage enters the plant at the Train 2 elevation, and if the flow exceeds pumping capacity for any extended length of time, this train will flood. Overflows can be removed through the use of the existing stormwater pumps, but lacking disinfection capability, any discharge through these pumps will violate permit conditions.

Discharges of undisinfected effluent have been prevented to date. Wet weather flow plus the Springettsbury Township flow transfer into the York plant will necessitate the use of the storm water pumps possibly twice a year for 12 to 24 hours unless system flow peaks can be significantly reduced.

The PADEP would consider the stormwater pump discharge to be "other bypassing" and this type of discharge is prohibited unless all of the following conditions are met:

a. A bypass is unavoidable to prevent loss of life, personal injury, or severe property damage.
b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed (in the exercise of reasonable engineering judgment) to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance.
c. The permittee submitted the necessary reports.

A bypass to avoid the flooding of treatment units (pumps etc.) in Train 2 may meet the conditions for "other bypassing" but only if such bypassing is extremely rare. Annual bypassing of undisinfected flow is likely not to be acceptable. If this alternative is selected, permit violations may occur once the Springettsbury Township connection is made.

This alternative has no capital cost and since no new equipment is involved there is no additional maintenance cost. Additional use of the stormwater pumps will result in small increases in electrical and operations costs. The increase in operations and maintenance costs for Alternative 1 are estimated at $500 per year.

Alternative 2. Increase Capacity to Convey Raw/ Primary Treated Sewage to Train 3.

This alternative involves increasing the peak pumping capacity to Train 3. Two pumping alternatives are identified that would increase the peak pumping capacity to Train 3 from a present 28 MGD to approximately 36 MGD.

Alternatives

Alternative 2. A. Upgrade Train 3 Raw Waste Pumps and Primary Effluent Pumps
Under this alternative, the capacity of existing pumps would be increased through the replacement of impellers and motors. The raw waste pumps can be increased from the current capacity of 14 MGD to a new capacity (in conjunction with operation of one primary effluent pump) of 22.4 MGD through the installation of larger impellers and an increase of motor horsepower from 125 to 250. The primary effluent pump impellers would need to be replaced with larger impellers to pump 12.1 MGD in conjunction with the raw pumps for a total of 34.5 MGD pumping capacity to Train 3. The primary effluent pump motor would not require upgrading beyond the existing 250 HP size. This alternative would allow Train 3 to process a peak flow of 34.5 MGD, 1.5 MGD below the goal of 36 MGD.

Without the raw pumps in operation, the primary effluent pumping capacity would be increased from 15.1 MGD to 16.2 MGD.

The project cost for this alternative is estimated at $665,000 and the additional annual operations and maintenance cost is estimated at $600.

Alternative 2.B. Install Pumps at Train 1 Feed Pumping Station to Feed Train 3
This alternative requires the installation of new pumps and a force main to convey flow from the Train 1 Feed Pumping Station wet well to Train 3. Two 100 HP centrifugal pumps with a capacity of 9.2 MGD each would be installed in a new dry well near the Train 1 raw sewage wet well. A 24" force main would be installed along one of two possible routes for a distance of approximately 1,900 feet. This alternative would allow Train 3 to process a peak flow of 37.2 MGD.

The project cost for this alternative is estimated at $1,034,000 and the additional annual operations and maintenance cost is estimated at $2,900.

Alternative 2. C. Upgrade Train 3 Raw Waste Pumps and Primary Effluent Pumps and Install New Force Main
This alternative is similar to 2.A. except that in addition to the upgrade of the pumps, a 1,530 foot long 30 inch diameter force main would be installed to parallel the existing 30-inch diameter force main to the Train 3 parshall flume structure. This second force main would allow the Train 3 raw sewage pumps and the primary effluent pumps to discharge into separate force mains in lieu of the existing combined force main. The motor horsepower of the raw pumps would be increased to 200 and the motor horsepower of the primary effluent pumps would remain at 250. This alternative would allow Train 3 to process a peak flow of 36.4 MGD.

Alternatives

The project cost for this alternative is estimated at $1,003,000 and the additional annual operations and maintenance cost is estimated at $300.

Alternative 3. Increase Capacity to Convey Effluent from Train 2
This alternative involves removing additional effluent from Train 2 by increasing conveyance capacity to the effluent filters and ultraviolet light disinfection system. The capacity of Train 2 is limited by that of the effluent screw pumps. The pumping capacity with two of the three pumps in service is 15 MGD. The capacity with three pumps operating is 22.5 MGD. One pump is considered a reserve pump. During periods of extreme flow all three pumps can be and are run, but for planning purposes, the rated conveyance capacity is based on that of two pumps. The use of all existing pumps is considered in some of the Alternative 3 scenarios and the capacity with all pumps in operation is called the emergency capacity. This alternative is intended to provide a rated capacity of 31 MGD for Train 2. Seven scenarios were considered to achieve this objective.

Alternative 3.A. Install Two Submersible Pumps in Screw Pump Wet Well
This alternative includes the installation of two 90 HP submersible centrifugal pumps and a 63 foot long by 20-inch diameter force main to convey Train 2 effluent from the screw pump wet well to the screw pump discharge sump. The capacity would be 8.5 MGD per pump and would increase the rated conveyance capacity to 31 MGD. The second pump would be a reserve pump.

The project cost for this alternative is estimated at $561,000 and the additional annual operations and maintenance cost is estimated at $4,600

Alternative 3.B. Install One Submersible Pump in Screw Pump Wet Well
This alternative is the same as the preceding alternative but without the reserve pump. The rated capacity would be increased to 23.5 MGD assuming the operation of two screw pumps and the centrifugal pump. In practice it will be less expensive to operate three screw pumps and maintain the centrifugal pump in reserve unless capacity was critical. The capacity of the three screw pumps is 22.5 MGD operated together. The emergency capacity of this alternative, assuming all pumps are operational, is 31 MGD, the combined capacity of all pumps.

The project cost for this alternative is estimated at $350,000 and the additional annual operations and maintenance cost is estimated at $2,400.

Alternatives

Alternative 3.C. Install One Additional Screw Pump With Spare Parts

This alternative involves the installation of one additional 60 HP screw pump and storage of critical parts (spare motor, gear drive, upper and lower bearings, and lube pump) on site to minimize the frequency and duration of pump down time. This alternative would provide a rated capacity of 22.5 MGD and an emergency capacity of 30 MGD with all pumps in operation.

The project cost for this alternative is estimated at $535,000 and the additional annual operations and maintenance cost is estimated at $5,600.

Alternative 3.D. Install One Additional Screw Pump With Spare Parts and Upgrade of Existing Pumps

This alternative involves the installation of an additional screw pump and modification of the existing pumps (replacement of gears and adjustment of speed) to increase pump capacity to 8.25 MGD per pump. This alternative would provide a rated capacity of 24.8 MGD and an emergency capacity of 33 MGD with all pumps in operation.

The project cost for this alternative is estimated at $570,000 and the additional annual operations and maintenance cost is estimated at $5,600.

Alternative 3.E. Install Two Additional Screw Pumps With Upgrade of Existing Pumps

This alternative involves the installation of two new screw pumps and an upgrade of existing pumps to provide a rated capacity of 33 MGD with one pump in reserve.

The project cost for this alternative is estimated at $954,000 and the additional annual operations and maintenance cost is estimated at $7,100.

Alternative 3.F. Install Two additional Screw Pumps With Spare Parts and Without Upgrade of Existing Pumps

This alternative provides a rated capacity of 30 MGD and an emergency capacity of 37.5 MGD with all pumps in service.

The project cost for this alternative is estimated at $918,000 and the additional annual operations and maintenance cost is estimated at $8,500.

Alternative 3.G. Purchase Two Trailer Mounted Suction Lift Pumps

This alternative includes the purchase of two trailer mounted diesel fueled suction lift pumps, the installation of a 63 foot 12" force main to the screw pump discharge sump, and the installation of a 10" suction line to the screw pump wet well. The force main and suction lines would be provided with quick disconnect couplings for connection of hoses from the portable pumps. In an emergency condition the pumps would be moved into position and connected to the installed piping. The capacity of each is 8.5 MGD to provide a rated capacity of 31 MGD with one pump in reserve. The portable pumps would be available for other plant uses such as tank dewatering when not in service for emergency pumping.

The project cost for this alternative is estimated at $263,000 and the additional annual operations and maintenance cost is estimated at $6,000.

Alternative 4. Provide Disinfection to Train 2 Overflow
This alternative involves the addition of chemical disinfectant to emergency overflows of Train 2 effluent that drain by gravity into the storm water pump station wet well (converted chlorine contact tank). This alternative would insure that any Train 2 flows exceeding the capacity of the screw pumps would be disinfected before discharge to the Codorus Creek. Such bypassing is allowed by the permit, but there are potential regulatory issues. The PADEP removed discharge point No. 001 from the permit at the last renewal because disinfection was not available for it and no flow value could be assigned to it. A provision should be reinstated in the permit for this discharge. The current permit also lacks any total residual chlorine limit. If chemical disinfection is provided for overflows to discharge point No. 001, the PADEP may institute such a limit even if discharges are strictly limited to wet weather. An oxidation/reduction based feed control system would be installed to minimize the chlorine residual. It is assumed that dechlorination will not be required. If dechlorination is required, the cost of additional chemical tanks and a more complicated control system will have to be added to the cost of this alternative

Alternative 4.A Hypochlorite Disinfection
This alternative involves conversion of two existing 10,000-gallon sodium hydroxide storage tanks to sodium hypochlorite storage tanks and modification to existing chemical pumps to feed 0.59 gpm of solution. Existing chlorine feed lines would be utilized to feed the solution to the storm water piping (Train 2 overflow pipe) upstream of the stormwater pump station (chlorine contact tank). Minimum storage of 2,000 gallons of full strength (15%) solution would be necessary to provide disinfection for the design event. The solution degrades in storage, but feed rates could be increased to prolong the useful life of the solution and larger quantities of solution could be maintained in storage. The use of higher quality solutions of known purity and a pH of between 11 and 13 units would reduce the rate of degradation. Operators would have to test the stored material on a routine basis

(monthly) to insure that proper feed rates are established when use is necessary. Disposal of degraded chemical could be accomplished by using it to clean tanks or filters. Such disposal would have to be controlled to prevent the release of chlorine in the effluent.

The project cost for this alternative is estimated at $65,000 and the additional annual operations and maintenance cost is estimated at $3,400.

Alternative 4.B. Chlorine Disinfection
This alternative involves the use of an existing chlorine system to provide disinfection. When the plant was upgraded, chlorine was the intended means of disinfection of overflows. Since that time, air quality and hazardous materials regulations have made the use of chlorine as a standby disinfectant more difficult, but not impossible. The presence of 2,500 or more pounds of chlorine on site subjects a facility to significant air quality requirements, in particular a requirement for a risk management plan. Since the chlorine system is equipped with an evaporator, emergency disinfection could be achieved using a single cylinder and the risk management plan requirement can be avoided. Since use would be infrequent, the cylinder would likely have to be replaced before it is empty. It could be practical to replace the tank yearly regardless of use. Reintroducing liquid chlorine to the site will require the necessary notification and information sharing required by SARA Title III.

This alternative has a capital cost of $55,000. The additional annual operations and maintenance cost includes the total cost of operating the now unused chlorine facility and is estimated at $5,700 per year.

Alternative 5. Increase Effluent Filtration System Capacity
The installation of additional filters may be required to insure compliance with the permit during peak flow periods. When flow exceeds filter capacity the excess flow bypasses the filters and drains with filtered water to disinfection. The installation of additional filters would reduce the quantity of flow bypassed. The installation of filters with and without a prewash system is considered. The prewash system is a chemical feed system designed to provide periodic on-line cleaning of the filters to maximize filtration capacity. Typically sodium hypochlorite is used to prewash filters. The York plant currently has five filter units. One is considered a reserve unit. The addition of up to three additional filters was evaluated. The filter building would have to be enlarged to house the new units and the existing sand trap on the back wash water drain line would have to be enlarged to process increased flow.

A prewash system could be installed with new filter units or separately at an estimated cost of $12,000 per filter. A prewash system would reduce filter clogging and the rate of backwash and reduce the need for manual cleaning of the filter units. Currently units are taken out of service quarterly to provide chemical treatment of the filter media. This out of service cleaning could be avoided through the use of a prewash system. A drawback to the prewash system is that any chemical residuals would be carried to the discharge with the effluent. If hypochlorite is used, a permit limitation for total residual chlorine could be imposed on the discharge. The cost of a prewash system was not included in the alternatives analysis, but may be considered if and when filters are expanded or replaced or separately to improve performance of the existing units.

Alternative 5.A. Install Three New Sand Filter Units
The rated capacity of the filter units is 10.6 MGD per filter. The installation of three filters should therefore increase the filtration capacity from the current 42. MGD to 74 MGD. In practice filtration capacity has been limited to between 20 and 30 MGD. The addition of three more filters would increase filtration capacity by 75%.

The project cost for this alternative is estimated at $4,145,000 and the additional annual operations and maintenance cost is estimated at $28,700.

Alternative 5.B. Install Two New Sand Filter Units
The installation of two filter units would provide 63.2 MGD of filtration capacity. This capacity would be adequate to provide filtration of all flows in excess of the volume of flow allowed to overflow at Train 2 and be disinfected and discharged through the stormwater overflow system (Alternative 4).

The project cost for this alternative is estimated at $2,784,000 and the additional annual operations and maintenance cost is estimated at $19,400.

Alternative 5.C. Retrofit Existing Sand Filters
The retrofit of the existing sand filters would provide 21.2 MGD average daily flow and 53.0 MGD peak flow filtration capacity. This alternative would not require modifications to Train 2 Effluent Pumping Station. The proposed capacity would be adequate to treat the flow from Train 3 in addition to the flows from Train 2 that are not disinfected and discharged through the stormwater overflow system (Alternative 4).

The project cost for this alternative is estimated at $1,272,500 and the additional annual operations and maintenance cost is estimated at $100.

Alternative 6. Enlarge Effluent Disinfection System
The installation of additional ultraviolet disinfection capacity would insure effective treatment of increased flows through the existing post-

treatment units.

Alternative 6.A. Enlarge Effluent Disinfection System (Two Channels)

The capacity of the ultraviolet light disinfection system can be increased to a capacity of 67 MGD through the installation of two additional disinfection channels. The channels would be sized for a water depth of 48" versus the existing channel depth of 21". Each UV light module would contain 16 bulbs versus the 8 bulbs contained in the existing modules. This configuration will allow the channels to be shorter in length to fit along the north wall of the existing building. The enclosure structure would also have to be expanded to house the new units. A separate effluent pipe for the two new channels would be installed to the cascade aerator. This additional pipe will eliminate the hydraulic restriction identified in Section 3.

The project cost for this alternative is estimated at $1,711,000 and the additional annual operations and maintenance cost is estimated at $29,200.

Alternative 6.B. Enlarge Effluent Disinfection System (One Channel)

The capacity of the ultraviolet light disinfection system can be increased to a capacity of 55.5 MGD through the installation of one additional disinfection channel. This capacity would be adequate if flows in excess of this volume of flow are allowed to overflow at Train 2 and be disinfected and discharged through the storm water overflow system (Alternative 4.)

The project cost for this alternative is estimated at $910,000 and the additional annual operations and maintenance cost is estimated at $14,700.

Summary of Alternative Costs

Table 5-1, Estimated Costs for Treatment Plant Alternatives, provides a listing of the estimated construction costs, associated project cost, total project cost and additional annual operation and maintenance cost of each alternative. Details of the estimated construction cost of each alternative is included in Appendix 6.

Combined Options

Specific combinations of alternatives, combined options, have been evaluated to provide increased treatment plant capacity. The fifteen combined options detailed below were evaluated for feasibility and cost. Table 5-2, Combined Options Evaluated to Provide Increased Instantaneous Treatment Capacity, lists the combined options and the alternates that are included in each. All of the combined options include providing increased pumping capacity to Train 3 and the installation of additional post-treatment units. Combined options N and O include the installation of a disinfection system for overflow from Train 2.

Alternatives

Table 5 - 1
Estimated Costs for Treatment Plant Alternatives

Treatment Plant Alternatives	Construction Cost	Associated Project Cost	Total Project Cost	Additional Annual O&M Cost
1 - No Action	$0	$0	$0	$500
2A - Upgrade Train 3 Raw Waste Pumps and Primary Effluent Pumps	$532,000	$133,000	$665,000	$600
2B - Install Additional Train 3 Raw Waste Pumps at Train 1 Pumping Station	$827,000	$207,000	$1,034,000	$2,900
2C - Upgrade Train 3 Raw Waste Pumps and Effluent Pumps & Install Force Main	$802,000	$201,000	$1,003,000	$300
3A - Install Two Submersible Pumps in Screw Pump Wet Well	$449,000	$112,000	$561,000	$4,600
3B - Install One Submersible Pump in Screw Pump Wet Well	$280,000	$70,000	$350,000	$2,400
3C - Install One Additional Screw Pump (with Spare Parts)	$428,000	$107,000	$535,000	$5,600
3D - Install One Additional Screw Pump (with Spare Parts & Upgrade of Existing Pumps)	$456,000	$114,000	$570,000	$5,600
3E - Install Two Additional Screw Pumps (with Upgrade of Existing Pumps)	$763,000	$191,000	$954,000	$7,100
3F - Install Two Additional Screw Pumps (with Spare Parts & w/o Upgrade of Existing Pumps)	$734,000	$184,000	$918,000	$8,500
3G - Install Two Trailer Mounted Suction Lift Pumps	$210,000	$53,000	$263,000	$6,000
4A - Hypochlorite Disinfection	$52,000	$13,000	$65,000	$3,400
4B - Chlorine Disinfection	$44,000	$11,000	$55,000	$5,700
5A - Install Three New Sand Filter Units	$3,316,000	$829,000	$4,145,000	$28,700
5B - Install Two New Sand Filter Units	$2,227,000	$557,000	$2,784,000	$19,400
5C - Retrofit Existing Sand Filters	$1,018,000	$255,000	$1,273,000	$100
6A - Increase UV Disinfection Capacity with Two Channels	$1,369,000	$342,000	$1,711,000	$29,200
6B - Increase UV Disinfection Capacity with One Channel	$728,000	$182,000	$910,000	$14,700

Alternatives

During the selection of combined options, several alternates were dropped from further consideration. Alternates 2.A., 3.C., 3.D., and 3.F. were dropped because they provided less than sufficient pumping capacity to merit final consideration. Alternate 4.B. (Chlorine disinfection) was dropped for safety reasons. The presence of even one one-ton chlorine cylinder would require special training, equipment, and safety plans that would not otherwise be required. Alternative 4.A. (Hypochlorite Disinfection) serves the same purpose and at similar cost. The combined options are intended to provide an overall peak flow treatment capacity of 67 MGD. Several of the combinations (those including two new filters and the retrofit of the existing filters) provide only 53.0 to 63.2 MGD of filtration capacity under the assumption that permit limits can be met without filtration of 100% of the effluent.

Table 5-2
Combined Options Evaluated to Provide Increased Instantaneous Treatment Capacity

Alternatives	Combinations																						
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1. No Action	X																						
2.A. Upgrade Train 3 Pumps	Drop from Selection Process (Inadequate)																						
2.B. Install Additional Train 3 Pumps		X	X	X	X	X	X	X	X	X										X		X	
2.C. Upgrade Train 3 Pumps/ Force Main											X	X	X	X	X	X	X	X	X		X		X
3.A. Install Two Submersible Pumps		X	X	X							X	X	X										
3.B. Install One Submersible Pump	Drop from Selection Process (Inadequate)																						
3.C. Install One Additional Screw Pump	Drop from Selection Process (Inadequate)																						
3.D. Install One Screw Pump (Upgrade)	Drop from Selection Process (Inadequate)																						
3.E. Install Two Screw Pumps (Upgrade)					X	X	X							X	X	X							
3.F. Install Two Screw Pumps	Drop from Selection Process (Inadequate)																						
3.G. Install Two Suction Lift Pumps								X	X	X							X	X	X				
4.A. Provide Hypochlorite Disinfection																				X	X	X	X
4.B. Provide Chlorine Disinfection	Drop from Selection Process (Safety)																						
5.A. Install Three New Filters		X			X			X			X			X			X						
5.B. Install Two New Filters			X			X			X			X			X			X		X	X		
5.C. Retrofit Existing Sand Filters				X			X			X			X			X			X			X	X
6.A. Increase UV Capacity (Two Channels)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
6.B. Increase UV Capacity (One Channel)																				X	X	X	X

Alternatives

Combined Option A. (Alternative 1.)
This is the no action combined option. This option does not meet the identified need to provide a peak flow capacity of 67 MGD and would result in increasing numbers of violations as flows increased after connection of Springettsbury Township to the York system.

Combined Option B. (Alternatives 2.B., 3.A., 5.A., and 6.A.)
This combined option includes additional pumping capacity at Trains 2 and 3 and expansion of the filtration and ultraviolet disinfection system. Two new pumps would be installed for Train 3 and two new submersible pumps would be installed at Train 2. The alternative includes three new filters and two new UV channels.

Combined Option C. (Alternatives 2.B., 3.A., 5.B., and 6.A.)
This combined option is similar to Combined Option B., but includes the installation of only two new filters in the view that some of the flow can bypass filters during peak flows without causing permit violations. The option includes new pumps for Train 3, two new submersible pumps at Train 2, two new filters, and two new UV channels.

Combined Option D. (Alternatives 2.B., 3.A., 5.C., and 6.A.)
This combined option is similar to Combined Option B., but includes the retrofit of the existing filters in the view that some of the flow can bypass filters during peak flows without causing permit violations. The option includes new pumps for Train 3, two new submersible pumps at Train 2, retrofitting the filters, and two new UV channels.

Combined Option E. (Alternatives 2.B., 3.E., 5.A., & 6.A.)
This combined option includes new pumps for Train 3, two new screw pumps at Train 2, three new filters, and two new UV channels.

Combined Option F. (Alternatives 2.B., 3.E., 5.B., & 6.A.)
This combined option includes new pumps for Train 3, two new screw pumps at Train 2, two new filters, and two new UV channels.

Combined Option G. (Alternatives 2.B., 3.E., 5.C., & 6.A.)
This combined option includes new pumps for Train 3, two new screw pumps at Train 2, retrofitting the filters, and two new UV channels.

Combined Option H. (Alternatives 2.B., 3.G., 5.A., & 6.A.)
This combined option includes new pumps for Train 3, new suction lift pumps at Train 2, three new filters, and two new UV channels.

Combined Option I. (Alternatives 2.B., 3.G., 5.B., & 6.A.)
This combined option includes new pumps for Train 3, two suction lift pumps at Train 2, two new filters, and two new UV channels.

Combined Option J. (Alternatives 2.B., 3.G., 5.C., & 6.A.)

Alternatives

This combined option includes new pumps for Train 3, two suction lift pumps at Train 2, retrofitting the filters, and two new UV channels.

Combined Option K. (Alternatives 2.C., 3.A., 5.A., & 6.A.)
This combined option includes the installation of two pump systems and a new force main for Train 3, two submersible pumps at Train 2, three new filters, and two new UV channels.

Combined Option L. (Alternatives 2.C., 3.A., 5.B., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main at Train 3, two submersible pumps at Train 2, two new filters, and two new UV channels.

Combined Option M. (Alternatives 2.C., 3.A., 5.C., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main at Train 3, two submersible pumps at Train 2, retrofitting the filters, and two new UV channels.

Combined Option N. (Alternatives 2.C., 3.E., 5.A., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new screw pumps at Train 2, three new filters, and two new UV channels.

Combined Option O. (Alternatives 2.C., 3.E., 5.B., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new screw pumps at Train 2, two new filters, and two new UV channels.

Combined Option P. (Alternatives 2.C., 3.E., 5.C., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new screw pumps at Train 2, retrofitting the filters, and two new UV channels.

Combined Option Q. (Alternatives 2.C., 3.G., 5.A., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new suction lift pumps at Train 2, three new filters, and two new UV channels.

Combined Option R. (Alternatives 2.C., 3.G., 5.B., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new suction lift pumps at Train 2, two new filters, and two new UV channels.

Combined Option S. (Alternatives 2.C., 3.G., 5.C., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, two new suction lift pumps at Train 2, retrofitting the filters, and two new UV channels.

Alternatives

Combined Option T. (Alternatives 2.B., 4.A., 5.B., & 6.B.)
This combined option includes new pumps for Train 3, use of the Train 2 overflow during storm peaks, hypochlorite disinfection of overflows, two new filters, and one new UV channel. This option and Combined Option V allow flexibility of implementation in that Alternates 2.B. and 4.A. can be implemented quickly and at relatively low cost in anticipation of higher peak flows. Implementation of Alternates 5.B. and 6.B. can be deferred until higher flows begin to stress the existing processes to the point where permit violations may become probable. A phased implementation of this combined option would provide time for infiltration and inflow control efforts to proceed and perhaps eliminate the need to enlarge the filtration and UV disinfection systems.

Combined Option U. (Alternatives 2.C., 4.A., 5.B., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, use of the Train 2 overflow during storm peaks, hypochlorite disinfection of overflows, two new filters, and one new UV channel. This combined option is similar to Combination T and its implementation may be phased to provide necessary capacity during the planning period.

Combined Option V. (Alternatives 2.B., 4.A., 5.C., & 6.B.)
This combined option includes new pumps for Train 3, use of the Train 2 overflow during storm peaks, hypochlorite disinfection of overflows, retrofit of the existing filters, and one new UV channel. This option and Combined Option T allow flexibility of implementation in that Alternates 2.B. and 4.A. can be implemented quickly and at relatively low cost in anticipation of higher peak flows. Implementation of Alternates 5.C. and 6.B. can be deferred until higher flows begin to stress the existing processes to the point where permit violations may become probable. A phased implementation of this combined option would provide time for infiltration and inflow control efforts to proceed and perhaps eliminate the need to retrofit the filtration system and enlarge UV disinfection systems.

Combined Option W. (Alternatives 2.C., 4.A., 5.C., & 6.A.)
This combined option includes the upgrade of two pump systems and a new force main for Train 3, use of the Train 2 overflow during storm peaks, hypochlorite disinfection of overflows, retrofitting filters, and one new UV channel. This combined option is similar to Combination V and its implementation may be phased to provide necessary capacity during the planning period.

Conveyance System Alternatives

Pump Stations
The existing pump station serving a portion of the York Industrial Park is operating within in it's design parameters, and does not need to be addressed for future upgrades or improvements.

Conveyance
Although the conveyance facilities are generally in good condition, some segments have restricted capacities under existing flow conditions. Several recent interceptor studies have reviewed various interceptors including Pennsylvania Avenue and Roosevelt Avenue and recommended a course of action for these sewers. Also, under the projected flows for the years 2005, 2010, 2020 and ultimate needs, the Codorus Creek, Poor House Run, Tyler Run and Prospect Street interceptors have varying degrees of flow restrictions that may need to be addressed.

The Pennsylvania Avenue Interceptor
Update of Interceptor Facilities Study of the Pennsylvania Avenue Interceptor, March 1995 provides recommendation for a two phase sewer upgrade. Phase I of this study, replacement of the 8 inch diameter sewers and a low slope 12 inch diameter sewers, has already been implemented. Phase II is the upgrade of the remaining 12 inch diameter sewer with 18 inch diameter piping. Phase II is to be implemented based upon future increased flows. Actual flows and available capacity should be rechecked in 2005 to determine the need and schedule for Phase II.

Roosevelt Avenue Interceptor
The Roosevelt Avenue Sewer Study, Phase 3, Alternative Evaluation provides recommendation for a two phased sewer upgrade. Phase I of this study, replacement of small diameter sewers will begin with the replacement of the sewers in the intersection of Rt. 30 and Roosevelt Avenue in conjunction with Pennsylvania Department of Transportation's Rt. 30 road improvements construction project. Phase II is to be implemented based upon future increased flows. Phase II should begin when 126,000 GPD is added to the service area. Phase III should be implemented when an additional 1,630,000 GPD is added to the service area.

Codorus Creek, Poor House Run, Prospect Street Interceptors
Each of these interceptors has segments of sewers with potentially restricted flows. Table 5-3, Restricted or Overloaded Interceptor Segments, identifies the number of segments which the computer model identified as restricted or overloaded under the noted flow conditions. Refer to Appendix 5 for Location Plan of Overloaded Interceptor Segments.

Alternatives

Codorus Creek, Poor House Run, Prospect Street Interceptors
Each of these interceptors has segments of sewers with potentially restricted flows. Table 5-3, Restricted or Overloaded Interceptor Segments, identifies the number of segments which the computer model identified as restricted or overloaded under the noted flow conditions. Refer to Appendix 5 for Location Plan of Overloaded Interceptor Segments.

Table 5-3
Restricted or Overloaded Interceptor Segments, based on Model Results

No. of Line Segments	Current Pipe Diameter (in.)	Pipe Length (ft.)	No. of Manholes
Segments Overloaded by Existing Peak Flow Conditions			
1	72	138	2
2	54	728	6
11	48	2,215	18
1	39	100	2
1	27	142	2
2	12	513	4
SUBTOTAL		3,836	34
No Additional Segments Overloaded by Projected 5 YR Future Peak Flow			
Additional Segments Overloaded by Projected 10 YR Future Peak Flow			
1	72	365	2
1	48	384	2
5	12	852	6
SUBTOTAL		1,601	10
Additional Segments Overloaded by Projected 20 YR and Ultimate Future Peak Flows			
5	72	1,653	10
3	54	643	4
1	48	384	2
1	27	526	2
1	24	70	2
3	18	525	4

Alternatives

No. of Line Segments	Current Pipe Diameter (in.)	Pipe Length (ft.)	No. of Manholes
SUBTOTAL		3,801	24
TOTAL		9,238	68

Replacement Alternative
Due to the size and location of these interceptors, most would require replacement rather than parallel sewers. The Codorus Creek interceptor replacement does include some parallel relief sewers. This condition increases the complexity and the cost of the upgrade projects to replace these lines. Table 5-4, Estimated Construction Cost for Interceptor Replacement, identifies the estimated construction cost for the affected interceptors. Details of the estimated construction cost are included in Appendix 6.

Table 5-4
Estimated Construction Cost for Interceptor Replacement

Interceptor	Construction Cost
Codorus Creek	$6,700,000
Poor House Run	$690,000

If I/I is not controlled, the identified interceptor replacements costing an estimated $7,390,000 will be necessary. As development continues and the average daily flows increase, the effects of I/I during storm events will become increasingly more noticeable in terms of surcharged sewers. At the present time the conveyance system has been capable of handling the peak periodic 45 MGD flows during major storm events and the occasional unusual peak flow in excess of 60 MGD. Without reduction of excessive I/I, a flow monitoring program will be necessary to manage future connection to the system until upgrades to the conveyance system can be made.

Surcharge Monitoring Plan
Treatment plant records indicate the present conveyance system has conveyed nearly 65 MGD during an unusual peak flow condition without overflow. Since the identified overloaded conditions are based on the computer model, a field verification should occur before replacement of the interceptors are scheduled. The identified overloaded segments should be closely monitored using surcharge indicators. Once an actual surcharge occurs and its occurrence and severity is frequent enough to predict possible overflow or flooding of connected customers' basements, then remedial action should be taken.

Table 5-5, Surcharge Indicator Placement, lists the manholes where surcharge indicators should be placed. These indicators must be read and reset on a regular basis (after each major rain event of 1.5 inches or more in a 24-hour period, or when the WWTP influent meter peaks at 40 MGD or more).

Table 5-5
Surcharge Indicator Placement

Location	Timing of Installation
A2	Currently Installed
A16	Install Now
A20	Install Now
A29	Install Now
A36	Install Now
A37	Currently Installed
A38	Currently Installed
A40	Install Now
C3	Install Now
C9	Install Now
C27-3	Install Now
L9-1	Install Now

Tyler Run Interceptor

The following sewer collection system upgrade alternatives have been reviewed to address probable growth in York Township. According to York Township's Flow Projections, there may be a need to increase the capacity of the Tyler Run and Codorus Creek interceptors between the years 2010 and 2020. York Township's Draft Act 537 Plan has developed five possible 20 year growth alternatives, several of which consider diverting a portion of existing and future projected flows from the Springettsbury Township Sewer service area to the York City service area. The York Township Alternatives are outlined in Table 5-6. Refer to Appendix 9 for connected municipality flow projection data.

Alternatives

Table 5-6
York Township Flow Alternatives

Alternative No.	Estimated Annual Average Flow	Description
N/A	2.4 MGD	Flows from York Township Chapter 94 Report and future projected flows provided by C. S. Davidson (ULTIMATE PROJECTED FLOW)
1	2.50 MGD	Flows from York Township's Act 537 Plan Flow Projections provided by Gannett Fleming
2 & 3	3.0 MGD	Flows from York Township's Act 537 Plan Flow Projections provided by Gannett Fleming (alt.2 flow projection = 2.75 MGD and alt. 3 flow projection = 3.00 were grouped under the highest flow) (2015 PROJECTED FLOW)
4&5	4.1 MGD	Flows from York Township's Act 537 Plan Flow Projections provided by Gannett Fleming (alt.3 flow projection = 3.9 MGD and alt. 4 flow projection = 4.1 were grouped under the highest flow) (2015 PROJECTED FLOW)
N/A	2.163 MGD	Maximum Annual Average Flow Allowed by the current Intermunicipal Agreement

Alternatives

The existing Tyler Run Interceptor has sufficient capacity to convey the peak flow estimated for Alternative No. 1. In order to convey additional flows from alternatives 2, 3, 4 and 5, the capacity of the Tyler Run Interceptor must be increased. The following options are considered to meet this additional conveyance: replacing the existing Tyler Run interceptor with larger pipe, paralleling the Tyler Run interceptor with a relief sewer designed to carry additional peak flows and constructing a pump station and force main to carry the additional flows from York Township to a discharge point closer to the Codorus Creek Interceptor.

Replacement of Tyler Run Interceptor Option
This option replaces the existing Tyler Run Interceptor with larger pipe of sufficient capacity to convey York Township's increased flows. In addition, various segments of the Codorus Creek Interceptor would need to be upgraded. Table 5-7, Tyler Run Replacement Sewer, provides a listing of sewer segments to be replaced. Appendix 5, Exhibit 1, identifies the location of the sewer segments to be replaced.

York Township Alternatives 2 and 3
Under the York Township Alternative 2 and 3, the existing 24" and 21" diameter interceptor would be replaced with 30" and 24" diameter interceptor respectively. Four Codorus Creek Interceptor segments will be directly impacted by the increased flow and are also noted to be replaced with larger pipe.

York Township Alternatives 4 and 5
Under the York Township Alternatives 4 and 5 the existing 24" and 21" diameter interceptor would be replaced with 30" diameter interceptor. Six Codorus Creek Interceptor segments will be directly impacted by the increased flow and are also noted to be replaced with larger pipe.

Table 5-7
Tyler Run Replacement Sewer

Pipe Segment		Present Tyler Run Interceptor – Existing Conditions				York Township Alternatives 2 & 3 – Proposed Conditions				York Township Alternatives 4 & 5 – Proposed Conditions			
Manhole Up	Manhole Down	Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)	Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)	Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)
A45	A44	48	400		17		400		17	54	400		17
A44	A43	48	384		17		384		17	54	384		17
A31	A30	48	97	S	16	54	97	S	16	60	97	S	16
A21	A20	54	168	S	18	60	168	S	18	60	168	S	18
A8	A7	72	506		16		506		16	84	506		16
A7	A6	72	460		17		460		17	84	460		17
A5	A4	72	436		18.5	78	436		18.5	84	436		18.5
A3	A2	72	518		17.5	84	518		17.5	84	518		17.5
K2T	A46	48	202		11.5		202		11.5		202		11.5
T1	K2T	24	8		14	30	8		14	30	8		14
T2	T1	24	248		11	30	248		11	30	248		11
T3	T2	24	285		14	30	285		14	30	285		14
T4	T3	24	226	S	7	30	226	S	7	30	226	S	7
T5	T4	24	203		11.5	30	203		11.5	30	203		11.5
T6	T5	24	171		17	30	171		17	30	171		17
T7	T6	24	53		18	30	53		18	30	53		18
T8	T7	24	75	S	18.5	30	75	S	18.5	30	75	S	18.5
T9	T8	24	300	S	11	30	300	S	11	30	300	S	11
T10	T9	24	133	S	10	30	133	S	10	30	133	S	10
T11	T10	24	330	S	7	30	330	S	7	30	330	S	7
T12	T11	24	169	S	8.5	30	169	S	8.5	30	169	S	8.5
T13	T12	24	195	S	9.5	30	195	S	9.5	30	195	S	9.5
T14	T13	24	171	S	10	30	171	S	10	30	171	S	10
T15	T14	24	299	S	10.5	30	299	S	10.5	30	299	S	10.5
T16	T15	24	358	S	10.5	30	358	S	10.5	30	358	S	10.5
T17	T16	24	319	S	7	30	319	S	7	30	319	S	7
T18	T17	24	37	S	7		37	S	7	30	37	S	7
T19	T18	24	235		5.5		235		5.5	30	235		5.5
T20	T19	21	291		6	24	291		6	30	291		6
T21	T20	21	254		6	24	254		6	30	254		6
T22	T21	21	248		6	24	248		6	30	248		6
T23	T22	21	380		7	24	380		7	30	380		7
T24	T23	21	236		7	24	236		7	30	236		7
T25	T24	21	140		8	24	140		8	30	140		8
T26	T25	21	17		8	24	17		8	30	17		8

(shaded) Indicates segments not included in proposed work.
S - indicates sewers located in a street
R/W - Right of Way

Sewer Segements Beginning in A are located on the Codorus Creek Interceptor
Sewer Segements Beginning in T are located on the Tyler Run Interceptor

Alternatives

Table 5-8
Estimated Construction Cost of Replacement Alternatives

York Township Alternative	Estimated Construction Cost
2 & 3	$1,900,000
4 & 5	$3,300,000

The above table summarizes the estimated construction cost of sewer replacement for the alternatives.

The estimated construction cost is based on the following assumptions:
- The replacement sewer will be in the existing sewer alignment.
- Bypass pumping will be necessary only during working hours for sewers of 30" diameter or less, and sewers larger than 30" diameter will require bypass pumping 24 hours a day.
- No rock excavation is included since the excavation is in the existing alignment.

The detailed construction cost estimates are included in Appendix 6.

Tyler Run Interceptor Relief Sewer Option
This option includes a parallel relief sewer to the existing Tyler Run interceptor. The relief sewer would serve the Tyler Run Interceptor only and discharge to the Codorus Creek interceptor upstream of the siphon. Modifications to Codorus Creek Interceptor would be required and remain the same as those outlined in the replacement option. Table 5-9, Tyler Run Relief Sewer, provides a listing of sewer lines to be relieved. Appendix 5, Exhibit 2 identifies the location of the relief sewer.

York Township Alternatives 2 and 3
The Tyler Run interceptor is capable of conveying 8.3 MGD. Under the York Township Alternative 2 and 3, the estimated peak flow rate is approximately 9.0 MGD. A 12" diameter relief sewer, directly paralleling the existing interceptor, is capable of carrying 1.3 MGD. The combined capacity would then become 9.6 MGD.

York Township Alternatives 4 and 5
Under the York Township Alternatives 4 and 5, the estimated peak flow rate required in the Tyler Run interceptor is approximately 11.2 MGD. An 18" diameter relief sewer directly paralleling the main interceptor is capable of carrying 3.9 MGD the combined capacity would then become 12.2 MGD.

Alternatives

Table 5-9
Tyler Run Relief Sewer

Pipe Segment Manhole Up	Pipe Segment Manhole Down	Present Tyler Run Interceptor – Existing Conditions: Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)	York Township Alternatives 2 & 3 – Proposed Conditions: Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)	York Township Alternatives 4 & 5 – Proposed Conditions: Diameter (in.)	Length (ft.)	Street or R/W	Depth (ft.)
A45	A44	48	400				400		0	54	400		0
A44	A43	48	384				384		0	54	384		0
A31	A30	48	97	S		54	97	S	0	60	97	S	0
A21	A20	54	168	S		60	168	S	0	60	168	S	0
A8	A7	72	506				506		0	84	506		0
A7	A6	72	460				460		0	84	460		0
A5	A4	72	436			78	436		0	84	436		0
A3	A2	72	518			84	518		0	84	518		0
K2T	A46	48	202		11.5		202		11.5		202		11.5
T1	K2T	24	8		14	12	8		14	18	8		14
T2	T1	24	248		11	12	248		11	18	248		11
T3	T2	24	285		14	12	285		14	18	285		14
T4	T3	24	226	S	7	12	226	S	7	18	226	S	7
T5	T4	24	203		11.5	12	203		11.5	18	203		11.5
T6	T5	24	171		17	12	171		17	18	171		17
T7	T6	24	53		18	12	53		18	18	53		18
T8	T7	24	75	S	18.5	12	75	S	18.5	18	75	S	18.5
T9	T8	24	300	S	11	12	300	S	11	18	300	S	11
T10	T9	24	133	S	10	12	133	S	10	18	133	S	10
T11	T10	24	330	S	7	12	330	S	7	18	330	S	7
T12	T11	24	169	S	8.5	12	169	S	8.5	18	169	S	8.5
T13	T12	24	195	S	9.5	12	195	S	9.5	18	195	S	9.5
T14	T13	24	171	S	10	12	171	S	10	18	171	S	10
T15	T14	24	299	S	10.5	12	299	S	10.5	18	299	S	10.5
T16	T15	24	358	S	10.5	12	358	S	10.5	18	358	S	10.5
T17	T16	24	319	S	7	12	319	S	7	18	319	S	7
T18	T17	24	37	S	7	12	37	S	7	18	37	S	7
T19	T18	24	235		5.5	12	235		5.5	18	235		5.5
T20	T19	21	291		6	12	291		6	15	291		6
T21	T20	21	254		6	12	254		6	15	254		6
T22	T21	21	248		6	12	248		6	15	248		6
T23	T22	21	380		7	12	380		7	15	380		7
T24	T23	21	236		7	12	236		7	15	236		7
T25	T24	21	140		8	12	140		8	15	140		8
T26	T25	21	17		8	12	17		8	15	17		8

(shaded) Indicates segments not included in proposed work.
S indicates sewers located in a street
R/W - Right of Way

Sewer Segements Beginning in A are located on the Codorus Creek Interceptor
Sewer Segements Beginning in T are located on the Tyler Run Interceptor

Table 5-10
Estimated Construction Cost of Relief Sewer Alternatives

York Township Alternative	Estimated Construction Cost
2 & 3	$1,800,000
4 & 5	$3,000,000

The table above summarizes the estimated construction cost of the relief sewer for the alternatives.

The estimated construction cost is based on the following assumptions:

- Adequate space is available to parallel the sewers in the street locations.
- Bypass pumping will be necessary only during working hours for sewers of 30" diameter or less, and sewers larger than 30" diameter will require bypass pumping 24 hours a day.
- Rock excavation will be approximately 25% of the total excavation.

The detailed construction cost estimates are included in Appendix 6.

Tyler Run Pump Station Option
This option includes the construction of a pump station designed to convey the balance of peak flow beyond the capacity of the existing Tyler Run Interceptor to a discharge point above the siphon at Codorus Creek. The pump station and force main would serve the Tyler Run Interceptor only. The force main would discharge to MH K2-4 in Lafayette Street. Approximately 750 linear feet of gravity sewer would be replaced with larger pipe from MH K2-4 to the siphon. Modifications to Codorus Creek Interceptor would remain the same as those outlined in the replacement option. Appendix 5, Exhibit 3, shows the location of the pump station and force main.

York Township Alternatives 2 and 3
The pump station would be designed to carry the estimated peak flow difference between the existing gravity conveyance capacity and the projected peak flow of Alternative 2 and 3. The pump station would be designed to convey a nominal peak flow of 1.5 MGD.

York Township Alternatives 4 and 5
The pump station would be designed to carry the estimated peak flow difference between the existing gravity conveyance capacity and the projected peak flow of Alternatives 4 & 5. The pump station would be designed to convey a nominal peak flow of 4.5 MGD.

Table 5-11
Estimated Construction Cost for Pump Station and Force Main Alternatives

York Township Alternative	Estimated Construction Cost
2 & 3	$2,400,000
4 & 5	$5,100,000

The above table summarizes the estimated construction cost of the pump station and force main for the alternatives. The estimated construction cost includes the following assumptions:

- The pump station would be a dry well wet well type.
- Bypass pumping will be necessary only during working hours for sewers of 30" diameter or less, and sewers larger than 30" diameter will require bypass pumping 24 hours a day.
- Rock excavation will be approximately 10% of total excavation for the force main.

The detailed construction cost estimates are included in Appendix 6.

Non-Structural Comprehensive Planning
The City of York ordinances and documents regulating or guiding sewer provision, were previously discussed (see Section 1). The City of York will continue its current policies and procedures regarding prohibiting on-lot systems. The City will update any necessary local codes regarding sewer connections, including building and plumbing codes, to ensure compliance with federal and state regulations and to provide for public health. The City's 1995 zoning ordinance, current subdivision and land development ordinances, and comprehensive plan update are consistent regarding sewer provision.

Section 6

Evaluation of Alternatives

Compliance and Consistency

This plan has been prepared to be consistent with existing planning and to comply with local, state, and federal laws and regulations.

Plans Developed and Approved under Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act
The Comprehensive Water Quality Management Plan for the study area recommended regionalization of wastewater treatment and included both the City of York and Springettsbury Township wastewater treatment plants as major treatment facilities. The plan recognized the need for expansion of collection systems, control of infiltration and inflow, and upgrading of facilities to meet water quality based limits. Many of the Water Quality Management Plan recommendations have been instituted. This Plan continues the integration of facilities envisioned in that plan and is consistent with it.

Municipal Wasteload Management under Chapter 94
This plan incorporated information from the 1996 and 1997 City of York Chapter 94 reports in the development of alternatives. This plan is consistent with the recommendations and findings of the current report.

Title II of the Clean Water Act
This plan expands upon earlier plans developed in accordance with Title II of the Clean Water Act. York City's Section 201 (PL 92-500) plans, developed in accordance with federal grant regulations, were adopted as 537 Facilities Plan updates during the 1970's and 1980's. These plans provided for expansion and upgrades of the treatment plant to meet future needs. The capacity provided by these projects is now available for immediate use.

Comprehensive Planning
This plan is consistent with the York City and York County Comprehensive Plans. This plan does not change development plans, but does expand the sewer service area for the York plant to include flow from the Springettsbury Township plant service area.

Chapters 93, 95 and 102
This plan is consistent with the antidegradation requirements of Chapters 93, 95, and 102. This plan includes no change in permitted capacity at the wastewater treatment plant and should result in no change in permit limits or degradation of stream quality. The receiving stream for effluent from the York City plant is the Codorus Creek. This stream is not subject to special protection requirements.

State Water Plan
This plan is consistent with the State Water Plan. The Plan for Sub-

basin 7 (SWP-8) was prepared in February 1980 and is somewhat obsolete. The York Water Company has implemented some of the water supply solution alternatives recommendations to maintain adequate reserves. These include: 1) industrial and commercial water conservation programs; 2) metering of gravity flow connections; and 3) increase in filter plant capacity. The water supplier has long term plans to implement the remaining recommendations. These are: 1) bascule gates on Lake Redman; 2) a third reservoir on the Codorus Creek watershed; and 3) an intake on the Susquehanna River.

The State Water Plan described severe water quality problems in the Codorus Creek watershed. These problems have been largely corrected through the construction of new, expanded, and upgraded municipal and industrial treatment plants. This facilities plan did not use population projections of the State Water Plan to identify alternatives because better information was available (see Section 4).

This plan is also consistent with the York County Water Plan and the new (1998) draft York County Water Plan.

Prime Agricultural Land Policy
This plan includes no expansions to the collection system and is consistent with the Prime Agricultural Land Policy.

County Stormwater Management Plans
This plan does not conflict with County Stormwater Management Plans. No changes in density or collection facilities are proposed which would impact such plans, including the plan for the Tyler Run sub-basin within the City of York, York Township, and Spring Garden Township.

Wetlands
All alternatives were evaluated to determine if any wetland area would be threatened. Since all the alternatives for the plant are within the current plant site, and the conveyance alternatives are located in city streets or developed lots, all alternatives are consistent with wetland protection under Chapter 105. No wetlands or hydric soils were identified except the following bodies of water: Codorus Creek, Poor House Run, Willis Run and Tyler Run.

PA Natural Diversity Inventory
Due to State and Federal Law, it is necessary to assess the impact of proposed sewage facilities planning alternatives on protected or endangered species. Letters were sent to US Fish and Wildlife Service, PA Fish and Boat Commission, PA Game Commission and PADEP Soils and Waterways Office. (Refer to Appendix 11 for responses from above listed organizations.) There are no endangered species identified in the areas of concern. All alternatives are consistent with the Endangered or Threatened Species Act.

Evaluation of Alternatives

Archeological and Historical Sites
A letter was sent to the Pennsylvania Historical and Museum Commission (PHMC). (Refer to Appendix 11 for responses from the PHMC.) This letter indicated that the alternatives in Section 5 should not have any effects on prehistoric or archaeologic resources.

Water Quality Standards and Effluent Limitations
This plan is consistent with the requirements of PADEP for water quality and effluent limitations. This plan includes no change in permitted capacity at the wastewater treatment plant and should result in no change in permit limits or degradation of stream quality. The receiving stream for effluent from the York City plant is the Codorus Creek. This stream is not subject to special protection requirements.

Resolution of Inconsistencies
There are no inconsistencies identified in this plan.

Construction and Project Costs
Construction and project costs associated with each alternative are discussed in Section 5.

Present Worth Analysis of Alternatives

The present worth analysis is based on the following assumptions:

1. Time period: 20 years
2. Inflation rate of 2% and an interest rate of 5%
3. Only the additional annual operation and maintenance cost is included.
4. The average cost of electrical power is $0.07/KWH

Present Worth Analysis Wastewater Treatment Plant Alternatives
Table 6-1, Present Worth Cost of Treatment Plant Alternatives, provides the estimated present worth of the plant alternatives. Table 6-2, Present Worth of Combination Options, lists the estimated present worth of the combined alternatives for each option.

The present worth of the action combined options ranges from $3,527,000 for combination W to $8,859,000 for combination E. Combined Options T, U, V, and W which include disinfection of Train 2 overflow and reduced pumping to the post-treatment units are estimated to be lower cost options. If the expansion or retrofitting of the filtration and expansion of the ultraviolet disinfection facilities is deferred and possibly eliminated by the reduction of inflow and infiltration, the estimated present worth of these four options would be greatly reduced.

The detailed present worth cost analysis is included in Appendix 7.

Evaluation of Alternatives

Table 6 - 1
Present Worth of Treatment Plant Alternatives

Alternatives	Present Worth
1 - No Action	$7,000
2A - Upgrade Train 3 Raw Waste Pumps and Primary Effluent Pumps	$674,000
2B - Install Additional Train 3 Raw Waste Pumps at Train 1 Pumping Station	$1,077,000
2C - Upgrade Train 3 Raw Waste Pumps and Effluent Pumps & Install Force Main	$1,007,000
3A - Install Two Submersible Pumps in Screw Pump Wet Well	$630,000
3B - Install One Submersible Pump in Screw Pump Wet Well	$386,000
3C - Install One Additional Screw Pump (with Spare Parts)	$619,000
3D - Install One Additional Screw Pump (with Spare Parts & Upgrade of Existing Pumps)	$654,000
3E - Install Two Additional Screw Pumps (with Upgrade of Existing Pumps)	$1,060,000
3F - Install Two Additional Screw Pumps (with Spare Parts & w/o Upgrade of Existing Pumps)	$1,045,000
3G - Install Two Trailer Mounted Suction Lift Pumps	$352,000
4A - Hypochlorite Disinfection	$116,000
4B - Chlorine Disinfection	$140,000
5A - Install Three New Sand Filter Units	$4,574,000
5B - Install Two New Sand Filter Units	$3,074,000
5C - Retrofit Existing Sand Filters	$1,274,000
6A - Increase UV Disinfection Capacity with Two Channels	$2,148,000
6B - Increase UV Disinfection Capacity with One Channel	$1,130,000

Table 6 - 2
Present Worth for Combination Options

Combination	Alternatives	Present Worth
A	1	$7,000
B	2B,3A,5A,6A	$8,429,000
C	2B,3A,5B,6A	$6,929,000
D	2B,3A,5C,6A	$5,129,000
E	2B,3E,5A,6A	$8,859,000
F	2B,3E,5B,6A	$7,359,000
G	2B,3E,5C,6A	$5,559,000
H	2B,3G,5A,6A	$8,151,000
I	2B,3G,5B,6A	$6,651,000
J	2B,3G,5C,6A	$4,851,000
K	2C,3A,5A,6A	$8,359,000
L	2C,3A,5B,6A	$6,859,000
M	2C,3A,5C,6A	$5,059,000
N	2C,3E,5A,6A	$8,789,000
O	2C,3E,5B,6A	$7,289,000
P	2C,3E,5C,6A	$5,489,000
Q	2C,3G,5A,6A	$8,081,000
R	2C,3G,5B,6A	$6,581,000
S	2C,3G,5C,6A	$4,781,000
T	2B,4A,5B,6B	$5,397,000
U	2C,4A,5B,6B	$5,327,000
V	2B,4A,5C,6B	$3,597,000
W	2C,4A,5C,6B	$3,527,000

Evaluation of Alternatives

Present Worth Analysis Conveyance System Alternatives
The conveyance system improvements are limited to the construction of expanded facilities in the event that York Township decides to increase flow to the York system beyond its current allocated flow. Table 6-3, York Township Alternatives Present Worth of Options, lists the estimated present worth of each of the York Township alternatives affecting the Tyler Run interceptor. The detailed present worth cost analysis is included in Appendix 7.

Table 6-3
York Township Alternatives
Present Worth of Options

	Option		
York Township Alternative No.	Replacement Sewer	Relief Sewer	Pump Station/ Force Main
Alternative 2 and 3	$2,375,000	$2,265,000	$3,275,000
Alternative 4 and 5	$4,125,000	$3,765,000	$6,867,000

Funding Methods
The YCSA has sufficient funding available in its current funds to implement any of the combination options identified for the treatment plant. Therefore, adjustment in the user fee as a result of capital expenditures to implement a treatment plant improvement is not expected.

The York Township Alternatives affecting the Tyler Run interceptor are improvements to the YCSA conveyance system that would be funded solely by York Township if the Township decides to divert additional flow to the York System. The effect on user fee resulting from the implementation of any of the Tyler Run interceptor options should be included in York Township's Act 537 Plan.

Ability to Implement
The alternatives outlined in Section 5 and evaluated in this Section are improvements to facilities that currently exist on YCSA properties or in YCSA utility right of ways. There should be no legal or environmental impedances to their implementation.

Section 7
Institutional Evaluation

The York Wastewater Treatment Plant is owned by the YCSA and operated by the City of York. The City of York formed the YCSA on November 16, 1950 in accordance with Ordinance 3-1-50.28 dated November 9, 1950 in compliance with the requirements of the Municipality Authorities Act of May 2, 1945, P.L. 382, as amended and supplemented.

Since that time, the YCSA has secured funding for wastewater treatment and collection system upgrades and expansions through bond issues and grants, both federal and state. The YCSA leases the upgraded and expanded facilities to the City of York to operate by agreement. The latest Lease Agreement requires the City of York to make rental payments equal to 105% of the debt service required on outstanding debt and pay additional rentals as the YCSA may reasonably request for its Administrative Expenses.

The Financial Statement dated June 26, 1997 for year ending December 31, 1996 as prepared by Philip R. Friedman and Associates notes the amount of outstanding debt as $50,609,252. Debt service payments on this debt will continue to the year 2017. The Financial Statement also lists the minimum lease payments for each of the five succeeding years as follows:

YEAR	AMOUNT
1997	$4,271,022
1998	$4,262,980
1999	$4,268,326
2000	$4,267,424
2001	$4,267,686

The Financial Statement as of December 31, 1996 also lists the YCSA's cash and investments amount at approximately $6 million. Since December 1996, the YCSA received two EPA grant payments under the plant upgrade project Grant No. C-421388-04 of $371,379 in 1997 and $5,551,023 in 1998. Current Trustee statements list the YCSA's cash and investments value at approximately $12 million. The YCSA is currently pursuing an economic defeasance of $5 million of its bond debt in order to reduce the annual debt service payment requirements. An approximate balance of $7 million of cash and investments will remain after this defeasance transaction.

The annual rental payments are paid by the City of York to the YCSA. The City of York has entered into separate agreements with the connected municipalities called Intermunicipal Agreements. The latest version of these agreements is dated December 1976 for all municipalities except Springettsbury Township. The agreement with Springettsbury Township is dated June 1998. Under the terms and conditions of these agreements, each municipality pays the City of York its share of the debt service based on the percentage of its allocated flow to the total plant capacity.

In addition, these agreements provide for the payment of operation and maintenance costs to the City of York based on the municipality's volume of flow conveyed to and treated at the plant. The City of York pays for its share of the debt service and operation and maintenance costs from sewer fees collected from the users within the City under the terms of its Sewer Use Ordinance.

The representatives of the City, the connected municipalities and the YCSA meet on a quarterly basis to discuss facility operation and plans for improvements. This forum is used to keep the municipal managers informed of pending projects and related costs that are to be shared by the municipalities. The managers in turn report to their elected officials for final decision making.

The City of York maintains a staff of 43 full time employees engaged in the operation and maintenance of the treatment plant and 4 full time employees engaged in the maintenance of the collection system within the boundaries of the City. The City's staff has received recognition for its performance by twice receiving EPA Region III's Operations and Maintenance Award (1993 and 1995), and by receiving the Pennsylvania Water Environment Association Operation and Maintenance Award in 1995 and the Central Section of Pennsylvania Water Quality Association Plant Excellence Award in 1994.

Financial implementation of the selected alternative is expected to be accomplished using funds already available to the YCSA. No increase in annual rental payments by the City of York, nor increase in user fees to the connected municipalities, is anticipated by the implementation of the selective alternative.

No change is expected in the City's operation and maintenance staffing to implement the selected alternative.

Section 8

Selected Alternatives

Selected Treatment Alternative
As discussed in Sections 5 and 6, the most economical combination of alternatives designed to address the needed improvements for distributing and treating high influent flows between Trains 2 and 3, is Combination W. Combination W includes upgrades to the Train 3 raw waste pumps and primary effluent pumps, installation of a new force main from the raw waste pumps and primary effluent pumps to Train 3, hypochlorite disinfection for the Train 2 stormwater and effluent overflow outfall, retrofitting the existing sand filters, and increasing the UV disinfection by adding a single channel.

These improvements would allow Train 3 to operate at a maximum capacity of 36.0 MGD and Train 2 to operate at a maximum capacity of 31MGD. During peak flow conditions approximately 11.5 MGD of the Train 2 effluent could be discharged to the stormwater outfall after hypochlorite disinfection. The filter system's capacity would increase to 53 MGD and the UV system would be capable of disinfecting 55.5 MGD

Selected Conveyance Alternative
Presently there are no known sanitary sewer overflows within the City of York. There is minimal evidence of interceptors surcharging under present conditions, and the computer model predicts several areas where the capacity of the conveyance system may be exceeded in the future. Therefore the sanitary sewer system should be monitored using surcharge indicators. Once capacity problems are confirmed by reading the surcharge indicators, remedial steps should be defined and implemented.

As indicated in Section 3, I/I is problematic in various sub-basins throughout the wastewater collection system. I/I should be further evaluated by monitoring those regions of the services area outlined in Section 3 to determine sources of I/I. Once the sources are identified, remedial steps should be defined and implemented.

Selected Institutional Alternative
The institutional structure already exists and does not need to be altered. The current Lease Agreement between the York City Sewer Authority and the City of York and the Intermunicipal Agreements between the City of York and the connected municipalities include provisions for implementing capital improvements to the sewage facilities.

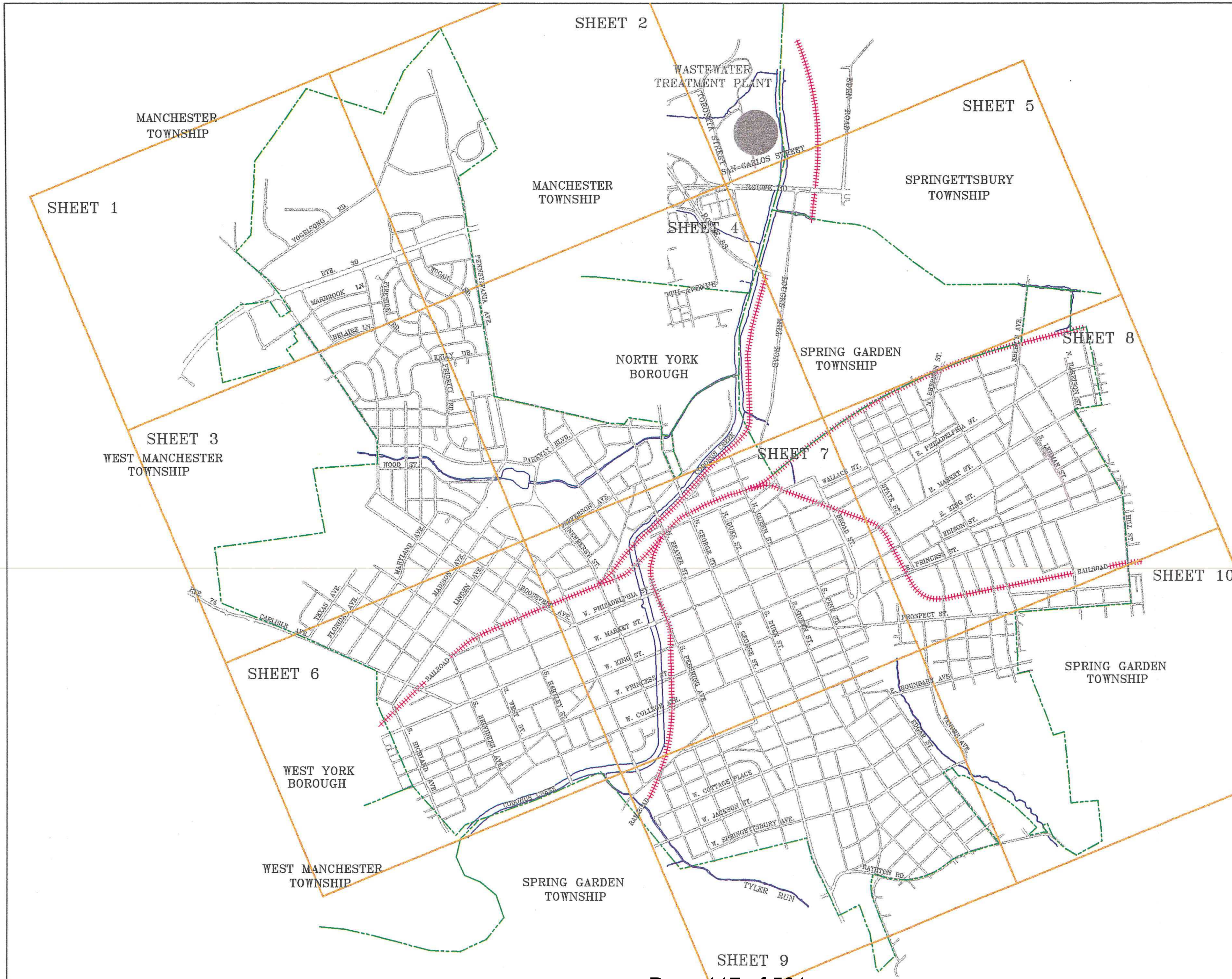
Cost Effectiveness
As established in Section 6, the selected alternatives are the most cost effective means of meeting the needs of York City Sewer Authority's service area.

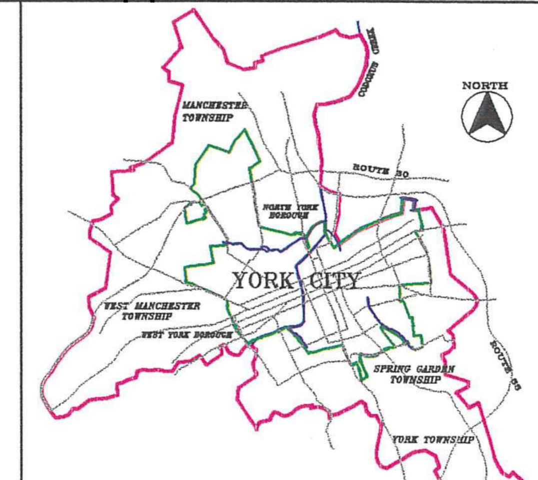
Selected Alternatives

Growth Areas
The York City Sewer Treatment Plant service area growth projections were developed for 5, 10 and 20 years as well as ultimate build-out conditions. Each of the tributary municipalities has approved their projected needs as shown in Table 4-4. Appendix 9 provides a break down of each municipalities' growth by point of connection to the collection system.

Environmental Soundness
Section 6 establishes the environmental soundness of the selected alternatives and ensures compliance with natural resource planning and preservation programs

Financial Plan
The York City Sewer Authority has sufficient monies available in its current funds to implement the capital improvements recommended by this plan. No adjustment in the system user fees are anticipated in the implementation of the capital improvements identified in this plan.





WASTE WATER TREATMENT PLANT SERVICE AREA
YORK CITY AND SURROUNDING MUNICIPALITIES

MAP LEGEND

- ROADWAY
- WATER WAY
- RAILROAD
- MUNICIPAL BOUNDARY LINE
- SHEET 8 — SANITARY SEWER MASTER INDEX BOUNDARY AND SHEET NUMBER

BUCHART HORN, INC.
Consulting Engineers and Planners

City of York, Pennsylvania
50 West King Street, York PA 17401

GRAPHIC SCALE
0 1/8 1/4 1/2 MILE
0 500 1000 2000 FEET

NORTH

City of York Base Map

York City Sewer Authority
Act 537 Plan

PREPARED BY:
City of York, Bureau of Planning/Engineering & GIS
One Marketway West, 3rd Floor
York, Pennsylvania 17401-1231
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Sanitary sewer grid is based on the York City Sanitary Sewer Index Maps.

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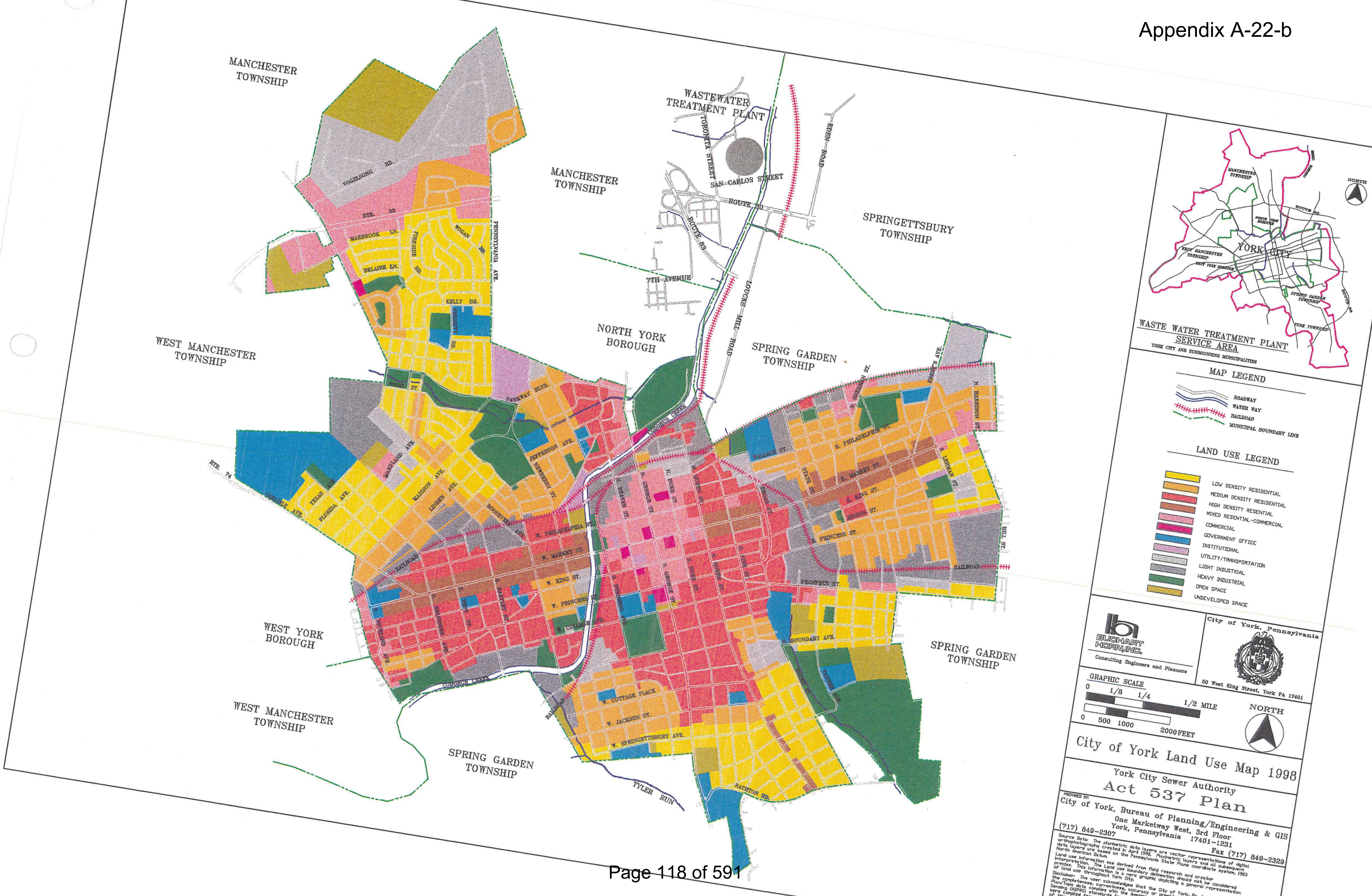
MANCHESTER TOWNSHIP
MANCHESTER TOWNSHIP
WASTEWATER TREATMENT PLANT
SPRINGETTSBURY TOWNSHIP
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NORTH YORK BOROUGH
SPRING GARDEN TOWNSHIP
WEST YORK BOROUGH
WEST MANCHESTER TOWNSHIP
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SPRING GARDEN TOWNSHIP
VOGELSONG RD.
RTE. 30
ROUTE 30
ROUTE 83
SAN CARLOS STREET
TORONITA STREET
EDEN ROAD
7TH AVENUE
LOUCKS MILL ROAD
PENNSYLVANIA AVE.
KELLY DR.
PARKWAY BLVD.
JEFFERSON AVE.
MADISON AVE.
LINDEN AVE.
FLORIDA AVE.
TEXAS AVE.
CARLISLE AVE.
RTE. 74
W. PHILADELPHIA ST.
W. MARKET ST.
W. KING ST.
W. PRINCESS ST.
W. COTTAGE PLACE
W. JACKSON ST.
W. SPRINGETTSBURY AVE.
E. PHILADELPHIA ST.
E. MARKET ST.
E. KING ST.
PRINCESS ST.
PROSPECT ST.
BOUNDARY AVE.
WALLACE ST.
HILL ST.
N. HARRISON ST.
RATHTON RD.
TYLER RUN
CODORUS CREEK
RAILROAD
WASTE WATER TREATMENT PLANT SERVICE AREA
YORK CITY AND SURROUNDING MUNICIPALITIES
YORK CITY
MAP LEGEND
ROADWAY
WATER WAY
RAILROAD
MUNICIPAL BOUNDARY LINE
LAND USE LEGEND
LOW DENSITY RESIDENTIAL
MEDIUM DENSITY RESIDENTIAL
HIGH DENSITY RESENTIAL
MIXED RESENTIAL-COMMERCIAL
COMMERCIAL
GOVERNMENT OFFICE
INSTITUTIONAL
UTILITY/TRANSPORTATION
LIGHT INDUSTRIAL
HEAVY INDUSTRIAL
OPEN SPACE
UNDEVELOPED SPACE
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0 500 1000 2000 FEET
NORTH
City of York Land Use Map 1998
York City Sewer Authority
Act 537 Plan
PREPARED BY
City of York, Bureau of Planning/Engineering & GIS
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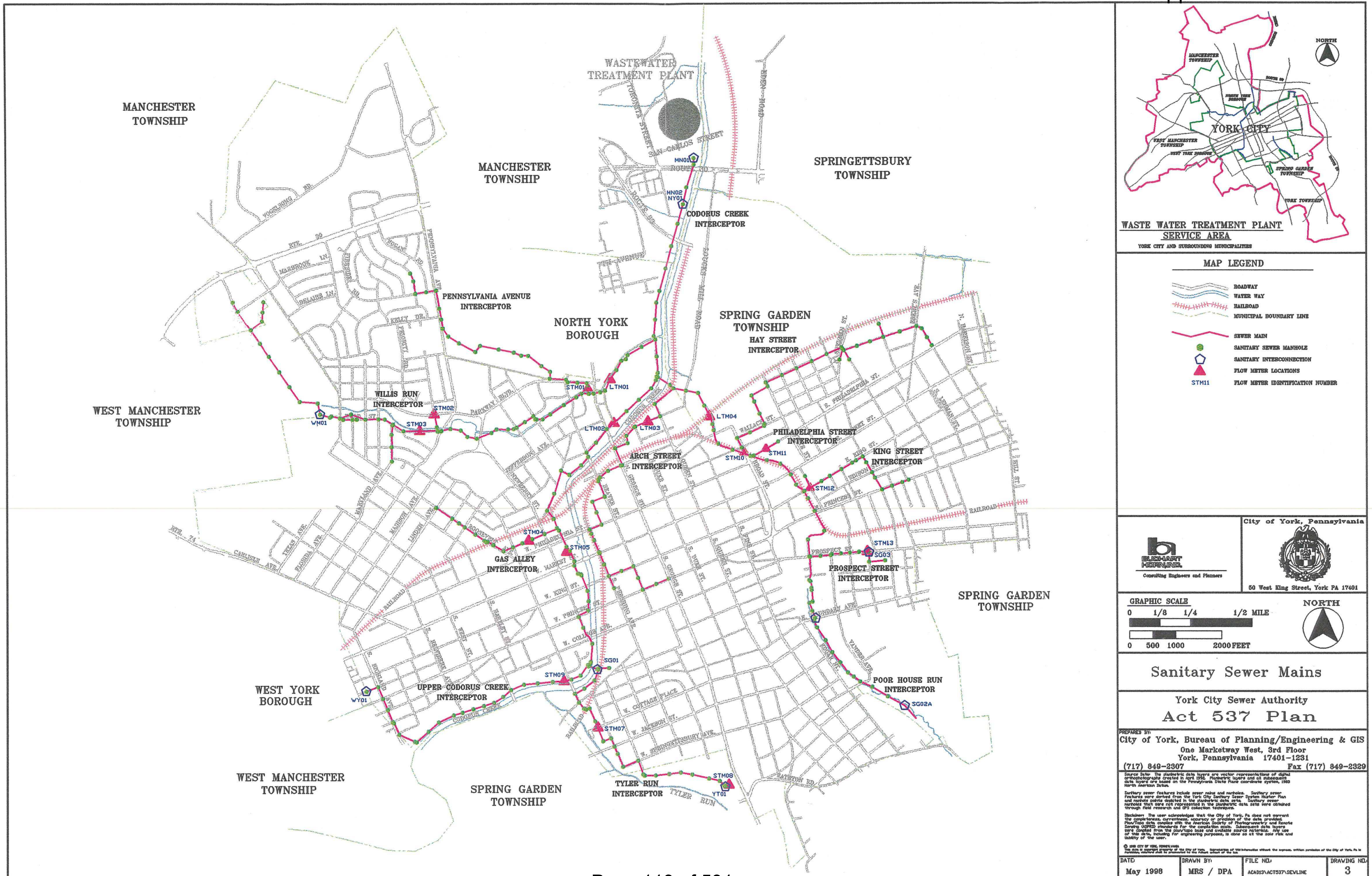

WASTEWATER TREATMENT PLANT
MANCHESTER TOWNSHIP
MANCHESTER TOWNSHIP
SPRINGETTSBURY TOWNSHIP
NORTH YORK BOROUGH
SPRING GARDEN TOWNSHIP
WEST MANCHESTER TOWNSHIP
WEST YORK BOROUGH
WEST MANCHESTER TOWNSHIP
SPRING GARDEN TOWNSHIP
SPRING GARDEN TOWNSHIP
CODORUS CREEK INTERCEPTOR
PENNSYLVANIA AVENUE INTERCEPTOR
WILLIS RUN INTERCEPTOR
HAY STREET INTERCEPTOR
PHILADELPHIA STREET INTERCEPTOR
ARCH STREET INTERCEPTOR
KING STREET INTERCEPTOR
GAS ALLEY INTERCEPTOR
PROSPECT STREET INTERCEPTOR
UPPER CODORUS CREEK INTERCEPTOR
POOR HOUSE RUN INTERCEPTOR
TYLER RUN INTERCEPTOR
TYLER RUN
MN01
MN02
NY01
WM01
WY01
SG01
SG02A
SG03
YT01
STM01
STM02
STM03
STM04
STM05
STM07
STM08
STM09
STM10
STM11
STM12
STM13
LTM01
LTM02
LTM03
LTM04
RTE. 30
RAILROAD
WASTE WATER TREATMENT PLANT SERVICE AREA
YORK CITY AND SURROUNDING MUNICIPALITIES
YORK CITY
NORTH
MAP LEGEND
ROADWAY
WATER WAY
RAILROAD
MUNICIPAL BOUNDARY LINE
SEWER MAIN
SANITARY SEWER MANHOLE
SANITARY INTERCONNECTION
FLOW METER LOCATIONS
STM11
FLOW METER IDENTIFICATION NUMBER
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Sanitary Sewer Mains
York City Sewer Authority
Act 537 Plan
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Source Data: The planimetric data layers are vector representations of digital orthophotographs created in April 1992. Planimetric layers and all subsequent data layers are based on the Pennsylvania State Plane coordinate system, 1983 North American Datum.
Sanitary sewer features include sewer mains and manholes. Sanitary sewer features were derived from the York City Sanitary Sewer System Master Plan and manhole points depicted in the planimetric data sets. Sanitary sewer manholes that were not represented in the planimetric data sets were obtained through field research and GPS collection techniques.
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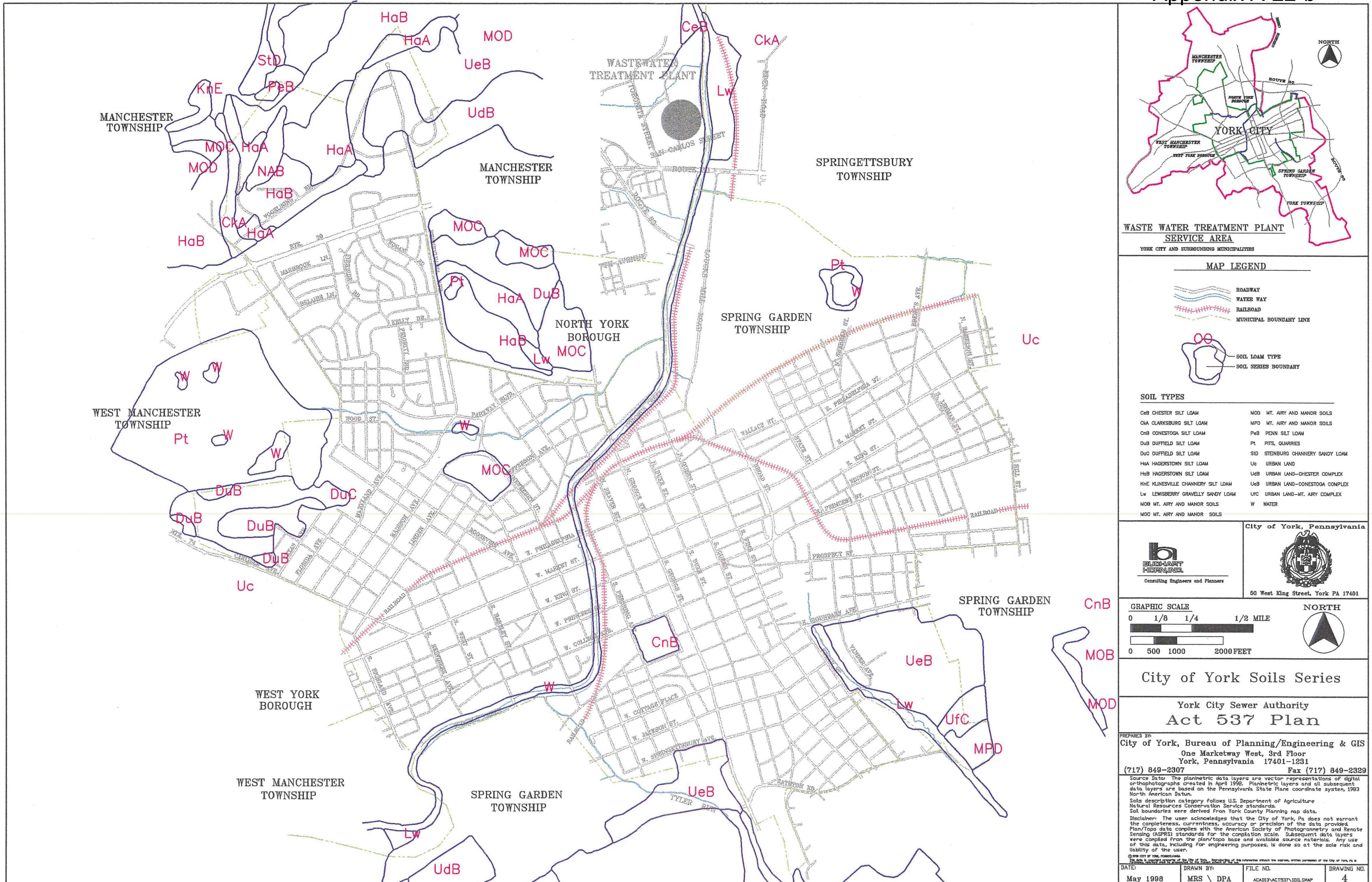
3


MANCHESTER TOWNSHIP
WASTEWATER TREATMENT PLANT
SPRINGETTSBURY TOWNSHIP
NORTH YORK BOROUGH
SPRING GARDEN TOWNSHIP
WEST MANCHESTER TOWNSHIP
WEST YORK BOROUGH
HaB
HaA
MOD
UeB
UdB
StD
PeB
KnE
MOC
NAB
CkA
CeB
Lw
Pt
W
DuB
DuC
Uc
CnB
MOB
UfC
MPD
WASTE WATER TREATMENT PLANT SERVICE AREA
YORK CITY AND SURROUNDING MUNICIPALITIES
YORK CITY
NORTH
MAP LEGEND
ROADWAY
WATER WAY
RAILROAD
MUNICIPAL BOUNDARY LINE
SOIL LOAM TYPE
SOIL SERIES BOUNDARY
SOIL TYPES
CeB CHESTER SILT LOAM
CkA CLARKSBURG SILT LOAM
CnB CONESTOGA SILT LOAM
DuB DUFFIELD SILT LOAM
DuC DUFFIELD SILT LOAM
HaA HAGERSTOWN SILT LOAM
HaB HAGERSTOWN SILT LOAM
KnE KLINESVILLE CHANNERY SILT LOAM
Lw LEWISBERRY GRAVELLY SANDY LOAM
MOB MT. AIRY AND MANOR SOILS
MOC MT. AIRY AND MANOR SOILS
MOD MT. AIRY AND MANOR SOILS
MPD MT. AIRY AND MANOR SOILS
PeB PENN SILT LOAM
Pt PITS, QUARRIES
StD STEINBURG CHANNERY SANDY LOAM
Uc URBAN LAND
UdB URBAN LAND-CHESTER COMPLEX
UeB URBAN LAND-CONESTOGA COMPLEX
UfC URBAN LAND-MT. AIRY COMPLEX
W WATER
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City of York Soils Series
York City Sewer Authority
Act 537 Plan
PREPARED BY:
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One Marketway West, 3rd Floor
York, Pennsylvania 17401-1231
(717) 849-2307
Fax (717) 849-2329
Source Data: The planimetric data layers are vector representations of digital orthophotographs created in April 1992. Planimetric layers and all subsequent data layers are based on the Pennsylvania State Plane coordinate system, 1983 North American Datum.
Soils description category follows U.S. Department of Agriculture Natural Resources Conservation Service standards.
Soil boundaries were derived from York County Planning map data.
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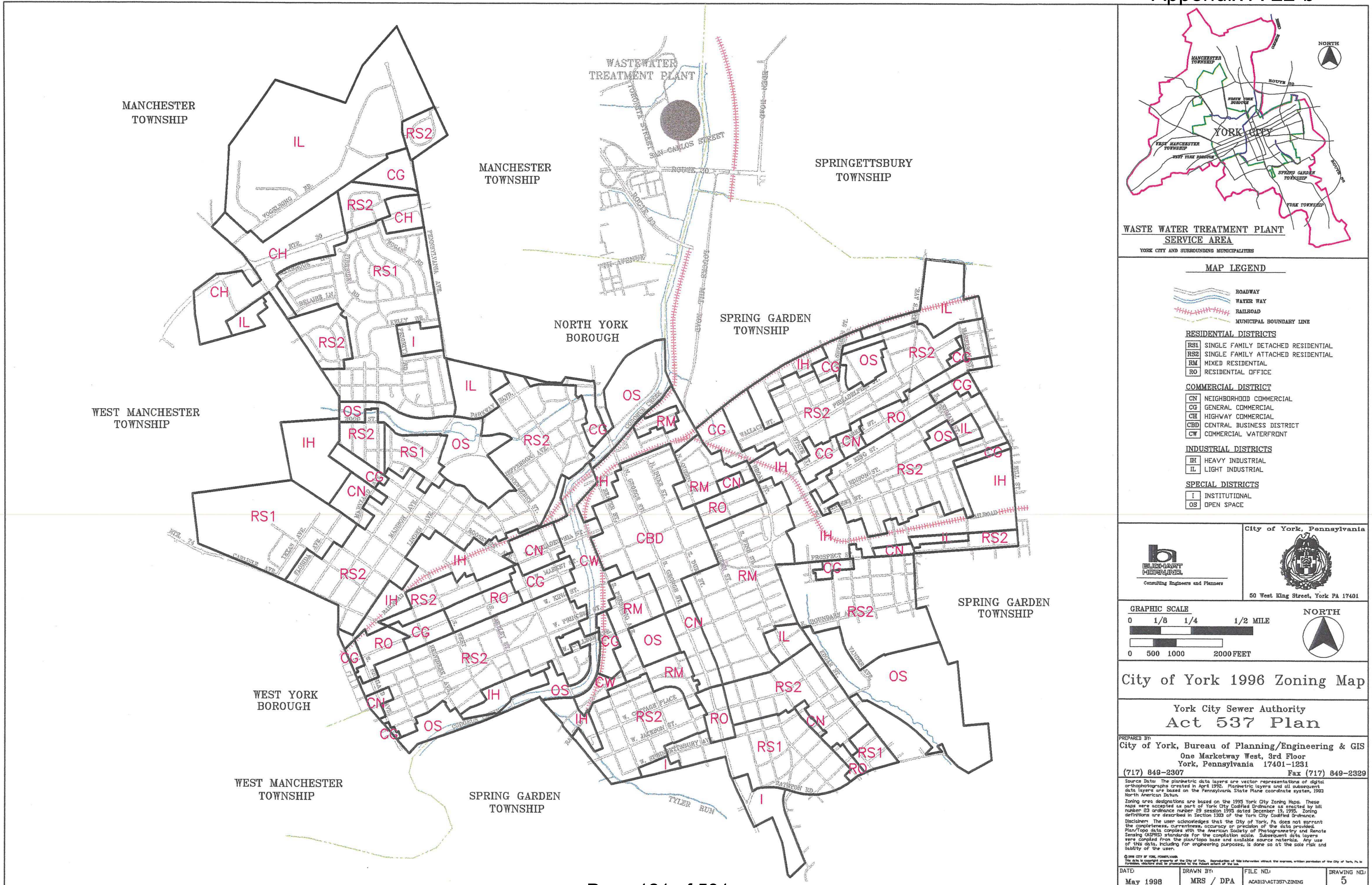
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WEST MANCHESTER TOWNSHIP
WEST YORK BOROUGH
SPRING GARDEN TOWNSHIP
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SPRINGETTSBURY TOWNSHIP
WASTEWATER TREATMENT PLANT
TYLER RUN
WASTE WATER TREATMENT PLANT SERVICE AREA
YORK CITY AND SURROUNDING MUNICIPALITIES
YORK CITY
NORTH
MAP LEGEND
ROADWAY
WATER WAY
RAILROAD
MUNICIPAL BOUNDARY LINE
RESIDENTIAL DISTRICTS
RS1 SINGLE FAMILY DETACHED RESIDENTIAL
RS2 SINGLE FAMILY ATTACHED RESIDENTIAL
RM MIXED RESIDENTIAL
RO RESIDENTIAL OFFICE
COMMERCIAL DISTRICT
CN NEIGHBORHOOD COMMERCIAL
CG GENERAL COMMERCIAL
CH HIGHWAY COMMERCIAL
CBD CENTRAL BUSINESS DISTRICT
CW COMMERCIAL WATERFRONT
INDUSTRIAL DISTRICTS
IH HEAVY INDUSTRIAL
IL LIGHT INDUSTRIAL
SPECIAL DISTRICTS
I INSTITUTIONAL
OS OPEN SPACE
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City of York 1996 Zoning Map
York City Sewer Authority
Act 537 Plan
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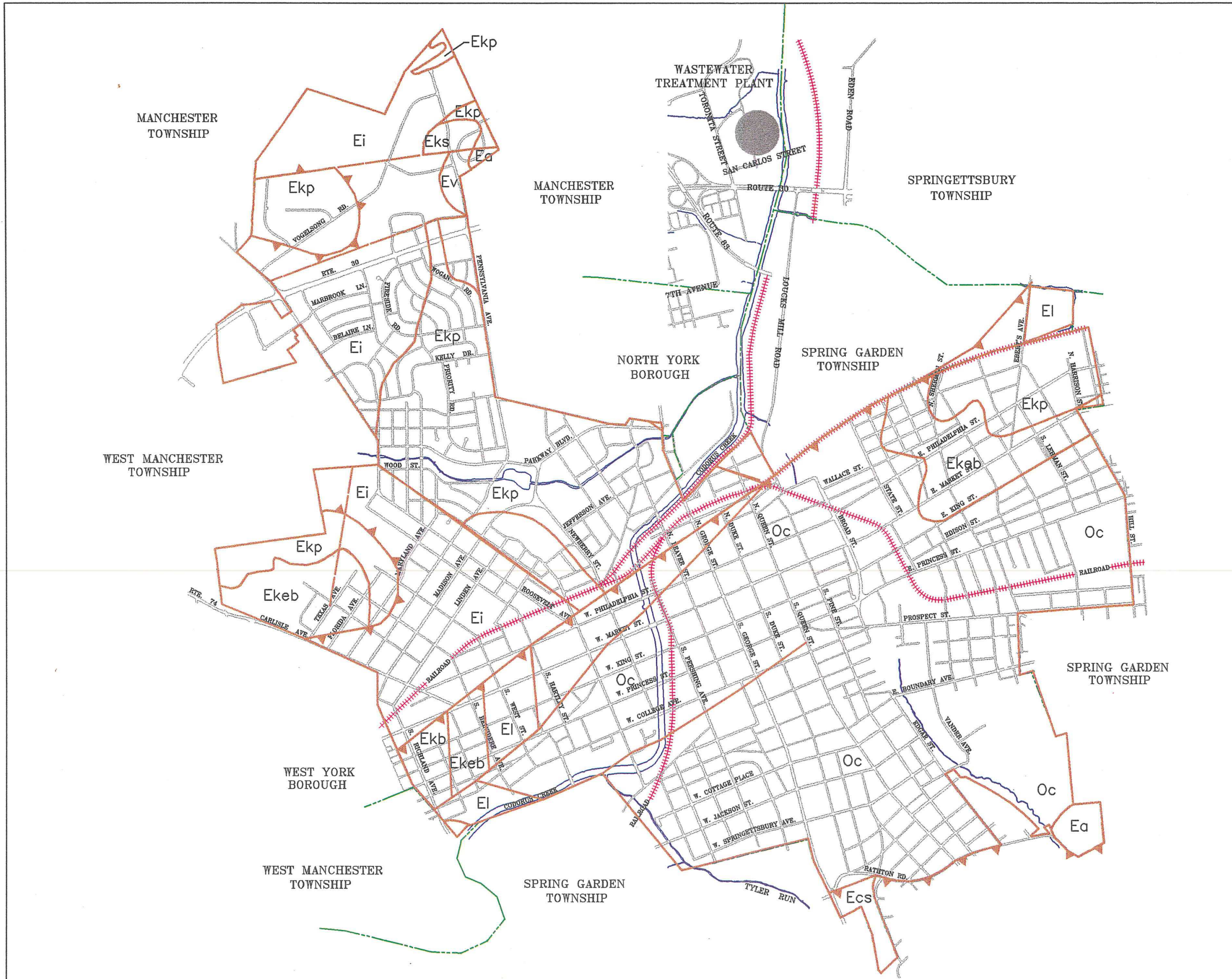

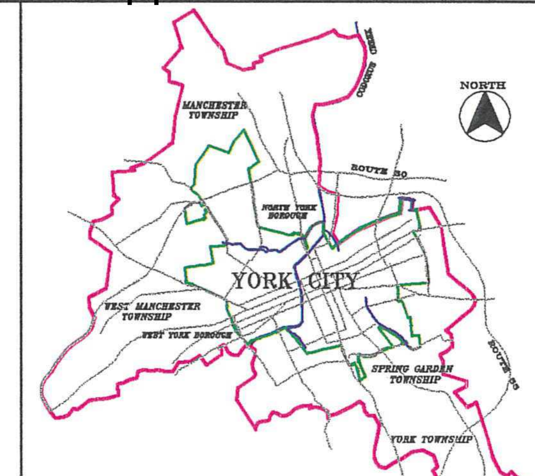

WASTE WATER TREATMENT PLANT SERVICE AREA

YORK CITY AND SURROUNDING MUNICIPALITIES

MAP LEGEND

ROADWAY
WATER WAY
RAILROAD
MUNICIPAL BOUNDARY LINE

Oc	CONESTOGA FORMATION
El	LEDGER FORMATION
Ekeb	KINZERS FORMATION—EARTHY—BUFF LIMESTONE MEMBER
Ekp	KINZERS FORMATION—PURE LIMESTONE MEMBER
Eks	KINZERS FORMATION—SHALE MEMBER
Ev	VINTAGE FORMATION
Ea	ANTIETAM FORMATION
Eh	HARPERS PHYLLITE
Ecs	CHICKIES SLATE

MAP TAKEN FROM WILSHUSEN, J.P., 1979 ENVIRONMENTAL GEOLOGY OF THE GREATER YORK AREA, YORK COUNTY, PENNSYLVANIA, PENNSYLVANIA GEOLOGICAL SURVEY ENVIRONMENTAL GEOLOGY REPORT 6.

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NORTH

Geology Study

York City Sewer Authority
Act 537 Plan

PREPARED BY:
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One Marketway West, 3rd Floor
York, Pennsylvania 17401-1231
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WASTEWATER TREATMENT PLANT UNIT CAPACITY EVALUATION

A. Background

The York City Wastewater Treatment Plant has an existing permitted design capacity for an average daily flow of 26 million gallons per day (MGD). This capacity was maintained during an upgrade project constructed in the late 1980's necessitated by changes in permitted effluent criteria. The most recent Part II Bureau of Water Quality Management Permit application was submitted in and approved in 1985. The design of treatment units and process operations for that application was based on a five-day BOD of 290 mg/l. This high organic loading was a historical loading caused by the large volumes of industrial food processing and paper making wastewaters in the sewage. The concentration of BOD has decreased since 1985 because of closure of some industries and industrial waste pretreatment by remaining industries. Today the raw BOD is less than 220 mg/l 95% of the time. The reduction in BOD suggests that the plant may be able to meet the existing effluent concentration limits at a capacity higher than the original design capacity.

B. Plant Capacity Evaluation Based on Current Permitted Effluent Limits

This unit capacity evaluation is intended to quantify the capacity of the plant and its treatment units based on current wastewater characteristics, PADEP design guidelines, industry standards and experience with the treatment processes in use at the York plant. Many of the unit processes were relatively new technology when the York plant upgrade was designed and constructed. Therefore, actual operational experience by the plant staff is used in this evaluation to refine the design assumptions. In addition to reviewing the design and operational record, information was solicited from I. Kruger, Inc. who holds the patent for the Anaerobic/Oxic (A/O) process in use at the York plant. The detailed results of the evaluation are summarized in Appendix C. This appendix lists the processes and units, provides unit sizes, PADEP standards, and calculated hydraulic and organic capacities where applicable. The hydraulic capacity is determined for each of the plant's three parallel treatment trains. Average and peak capacities are provided where appropriate. Organic capacity of units is also indicated for some units, but where possible, capacities were calculated based on plant influent flow using the characteristics of the present wastewater treated. The City has the capability of controlling wastewater characteristics through its USEPA approved pretreatment program. Therefore, the wastewater organic loading characteristics are not expected to increase over time.

The capacities of "critical units" are indicated in Table 4, York City Wastewater Treatment Plant Capacity of Critical Units. Although all units are necessary to the operation of the plant, it is the main treatment processes that limit the capacity of the plant to meet permit requirements. The supporting process units can be modified if necessary to provide that capacity necessary to match that of the main treatment units. The capacity limits of these critical process units essentially determines the capacity of the plant without major modification, expansion or upgrade.

TABLE 4

YORK CITY WASTEWATER TREATMENT PLANT
CAPACITY OF CRITICAL UNITS

UNITS	TREAT-MENT TRAIN	HYDRAULIC CAPACITY MGD Average	Peak	REMARKS
Headworks:				
Mechanical Screens			54.0	
Grit Removal Units			50.0	
Train 1:				
Raw Pumps	T1	8.1	12.1	
Oxygen Reactor	T1	1.8	9.2	
Clarifiers	T1	5.0	10.0	
Total Train 1:	**T1**	**1.8**	**9.2**	
Train 2:				
Primary Tanks	T2 &T3	14.5	36.4	Assumes channel improvements and restoration of all units to service
A/O Tanks	T2	12.4		
Clarifiers	T2	11.8 (PADEP), 9.4 I. (Kruger)	18.8	
Effluent Pumps	T2		15.0	
Total Train 2:	**T2**	**12.4**	**15.0**	Assumes adequate clarification can be achieved through chemical addition if necessary
Train 3:				
Raw Pumps	T-3		14.	
Primary Effluent Pumps	T3		14.	
Total Pumps	T3		28.	
A/O Tanks	T3	14.4		

UNITS	TREAT-MENT TRAIN	HYDRAULIC CAPACITY MGD Average	Peak	REMARKS
Clarifiers	T3	19.8	39.6	
Total Train 3:	**T3**	**14.4**	**28.**	
Secondary Effluent:				
Filters			42.4	May require additional capacity if I/I is not reduced
Disinfection Units			42.	May require additional capacity if I/I is not reduced
Sludge Treatment:				
Digesters		31.		Assumes modification of heating system
Belt Filters		44.		
Total Plant		**28.6**	**42.**	**Requires consideration of increased pumping capacity if I/I reduction is not obtained.**

The total redefined capacity (average daily flow) of 28.6 MGD is based on use of all three treatment trains. Train 1, an oxygen activated sludge process, cannot provide nitrification as currently configured, and flow through this unit must be limited to an average of 1.8 MGD to insure overall compliance with the ammonia limit. Modifications/replacement of the pure oxygen generator is required to place Train 1 into permanent service or oxygen would have to be purchased and stored. The existing generator system has been out of service for ten years and is currently not operable. Train 2, an A/O process, can provide nitrification at an average flow of 12.4 MGD. This flow is slightly above the capacity of the Train 2 clarifiers, but it is taken as the capacity of Train 2 under the assumption that the clarifiers could process this flow. If clarification is found to be inadequate, modifications could be made to the clarifiers to improve settling. Alternatively chemical additions could be made to the mixed liquor to accelerate sedimentation. Train 3, also an A/O process, can provide nitrification at an average flow of 14.4 MGD of combined raw and primary treated wastewater. The preliminary treatment, primary treatment, filtration, and disinfection units can provide the necessary capacity to support the biological treatment units. Filtration and disinfection may require additional capacity if I/I is not controlled to reduced peak flows. The solids processing units are also adequate, but improvements should be made to the activated sludge wasting units regardless of changes in flow. The digester's heating system may also have to be modified and improved as solids loadings increase.

The theoretical peak treatment capacity is 42 MGD based on the design capacity of the disinfection units. This peak is approximately 1.5 times the average plant capacity of 28.6 MGD. The actual peak hydraulic capacity of the plant is somewhat higher than the 42 MGD since the plant has effectively treated and disinfected peak instantaneous flows of near 60 MGD. The effectiveness of treatment, however, will decline at higher flows.

If the total needs of the users of the system require a redefinition of the plant's capacity, the York City Sewer Authority may request a modification of its permit based on this evaluation. The PADEP may grant such a redefinition, but the agency may not grant a significant increase in the effluent mass limits even if it can be demonstrated that the plant can meet the existing concentration limits at higher flows. This condition could result in a tightening of the effluent concentration limits. The system users' ability to control peak flows and the City's ability to maintain good performance during periods of high flow may ultimately determine the limit to the average flow that can be accepted. The PADEP does not now limit the discharge volume, but bases the concentration limits on the design flow. If peak flows can be reduced through control of inflow and infiltration, additional capacity can be provided without increasing the rated capacity and without further decreasing the effluent concentration limits in the permit.

C. Plant Capacity to Meet Effluent Total Nitrogen Limit

PADEP has required the plant effluent to be monitored for total nitrogen. This requirement places the York City Sewer Authority on notice that a total nitrogen limit may be placed on the plant in the future. Therefore, a plant unit capacity evaluation was conducted assuming that existing effluent limits will remain similar to those currently imposed even at a modestly higher design flow but a limit of 8.0 mg/l total nitrogen would be added to the permit.

Denitrification is the process used to remove the nitrate created by nitrification from the wastewater. The PADEP has indicated no intention to require denitrification, but given the possibility that the agency may be forced to do so either as a condition of a regional pact or to satisfy requirements from the USEPA, the potential for denitrification using the existing facilities was evaluated. I. Kruger Inc. provided the methodology and parameters used to determine the capacity for denitrification available in the existing tanks. The evaluation assumes that modifications could be made to provide an anoxic zone and necessary internal tank return flows. To achieve denitrification would require an aerobic holding time of 1.5 hours and an anoxic holding time of 1.75 hours. The final oxic zone would be sized to have an F/M ratio of 0.17 at a mixed liquor volatile suspended solids concentration of 2,800 mg/l. The capacity of the plant to provide denitrification based on the existing sizes of the three treatment trains is indicated in Table 5, Existing Plant Capacity Available for Denitrification.

TABLE 5

EXISTING CAPACITY AVAILABLE FOR DENITRIFICATION (MGD)

Train 1	0.3 MGD

Train 2	8.0 MGD
Train 3	10.3 MGD
TOTALS	18.6 MGD

The capacity of 18.6 MGD is substantially less than the current design capacity of 26 MGD or the possible redefined capacity of 28.6 MGD that could be justified based on the evaluation of units under existing permit limits. To achieve nitrification of a design flow greater than 18.6 MGD would require the construction of additional treatment units.

D. Plant Capacity Review

The existing treatment plant, under current effluent limits, has sufficient capacity for the 20 year planning period for the flow identified by the users of the system. The plant has 6.483 MGD of excess capacity under the ultimate flow planning period scenario.

If a total nitrogen effluent limit is added to the treatment plant's NPDES permit, the plant would require an upgrade construction project to maintain its current 26.0 MGD capacity.

PEAKED EXISTING FLOWS
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45.016	35.456	9.560	0.79	
A2	A1	72	138	8.655	34 092	-25 436	4 54	35%
A3	A2	72	518	53.051	34.085	18.966	0.64	
A4	A3	72	365	41.092	34.027	7.065	0.83	
A5	A4	72	436	49.767	33.258	16.509	0.67	
A6	A5	72	439	43.749	33.258	10 491	0 76	
A7	A6	72	460	51.978	33.258	18.720	0.64	
A8	A7	72	506	52.521	33.258	19.263	0 63	
A9	A8	72	263	46.251	33.258	12 993	0 72	
A10	A9	72	360	46.852	33.206	13 646	0.71	
A11	A10	72	379	47 453	33.206	14 247	0.70	
A12	A11	72	70	49.198	33.206	15.992	0.67	
A13	A12	72	366	45.016	27 983	17 033	0.62	
A14	A13	72	451	43.103	27.983	15.120	0.65	
A15	A14	72	85	44.389	27.983	16 406	0.63	
A16	A15	54	81	24 389	16.749	7 641	0.69	
A17	A16	54	202	22.036	16.749	5 288	0 76	
A18	A17	54	360	21.758	16.749	5.010	0.77	
A19	A18	54	358	13 038	16.749	-3 710	1.29	21%
A20	A19	54	370	11 551	16.749	-5 197	1.45	22%
A21	A20	54	168	25.598	16.749	8.849	0.65	28%
A22	A21	54	297	70.627	16.716	53.911	0.24	
A23	A22	48	326	29.567	16.716	12.851	0.57	
A24	A23	48	102	42.883	16.716	26.167	0.39	
A25	A24	48	238	13.704	16.716	-3 012	1.22	22%
A26	A25	48	283	2.547	16.716	-14.169	6.57	27%
A27	A26	48	116	2.547	16.710	-14.163	6.57	21%
A28	A27	48	518	29.567	16.710	12.857	0.57	14%
A29	A28	48	392	2.547	16.710	-14.163	6.57	13%
A30	A29	48	335	23.323	16.710	6.613	0.72	31%
A31	A30	48	97	71.254	16.464	54.790	0.23	33%
A32	A31	48	390	2.547	13.426	-10.879	5.28	36%
A33	A32	48	118	2.547	13 426	-10.879	5.28	44%
A34	A33	48	243	34.234	13.426	20.808	0.39	34%
A35	A34	48	93	2.547	13.426	-10.879	5.28	33%
A36	A35	48	193	2.547	13.426	-10.879	5.28	41%
A37	A36	48	70	62.334	13.426	48.908	0.22	42%
A38	A37	48	20	2.547	13.426	-10.879	5.28	40%
A39	A38	48	344	24.538	13.426	11.112	0.55	32%
A40	A39	48	225	2.547	13.426	-10 879	5.28	26%
A41	A40	48	199	26.813	13.426	13.387	0.50	29%
A42	A41	48	372	11.092	13.426	-2.334	1.21	32%
A43	A42	48	262	21.745	13.426	8.319	0.62	36%
A44	A43	48	384	16.878	13.426	3.452	0.80	25%
A45	A44	48	400	42.734	13.426	29.308	0.31	
A46	A45	48	108	72.243	13.426	58.817	0.19	
A54	A46	42	296	62.586	5.533	57.052	0.09	
A55	A54	42	283	16.723	5.533	11.189	0.33	
A56	A55	42	211	15.016	5.288	9.729	0.35	
A57	A56	42	163	18.694	5.288	13.407	0.28	
A58	A57	42	247	8.733	5.288	3.445	0.61	
A59	A58	42	326	13.575	5.262	8.313	0.39	
A60	A59	42	297	17 279	5.010	12.269	0.29	
A61	A60	42	303	25.708	5.010	20.698	0.19	
A62	A61	42	230	15.740	4.460	11.280	0.28	
A63	A62	42	201	17.376	4 460	12.915	0.26	
A64	A63	42	300	13.807	4.460	9.347	0.32	
A65	A64	42	247	22.405	4.460	17 944	0.20	
A66	A65	42	199	15.941	4.460	11.480	0.28	
A67	A66	42	357	26.677	4.460	22.217	0.17	
A68	A67	42	44	99.813	3.652	96.160	0.04	
A73	A68	24	369	8.623	3.581	5.042	0 42	
A74	A73	30	275	17.195	3.581	13.613	0.21	
A75	A74	30	28	30.401	3.581	26.820	0.12	
A76	A75	30	10	7.266	3.581	3.685	0.49	
A78	A76	30	12	160.304	3.290	157.014	0.02	
A79	A78	30	255	20.899	3.290	17 608	0.16	

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PEAKED EXISTING FLOWS
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14.421	3 290	11.131	0.23	
A81	A80	30	280	13.516	3 290	10.226	0.24	
B10-1	B10A	15	65	5.423	0.452	4 971	0.08	
B10-2	B10-1	15	127	2.269	0.452	1 816	0.20	
B10-3	B10-2	12	204	1 248	0.452	0.795	0.36	
B10-3A	B10-3	12	206	1.105	0.452	0.653	0.41	
B10-4	B10-3A	12	65	1.080	0.452	0.627	0.42	
B10-4A	B10-4	12	359	1.092	0.452	0 640	0 41	
B10-4B	B10-4A	12	149	1 086	0.452	0.633	0 42	
B10-5	B10-4B	18	222	2 056	0.452	1 603	0 65	
B10-6	B10-5	12	358	1 157	0.452	0.705	0.39	
B10-7	B10-6	12	155	1.997	0.452	1 545	0 23	
B10-8	B10-7	12	174	2.036	0 452	1 584	0 22	
B10-9	B10-8	12	335	1.997	0.452	1.545	0.23	
B10-10	B10-9	12	400	1.370	0 452	0.918	0.33	
B10-11	B10-10	12	225	1.183	0.452	0.730	0 38	
B10-12	B10-11	12	400	1.215	0.452	0.763	0 37	
B10-13	B10-12	12	275	1 202	0.452	0 750	0 38	
B10-14	B10-13	12	205	1 907	0.452	1.454	0.24	
B10-15	B10-14	12	200	1.713	0.452	1 261	0.26	
B10-16	B10-15	12	240	1.092	0.452	0.640	0.41	
B10-17	B10-16	12	400	1.092	0.452	0.640	0.41	
B10-18	B10-17	12	215	1.105	0 452	0 653	0.41	
B10-19	B10-18	12	233	1.118	0.452	0.666	0.41	
B10-20	B10-19	12	277	1 228	0.452	0.776	0.37	
B10-21	B10-20	12	180	1.228	0.452	0.776	0.37	
B10-22	B10-21	12	190	1.228	0.452	0.776	0.37	
B10-23	B10-22	12	139	1.222	0.452	0.769	0.37	
B10-24	B10-23	12	403	1.228	0.452	0.776	0.37	
B10-25	B10-24	12	125	1.383	0.452	0.931	0.33	
B10-26	B10-25	12	170	1.396	0.452	0.944	0.32	
B10-27	B10-26	12	251	1.383	0.452	0.931	0.33	
B10-28	B10-27	12	140	2.825	0.452	2.372	0.16	
B2	A12	36	348	24.305	5.217	19 089	0.21	
B3	B2	36	351	17.725	5.217	12.508	0.29	
B4	B3	36	86	17.608	5.217	12.392	0.30	
B5	B4	36	103	18.384	5.217	13.167	0.28	
B6	B5	36	236	13.523	5.217	8.306	0.39	
B7	B6	36	235	12.889	5.217	7.673	0.40	
B8	B7	36	246	17.039	5.217	11.823	0.31	
B9	B8	36	115	22.605	5.178	17 427	0.23	
B10	B9	36	141	14.758	5.055	9.703	0.34	
B10A	B10	36	107	16.962	4 919	12.043	0.29	
B11	B10A	36	156	16.962	4.467	12.495	0.26	
B12	B11	36	126	18.830	4 467	14.363	0.24	
B13	B12	36	329	11.273	4.467	6.807	0.40	
B14	B13	36	343	18.384	4.467	13.917	0.24	
B15	B14	30	200	10.530	4.467	6.063	0.42	
B16	B15	30	131	14.771	4.467	10.304	0.30	
B17	B16	30	22	34.486	4.467	30.019	0.13	
B18	B17	30	80	11.189	4.467	6.723	0.40	
B19	B18	30	220	13.691	4.150	9.541	0.30	
B20	B19	30	217	11.674	4.150	7 524	0.36	
B20B	B20	30	66	14.680	4 150	10.530	0.28	
B21	B20B	30	121	17.104	4.150	12.954	0 24	
B22	B21	30	259	11.849	4.150	7 699	0.35	
B23	B22	30	129	11 829	4.150	7 679	0.35	
B24	B23	30	338	12.631	4.150	8.481	0.33	
B25	B24	30	207	11.629	4.150	7.479	0.36	
B26	B25	30	199	14.570	4.150	10.420	0.28	
B27	B26	30	216	12.896	4.150	8.746	0.32	
B29	B27	30	194	13.103	4.150	8 953	0.32	
B30	B29	30	84	14.803	4.150	10 653	0.28	
B31	B30	30	386	11.920	3.426	8.494	0.29	
B32	B31	30	355	12.243	3.426	8.817	0.28	
B33	B32	30	267	12.178	3.426	8.752	0.28	
B34	B33	30	202	13.142	3.426	9.716	0.26	

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PEAKED EXISTING FLOWS
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12.961	3.426	9.535	0.26	
B36	B35	30	285	14.331	2.902	11.429	0.20	
B37C	B36	30	116	21.034	2.902	18.132	0.14	
B38	B37C	30	262	13.103	2.902	10.200	0.22	
B39A	B38	30	192	12.521	2.618	9.903	0.21	
B39	B39A	12	46	5.514	0.446	5 068	0.08	
B40	B39	12	220	1.118	0.446	0.672	0.40	
B41	B40	12	229	1.144	0.446	0.698	0.39	
B42	B41	12	380	1.092	0 446	0.646	0 41	
B43	B42	12	389	1 092	0 446	0 646	0.41	
B44	B43	12	385	1 092	0.446	0 646	0.40	
B45	B44	12	404	1 099	0.433	0.666	0 39	
B46	B45	12	362	1 060	0.414	0 646	0 39	
B47	B46	12	352	1 092	0.414	0 679	0 38	
B48	B47	10	303	0.963	0.414	0.549	0 43	
B49	B48	10	195	0.918	0.142	0 776	0 16	
B50	B49	10	224	0.918	0.142	0.776	0 16	
B51	B50	10	242	0 918	0.142	0 776	0.16	
B52	B51	10	90	0.918	0.136	0.782	0.15	
B53	B52	10	250	0.924	0 136	0.789	0.15	
B54	B53	10	79	0 918	0.136	0.782	0.15	
B55	B54	10	193	0.918	0 136	0.782	0.15	
B56	B55	10	242	1.034	0.136	0.899	0.13	
C13-1	C13	15	150	9.451	1 047	8.403	0.11	
C13-2	C13-1	15	211	3.471	1.047	2.424	0.30	
C13-3	C13-2	15	300	4.473	1 047	3.426	0.23	
C13-4	C13-3	15	336	4.706	0.084	4 622	0.02	
C13-5	C13-4	15	33	1.991	0.084	1.907	0.04	
C13-6	C13-5	15	250	1.758	0.084	1.674	0.05	
C13-7	C13-6	15	278	1.694	0.084	1 610	0.05	
C13-8	C13-7	15	175	1.571	0.084	1.487	0.05	
C13-9	C13-8	15	396	1.131	0.084	1.047	0.08	
C13-10	C13-9	15	93	1.719	0.084	1.635	0.05	
C13-11	C13-10	15	383	1.642	0.084	1.558	0.05	
C13-12	C13-11	15	348	1.700	0.084	1 616	0.05	
C13-13	C13-12	15	364	1.629	0.084	1.545	0.05	
C13-14	C13-13	15	363	1.765	0.084	1.681	0.05	
C13-15	C13-14	15	349	1.700	0.084	1.616	0.05	
C13-16	C13-15	15	32	1.571	0.084	1 487	0.06	
C13-17	C13-16	12	51	1.674	0.084	1.590	0.05	
C13-18	C13-17	12	299	1.015	0.084	0.931	0.09	
C13-19	C13-18	12	299	0.937	0.084	0.853	0.09	
C13-20	C13-19	12	302	0.873	0.084	0.789	0.10	
C13-21	C13-20	12	369	0.937	0.084	0.853	0.09	
C13-22	C13-21	12	373	0.924	0 084	0.840	0.09	
C1	A15	39	183	35.533	11 235	24.299	0.32	
C2	C1	48	5	493.445	11 235	482.211	0.02	
C3	C2	39	100	8.009	11.235	-3 226	1.40	
C4	C3	30	272	19.017	7 485	11.532	0.39	
C5	C4	27	267	13.439	7.414	6.025	0.55	
C6	C5	27	300	13.439	7 414	6.025	0.55	
C7	C6	27	252	13.381	7.414	5.966	0.55	
C8	C7	27	179	13.465	7.414	6.050	0.55	
C9	C8	27	142	4 144	7 143	-2.999	1.72	
C11	C9	27	306	10.957	7 143	3.814	0.65	
C12	C11	27	340	10.976	7 143	3.833	0.65	
C13	C12	27	220	15.947	7 143	8.804	0.45	
C14	C13	27	185	11.752	6.096	5 656	0.52	
C15	C14	24	70	7.569	6.096	1.474	0.81	
C16	C15	24	292	7.563	5.553	2.010	0.73	
C17	C16	24	300	7.356	5.553	1.803	0.75	
C18	C17	24	300	7 356	4 867	2.489	0.66	
C19	C18	24	249	11.273	4.867	6.406	0.43	
C20	C19	24	229	10.944	4.867	6.076	0.44	
C21	C20	24	170	11.138	3.562	7 576	0.32	
C23	C21	21	311	8.119	3.219	4.900	0.40	
C25	C23	21	456	8.229	3.219	5 010	0.39	

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PEAKED EXISTING FLOWS
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7.983	3.219	4 764	0 40	
C27	C26	21	352	7.990	3.219	4 771	0.40	
C28	C27	21	20	7.938	1 092	6 846	0.14	
C29	C28	15	511	3.258	0.776	2 482	0 24	
C30	C29	15	30	8.410	0.776	7 634	0.09	
C32	C30	15	147	8.410	0.776	7 634	0 09	
C33	C32	15	43	8.552	0.776	7 776	0.09	
C34	C33	15	248	3.963	0.776	3.187	0.20	
C35	C34	15	76	3.975	0.776	3.200	0.19	
C36	C35	15	185	4.059	0.776	3 284	0.19	
C37	C36	15	158	4.299	0.776	3.523	0.18	
C27-1	C27	12	8	19.858	1.784	18.074	0.09	
C27-2	C27-1	12	10	3 678	1.784	1.894	0 48	
C27-3	C27-2	12	213	1.732	1.784	-0.052	1.03	6%
C27-4	C27-3	12	230	1.862	1.784	0.078	0.96	
C27-5	C27-4	12	30	1.862	1.784	0 078	0.96	
C27-6	C27-5	12	200	1.875	1 784	0.090	0.95	
C27-7	C27-6	12	192	1.868	1 784	0.084	0.95	
C27-8	C27-7	12	200	1.849	1.784	0.065	0 97	
C27-9	C27-8	12	175	1 939	1.784	0.155	0.92	
C27-10	C27-9	12	8	3.523	1.739	1.784	0.49	
C15-1	C15	12	20	14.551	0.543	14 008	0 04	
C15-2	C15-1	12	300	3.025	0.543	2.482	0.18	
C15-3	C15-2	12	300	1.875	0 543	1.332	0.29	
C15-4	C15-3	12	315	1.745	0.543	1 202	0.31	
D1	C3	27	526	4.783	3.749	1 034	0.78	
D2	D1	27	285	7.544	3.749	3 794	0.50	
D3	D2	27	284	6.257	3.749	2.508	0.60	
D4	D3	27	298	6.897	3.581	3 316	0.52	
D5	D4	27	58	6.833	3.581	3 251	0.52	
D6	D5	27	250	6.942	3.581	3.361	0.52	
D7	D6	27	153	7.563	3.581	3.982	0.47	
D8	D7	27	290	6.981	3.581	3.400	0.51	
D9	D8	27	394	9.295	3.581	5.714	0.38	
D10	D9	24	32	7.091	1.965	5.126	0.28	
D11	D10	24	293	6.742	1.965	4.777	0.29	
D12	D11	24	229	6.645	1.965	4 680	0.30	
D13	D12	24	50	4.758	1.965	2.793	0.41	
D14	D13	24	40	4.460	1.965	2.495	0.44	
D15	D14	24	361	6.037	1.965	4.072	0.33	
D16	D15	24	295	5 669	1.965	3.704	0.35	
D17	D16	24	250	5.727	1.965	3.762	0.34	
D18	D17	24	283	7.149	1.965	5.184	0.28	
D19	D18	18	277	3.355	1.965	1.390	0.59	
D20	D19	18	98	2.663	1.965	0.698	0.74	
D21	D20	18	158	2.566	1.965	0.601	0.77	
D22	D21	18	269	2.663	1.965	0.698	0.74	
D23	D22	18	36	4 829	1.965	2.864	0.41	
D24	D23	18	263	4.887	1.965	2.922	0.40	
D25	D24	15	268	4.900	1.965	2.935	0.40	
F1	A31	18	304	11.739	1.622	10.116	0.14	
F3	F1	18	372	6.154	1.622	4.531	0.26	
F5	F3	18	365	7 027	1.261	5.766	0.18	
F6	F5	18	219	2.896	1.261	1.635	0.44	
F7	F6	18	255	3.950	1.261	2.689	0.32	
F8	F7	18	146	2.178	1.261	0 918	0.58	
F9	F8	18	33	2.728	1.261	1.467	0.46	
F10	F9	18	38	2.702	1.261	1.441	0.47	
F11	F10	18	275	3.232	1.261	1.972	0.39	
F12	F11	18	275	3.316	1.261	2.056	0.38	
F13	F12	15	150	2.153	0.633	1 519	0.29	
F14	F13	15	182	1.823	0.633	1.189	0.35	
F15	F14	15	415	1.597	0.633	0.963	0.39	
L1	C20	18	10	55.204	0.937	54.266	0.02	
L1A	L1	18	146	4.893	0.937	3.956	0.19	
L2	L1A	18	279	4.240	0.646	3.594	0.15	
L3	L2	18	223	4.150	0.646	3.504	0.16	

PEAKED EXISTING FLOWS
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4.150	0.646	3.504	0 16	
L5	L4	18	271	4.189	0.646	3.542	0.15	
L6	L5	18	100	7.253	0.646	6.606	0 09	
L7	L6	18	167	7.033	0.646	6 387	0.09	
L8	L7	15	149	2.799	0.621	2.178	0.22	
L9	L8	15	247	2.560	0.621	1.939	0.24	
L10	L9	15	133	5.708	0.071	5.637	0 01	
L11	L10	12	295	2.411	0.071	2.340	0 03	
L12	L11	12	226	1.920	0 071	1 849	0.04	
L9-1	L9	12	300	0.065	0.103	-0 039	1.60	62%
L9-2	L9-1	12	306	1 875	0.103	1 771	0 05	37%
L9-3	L9-2	12	375	1.487	0 103	1.383	0.07	23%
L9-4	L9-3	12	384	1.493	0.103	1 390	0.07	8%
L9-5	L9-4	12	249	2.204	0.103	2.101	0.05	
K2T	A46	48	202	110.517	7 893	102.624	0 07	
T1	K2T	24	8	21.952	5 385	16.568	0 25	
T2	T1	24	248	19.095	5.385	13.710	0.28	
T3	T2	24	285	8.791	5.385	3.407	0.61	
T4	T3	24	226	8.882	5.385	3.497	0.61	
T5	T4	24	203	8.668	5.385	3.284	0.62	
T6	T5	24	171	8.778	5.385	3 394	0.61	
T7	T6	24	53	9.043	5.385	3.659	0.60	
T8	T7	24	75	8.778	5.385	3.394	0 61	
T9	T8	24	300	8.778	5.385	3.394	0.61	
T10	T9	24	133	8.791	5.385	3.407	0.61	
T11	T10	24	330	8.772	5.385	3.387	0.61	
T12	T11	24	169	8.772	5.385	3.387	0.61	
T13	T12	24	195	8.798	5.385	3.413	0.61	
T14	T13	24	171	9.043	5.385	3.659	0.60	
T15	T14	24	299	11.041	5.385	5.656	0.49	
T16	T15	24	358	8.778	5.385	3.394	0.61	
T17	T16	24	319	8.300	5.385	2.915	0.65	
T18	T17	24	37	12.502	5.288	7.214	0.42	
T19	T18	24	235	12.676	5.288	7 388	0.42	
T20	T19	21	291	8.423	5.288	3.135	0.63	
T21	T20	21	254	8.449	5.288	3.161	0.63	
T22	T21	21	248	8.416	5.288	3.129	0.63	
T23	T22	21	380	8.423	5.288	3.135	0.63	
T24	T23	21	236	8.410	5.288	3.122	0.63	
T25	T24	21	140	8.423	5.288	3.135	0.63	
T26	T25	21	17	8.339	5.288	3.051	0.63	
K27A	T26	18	15	9.961	0.840	9.121	0.08	
K28	K27A	15	38	4 771	0.840	3 930	0.18	

5 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45.016	42.734	2.282	0.95	
A2	A1	72	138	8.655	39.741	-31.086	5.30	35%
A3	A2	72	518	53.051	39.735	13.316	0.75	
A4	A3	72	365	41.092	39.670	1.422	0.97	
A5	A4	72	436	49.767	38.817	10.950	0.78	
A6	A5	72	439	43.749	38.817	4.932	0.89	
A7	A6	72	460	51.978	38.817	13.161	0.75	
A8	A7	72	506	52.521	38.811	13.710	0.74	
A9	A8	72	263	46.251	38.811	7.440	0.84	
A10	A9	72	360	46.852	38.752	8.100	0.83	
A11	A10	72	379	47.453	38.752	8.701	0.82	
A12	A11	72	70	49.198	38.752	10.446	0.79	
A13	A12	72	366	45.016	32.004	13.012	0.71	
A14	A13	72	451	43.103	32.004	11.099	0.74	
A15	A14	72	85	44.389	32.004	12.385	0.72	
A16	A15	54	81	24.389	20.065	4.324	0.82	
A17	A16	54	202	22.036	20.065	1.972	0.91	
A18	A17	54	360	21.758	20.065	1.694	0.92	
A19	A18	54	358	13.038	20.065	-7.027	1.54	22%
A20	A19	54	370	11.551	20.065	-8.513	1.74	22%
A21	A20	54	168	25.598	20.065	5.533	0.78	29%
A22	A21	54	297	70.627	20.019	50.608	0.28	
A23	A22	48	326	29.567	20.019	9.548	0.68	
A24	A23	48	102	42.883	20.019	22.864	0.47	
A25	A24	48	238	13.704	20.019	-6.315	1.46	22%
A26	A25	48	283	2.547	20.019	-17.473	7.87	28%
A27	A26	48	116	2.547	20.019	-17.473	7.87	22%
A28	A27	48	518	29.567	20.019	9.548	0.68	14%
A29	A28	48	392	2.547	20.019	-17.473	7.87	13%
A30	A29	48	335	23.323	20.019	3.303	0.86	33%
A31	A30	48	97	71.254	19.767	51.487	0.28	36%
A32	A31	48	390	2.547	16.419	-13.872	6.45	39%
A33	A32	48	118	2.547	16.419	-13.872	6.45	48%
A34	A33	48	243	34.234	16.419	17.815	0.48	37%
A35	A34	48	93	2.547	16.419	-13.872	6.45	37%
A36	A35	48	193	2.547	16.419	-13.872	6.45	45%
A37	A36	48	70	62.334	16.419	45.915	0.26	46%
A38	A37	48	20	2.547	16.419	-13.872	6.45	44%
A39	A38	48	344	24.538	16.419	8.119	0.67	36%
A40	A39	48	225	2.547	16.419	-13.872	6.45	30%
A41	A40	48	199	26.813	16.419	10.394	0.61	33%
A42	A41	48	372	11.092	16.419	-5.326	1.48	37%
A43	A42	48	262	21.745	16.419	5.326	0.76	41%
A44	A43	48	384	16.878	16.419	0.459	0.97	30%
A45	A44	48	400	42.734	16.419	26.315	0.38	39%
A46	A45	48	108	72.243	16.419	55.824	0.23	
A54	A46	42	296	62.586	6.154	56.432	0.10	
A55	A54	42	283	16.723	6.154	10.569	0.37	
A56	A55	42	211	15.016	5.902	9.114	0.39	
A57	A56	42	163	18.694	5.902	12.793	0.32	
A58	A57	42	247	8.733	5.902	2.831	0.68	
A59	A58	42	326	13.575	5.863	7.712	0.43	
A60	A59	42	297	17.279	5.604	11.674	0.32	
A61	A60	42	303	25.708	5.604	20.103	0.22	
A62	A61	42	230	15.740	5.048	10.692	0.32	
A63	A62	42	201	17.376	5.048	12.327	0.29	
A64	A63	42	300	13.807	5.048	8.759	0.37	
A65	A64	42	247	22.405	5.048	17.356	0.23	
A66	A65	42	199	15.941	5.048	10.892	0.32	
A67	A66	42	357	26.677	5.048	21.629	0.19	
A68	A67	42	44	99.813	3.756	96.057	0.04	
A73	A68	24	369	8.623	3.672	4.952	0.43	
A74	A73	30	275	17.195	3.672	13.523	0.21	
A75	A74	30	28	30.401	3.672	26.729	0.12	
A76	A75	30	10	7.266	3.672	3.594	0.51	
A78	A76	30	12	160.304	3.368	156.936	0.02	
A79	A78	30	255	20.899	3.368	17.531	0.16	

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5 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14 421	3.368	11 054	0.23	
A81	A80	30	280	13.516	3.368	10.149	0 25	
B10-1	B10A	15	65	5.423	0.478	4.945	0.09	
B10-2	B10-1	15	127	2.269	0.478	1 791	0 21	
B10-3	B10-2	12	204	1.248	0.478	0.769	0.38	
B10-3A	B10-3	12	206	1.105	0.478	0 627	0.43	
B10-4	B10-3A	12	65	1 080	0.478	0.601	0.44	
B10-4A	B10-4	12	359	1 092	0 478	0.614	0.44	
B10-4B	B10-4A	12	149	1 086	0 478	0.608	0.44	
B10-5	B10-4B	18	222	2.056	0.478	1.577	0.69	
B10-6	B10-5	12	358	1.157	0.478	0.679	0 42	
B10-7	B10-6	12	155	1.997	0.478	1.519	0 24	
B10-8	B10-7	12	174	2.036	0.478	1 558	0.24	
B10-9	B10-8	12	335	1.997	0.478	1 519	0.24	
B10-10	B10-9	12	400	1 370	0.478	0.892	0.35	
B10-11	B10-10	12	225	1 183	0.478	0.705	0.41	
B10-12	B10-11	12	400	1.215	0 478	0.737	0.40	
B10-13	B10-12	12	275	1.202	0.478	0.724	0.40	
B10-14	B10-13	12	205	1.907	0.478	1 429	0.25	
B10-15	B10-14	12	200	1.713	0.478	1 235	0.28	
B10-16	B10-15	12	240	1.092	0.478	0.614	0.44	
B10-17	B10-16	12	400	1.092	0.478	0.614	0.44	
B10-18	B10-17	12	215	1.105	0.478	0 627	0.43	
B10-19	B10-18	12	233	1.118	0.478	0.640	0.43	
B10-20	B10-19	12	277	1 228	0.478	0.750	0.39	
B10-21	B10-20	12	180	1.228	0.478	0.750	0.39	
B10-22	B10-21	12	190	1.228	0.478	0 750	0.39	
B10-23	B10-22	12	139	1.222	0.478	0.743	0.39	
B10-24	B10-23	12	403	1.228	0.478	0.750	0.39	
B10-25	B10-24	12	125	1.383	0.478	0.905	0.35	
B10-26	B10-25	12	170	1.396	0.478	0.918	0.34	
B10-27	B10-26	12	251	1 383	0.478	0.905	0.35	
B10-28	B10-27	12	140	2.825	0.478	2.346	0.17	
B2	A12	36	348	24.305	6.749	17 557	0.28	
B3	B2	36	351	17 725	6.749	10.976	0.38	
B4	B3	36	86	17 608	6.749	10.860	0.38	
B5	B4	36	103	18.384	6.749	11.635	0.37	
B6	B5	36	236	13.523	6.749	6.774	0.50	
B7	B6	36	235	12.889	6.749	6.141	0.52	
B8	B7	36	246	17 039	6.749	10.291	0.40	
B9	B8	36	115	22.605	6.716	15.889	0.30	
B10	B9	36	141	14.758	6.587	8.171	0.45	
B10A	B10	36	107	16.962	6.425	10.537	0.38	
B11	B10A	36	156	16.962	5.947	11.015	0.35	
B12	B11	36	126	18.830	5.947	12.883	0.32	
B13	B12	36	329	11.273	5.947	5.326	0.53	
B14	B13	36	343	18.384	5.947	12.437	0.32	
B15	B14	30	200	10.530	5.947	4.583	0.56	
B16	B15	30	131	14.771	5.947	8.824	0 40	
B17	B16	30	22	34.486	5.947	28.539	0.17	
B18	B17	30	80	11.189	5.947	5.242	0.53	
B19	B18	30	220	13.691	5.617	8.074	0.41	
B20	B19	30	217	11.674	5.617	6.057	0.48	
B20B	B20	30	66	14.680	5.617	9.063	0.38	
B21	B20B	30	121	17.104	5.617	11 487	0.33	
B22	B21	30	259	11 849	5.617	6.231	0 47	
B23	B22	30	129	11.829	5.617	6.212	0.48	
B24	B23	30	338	12.631	5.617	7.014	0.45	
B25	B24	30	207	11.629	5.617	6.012	0.48	
B26	B25	30	199	14.570	5.617	8.953	0.39	
B27	B26	30	216	12.896	5.617	7 279	0.44	
B29	B27	30	194	13.103	5.617	7.485	0.43	
B30	B29	30	84	14 803	5.617	9.186	0.38	
B31	B30	30	386	11.920	4.887	7 033	0 41	
B32	B31	30	355	12.243	4.887	7 356	0.40	
B33	B32	30	267	12.178	4.887	7 292	0.40	
B34	B33	30	202	13.142	4.887	8.255	0.37	

5 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12.961	4 887	8 074	0 38	
B36	B35	30	285	14.331	4.350	9.981	0.30	
B37C	B36	30	116	21.034	4.350	16 684	0.21	
B38	B37C	30	262	13.103	4 350	8.752	0.33	
B39A	B38	30	192	12.521	4 066	8.455	0.32	
B39	B39A	12	46	5.514	0.918	4.596	0 17	
B40	B39	12	220	1.118	0.918	0 200	0 82	
B41	B40	12	229	1 144	0.918	0 226	0.81	
B42	B41	12	380	1.092	0.918	0 175	0.84	
B43	B42	12	389	1 092	0.918	0.175	0.84	
B44	B43	12	385	1.092	0.918	0.175	0 84	
B45	B44	12	404	1 099	0.905	0.194	0.83	
B46	B45	12	362	1 060	0 886	0.175	0.84	
B47	B46	12	352	1.092	0.886	0 207	0 81	
B48	B47	10	303	0.963	0 886	0 078	0 92	
B49	B48	10	195	0.918	0.621	0 297	0.68	
B50	B49	10	224	0 918	0.621	0.297	0 68	
B51	B50	10	242	0.918	0.621	0.297	0 68	
B52	B51	10	90	0.918	0.601	0.317	0 66	
B53	B52	10	250	0.924	0.601	0.323	0.65	
B54	B53	10	79	0.918	0.601	0.317	0.66	
B55	B54	10	193	0.918	0.601	0.317	0.65	
B56	B55	10	242	1.034	0.601	0.433	0.58	
C13-1	C13	15	150	9.451	1.112	8.339	0.12	
C13-2	C13-1	15	211	3.471	1 112	2.359	0.32	
C13-3	C13-2	15	300	4.473	1 112	3.361	0 25	
C13-4	C13-3	15	336	4.706	0.097	4.609	0.02	
C13-5	C13-4	15	33	1.991	0.097	1.894	0.05	
C13-6	C13-5	15	250	1.758	0.097	1 661	0.05	
C13-7	C13-6	15	278	1.694	0.097	1.597	0 06	
C13-8	C13-7	15	175	1.571	0.097	1.474	0.06	
C13-9	C13-8	15	396	1.131	0.097	1.034	0.08	
C13-10	C13-9	15	93	1.719	0.097	1.622	0.06	
C13-11	C13-10	15	383	1.642	0.097	1.545	0.06	
C13-12	C13-11	15	348	1.700	0.097	1.603	0.06	
C13-13	C13-12	15	364	1 629	0.097	1.532	0.06	
C13-14	C13-13	15	363	1.765	0.097	1.668	0 05	
C13-15	C13-14	15	349	1.700	0.097	1 603	0.06	
C13-16	C13-15	15	32	1.571	0.097	1.474	0.06	
C13-17	C13-16	12	51	1.674	0.097	1.577	0.06	
C13-18	C13-17	12	299	1.015	0.097	0.918	0.09	
C13-19	C13-18	12	299	0.937	0.097	0.840	0.10	
C13-20	C13-19	12	302	0.873	0.097	0.776	0.11	
C13-21	C13-20	12	369	0.937	0.097	0 840	0.10	
C13-22	C13-21	12	373	0.924	0.097	0.827	0.10	
C1	A15	39	183	35.533	11.939	23.594	0.34	
C2	C1	48	5	493.445	11.939	481.506	0.02	
C3	C2	39	100	8.009	11.939	-3.930	1.49	
C4	C3	30	272	19.017	8.145	10.873	0.43	
C5	C4	27	267	13.439	8.054	5 385	0.60	
C6	C5	27	300	13.439	8.054	5.385	0.60	
C7	C6	27	252	13.381	8.054	5.326	0.60	
C8	C7	27	179	13.465	8.054	5.410	0.60	
C9	C8	27	142	4.144	7.731	-3.588	1 87	
C11	C9	27	306	10.957	7.731	3.226	0.71	
C12	C11	27	340	10.976	7 731	3.245	0 70	
C13	C12	27	220	15.947	7.731	8.216	0.48	
C14	C13	27	185	11.752	6.619	5.133	0.56	
C15	C14	24	70	7.569	6.619	0.950	0.87	
C16	C15	24	292	7 563	5.973	1 590	0 79	
C17	C16	24	300	7 356	5.973	1.383	0.81	
C18	C17	24	300	7.356	5.268	2 088	0.72	
C19	C18	24	249	11.273	5.268	6.005	0.47	
C20	C19	24	229	10 944	5.268	5.676	0.48	
C21	C20	24	170	11 138	3.878	7 259	0.35	
C23	C21	21	311	8.119	3.465	4.654	0.43	
C25	C23	21	456	8.229	3.465	4.764	0.42	

5 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7 983	3.465	4.518	0.43	
C27	C26	21	352	7.990	3.465	4 525	0 43	
C28	C27	21	20	7 938	1.241	6.697	0.16	
C29	C28	15	511	3.258	0.860	2.398	0.26	
C30	C29	15	30	8.410	0.860	7 550	0.10	
C32	C30	15	147	8.410	0.860	7 550	0.10	
C33	C32	15	43	8 552	0.860	7 692	0.10	
C34	C33	15	248	3.963	0.860	3.103	0 22	
C35	C34	15	76	3.975	0 860	3.116	0.22	
C36	C35	15	185	4.059	0.860	3.200	0.21	
C37	C36	15	158	4.299	0.860	3.439	0 20	
C27-1	C27	12	8	19 858	1.823	18.035	0.09	
C27-2	C27-1	12	10	3 678	1 823	1 855	0.49	
C27-3	C27-2	12	213	1.732	1.823	-0 090	1 05	7%
C27-4	C27-3	12	230	1.862	1 823	0.039	0.98	
C27-5	C27-4	12	30	1 862	1.823	0.039	0.98	
C27-6	C27-5	12	200	1.875	1.823	0 052	0.97	
C27-7	C27-6	12	192	1 868	1 823	0 045	0.97	
C27-8	C27-7	12	200	1.849	1.823	0 026	0 99	
C27-9	C27-8	12	175	1.939	1 823	0.116	0.94	
C27-10	C27-9	12	8	3.523	1.778	1.745	0.50	
C15-1	C15	12	20	14.551	0.646	13.904	0.04	
C15-2	C15-1	12	300	3.025	0.646	2.379	0.21	
C15-3	C15-2	12	300	1 875	0.646	1 228	0.35	
C15-4	C15-3	12	315	1.745	0.646	1 099	0.37	
D1	C3	27	526	4.783	3.794	0.989	0.79	
D2	D1	27	285	7.544	3.794	3.749	0.50	
D3	D2	27	284	6.257	3.794	2.463	0.61	
D4	D3	27	298	6.897	3.613	3.284	0.52	
D5	D4	27	58	6.833	3.613	3.219	0.53	
D6	D5	27	250	6.942	3.613	3 329	0.52	
D7	D6	27	153	7 563	3.613	3.950	0.48	
D8	D7	27	290	6.981	3.613	3.368	0.52	
D9	D8	27	394	9.295	3.613	5.682	0.39	
D10	D9	24	32	7 091	1.984	5.107	0.28	
D11	D10	24	293	6.742	1.984	4.758	0.29	
D12	D11	24	229	6.645	1.984	4.661	0.30	
D13	D12	24	50	4.758	1.984	2.773	0.42	
D14	D13	24	40	4.460	1.984	2.476	0.45	
D15	D14	24	361	6.037	1.984	4.053	0.33	
D16	D15	24	295	5.669	1.984	3.685	0.35	
D17	D16	24	250	5.727	1.984	3.743	0.35	
D18	D17	24	283	7.149	1.984	5.165	0.28	
D19	D18	18	277	3.355	1.984	1.370	0.59	
D20	D19	18	98	2.663	1.984	0.679	0.75	
D21	D20	18	158	2.566	1.984	0.582	0.77	
D22	D21	18	269	2.663	1.984	0 679	0.75	
D23	D22	18	36	4.829	1.984	2.844	0.41	
D24	D23	18	263	4.887	1.984	2.902	0.41	
D25	D24	15	268	4.900	1.984	2.915	0.41	
F1	A31	18	304	11.739	1.681	10.058	0.14	
F3	F1	18	372	6.154	1.681	4 473	0.27	
F5	F3	18	365	7 027	1.286	5.740	0.18	
F6	F5	18	219	2.896	1 286	1 610	0.44	
F7	F6	18	255	3.950	1 286	2.663	0.33	
F8	F7	18	146	2.178	1 286	0.892	0.59	
F9	F8	18	33	2.728	1.286	1 441	0.47	
F10	F9	18	38	2.702	1.286	1 416	0.48	
F11	F10	18	275	3.232	1.286	1.946	0.40	
F12	F11	18	275	3.316	1.286	2.030	0.39	
F13	F12	15	150	2.153	0.646	1 506	0.30	
F14	F13	15	182	1 823	0.646	1.176	0.35	
F15	F14	15	415	1 597	0.646	0.950	0.40	
L1	C20	18	10	55.204	0.957	54.247	0.02	
L1A	L1	18	146	4.893	0.957	3.937	0.20	
L2	L1A	18	279	4.240	0.659	3.581	0.16	
L3	L2	18	223	4.150	0.659	3.491	0.16	

5 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4.150	0.659	3.491	0.16	
L5	L4	18	271	4.189	0 659	3.529	0.16	
L6	L5	18	100	7 253	0.659	6.593	0.09	
L7	L6	18	167	7.033	0.659	6.374	0.09	
L8	L7	15	149	2.799	0.633	2.165	0.23	
L9	L8	15	247	2.560	0.633	1 926	0.25	
L10	L9	15	133	5.708	0.078	5.630	0 01	
L11	L10	12	295	2.411	0 078	2.334	0.03	
L12	L11	12	226	1.920	0.078	1.842	0.04	
L9-1	L9	12	300	0.000	0.103	-0.103	0.00	62%
L9-2	L9-1	12	306	1.875	0.103	1.771	0.05	37%
L9-3	L9-2	12	375	1.487	0.103	1.383	0 07	23%
L9-4	L9-3	12	384	1.493	0.103	1.390	0.07	8%
L9-5	L9-4	12	249	2.204	0.103	2.101	0.05	
K2T	A46	48	202	110.517	10.265	100.252	0.09	
T1	K2T	24	8	21.952	7 628	14 324	0.35	
T2	T1	24	248	19.095	7.628	11.467	0.40	
T3	T2	24	285	8.791	7 628	1.164	0.87	
T4	T3	24	226	8.882	7 628	1.254	0.86	
T5	T4	24	203	8.668	7.628	1 041	0.88	
T6	T5	24	171	8.778	7.628	1.151	0.87	
T7	T6	24	53	9.043	7.628	1.416	0.84	
T8	T7	24	75	8.778	7 628	1.151	0.87	
T9	T8	24	300	8.778	7.628	1.151	0.87	
T10	T9	24	133	8.791	7.628	1.164	0.87	
T11	T10	24	330	8.772	7.628	1 144	0.87	
T12	T11	24	169	8.772	7.628	1.144	0.87	
T13	T12	24	195	8.798	7.628	1.170	0.87	
T14	T13	24	171	9.043	7.628	1.416	0.84	
T15	T14	24	299	11.041	7.628	3.413	0.69	
T16	T15	24	358	8.778	7.628	1.151	0.87	
T17	T16	24	319	8.300	7.628	0.672	0.92	
T18	T17	24	37	12.502	7.466	5.036	0.60	
T19	T18	24	235	12.676	7.466	5.210	0.59	
T20	T19	21	291	8.423	7.466	0.957	0.89	
T21	T20	21	254	8.449	7.466	0.983	0.88	
T22	T21	21	248	8.416	7.466	0.950	0.89	
T23	T22	21	380	8.423	7.466	0.957	0.89	
T24	T23	21	236	8.410	7.466	0.944	0.89	
T25	T24	21	140	8.423	7.466	0.957	0.89	
T26	T25	21	17	8.339	7.466	0.873	0.90	
K27A	T26	18	15	9.961	0.911	9.050	0.09	
K28	K27A	15	38	4.771	0.911	3.859	0 19	

10 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45.016	44.926	0 090	1.00	
A2	A1	72	138	8.655	41.810	-33.154	5.57	35%
A3	A2	72	518	53.051	41.803	11.248	0.79	
A4	A3	72	365	41.092	41 739	-0.646	1.02	33%
A5	A4	72	436	49.767	40.860	8.908	0.82	
A6	A5	72	439	43.749	40 860	2.889	0.93	
A7	A6	72	460	51.978	40.860	11 118	0.79	
A8	A7	72	506	52.521	40.860	11 661	0.78	
A9	A8	72	263	46.251	40.860	5.391	0.88	
A10	A9	72	360	46 852	40.795	6 057	0.87	
A11	A10	72	379	47.453	40.795	6.658	0 86	
A12	A11	72	70	49 198	40.795	8.403	0 83	
A13	A12	72	366	45 016	33 710	11.306	0 75	
A14	A13	72	451	43 103	33 710	9.392	0.78	
A15	A14	72	85	44 389	33.710	10 679	0.76	
A16	A15	54	81	24 389	21.183	3 206	0.87	
A17	A16	54	202	22.036	21 183	0.853	0.96	
A18	A17	54	360	21.758	21 183	0.575	0.97	
A19	A18	54	358	13.038	21.183	-8.145	1.62	22%
A20	A19	54	370	11.551	21.183	-9.632	1 83	23%
A21	A20	54	168	25 598	21.183	4.415	0.83	29%
A22	A21	54	297	70.627	21.131	49.496	0.30	
A23	A22	48	326	29.567	21.131	8 436	0.71	
A24	A23	48	102	42.883	21.131	21 752	0.49	
A25	A24	48	238	13.704	21.131	-7 427	1.54	22%
A26	A25	48	283	2.547	21.131	-18.584	8.31	28%
A27	A26	48	116	2.547	21.131	-18.584	8.30	22%
A28	A27	48	518	29.567	21.131	8.436	0.71	14%
A29	A28	48	392	2.547	21.131	-18.584	8.30	14%
A30	A29	48	335	23.323	21.131	2.191	0.91	34%
A31	A30	48	97	71.254	20.879	50.375	0.29	37%
A32	A31	48	390	2.547	17.188	-14 641	6.75	40%
A33	A32	48	118	2.547	17.188	-14.641	6.75	49%
A34	A33	48	243	34.234	17.188	17.046	0.50	38%
A35	A34	48	93	2 547	17.188	-14 641	6.75	38%
A36	A35	48	193	2 547	17 188	-14.641	6 75	46%
A37	A36	48	70	62 334	17 188	45.145	0.28	48%
A38	A37	48	20	2 547	17 188	-14.641	6.75	46%
A39	A38	48	344	24.538	17.188	7 350	0.70	38%
A40	A39	48	225	2.547	17 188	-14.641	6.75	31%
A41	A40	48	199	26.813	17.188	9.625	0.64	35%
A42	A41	48	372	11.092	17.188	-6.096	1.55	38%
A43	A42	48	262	21.745	17.188	4.557	0.79	43%
A44	A43	48	384	16.878	17 188	-0.310	1.02	31%
A45	A44	48	400	42.734	17 188	25.546	0.40	41%
A46	A45	48	108	72.243	17.188	55.055	0.24	
A54	A46	42	296	62.586	6.658	55.928	0.11	
A55	A54	42	283	16.723	6.658	10.065	0.40	
A56	A55	42	211	15.016	6.393	8.623	0.43	—
A57	A56	42	163	18.694	6.393	12.301	0.34	
A58	A57	42	247	8.733	6.393	2.340	0.73	
A59	A58	42	326	13.575	6.341	7.233	0.47	
A60	A59	42	297	17 279	6.076	11.202	0.35	
A61	A60	42	303	25 708	6 076	19.632	0.24	
A62	A61	42	230	15.740	5 514	10.226	0.35	
A63	A62	42	201	17.376	5 514	11 862	0 32	
A64	A63	42	300	13.807	5.514	8.293	0.40	
A65	A64	42	247	22.405	5.514	16.891	0.25	
A66	A65	42	199	15.941	5.514	10.427	0.35	
A67	A66	42	357	26.677	5.514	21.164	0.21	
A68	A67	42	44	99.813	3.788	96 025	0.04	
A73	A68	24	369	8.623	3 704	4.919	0.43	
A74	A73	30	275	17.195	3.704	13.491	0.22	
A75	A74	30	28	30.401	3.704	26.697	0 12	
A76	A75	30	10	7 266	3.704	3.562	0 51	
A78	A76	30	12	160.304	3.400	156.904	0.02	
A79	A78	30	255	20.899	3.400	17.498	0.16	

10 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14.421	3.400	11.021	0.24	
A81	A80	30	280	13.516	3.400	10 116	0.25	
B10-1	B10A	15	65	5 423	0.543	4 880	0.10	
B10-2	B10-1	15	127	2.269	0.543	1.726	0 24	
B10-3	B10-2	12	204	1 248	0.543	0 705	0.43	
B10-3A	B10-3	12	206	1 105	0.543	0.562	0.49	
B10-4	B10-3A	12	65	1 080	0.543	0 537	0.50	
B10-4A	B10-4	12	359	1.092	0 543	0 549	0 49	
B10-4B	B10-4A	12	149	1 086	0.543	0.543	0.50	
B10-5	B10-4B	18	222	2.056	0.543	1 513	0 78	
B10-6	B10-5	12	358	1 157	0.543	0 614	0.47	
B10-7	B10-6	12	155	1 997	0.543	1.454	0.27	
B10-8	B10-7	12	174	2 036	0.543	1 493	0 27	
B10-9	B10-8	12	335	1 997	0.543	1.454	0.27	
B10-10	B10-9	12	400	1 370	0 543	0 827	0 40	
B10-11	B10-10	12	225	1 183	0 543	0.640	0 46	
B10-12	B10-11	12	400	1 215	0.543	0.672	0.45	
B10-13	B10-12	12	275	1 202	0 543	0 659	0.45	
B10-14	B10-13	12	205	1 907	0.543	1.364	0 28	
B10-15	B10-14	12	200	1.713	0 543	1.170	0 32	
B10-16	B10-15	12	240	1.092	0.543	0.549	0.49	
B10-17	B10-16	12	400	1 092	0.543	0.549	0.49	
B10-18	B10-17	12	215	1 105	0 491	0.614	0.44	
B10-19	B10-18	12	233	1.118	0 491	0.627	0.44	
B10-20	B10-19	12	277	1.228	0.491	0 737	0.40	
B10-21	B10-20	12	180	1.228	0.491	0.737	0.40	
B10-22	B10-21	12	190	1.228	0.491	0.737	0.40	
B10-23	B10-22	12	139	1.222	0 491	0 730	0.40	
B10-24	B10-23	12	403	1 228	0.491	0.737	0.40	
B10-25	B10-24	12	125	1.383	0.491	0.892	0.35	
B10-26	B10-25	12	170	1.396	0 491	0.905	0 35	
B10-27	B10-26	12	251	1.383	0 491	0.892	0.35	
B10-28	B10-27	12	140	2.825	0.491	2 334	0.17	
B2	A12	36	348	24.305	7 085	17.220	0.29	
B3	B2	36	351	17.725	7.085	10 640	0.40	
B4	B3	36	86	17.608	7 085	10 524	0.40	
B5	B4	36	103	18.384	7 085	11.299	0.39	
B6	B5	36	236	13.523	7.085	6.438	0.52	
B7	B6	36	235	12.889	7 085	5 805	0.55	
B8	B7	36	246	17.039	7 085	9.955	0.42	
B9	B8	36	115	22.605	7.046	15 559	0.31	
B10	B9	36	141	14.758	6.917	7 841	0.47	
B10A	B10	36	107	16.962	6.742	10.220	0 40	
B11	B10A	36	156	16.962	6.199	10 763	0.37	
B12	B11	36	126	18.830	6.199	12.631	0.33	
B13	B12	36	329	11.273	6 199	5 074	0.55	
B14	B13	36	343	18.384	6.199	12 185	0.34	
B15	B14	30	200	10.530	6.199	4 331	0.59	
B16	B15	30	131	14.771	6 199	8 571	0.42	—
B17	B16	30	22	34.486	6.199	28.287	0 18	
B18	B17	30	80	11.189	6.199	4.990	0.55	
B19	B18	30	220	13.691	5.869	7.822	0 43	
B20	B19	30	217	11.674	5 869	5.805	0.50	
B20B	B20	30	66	14.680	5 869	8.811	0 40	
B21	B20B	30	121	17 104	5.869	11 235	0 34	
B22	B21	30	259	11 849	5.869	5 979	0 50	
B23	B22	30	129	11.829	5.869	5.960	0 50	
B24	B23	30	338	12 631	5.869	6.761	0 46	
B25	B24	30	207	11 629	5.869	5.760	0 50	
B26	B25	30	199	14.570	5 869	8.701	0.40	
B27	B26	30	216	12.896	5.869	7 027	0.45	
B29	B27	30	194	13.103	5.869	7 233	0 45	
B30	B29	30	84	14.803	5.869	8.933	0 40	
B31	B30	30	386	11.920	5.126	6 794	0.43	
B32	B31	30	355	12.243	5.126	7.117	0 42	
B33	B32	30	267	12 178	5 126	7 052	0.42	
B34	B33	30	202	13.142	5 126	8.016	0.39	

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10 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12 961	5.126	7 835	0.40	
B36	B35	30	285	14.331	4.583	9.748	0 32	
B37C	B36	30	116	21 034	4.583	16.451	0 22	
B38	B37C	30	262	13.103	4 583	8 520	0.35	
B39A	B38	30	192	12.521	4 286	8 235	0.34	
B39	B39A	12	46	5 514	0 931	4 583	0.17	
B40	B39	12	220	1.118	0 931	0 187	0 83	
B41	B40	12	229	1.144	0.931	0 213	0 81	
B42	B41	12	380	1.092	0 931	0 162	0 85	
B43	B42	12	389	1.092	0.931	0 162	0 85	
B44	B43	12	385	1.092	0.931	0 162	0.85	
B45	B44	12	404	1 099	0.918	0.181	0.84	
B46	B45	12	362	1 060	0.899	0 162	0 85	
B47	B46	12	352	1 092	0.899	0 194	0 82	
B48	B47	10	303	0 963	0.899	0 065	0.93	
B49	B48	10	195	0 918	0.627	0 291	0.69	
B50	B49	10	224	0 918	0.627	0 291	0.69	
B51	B50	10	242	0.918	0.627	0 291	0 69	
B52	B51	10	90	0.918	0.608	0.310	0 66	
B53	B52	10	250	0.924	0 608	0.317	0 66	
B54	B53	10	79	0.918	0.608	0.310	0.66	
B55	B54	10	193	0.918	0.608	0 310	0.66	
B56	B55	10	242	1.034	0 608	0.427	0.59	
C13-1	C13	15	150	9.451	1 209	8.242	0 13	
C13-2	C13-1	15	211	3.471	1.209	2.262	0 35	
C13-3	C13-2	15	300	4.473	1.209	3.264	0.27	
C13-4	C13-3	15	336	4.706	0.097	4 609	0.02	
C13-5	C13-4	15	33	1.991	0.097	1 894	0.05	
C13-6	C13-5	15	250	1.758	0.097	1.661	0.06	
C13-7	C13-6	15	278	1.694	0.097	1 597	0.06	
C13-8	C13-7	15	175	1.571	0.097	1 474	0.06	
C13-9	C13-8	15	396	1.131	0.097	1 034	0.09	
C13-10	C13-9	15	93	1 719	0.097	1.622	0.06	
C13-11	C13-10	15	383	1 642	0.097	1.545	0.06	
C13-12	C13-11	15	348	1 700	0.097	1.603	0.06	
C13-13	C13-12	15	364	1.629	0.097	1.532	0.06	
C13-14	C13-13	15	363	1.765	0.097	1.668	0.06	
C13-15	C13-14	15	349	1.700	0.097	1.603	0.06	
C13-16	C13-15	15	32	1.571	0.097	1.474	0.06	
C13-17	C13-16	12	51	1.674	0 097	1.577	0 06	
C13-18	C13-17	12	299	1.015	0 097	0.918	0.10	
C13-19	C13-18	12	299	0.937	0 097	0.840	0.11	
C13-20	C13-19	12	302	0.873	0.097	0.776	0 11	
C13-21	C13-20	12	369	0.937	0 097	0.840	0.11	
C13-22	C13-21	12	373	0.924	0.097	0.827	0.11	
C1	A15	39	183	35.533	12.534	22.999	0.35	
C2	C1	48	5	493.445	12.534	480.911	0.03	
C3	C2	39	100	8.009	12.534	-4 525	1.56	
C4	C3	30	272	19.017	8.681	10.336	0.46	
C5	C4	27	267	13.439	8.591	4.848	0.64	
C6	C5	27	300	13.439	8.591	4.848	0.64	
C7	C6	27	252	13.381	8.591	4 790	0.64	
C8	C7	27	179	13.465	8.591	4 874	0.64	
C9	C8	27	142	4 144	8.235	-4.092	1.99	
C11	C9	27	306	10.957	8 235	2.721	0.75	
C12	C11	27	340	10.976	8 235	2.741	0.75	
C13	C12	27	220	15.947	8 235	7 712	0 52	
C14	C13	27	185	11.752	7 027	4 725	0 60	
C15	C14	24	70	7.569	7 027	0.543	0.93	
C16	C15	24	292	7 563	6.315	1.248	0.84	
C17	C16	24	300	7 356	6.315	1.041	0.86	
C18	C17	24	300	7.356	5 546	1 810	0 75	
C19	C18	24	249	11.273	5 546	5 727	0.49	
C20	C19	24	229	10.944	5.546	5 398	0.51	
C21	C20	24	170	11 138	4.105	7.033	0.37	
C23	C21	21	311	8.119	3.652	4.467	0.45	
C25	C23	21	456	8.229	3.652	4 577	0.44	

10 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7.983	3.652	4.331	0.46	
C27	C26	21	352	7 990	3.652	4 337	0.46	
C28	C27	21	20	7.938	1.306	6.632	0.16	
C29	C28	15	511	3.258	0.892	2.366	0.27	
C30	C29	15	30	8.410	0.892	7 518	0 11	
C32	C30	15	147	8.410	0.892	7 518	0 11	
C33	C32	15	43	8.552	0.892	7.660	0.10	
C34	C33	15	248	3.963	0.892	3.070	0.22	
C35	C34	15	76	3 975	0 892	3 083	0.22	
C36	C35	15	185	4.059	0 892	3.167	0.22	
C37	C36	15	158	4 299	0.892	3.407	0.21	
C27-1	C27	12	8	19.858	1 907	17.951	0 10	
C27-2	C27-1	12	10	3.678	1.907	1.771	0.52	
C27-3	C27-2	12	213	1.732	1.907	-0.175	1 10	8%
C27-4	C27-3	12	230	1 862	1.907	-0.045	1.02	
C27-5	C27-4	12	30	1.862	1 907	-0.045	1.03	
C27-6	C27-5	12	200	1 875	1 907	-0.032	1.02	
C27-7	C27-6	12	192	1.868	1.907	-0.039	1 02	
C27-8	C27-7	12	200	1.849	1.907	-0 058	1.03	
C27-9	C27-8	12	175	1.939	1.907	0.032	0.98	
C27-10	C27-9	12	8	3.523	1 868	1.655	0.53	10%
C15-1	C15	12	20	14.551	0.711	13.840	0.05	
C15-2	C15-1	12	300	3.025	0.711	2.314	0.23	
C15-3	C15-2	12	300	1 875	0.711	1 164	0.38	
C15-4	C15-3	12	315	1.745	0.711	1 034	0.41	
D1	C3	27	526	4.783	3.846	0 937	0.80	
D2	D1	27	285	7.544	3.846	3.697	0.51	
D3	D2	27	284	6.257	3 846	2 411	0 62	
D4	D3	27	298	6.897	3 652	3.245	0.53	
D5	D4	27	58	6.833	3.652	3.180	0.53	
D6	D5	27	250	6.942	3.652	3.290	0 53	
D7	D6	27	153	7.563	3.652	3 911	0.48	
D8	D7	27	290	6.981	3.652	3.329	0.52	
D9	D8	27	394	9.295	3 652	5.643	0.39	
D10	D9	24	32	7 091	2.004	5.087	0.28	
D11	D10	24	293	6.742	2.004	4.738	0 30	
D12	D11	24	229	6.645	2.004	4.641	0.30	
D13	D12	24	50	4.758	2.004	2.754	0.42	
D14	D13	24	40	4 460	2.004	2.456	0.45	
D15	D14	24	361	6 037	2 004	4.034	0.33	
D16	D15	24	295	5.669	2 004	3.665	0.35	
D17	D16	24	250	5 727	2.004	3.723	0.35	
D18	D17	24	283	7 149	2.004	5.145	0 28	
D19	D18	18	277	3.355	2.004	1 351	0.60	
D20	D19	18	98	2.663	2.004	0.659	0.75	
D21	D20	18	158	2.566	2.004	0.562	0.78	
D22	D21	18	269	2.663	2.004	0.659	0.75	
D23	D22	18	36	4.829	2.004	2.825	0.41	
D24	D23	18	263	4.887	2.004	2.883	0.41	—
D25	D24	15	268	4.900	2.004	2.896	0.41	
F1	A31	18	304	11.739	1.875	9.864	0.16	
F3	F1	18	372	6 154	1 875	4.279	0.30	
F5	F3	18	365	7.027	1 409	5.617	0.20	
F6	F5	18	219	2 896	1 409	1.487	0.49	
F7	F6	18	255	3.950	1.409	2 540	0.36	
F8	F7	18	146	2.178	1 409	0.769	0.65	
F9	F8	18	33	2.728	1 409	1.319	0.52	
F10	F9	18	38	2.702	1.409	1.293	0.52	
F11	F10	18	275	3.232	1 409	1.823	0.43	
F12	F11	18	275	3.316	1 409	1.907	0 42	
F13	F12	15	150	2.153	0.705	1 448	0.33	
F14	F13	15	182	1.823	0.705	1.118	0.39	
F15	F14	15	415	1.597	0 705	0.892	0.44	
L1	C20	18	10	55 204	0.963	54.240	0 02	
L1A	L1	18	146	4.893	0 963	3 930	0.20	
L2	L1A	18	279	4.240	0.666	3.575	0 16	
L3	L2	18	223	4.150	0.666	3 484	0 16	

10 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4.150	0 666	3.484	0 16	
L5	L4	18	271	4 189	0 666	3.523	0.16	
L6	L5	18	100	7.253	0.666	6 587	0.09	
L7	L6	18	167	7.033	0.666	6.367	0 09	
L8	L7	15	149	2.799	0.640	2.159	0.23	
L9	L8	15	247	2.560	0.640	1.920	0.25	
L10	L9	15	133	5.708	0 078	5.630	0.01	
L11	L10	12	295	2 411	0 078	2.334	0.03	
L12	L11	12	226	1.920	0 078	1.842	0 04	
L9-1	L9	12	300	0.000	0 103	-0 103	0 00	62%
L9-2	L9-1	12	306	1 875	0 103	1 771	0 05	37%
L9-3	L9-2	12	375	1 487	0.103	1.383	0 07	23%
L9-4	L9-3	12	384	1.493	0 103	1.390	0 07	8%
L9-5	L9-4	12	249	2.204	0.103	2 101	0.05	
K2T	A46	48	202	110.517	10.530	99.987	0 10	
T1	K2T	24	8	21.952	7.841	14.111	0.36	
T2	T1	24	248	19.095	7.841	11.254	0.41	
T3	T2	24	285	8.791	7 841	0.950	0 89	
T4	T3	24	226	8 882	7.841	1 041	0.88	
T5	T4	24	203	8.668	7.841	0 827	0.90	
T6	T5	24	171	8.778	7.841	0.937	0.89	
T7	T6	24	53	9.043	7.841	1 202	0 87	
T8	T7	24	75	8.778	7.841	0.937	0.89	
T9	T8	24	300	8 778	7.841	0 937	0 89	
T10	T9	24	133	8.791	7 841	0 950	0.89	
T11	T10	24	330	8.772	7.841	0.931	0 89	
T12	T11	24	169	8 772	7.841	0 931	0 89	
T13	T12	24	195	8 798	7.841	0 957	0.89	
T14	T13	24	171	9 043	7.841	1.202	0.87	
T15	T14	24	299	11 041	7.841	3.200	0.71	
T16	T15	24	358	8.778	7.841	0 937	0.89	
T17	T16	24	319	8.300	7.841	0 459	0.94	
T18	T17	24	37	12.502	7 679	4.822	0 61	
T19	T18	24	235	12.676	7 679	4.997	0.61	
T20	T19	21	291	8 423	7.679	0.743	0.91	
T21	T20	21	254	8 449	7.679	0 769	0 91	
T22	T21	21	248	8 416	7 679	0.737	0.91	
T23	T22	21	380	8 423	7 679	0.743	0.91	
T24	T23	21	236	8 410	7.679	0.730	0.91	
T25	T24	21	140	8.423	7.679	0.743	0.91	
T26	T25	21	17	8 339	7 679	0 659	0.92	
K27A	T26	18	15	9 961	0.976	8.985	0.10	
K28	K27A	15	38	4 771	0 976	3 794	0 20	

20 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45 016	49 173	-4.156	1 09	44%
A2	A1	72	138	8 655	45.805	-37 149	6.11	35%
A3	A2	72	518	53 051	45.798	7.253	0 86	
A4	A3	72	365	41 092	45.740	-4.648	1.11	33%
A5	A4	72	436	49.767	44.816	4 952	0 90	
A6	A5	72	439	43 749	44 816	-1 067	1.02	36%
A7	A6	72	460	51 978	44 816	7 162	0.86	
A8	A7	72	506	52.521	44 809	7.712	0 85	
A9	A8	72	263	46 251	44 809	1 441	0 97	
A10	A9	72	360	46 852	44.738	2.114	0.95	
A11	A10	72	449	43 103	44 738	-1 635	1 04	
A12	A11	72	70	49.198	44 738	4 460	0 91	39%
A13	A12	72	366	45 016	37 104	7 912	0 82	
A14	A13	72	451	43.103	37.104	5.999	0 86	
A15	A14	72	85	44 389	37.104	7.285	0 84	
A16	A15	54	81	24.389	23.323	1.067	0.96	
A17	A16	54	202	22.036	23.323	-1 286	1.06	24%
A18	A17	54	360	21 758	23.323	-1 564	1.07	23%
A19	A18	54	358	13.038	23.323	-10 284	1.79	22%
A20	A19	54	370	11.551	23 323	-11 771	2.02	23%
A21	A20	54	168	25.598	23 323	2.275	0.91	29%
A22	A21	54	297	70.627	23.264	47 363	0.33	
A23	A22	48	326	29.567	23.264	6.303	0 79	
A24	A23	48	102	42.883	23.264	19.619	0 54	
A25	A24	48	238	13.704	23.264	-9.560	1.70	22%
A26	A25	48	283	2.547	23.264	-20.718	9.14	28%
A27	A26	48	116	2 547	23.264	-20.718	9.14	23%
A28	A27	48	518	29 567	23.264	6.303	0.79	15%
A29	A28	48	392	2.547	23.264	-20.718	9.14	14%
A30	A29	48	335	23.323	23.264	0 058	1 00	35%
A31	A30	48	97	71.254	22.889	48 365	0.32	39%
A32	A31	48	390	2.547	18.455	-15.908	7.25	42%
A33	A32	48	118	2.547	18.455	-15.908	7 25	52%
A34	A33	48	243	34 234	18 455	15.779	0 54	41%
A35	A34	48	93	2.547	18.455	-15.908	7 25	40%
A36	A35	48	193	2.547	18.455	-15.908	7 25	49%
A37	A36	48	70	62.334	18.455	43.878	0.30	51%
A38	A37	48	20	2.547	18.455	-15.908	7.25	49%
A39	A38	48	344	24 538	18.455	6.083	0.75	40%
A40	A39	48	225	2 547	18.455	-15.908	7 25	33%
A41	A40	48	199	26.813	18.455	8.358	0 69	37%
A42	A41	48	372	11.092	18.455	-7 363	1.66	41%
A43	A42	48	262	21.745	18.455	3 290	0 85	47%
A44	A43	48	384	16.878	18.455	-1 577	1.09	34%
A45	A44	48	400	42.734	18 455	24.279	0.43	46%
A46	A45	48	108	72.243	18 455	53.788	0.26	19%
A54	A46	42	296	62.586	7.569	55.016	0.12	
A55	A54	42	283	16.723	7.569	9.153	0.45	
A56	A55	42	211	15 016	7.298	7.718	0.49	
A57	A56	42	163	18 694	7.298	11.396	0.39	
A58	A57	42	247	8.733	7.298	1.435	0.84	
A59	A58	42	326	13.575	7 227	6.348	0.53	
A60	A59	42	297	17 279	6.955	10.323	0.40	
A61	A60	42	303	25.708	6.955	18.752	0.27	
A62	A61	42	230	15.740	6 387	9.354	0.41	
A63	A62	42	201	17 376	6.387	10 989	0.37	
A64	A63	42	300	13 807	6 387	7 421	0.46	
A65	A64	42	247	22.405	6.387	16.018	0.28	
A66	A65	42	199	15.941	6 387	9.554	0.40	
A67	A66	42	357	26.677	6.387	20.291	0 24	
A68	A67	42	44	99.813	3.859	95.953	0.04	
A73	A68	24	369	8 623	3.769	4.855	0.44	
A74	A73	30	275	17.195	3.769	13.426	0 22	
A75	A74	30	28	30.401	3.769	26.632	0.12	
A76	A75	30	10	7 266	3.769	3.497	0.52	
A78	A76	30	12	160.304	3.452	156 852	0.02	
A79	A78	30	255	20.899	3.452	17 447	0.17	

20 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14.421	3.452	10.970	0 24	
A81	A80	30	280	13.516	3.452	10.065	0.26	
B10-1	B10A	15	65	5 423	0 653	4.771	0 12	
B10-2	B10-1	15	127	2.269	0.653	1.616	0.29	
B10-3	B10-2	12	204	1 248	0.653	0 595	0.52	
B10-3A	B10-3	12	206	1 105	0.653	0 452	0 59	
B10-4	B10-3A	12	65	1 080	0.653	0.427	0.61	
B10-4A	B10-4	12	359	1 092	0.653	0 440	0.60	
B10-4B	B10-4A	12	149	1 086	0.653	0.433	0.60	
B10-5	B10-4B	18	222	2.056	0.653	1 403	0.94	
B10-6	B10-5	12	358	1 157	0 653	0.504	0 57	
B10-7	B10-6	12	155	1.997	0 653	1.345	0.33	
B10-8	B10-7	12	174	2.036	0.653	1 383	0.32	
B10-9	B10-8	12	335	1 997	0 653	1 345	0.33	
B10-10	B10-9	12	400	1 370	0.653	0.718	0 48	
B10-11	B10-10	12	225	1 183	0.653	0 530	0.55	
B10-12	B10-11	12	400	1 215	0.653	0.562	0.54	
B10-13	B10-12	12	275	1 202	0.653	0.549	0.54	
B10-14	B10-13	12	205	1 907	0 653	1 254	0.34	
B10-15	B10-14	12	200	1.713	0 653	1 060	0.38	
B10-16	B10-15	12	240	1 092	0.653	0.440	0.60	
B10-17	B10-16	12	400	1 092	0.653	0 440	0.60	
B10-18	B10-17	12	215	1 105	0.498	0 608	0.45	
B10-19	B10-18	12	233	1.118	0.498	0 621	0.45	
B10-20	B10-19	12	277	1 228	0.498	0.730	0.41	
B10-21	B10-20	12	180	1.228	0.498	0.730	0 41	
B10-22	B10-21	12	190	1 228	0.498	0.730	0.41	
B10-23	B10-22	12	139	1.222	0.498	0.724	0.41	
B10-24	B10-23	12	403	1 228	0.498	0 730	0.40	
B10-25	B10-24	12	125	1 383	0.498	0 886	0.36	
B10-26	B10-25	12	170	1.396	0.498	0.899	0.36	
B10-27	B10-26	12	251	1 383	0.498	0.886	0.36	
B10-28	B10-27	12	140	2.825	0.498	2.327	0.18	
B2	A12	36	348	24.305	7 634	16.671	0.31	
B3	B2	36	351	17 725	7.634	10.090	0.43	
B4	B3	36	86	17.608	7.634	9.974	0.43	
B5	B4	36	103	18.384	7.634	10.750	0.42	
B6	B5	36	236	13 523	7.634	5 889	0.56	
B7	B6	36	235	12 889	7.634	5.255	0.59	
B8	B7	36	246	17 039	7.634	9.405	0.45	
B9	B8	36	115	22.605	7.595	15 010	0 34	
B10	B9	36	141	14 758	7.473	7.285	0.51	
B10A	B10	36	107	16.962	7.259	9.703	0.43	
B11	B10A	36	156	16.962	6.606	10 356	0.39	
B12	B11	36	126	18 830	6.606	12 224	0.35	
B13	B12	36	329	11.273	6.606	4.667	0.59	
B14	B13	36	343	18.384	6.606	11.778	0.36	
B15	B14	30	200	10.530	6.606	3.924	0.63	
B16	B15	30	131	14.771	6.606	8.164	0.45	
B17	B16	30	22	34.486	6.606	27.880	0 19	
B18	B17	30	80	11.189	6.606	4.583	0.59	
B19	B18	30	220	13 691	6.264	7 427	0.46	
B20	B19	30	217	11.674	6.264	5.410	0.54	
B20B	B20	30	66	14.680	6.264	8.416	0 43	
B21	B20B	30	121	17.104	6.264	10.840	0.37	
B22	B21	30	259	11 849	6 264	5 585	0.53	
B23	B22	30	129	11.829	6.264	5.566	0.53	
B24	B23	30	338	12 631	6.264	6 367	0.50	
B25	B24	30	207	11 629	6.264	5 365	0.54	
B26	B25	30	199	14.570	6.264	8.306	0.43	
B27	B26	30	216	12.896	6.264	6.632	0 49	
B29	B27	30	194	13.103	6 264	6.839	0.48	
B30	B29	30	84	14.803	6.264	8.539	0.42	
B31	B30	30	386	11.920	5.507	6.412	0.46	
B32	B31	30	355	12.243	5.507	6 736	0.45	
B33	B32	30	267	12.178	5.507	6.671	0.45	
B34	B33	30	202	13.142	5.507	7.634	0.42	

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20 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12.961	5.507	7 453	0.43	
B36	B35	30	285	14 331	4.958	9.373	0.35	
B37C	B36	30	116	21.034	4.958	16 076	0.24	
B38	B37C	30	262	13.103	4 958	8 145	0.38	
B39A	B38	30	192	12.521	4 654	7 867	0 37	
B39	B39A	12	46	5 514	0.950	4 564	0.17	
B40	B39	12	220	1.118	0.950	0.168	0.85	
B41	B40	12	229	1.144	0.950	0 194	0.83	
B42	B41	12	380	1.092	0 950	0 142	0.87	
B43	B42	12	389	1.092	0.950	0.142	0.87	
B44	B43	12	385	1 092	0.950	0.142	0.87	
B45	B44	12	404	1 099	0 937	0 162	0.85	
B46	B45	12	362	1 060	0 918	0.142	0.86	
B47	B46	12	352	1.092	0.918	0.175	0.84	
B48	B47	10	303	0.963	0.918	0.045	0.95	
B49	B48	10	195	0.918	0.646	0.271	0.71	
B50	B49	10	224	0 918	0 646	0.271	0.71	
B51	B50	10	242	0 918	0.646	0.271	0.71	
B52	B51	10	90	0.918	0.614	0.304	0.67	
B53	B52	10	250	0.924	0.614	0.310	0 67	
B54	B53	10	79	0.918	0 614	0 304	0.67	
B55	B54	10	193	0.918	0 614	0 304	0.67	
B56	B55	10	242	1 034	0.614	0.420	0 59	
C13-1	C13	15	150	9.451	1 441	8.009	0.15	
C13-2	C13-1	15	211	3.471	1.441	2.030	0.42	
C13-3	C13-2	15	300	4.473	1 441	3.032	0.32	
C13-4	C13-3	15	336	4.706	0.110	4.596	0.02	
C13-5	C13-4	15	33	1 991	0.110	1.881	0 06	
C13-6	C13-5	15	250	1.758	0.110	1.648	0.06	
C13-7	C13-6	15	278	1.694	0.110	1.584	0.06	
C13-8	C13-7	15	175	1 571	0.110	1.461	0.07	
C13-9	C13-8	15	396	1.131	0.110	1.021	0.10	
C13-10	C13-9	15	93	1.719	0.110	1 610	0.06	
C13-11	C13-10	15	383	1.642	0.110	1.532	0.07	
C13-12	C13-11	15	348	1.700	0.110	1.590	0.06	
C13-13	C13-12	15	364	1.629	0.110	1 519	0.07	
C13-14	C13-13	15	363	1.765	0.110	1 655	0.06	
C13-15	C13-14	15	349	1.700	0 110	1 590	0 06	
C13-16	C13-15	15	32	1.571	0 110	1.461	0.07	
C13-17	C13-16	12	51	1 674	0.110	1 564	0.07	
C13-18	C13-17	12	299	1 015	0 110	0.905	0 11	
C13-19	C13-18	12	299	0.937	0.110	0.827	0.12	
C13-20	C13-19	12	302	0.873	0.110	0.763	0.13	
C13-21	C13-20	12	369	0.937	0.110	0 827	0.12	
C13-22	C13-21	12	373	0.924	0.110	0 814	0.12	
C1	A15	39	183	35.533	13.782	21.752	0.39	
C2	C1	48	5	493.445	13.782	479 664	0.03	
C3	C2	39	100	8.009	13.782	-5.772	1.72	
C4	C3	30	272	19 017	9.858	9.160	0 52	
C5	C4	27	267	13.439	9.748	3 691	0 73	
C6	C5	27	300	13.439	9 748	3.691	0 73	
C7	C6	27	252	13.381	9 748	3.633	0.73	
C8	C7	27	179	13 465	9.748	3.717	0.72	
C9	C8	27	142	4 144	9.321	-5.178	2.25	
C11	C9	27	306	10.957	9.321	1.635	0 85	
C12	C11	27	340	10 976	9.321	1 655	0.85	
C13	C12	27	220	15.947	9.321	6 626	0.58	
C14	C13	27	185	11 752	7 880	3 872	0.67	
C15	C14	24	70	7.569	7.880	-0.310	1.04	
C16	C15	24	292	7 563	7.027	0.537	0 93	
C17	C16	24	300	7 356	7 027	0 330	0.96	
C18	C17	24	300	7 356	6 102	1 254	0 83	
C19	C18	24	249	11 273	6.102	5.171	0.54	
C20	C19	24	229	10 944	6.102	4.842	0 56	
C21	C20	24	170	11.138	4 557	6.580	0.41	
C23	C21	21	311	8.119	4.021	4.098	0.50	
C25	C23	21	456	8.229	4 021	4 208	0.49	

20 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7 983	4.021	3 963	0 50	
C27	C26	21	352	7 990	4.021	3.969	0.50	
C28	C27	21	20	7.938	1.435	6.503	0.18	
C29	C28	15	511	3.258	0.937	2.321	0.29	
C30	C29	15	30	8.410	0.937	7.473	0.11	
C32	C30	15	147	8.410	0.937	7 473	0 11	
C33	C32	15	43	8.552	0.937	7 615	0.11	
C34	C33	15	248	3 963	0.937	3.025	0 24	
C35	C34	15	76	3.975	0.937	3.038	0 24	
C36	C35	15	185	4 059	0.937	3.122	0.23	
C37	C36	15	158	4.299	0 937	3.361	0 22	
C27-1	C27	12	8	19.858	2.049	17 809	0.10	
C27-2	C27-1	12	10	3.678	2.049	1 629	0 56	
C27-3	C27-2	12	213	1 732	2.049	-0.317	1 18	10%
C27-4	C27-3	12	230	1 862	2.049	-0 187	1.10	
C27-5	C27-4	12	30	1 862	2 049	-0.187	1 10	
C27-6	C27-5	12	200	1.875	2 049	-0.175	1.10	
C27-7	C27-6	12	192	1.868	2.049	-0 181	1 10	
C27-8	C27-7	12	200	1.849	2.049	-0 200	1.11	
C27-9	C27-8	12	175	1 939	2.049	-0.110	1 06	
C27-10	C27-9	12	8	3.523	2.010	1.513	0.57	22%
C15-1	C15	12	20	14.551	0 853	13.697	0.06	
C15-2	C15-1	12	300	3.025	0 853	2.172	0 28	
C15-3	C15-2	12	300	1.875	0.853	1 021	0 45	
C15-4	C15-3	12	315	1.745	0 853	0 892	0.49	
D1	C3	27	526	4.783	3.924	0.860	0.82	
D2	D1	27	285	7.544	3.924	3.620	0.52	
D3	D2	27	284	6.257	3.924	2.334	0.63	
D4	D3	27	298	6.897	3.685	3.213	0 53	
D5	D4	27	58	6.833	3.685	3.148	0.54	
D6	D5	27	250	6 942	3.685	3 258	0.53	
D7	D6	27	153	7 563	3.685	3.878	0.49	
D8	D7	27	290	6.981	3.685	3.297	0.53	
D9	D8	27	394	9.295	3.685	5.611	0.40	
D10	D9	24	32	7.091	2.023	5.068	0.29	
D11	D10	24	293	6.742	2.023	4.719	0.30	
D12	D11	24	229	6.645	2.023	4.622	0.30	
D13	D12	24	50	4 758	2.023	2.734	0.42	
D14	D13	24	40	4.460	2.023	2.437	0.45	
D15	D14	24	361	6.037	2 023	4.014	0.33	
D16	D15	24	295	5.669	2 023	3.646	0.36	
D17	D16	24	250	5.727	2.023	3 704	0.35	
D18	D17	24	283	7 149	2.023	5.126	0.28	
D19	D18	18	277	3.355	2 023	1.332	0.60	
D20	D19	18	98	2.663	2.023	0.640	0 76	
D21	D20	18	158	2.566	2.023	0.543	0.79	
D22	D21	18	269	2.663	2 023	0 640	0.76	
D23	D22	18	36	4.829	2.023	2 805	0.42	
D24	D23	18	263	4 887	2.023	2.864	0.41	
D25	D24	15	268	4.900	2.023	2.877	0 41	
F1	A31	18	304	11.739	2.250	9.489	0.19	
F3	F1	18	372	6.154	2.250	3.904	0.37	
F5	F3	18	365	7.027	1.687	5 339	0.24	
F6	F5	18	219	2.896	1 687	1.209	0.58	
F7	F6	18	255	3 950	1.687	2.262	0.43	
F8	F7	18	146	2.178	1.687	0.491	0 77	
F9	F8	18	33	2.728	1 687	1.041	0 62	
F10	F9	18	38	2.702	1 687	1 015	0.62	
F11	F10	18	275	3.232	1 687	1.545	0.52	
F12	F11	18	275	3 316	1 687	1.629	0.51	
F13	F12	15	150	2.153	0 847	1.306	0 39	
F14	F13	15	182	1.823	0.847	0.976	0.46	
F15	F14	15	415	1 597	0 847	0 750	0.53	
L1	C20	18	10	55.204	0.976	54.228	0.02	
L1A	L1	18	146	4 893	0.976	3.917	0.20	
L2	L1A	18	279	4 240	0.672	3.568	0 16	
L3	L2	18	223	4.150	0.672	3.478	0.16	

20 YEAR PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4.150	0.672	3.478	0.16	
L5	L4	18	271	4.189	0.672	3 516	0.16	
L6	L5	18	100	7.253	0.672	6.580	0.09	
L7	L6	18	167	7.033	0.672	6.361	0 10	
L8	L7	15	149	2.799	0.646	2.153	0.23	
L9	L8	15	247	2.560	0.646	1.913	0.25	
L10	L9	15	133	5.708	0.078	5.630	0.01	
L11	L10	12	295	2.411	0.078	2.334	0 03	
L12	L11	12	226	1.920	0.078	1.842	0.04	
L9-1	L9	12	300	0.000	0.103	-0 103	0.00	62%
L9-2	L9-1	12	306	1.875	0 103	1.771	0.05	37%
L9-3	L9-2	12	375	1.487	0.103	1.383	0.07	23%
L9-4	L9-3	12	384	1.493	0.103	1.390	0.07	8%
L9-5	L9-4	12	249	2.204	0 103	2.101	0 05	
K2T	A46	48	202	110 517	10.892	99.625	0 10	
T1	K2T	24	8	21.952	8 145	13.807	0.37	
T2	T1	24	248	19.095	8.145	10.950	0.43	
T3	T2	24	285	8.791	8 145	0.646	0 93	
T4	T3	24	226	8.882	8 145	0.737	0.92	
T5	T4	24	203	8.668	8.145	0 524	0.94	
T6	T5	24	171	8.778	8.145	0.633	0.93	
T7	T6	24	53	9.043	8.145	0.899	0.90	
T8	T7	24	75	8.778	8.145	0.633	0.93	
T9	T8	24	300	8 778	8.145	0.633	0.93	
T10	T9	24	133	8 791	8.145	0.646	0 93	
T11	T10	24	330	8.772	8.145	0.627	0.93	
T12	T11	24	169	8.772	8 145	0.627	0.93	
T13	T12	24	195	8.798	8 145	0.653	0.93	
T14	T13	24	171	9.043	8.145	0 899	0.90	
T15	T14	24	299	11.041	8.145	2.896	0.74	
T16	T15	24	358	8.778	8.145	0.633	0.93	
T17	T16	24	319	8.300	8.145	0.155	0.98	
T18	T17	24	37	12.502	7.990	4.512	0.64	
T19	T18	24	235	12 676	7.990	4.686	0.63	
T20	T19	21	291	8 423	7.990	0.433	0.95	
T21	T20	21	254	8 449	7.990	0 459	0 95	
T22	T21	21	248	8.416	7.990	0.427	0.95	
T23	T22	21	380	8 423	7 990	0.433	0.95	
T24	T23	21	236	8.410	7.990	0 420	0.95	
T25	T24	21	140	8 423	7.990	0 433	0.95	
T26	T25	21	17	8.339	7.990	0.349	0 96	
K27A	T26	18	15	9.961	1.125	8.836	0.11	
K28	K27A	15	38	4 771	1 125	3.646	0.24	

ULTIMATE PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45 016	54 111	-9 095	1 20	44%
A2	A1	72	138	8 655	50.614	-41 959	6 75	36%
A3	A2	72	518	53 051	50.608	2.443	0.95	35%
A4	A3	72	365	41 092	50.549	-9 457	1 23	34%
A5	A4	72	436	49 767	49.612	0 155	1 00	34%
A6	A5	72	439	43 749	49.612	-5 863	1 13	37%
A7	A6	72	460	51 978	49.612	2 366	0.95	38%
A8	A7	72	506	52 521	49.612	2 909	0.94	39%
A9	A8	72	263	46 251	49 612	-3 361	1 07	38%
A10	A9	72	360	46 852	49 535	-2 683	1.06	37%
A11	A10	72	379	47 453	49.535	-2 081	1.04	
A12	A11	72	70	49 198	49 535	-0 336	1.01	40%
A13	A12	72	366	45 016	40 601	4 415	0 90	35%
A14	A13	72	451	43 103	40.601	2.502	0.94	35%
A15	A14	72	85	44 389	40.601	3.788	0.91	39%
A16	A15	54	81	24 389	25 268	-0 879	1 04	33%
A17	A16	54	202	22 036	25 268	-3.232	1.15	32%
A18	A17	54	360	21 758	25.268	-3 510	1.16	32%
A19	A18	54	358	13 038	25 268	-12 230	1.94	30%
A20	A19	54	370	11 551	25.268	-13 717	2.19	31%
A21	A20	54	168	25 598	25.268	0 330	0.99	40%
A22	A21	54	297	70.627	25 210	45 417	0 36	35%
A23	A22	48	326	29.567	25 210	4 357	0.85	22%
A24	A23	48	102	42.883	25.210	17 673	0.59	23%
A25	A24	48	238	13.704	25 210	-11 506	1.84	29%
A26	A25	48	283	2.547	25 210	-22.663	9 91	35%
A27	A26	48	116	2.547	25.210	-22 663	9 91	28%
A28	A27	48	518	29.567	25 210	4 357	0.85	19%
A29	A28	48	392	2.547	25.210	-22 663	9 91	18%
A30	A29	48	335	23.323	25 210	-1 888	1 08	44%
A31	A30	48	97	71.254	24 822	46.432	0.35	51%
A32	A31	48	390	2.547	20 394	-17 847	8.01	53%
A33	A32	48	118	2.547	20.394	-17 847	8.01	64%
A34	A33	48	243	34 234	20.394	13.840	0.60	51%
A35	A34	48	93	2.547	20 394	-17 847	8.01	51%
A36	A35	48	193	2.547	20 394	-17.847	8.01	61%
A37	A36	48	70	62.334	20.394	41.939	0.33	64%
A38	A37	48	20	2 547	20.394	-17.847	8.01	61%
A39	A38	48	344	24.538	20.394	4.144	0.83	51%
A40	A39	48	225	2.547	20.394	-17.847	8.01	41%
A41	A40	48	199	26.813	20.394	6.419	0.76	47%
A42	A41	48	372	11 092	20.394	-9 302	1 84	52%
A43	A42	48	262	21.745	20.394	1 351	0.94	60%
A44	A43	48	384	16.878	20 394	-3 516	1 21	43%
A45	A44	48	400	42.734	20.394	22.340	0 48	62%
A46	A45	48	108	72.243	20.394	51.849	0.28	27%
A54	A46	42	296	62.586	8 630	53.956	0.14	
A55	A54	42	283	16.723	8 630	8.093	0.52	
A56	A55	42	211	15.016	8 242	6 774	0.55	
A57	A56	42	163	18.694	8.242	10.452	0.44	
A58	A57	42	247	8.733	8.242	0.491	0.94	
A59	A58	42	326	13.575	8.171	5.404	0.60	
A60	A59	42	297	17.279	7 789	9.489	0.45	
A61	A60	42	303	25.708	7 789	17.919	0.30	
A62	A61	42	230	15.740	6 807	8.933	0 43	
A63	A62	42	201	17.376	6 807	10 569	0.39	
A64	A63	42	300	13.807	6.807	7 001	0.49	
A65	A64	42	247	22.405	6 807	15.598	0.30	
A66	A65	42	199	15 941	6.807	9.134	0.43	
A67	A66	42	357	26 677	6 807	19.871	0.26	
A68	A67	42	44	99 813	3.891	95.921	0 04	
A73	A68	24	369	8 623	3.794	4.829	0 44	
A74	A73	30	275	17 195	3.794	13.400	0 22	
A75	A74	30	28	30 401	3 794	26.606	0 12	
A76	A75	30	10	7 266	3 794	3.471	0.52	
A78	A76	30	12	160 304	3 471	156.833	0.02	
A79	A78	30	255	20.899	3 471	17 427	0 17	

ULTIMATE PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14.421	3.471	10 950	0.24	
A81	A80	30	280	13 516	3.471	10 045	0 26	
B10-1	B10A	15	65	5 423	0.924	4 499	0.17	
B10-2	B10-1	15	127	2 269	0.924	1.345	0.41	
B10-3	B10-2	12	204	1 248	0 924	0.323	0.74	
B10-3A	B10-3	12	206	1 105	0 924	0.181	0.84	
B10-4	B10-3A	12	65	1 080	0 924	0.155	0.86	
B10-4A	B10-4	12	359	1 092	0 924	0.168	0.84	
B10-4B	B10-4A	12	149	1 086	0.924	0.162	0 85	
B10-5	B10-4B	18	222	2.056	0.924	1.131	1 33	
B10-6	B10-5	12	358	1 157	0 924	0.233	0 80	
B10-7	B10-6	12	155	1 997	0 924	1 073	0 46	
B10-8	B10-7	12	174	2 036	0.924	1.112	0 45	
B10-9	B10-8	12	335	1 997	0 924	1 073	0 46	
B10-10	B10-9	12	400	1 370	0 924	0 446	0.68	
B10-11	B10-10	12	225	1 183	0 924	0.259	0.78	
B10-12	B10-11	12	400	1 215	0 924	0.291	0 76	
B10-13	B10-12	12	275	1 202	0 924	0.278	0 77	
B10-14	B10-13	12	205	1 907	0 924	0.983	0.48	
B10-15	B10-14	12	200	1 713	0.924	0.789	0.54	
B10-16	B10-15	12	240	1.092	0.924	0.168	0 85	
B10-17	B10-16	12	400	1 092	0 924	0.168	0 85	
B10-18	B10-17	12	215	1.105	0.679	0.427	0 61	
B10-19	B10-18	12	233	1 118	0.679	0.440	0.61	
B10-20	B10-19	12	277	1 228	0 679	0 549	0.55	
B10-21	B10-20	12	180	1.228	0.679	0 549	0 55	
B10-22	B10-21	12	190	1 228	0.679	0 549	0.55	
B10-23	B10-22	12	139	1.222	0.679	0.543	0.56	
B10-24	B10-23	12	403	1 228	0 679	0.549	0 55	
B10-25	B10-24	12	125	1 383	0 679	0 705	0.49	
B10-26	B10-25	12	170	1.396	0.679	0.718	0.49	
B10-27	B10-26	12	251	1 383	0.679	0.705	0.49	
B10-28	B10-27	12	140	2 825	0 679	2.146	0.24	
B2	A12	36	348	24.305	8.933	15.372	0.37	
B3	B2	36	351	17 725	8.933	8.791	0.50	
B4	B3	36	86	17 608	8.933	8 675	0.51	
B5	B4	36	103	18.384	8.933	9 451	0.49	
B6	B5	36	236	13.523	8.933	4 590	0.66	
B7	B6	36	235	12 889	8.933	3.956	0.69	
B8	B7	36	246	17.039	8.933	8 106	0.52	
B9	B8	36	115	22.605	8.901	13.704	0.39	
B10	B9	36	141	14.758	8 772	5.986	0.59	
B10A	B10	36	107	16.962	8 559	8 403	0.50	
B11	B10A	36	156	16 962	7.634	9 328	0.45	
B12	B11	36	126	18.830	7.634	11.196	0 41	
B13	B12	36	329	11 273	7 634	3.639	0.68	
B14	B13	36	343	18.384	7.634	10 750	0.42	
B15	B14	30	200	10.530	7.634	2.896	0.73	
B16	B15	30	131	14 771	7.634	7.136	0.52	
B17	B16	30	22	34.486	7 634	26.852	0.22	
B18	B17	30	80	11.189	7 634	3 555	0.68	
B19	B18	30	220	13 691	7.111	6 580	0.52	
B20	B19	30	217	11.674	7 111	4 564	0.61	
B20B	B20	30	66	14 680	7 111	7.569	0.48	
B21	B20B	30	121	17 104	7 111	9.994	0.42	
B22	B21	30	259	11 849	7 111	4 738	0.60	
B23	B22	30	129	11 829	7 111	4 719	0.60	
B24	B23	30	338	12 631	7 111	5.520	0.56	
B25	B24	30	207	11 629	7 111	4 518	0.61	
B26	B25	30	199	14.570	7.111	7 460	0.49	
B27	B26	30	216	12.896	7 111	5.785	0.55	
B29	B27	30	194	13 103	7 111	5 992	0.54	
B30	B29	30	84	14.803	7 111	7 692	0.48	
B31	B30	30	386	11 920	5 979	5.941	0.50	
B32	B31	30	355	12 243	5 979	6.264	0.49	
B33	B32	30	267	12.178	5 979	6 199	0.49	
B34	B33	30	202	13 142	5 979	7.162	0 45	

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ULTIMATE PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12.961	5 979	6.981	0 46	
B36	B35	30	285	14 331	4.990	9.341	0.35	
B37C	B36	30	116	21.034	4 990	16.044	0 24	
B38	B37C	30	262	13 103	4 990	8 112	0 38	
B39A	B38	30	192	12 521	4 680	7.841	0.37	
B39	B39A	12	46	5.514	0.950	4 564	0 17	
B40	B39	12	220	1.118	0.950	0 168	0 85	
B41	B40	12	229	1 144	0.950	0.194	0 83	
B42	B41	12	380	1 092	0 950	0.142	0 87	
B43	B42	12	389	1 092	0.950	0.142	0 87	
B44	B43	12	385	1.092	0.950	0 142	0.87	
B45	B44	12	404	1.099	0 937	0.162	0.86	
B46	B45	12	362	1 060	0.918	0.142	0 87	
B47	B46	12	352	1 092	0.918	0 175	0 84	
B48	B47	10	303	0 963	0.918	0 045	0 96	
B49	B48	10	195	0 918	0.653	0 265	0 71	
B50	B49	10	224	0.918	0.653	0 265	0 71	
B51	B50	10	242	0.918	0.653	0.265	0 71	
B52	B51	10	90	0.918	0 614	0.304	0 67	
B53	B52	10	250	0 924	0 614	0 310	0.67	
B54	B53	10	79	0.918	0 614	0.304	0 67	
B55	B54	10	193	0 918	0 614	0.304	0.67	
B56	B55	10	242	1.034	0.614	0 420	0 59	
C13-1	C13	15	150	9.451	1.441	8.009	0.15	
C13-2	C13-1	15	211	3 471	1.441	2.030	0 42	
C13-3	C13-2	15	300	4 473	1.441	3.032	0.32	
C13-4	C13-3	15	336	4 706	0.110	4 596	0.02	
C13-5	C13-4	15	33	1.991	0.110	1 881	0.06	
C13-6	C13-5	15	250	1.758	0.110	1.648	0.06	
C13-7	C13-6	15	278	1.694	0.110	1.584	0 06	
C13-8	C13-7	15	175	1.571	0.110	1.461	0 07	
C13-9	C13-8	15	396	1 131	0.110	1.021	0 10	
C13-10	C13-9	15	93	1 719	0.110	1 610	0.06	
C13-11	C13-10	15	383	1.642	0 110	1.532	0.07	
C13-12	C13-11	15	348	1 700	0 110	1.590	0 06	
C13-13	C13-12	15	364	1 629	0.110	1.519	0.07	
C13-14	C13-13	15	363	1 765	0.110	1.655	0.06	
C13-15	C13-14	15	349	1 700	0.110	1.590	0.06	
C13-16	C13-15	15	32	1.571	0.110	1 461	0.07	
C13-17	C13-16	12	51	1.674	0.110	1.564	0.07	
C13-18	C13-17	12	299	1.015	0.110	0.905	0.11	
C13-19	C13-18	12	299	0.937	0.110	0 827	0.12	
C13-20	C13-19	12	302	0.873	0 110	0.763	0.13	
C13-21	C13-20	12	369	0.937	0.110	0.827	0.12	
C13-22	C13-21	12	373	0.924	0.110	0.814	0.12	
C1	A15	39	183	35.533	15.326	20.207	0.43	
C2	C1	48	5	493.445	15.326	478.119	0.03	
C3	C2	39	100	8.009	15.326	-7.317	1.91	
C4	C3	30	272	19.017	10 065	8.953	0.53	
C5	C4	27	267	13.439	9.948	3.491	0.74	
C6	C5	27	300	13 439	9.948	3.491	0.74	
C7	C6	27	252	13.381	9 948	3.432	0.74	
C8	C7	27	179	13 465	9 948	3.516	0.74	
C9	C8	27	142	4.144	9 515	-5 372	2.30	
C11	C9	27	306	10.957	9 515	1 441	0.87	
C12	C11	27	340	10.976	9.515	1.461	0.87	
C13	C12	27	220	15.947	9.515	6.432	0.60	
C14	C13	27	185	11 752	8.080	3.672	0.69	
C15	C14	24	70	7.569	8 080	-0.511	1.07	
C16	C15	24	292	7 563	7.227	0.336	0.96	
C17	C16	24	300	7.356	7 227	0.129	0.98	
C18	C17	24	300	7.356	6 303	1.054	0 86	
C19	C18	24	249	11.273	6 303	4.971	0.56	
C20	C19	24	229	10.944	6 303	4.641	0.58	
C21	C20	24	170	11 138	4.577	6.561	0 41	
C23	C21	21	311	8 119	4.034	4.085	0.50	
C25	C23	21	456	8.229	4 034	4.195	0.49	

ULTIMATE PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7 983	4.034	3.950	0 51	
C27	C26	21	352	7 990	4 034	3 956	0.50	
C28	C27	21	20	7.938	1.435	6.503	0.18	
C29	C28	15	511	3 258	0 937	2 321	0.29	
C30	C29	15	30	8.410	0.937	7 473	0 11	
C32	C30	15	147	8 410	0.937	7.473	0.11	
C33	C32	15	43	8 552	0 937	7 615	0.11	
C34	C33	15	248	3.963	0.937	3 025	0 24	
C35	C34	15	76	3.975	0.937	3 038	0 24	
C36	C35	15	185	4 059	0 937	3.122	0.23	
C37	C36	15	158	4 299	0.937	3.361	0.22	
C27-1	C27	12	8	19.858	2.062	17 796	0.10	
C27-2	C27-1	12	10	3 678	2.062	1.616	0.56	
C27-3	C27-2	12	213	1.732	2 062	-0.330	1.19	10%
C27-4	C27-3	12	230	1 862	2.062	-0 200	1.11	
C27-5	C27-4	12	30	1 862	2 062	-0.200	1.11	
C27-6	C27-5	12	200	1.875	2 062	-0.187	1 10	
C27-7	C27-6	12	192	1 868	2.062	-0.194	1.10	
C27-8	C27-7	12	200	1.849	2 062	-0.213	1.12	
C27-9	C27-8	12	175	1.939	2.062	-0 123	1 06	
C27-10	C27-9	12	8	3.523	2.023	1 500	0.57	23%
C15-1	C15	12	20	14.551	0 853	13 697	0.06	
C15-2	C15-1	12	300	3.025	0.853	2.172	0.28	
C15-3	C15-2	12	300	1 875	0.853	1.021	0.45	
C15-4	C15-3	12	315	1.745	0.853	0.892	0.49	
D1	C3	27	526	4.783	5 262	-0.478	1.10	
D2	D1	27	285	7.544	5.262	2 282	0 70	
D3	D2	27	284	6.257	5.262	0 995	0.84	
D4	D3	27	298	6.897	5 023	1 875	0.73	
D5	D4	27	58	6.833	5.023	1.810	0.74	
D6	D5	27	250	6.942	5.023	1.920	0.72	
D7	D6	27	153	7 563	5.023	2.540	0 66	
D8	D7	27	290	6.981	5.023	1.959	0.72	
D9	D8	27	394	9.295	5 023	4 273	0.54	
D10	D9	24	32	7.091	2.793	4 299	0.39	
D11	D10	24	293	6 742	2 793	3.950	0 41	
D12	D11	24	229	6.645	2.793	3.853	0.42	
D13	D12	24	50	4.758	2.793	1.965	0 59	
D14	D13	24	40	4.460	2.793	1 668	0 63	
D15	D14	24	361	6 037	2.793	3.245	0.46	
D16	D15	24	295	5.669	2 793	2.877	0.49	
D17	D16	24	250	5.727	2.793	2.935	0.49	
D18	D17	24	283	7 149	2.793	4.357	0.39	
D19	D18	18	277	3.355	2.793	0.562	0.83	
D20	D19	18	98	2.663	2.793	-0.129	1 05	13%
D21	D20	18	158	2.566	2 793	-0.226	1.09	13%
D22	D21	18	269	2.663	2 793	-0.129	1.05	
D23	D22	18	36	4 829	2 793	2.036	0.58	
D24	D23	18	263	4.887	2.793	2.094	0.57	
D25	D24	15	268	4.900	2.793	2 107	0.57	
F1	A31	18	304	11.739	2.250	9.489	0 19	
F3	F1	18	372	6.154	2.250	3.904	0.37	
F5	F3	18	365	7.027	1 687	5.339	0.24	
F6	F5	18	219	2 896	1.687	1.209	0.58	
F7	F6	18	255	3 950	1.687	2.262	0.43	
F8	F7	18	146	2.178	1.687	0 491	0.77	
F9	F8	18	33	2.728	1.687	1 041	0 62	
F10	F9	18	38	2.702	1.687	1.015	0 62	
F11	F10	18	275	3.232	1 687	1.545	0.52	
F12	F11	18	275	3.316	1.687	1.629	0.51	
F13	F12	15	150	2 153	0 847	1 306	0.39	
F14	F13	15	182	1 823	0.847	0 976	0.46	
F15	F14	15	415	1 597	0.847	0.750	0 53	
L1	C20	18	10	55 204	1.157	54 047	0.02	
L1A	L1	18	146	4 893	1 157	3.736	0.24	
L2	L1A	18	279	4.240	0.672	3.568	0.16	
L3	L2	18	223	4.150	0.672	3 478	0.16	

ULTIMATE PROJECTED FLOWS, PEAKED
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4.150	0.672	3 478	0.16	
L5	L4	18	271	4.189	0.672	3.516	0.16	
L6	L5	18	100	7.253	0.672	6.580	0.09	
L7	L6	18	167	7 033	0.672	6.361	0.10	
L8	L7	15	149	2 799	0.646	2 153	0.23	
L9	L8	15	247	2.560	0 646	1.913	0.25	
L10	L9	15	133	5.708	0.078	5.630	0.01	
L11	L10	12	295	2.411	0.078	2.334	0.03	
L12	L11	12	226	1.920	0.078	1.842	0.04	
L9-1	L9	12	300	0.000	0 103	-0 103	0.00	62%
L9-2	L9-1	12	306	1 875	0 103	1 771	0 05	37%
L9-3	L9-2	12	375	1 487	0 103	1.383	0.07	23%
L9-4	L9-3	12	384	1.493	0.103	1.390	0.07	8%
L9-5	L9-4	12	249	2.204	0.103	2 101	0.05	
K2T	A46	48	202	110 517	11.765	98.752	0.11	
T1	K2T	24	8	21 952	8.287	13.665	0.38	
T2	T1	24	248	19.095	8.287	10.808	0.43	
T3	T2	24	285	8 791	8.287	0.504	0.94	
T4	T3	24	226	8.882	8.287	0.595	0.93	
T5	T4	24	203	8.668	8.287	0.381	0.96	
T6	T5	24	171	8.778	8.287	0 491	0.94	
T7	T6	24	53	9.043	8.287	0.756	0.92	
T8	T7	24	75	8.778	8.287	0 491	0.94	
T9	T8	24	300	8.778	8.287	0 491	0.94	
T10	T9	24	133	8.791	8.287	0.504	0 94	
T11	T10	24	330	8.772	8.287	0 485	0.94	
T12	T11	24	169	8.772	8.287	0.485	0.94	
T13	T12	24	195	8 798	8.287	0.511	0.94	
T14	T13	24	171	9.043	8.287	0 756	0 51	
T15	T14	24	299	11 041	8.287	2.754	0.75	
T16	T15	24	358	8.778	8.287	0.491	0.94	
T17	T16	24	319	8.300	8.287	0.013	1.00	
T18	T17	24	37	12.502	8.125	4 376	0.65	
T19	T18	24	235	12.676	8.125	4.551	0.64	
T20	T19	21	291	8 423	8.125	0.297	0.97	
T21	T20	21	254	8 449	8 125	0.323	0.96	
T22	T21	21	248	8 416	8 125	0.291	0.97	
T23	T22	21	380	8 423	8 125	0.297	0.37	
T24	T23	21	236	8 410	8.125	0 284	0 97	
T25	T24	21	140	8 423	8.125	0.297	0.97	
T26	T25	21	17	8 339	8.125	0.213	0.97	
K27A	T26	18	15	9 961	1.131	8.830	0.11	
K28	K27A	15	38	4 771	1 131	3 639	0.24	

YORK TOWNSHIP FLOW ALTERNATIVES 2 &3
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45.016	54.396	-9 379	1 21	44%
A2	A1	72	138	8 655	50 899	-42 243	6.78	36%
A3	A2	72	518	53.051	50.892	2 159	0 96	35%
A4	A3	72	365	41 092	50.834	-9 741	1 24	34%
A5	A4	72	436	49 767	49.897	-0 129	1 00	35%
A6	A5	72	439	43 749	49 897	-6.147	1.14	37%
A7	A6	72	460	51 978	49 897	2.081	0.96	38%
A8	A7	72	506	52 521	49 897	2.624	0.95	40%
A9	A8	72	263	46 251	49 897	-3.646	1 08	39%
A10	A9	72	360	46.852	49 819	-2.967	1 06	37%
A11	A10	72	379	47 453	49 819	-2.366	1.05	
A12	A11	72	70	49 198	49 819	-0.621	1 01	40%
A13	A12	72	366	45 016	41 235	3.782	0.92	36%
A14	A13	72	451	43 103	41.235	1 868	0.96	35%
A15	A14	72	85	44 389	41 235	3.154	0.93	39%
A16	A15	54	81	24 389	25.669	-1 280	1.05	34%
A17	A16	54	202	22.036	25.669	-3 633	1 16	32%
A18	A17	54	360	21 758	25.669	-3 911	1 18	32%
A19	A18	54	358	13 038	25.669	-12.631	1 97	30%
A20	A19	54	370	11 551	25.669	-14 118	2 22	31%
A21	A20	54	168	25 598	25 669	-0.071	1 00	40%
A22	A21	54	297	70.627	25 611	45.016	0.36	35%
A23	A22	48	326	29.567	25.611	3.956	0.87	22%
A24	A23	48	102	42.883	25 611	17 272	0.60	24%
A25	A24	48	238	13.704	25.611	-11 907	1.87	29%
A26	A25	48	283	2.547	25.611	-23 064	10.07	36%
A27	A26	48	116	2.547	25.611	-23.064	10.06	28%
A28	A27	48	518	29.567	25.611	3 956	0.87	19%
A29	A28	48	392	2.547	25 611	-23 064	10.06	18%
A30	A29	48	335	23.323	25 611	-2.288	1 10	45%
A31	A30	48	97	71 254	25.236	46 018	0.35	52%
A32	A31	48	390	2.547	21.092	-18 546	8.29	54%
A33	A32	48	118	2.547	21.092	-18.546	8.29	66%
A34	A33	48	243	34.234	21.092	13.142	0.62	52%
A35	A34	48	93	2.547	21 092	-18 546	8.29	52%
A36	A35	48	193	2.547	21 092	-18.546	8.29	62%
A37	A36	48	70	62.334	21 092	41.241	0 34	66%
A38	A37	48	20	2 547	21 092	-18.546	8.29	63%
A39	A38	48	344	24.538	21 092	3.445	0.86	53%
A40	A39	48	225	2.547	21 092	-18.546	8.29	43%
A41	A40	48	199	26.813	21 092	5 721	0.79	49%
A42	A41	48	372	11.092	21.092	-10 000	1.90	54%
A43	A42	48	262	21 745	21 092	0.653	0.97	61%
A44	A43	48	384	16 878	21 092	-4.215	1.25	45%
A45	A44	48	400	42 734	21 092	21 642	0.49	64%
A46	A45	48	108	72.243	21.092	51.151	0.29	29%
A54	A46	42	296	62.586	7.867	54.719	0 13	
A55	A54	42	283	16.723	7.867	8.856	0.47	
A56	A55	42	211	15.016	7 628	7.388	0 51	
A57	A56	42	163	18 694	7 628	11.067	0.41	
A58	A57	42	247	8.733	7.628	1.105	0.87	
A59	A58	42	326	13.575	7.550	6.025	0 56	
A60	A59	42	297	17.279	7.311	9.968	0.42	
A61	A60	42	303	25.708	7.311	18.397	0.28	
A62	A61	42	230	15 740	6.703	9 037	0 43	
A63	A62	42	201	17 376	6.703	10.672	0.39	
A64	A63	42	300	13.807	6 703	7 104	0.49	
A65	A64	42	247	22.405	6 703	15 701	0 30	
A66	A65	42	199	15.941	6.703	9 237	0.42	
A67	A66	42	357	26.677	6 703	19 974	0.25	
A68	A67	42	44	99.813	3.885	95 928	0.04	
A73	A68	24	369	8.623	3.794	4 829	0.44	
A74	A73	30	275	17 195	3.794	13.400	0.22	
A75	A74	30	28	30.401	3.794	26.606	0 12	
A76	A75	30	10	7 266	3 794	3.471	0.52	
A78	A76	30	12	160.304	3 471	156.833	0 02	
A79	A78	30	255	20 899	3.471	17 427	0.17	

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YORK TOWNSHIP FLOW ALTERNATIVES 2 &3
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14.421	3.471	10 950	0.24	
A81	A80	30	280	13.516	3.471	10.045	0.26	
B10-1	B10A	15	65	5.423	0 853	4 570	0.16	
B10-2	B10-1	15	127	2.269	0.853	1.416	0.37	
B10-3	B10-2	12	204	1.248	0.853	0.394	0.68	
B10-3A	B10-3	12	206	1.105	0.853	0 252	0.77	
B10-4	B10-3A	12	65	1 080	0.853	0.226	0.79	
B10-4A	B10-4	12	359	1 092	0 853	0.239	0.78	
B10-4B	B10-4A	12	149	1.086	0.853	0.233	0.78	
B10-5	B10-4B	12	222	0 698	0.853	-0.155	1.22	
B10-6	B10-5	12	358	1 157	0.853	0.304	0.74	
B10-7	B10-6	12	155	1.997	0.853	1.144	0.43	
B10-8	B10-7	12	174	2 036	0.853	1 183	0.42	
B10-9	B10-8	12	335	1 997	0.853	1 144	0.43	
B10-10	B10-9	12	400	1 370	0.853	0.517	0.62	
B10-11	B10-10	12	225	1 183	0 853	0.330	0 72	
B10-12	B10-11	12	400	1.215	0 853	0.362	0.70	
B10-13	B10-12	12	275	1.202	0.853	0.349	0.71	
B10-14	B10-13	12	205	1.907	0.853	1 054	0.45	
B10-15	B10-14	12	200	1 713	0.853	0.860	0.50	
B10-16	B10-15	12	240	1 092	0 853	0 239	0.78	
B10-17	B10-16	12	400	1 092	0.853	0 239	0.78	
B10-18	B10-17	12	215	1 105	0.614	0.491	0.55	
B10-19	B10-18	12	233	1 118	0 614	0.504	0.55	
B10-20	B10-19	12	277	1.228	0.614	0 614	0.50	
B10-21	B10-20	12	180	1.228	0.614	0.614	0.50	
B10-22	B10-21	12	190	1.228	0.614	0 614	0.50	
B10-23	B10-22	12	139	1 222	0.614	0.608	0.50	
B10-24	B10-23	12	403	1.228	0.614	0 614	0.50	
B10-25	B10-24	12	125	1 383	0.614	0.769	0.44	
B10-26	B10-25	12	170	1.396	0.614	0.782	0.44	
B10-27	B10-26	12	251	1.383	0.614	0.769	0.44	
B10-28	B10-27	12	140	2.825	0.614	2.211	0.22	
B2	A12	36	348	24.305	8.584	15.721	0.35	
B3	B2	36	351	17.725	8.584	9.140	0.48	
B4	B3	36	86	17.608	8.584	9.024	0.49	
B5	B4	36	103	18.384	8.584	9 800	0.47	
B6	B5	36	236	13.523	8.584	4.939	0.63	
B7	B6	36	235	12.889	8.584	4.305	0.67	
B8	B7	36	246	17.039	8.584	8.455	0 50	
B9	B8	36	115	22.605	8.546	14.059	0.38	
B10	B9	36	141	14.758	8.429	6.328	0.57	
B10A	B10	36	107	16.962	8.222	8.739	0.48	
B11	B10A	36	156	16.962	7.369	9.593	0.43	
B12	B11	36	126	18.830	7.369	11.461	0.39	
B13	B12	36	329	11.273	7 369	3.904	0.65	
B14	B13	36	343	18 384	7.369	11.015	0.40	
B15	B14	30	200	10.530	7.369	3.161	0.70	
B16	B15	30	131	14.771	7.369	7.401	0.50	
B17	B16	30	22	34.486	7.369	27.117	0.21	
B18	B17	30	80	11.189	7.369	3 820	0.66	
B19	B18	30	220	13.691	6.858	6.833	0.50	
B20	B19	30	217	11.674	6.858	4.816	0.59	
B20B	B20	30	66	14.680	6.858	7 822	0 47	
B21	B20B	30	121	17 104	6.858	10.246	0 40	
B22	B21	30	259	11.849	6.858	4 990	0.58	
B23	B22	30	129	11.829	6.858	4.971	0.58	
B24	B23	30	338	12.631	6.858	5.772	0.54	
B25	B24	30	207	11.629	6.858	4.771	0.59	
B26	B25	30	199	14.570	6.858	7 712	0.47	
B27	B26	30	216	12.896	6.858	6.037	0.53	
B29	B27	30	194	13.103	6 858	6.244	0 52	
B30	B29	30	84	14 803	6.858	7 944	0.46	
B31	B30	30	386	11.920	5.772	6.147	0 48	
B32	B31	30	355	12.243	5.772	6.471	0.47	
B33	B32	30	267	12.178	5.772	6.406	0.47	
B34	B33	30	202	13.142	5.772	7 369	0.44	

YORK TOWNSHIP FLOW ALTERNATIVES 2 &3
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12 961	5.772	7 188	0.45	
B36	B35	30	285	14.331	4.816	9.515	0 34	
B37C	B36	30	116	21 034	4.816	16.218	0 23	
B38	B37C	30	262	13 103	4.816	8.287	0.37	
B39A	B38	30	192	12 521	4.518	8 003	0 36	
B39	B39A	12	46	5 514	0.918	4 596	0 17	
B40	B39	12	220	1 118	0 918	0 200	0 82	
B41	B40	12	229	1.144	0.918	0 226	0 81	
B42	B41	12	380	1.092	0 918	0 175	0 84	
B43	B42	12	389	1 092	0.918	0.175	0.84	
B44	B43	12	385	1 092	0 918	0.175	0 84	
B45	B44	12	404	1 099	0.905	0.194	0 83	
B46	B45	12	362	1 060	0 886	0.175	0.84	
B47	B46	12	352	1 092	0 886	0.207	0 81	
B48	B47	10	303	0.963	0 886	0.078	0.92	
B49	B48	10	195	0.918	0.633	0.284	0.69	
B50	B49	10	224	0 918	0.633	0.284	0.69	
B51	B50	10	242	0.918	0.633	0 284	0.69	
B52	B51	10	90	0.918	0 595	0.323	0.65	
B53	B52	10	250	0 924	0.595	0.330	0.64	
B54	B53	10	79	0 918	0.595	0.323	0.65	
B55	B54	10	193	0 918	0.595	0 323	0 65	
B56	B55	10	242	1.034	0 595	0 440	0.57	
C13-1	C13	15	150	9.451	1 183	8 268	0.12	
C13-2	C13-1	15	211	3.471	1 183	2 288	0.34	
C13-3	C13-2	15	300	4 473	1 183	3.290	0.26	
C13-4	C13-3	15	336	4.706	0 090	4.615	0 02	
C13-5	C13-4	15	33	1.991	0.090	1.900	0.05	
C13-6	C13-5	15	250	1.758	0.090	1.668	0.05	
C13-7	C13-6	15	278	1.694	0 090	1 603	0.05	
C13-8	C13-7	15	175	1 571	0.090	1.480	0.06	
C13-9	C13-8	15	396	1.131	0 090	1.041	0.08	
C13-10	C13-9	15	93	1.719	0.090	1.629	0.05	
C13-11	C13-10	15	383	1.642	0.090	1.551	0.05	
C13-12	C13-11	15	348	1.700	0.090	1.610	0.05	
C13-13	C13-12	15	364	1.629	0.090	1.538	0.06	
C13-14	C13-13	15	363	1 765	0.090	1.674	0 05	
C13-15	C13-14	15	349	1 700	0.090	1.610	0 05	
C13-16	C13-15	15	32	1.571	0.090	1.480	0 06	
C13-17	C13-16	12	51	1 674	0 090	1 584	0.05	
C13-18	C13-17	12	299	1.015	0.090	0 924	0.09	
C13-19	C13-18	12	299	0.937	0.090	0 847	0.10	
C13-20	C13-19	12	302	0.873	0.090	0 782	0.10	
C13-21	C13-20	12	369	0.937	0 090	0 847	0 10	
C13-22	C13-21	12	373	0.924	0.090	0.834	0.10	
C1	A15	39	183	35.533	15.572	19.961	0.44	
C2	C1	48	5	493.445	15.572	477.873	0.03	
C3	C2	39	100	8.009	15.572	-7 563	1 94	
C4	C3	30	272	19.017	10.433	8.584	0.55	
C5	C4	27	267	13.439	10.310	3.129	0.77	
C6	C5	27	300	13.439	10.310	3.129	0.77	
C7	C6	27	252	13.381	10.310	3.070	0 77	
C8	C7	27	179	13 465	10.310	3.154	0 77	
C9	C8	27	142	4 144	9.903	-5.760	2.39	
C11	C9	27	306	10.957	9.903	1.054	0.90	
C12	C11	27	340	10.976	9 903	1 073	0.90	
C13	C12	27	220	15.947	9 903	6 044	0.62	
C14	C13	27	185	11 752	8.727	3 025	0.74	
C15	C14	24	70	7 569	8.727	-1.157	1.15	
C16	C15	24	292	7.563	7.906	-0 343	1.05	
C17	C16	24	300	7.356	7 906	-0.549	1.07	
C18	C17	24	300	7.356	7.020	0.336	0.95	
C19	C18	24	249	11.273	7.020	4.253	0.62	
C20	C19	24	229	10.944	7 020	3.924	0.64	
C21	C20	24	170	11.138	5.042	6.096	0 45	
C23	C21	21	311	8.119	4.525	3.594	0.56	
C25	C23	21	456	8.229	4.525	3.704	0.55	

YORK TOWNSHIP FLOW ALTERNATIVES 2 &3
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7 983	4.525	3 458	0 57	
C27	C26	21	352	7 990	4 525	3 465	0.57	
C28	C27	21	20	7 938	1.403	6.535	0.18	
C29	C28	15	511	3 258	0.924	2.334	0 28	
C30	C29	15	30	8.410	0 924	7 485	0.11	
C32	C30	15	147	8 410	0.924	7 485	0 11	
C33	C32	15	43	8.552	0.924	7 628	0 11	
C34	C33	15	248	3 963	0.924	3 038	0.23	
C35	C34	15	76	3 975	0 924	3 051	0.23	
C36	C35	15	185	4 059	0 924	3.135	0 23	
C37	C36	15	158	4 299	0.924	3.374	0 22	
C27-1	C27	12	8	19 858	2 612	17 246	0.13	
C27-2	C27-1	12	10	3 678	2.612	1.067	0 71	
C27-3	C27-2	12	213	1.732	2 612	-0.879	1.50	18%
C27-4	C27-3	12	230	1 862	2.612	-0 750	1.40	
C27-5	C27-4	12	30	1 862	2 612	-0.750	1 40	
C27-6	C27-5	12	200	1 875	2 612	-0.737	1 39	
C27-7	C27-6	12	192	1 868	2.612	-0.743	1 40	
C27-8	C27-7	12	200	1 849	2 612	-0.763	1.41	
C27-9	C27-8	12	175	1 939	2.612	-0 672	1 35	
C27-10	C27-9	12	8	3.523	2.566	0 957	0.73	76%
C15-1	C15	12	20	14.551	0 821	13 730	0.06	
C15-2	C15-1	12	300	3 025	0 821	2 204	0 27	
C15-3	C15-2	12	300	1 875	0.821	1 054	0 44	
C15-4	C15-3	12	315	1.745	0.821	0.924	0 47	
D1	C3	27	526	4.783	5.139	-0.356	1.07	
D2	D1	27	285	7.544	5.139	2.405	0.68	
D3	D2	27	284	6.257	5.139	1 118	0 82	
D4	D3	27	298	6.897	4 906	1 991	0 71	
D5	D4	27	58	6 833	4 906	1.926	0.72	
D6	D5	27	250	6 942	4.906	2 036	0.71	
D7	D6	27	153	7.563	4.906	2.657	0 65	
D8	D7	27	290	6.981	4.906	2 075	0.70	
D9	D8	27	394	9.295	4.906	4.389	0.53	
D10	D9	24	32	7 091	2.728	4 363	0.38	
D11	D10	24	293	6.742	2.728	4 014	0.40	
D12	D11	24	229	6 645	2 728	3.917	0.41	
D13	D12	24	50	4 758	2.728	2.030	0.57	
D14	D13	24	40	4 460	2.728	1 732	0.61	
D15	D14	24	361	6.037	2.728	3.310	0.45	
D16	D15	24	295	5.669	2.728	2.941	0.48	
D17	D16	24	250	5 727	2.728	2 999	0.48	
D18	D17	24	283	7.149	2.728	4 421	0.38	
D19	D18	18	277	3.355	2.728	0 627	0.81	
D20	D19	18	98	2.663	2.728	-0.065	1 02	13%
D21	D20	18	158	2.566	2.728	-0.162	1.06	12%
D22	D21	18	269	2 663	2.728	-0.065	1.02	
D23	D22	18	36	4.829	2.728	2.101	0.56	
D24	D23	18	263	4.887	2.728	2.159	0.56	
D25	D24	15	268	4.900	2.728	2.172	0.56	
F1	A31	18	304	11 739	2 178	9.560	0.19	
F3	F1	18	372	6.154	2.178	3.975	0.35	
F5	F3	18	365	7 027	1 635	5.391	0.23	
F6	F5	18	219	2 896	1.635	1.261	0.56	
F7	F6	18	255	3.950	1.635	2.314	0 41	
F8	F7	18	146	2.178	1.635	0 543	0.75	
F9	F8	18	33	2.728	1 635	1.092	0 60	
F10	F9	18	38	2 702	1.635	1 067	0 61	
F11	F10	18	275	3.232	1.635	1.597	0.51	
F12	F11	18	275	3 316	1.635	1 681	0.49	
F13	F12	15	150	2.153	0.821	1.332	0.38	
F14	F13	15	182	1 823	0.821	1 002	0.45	
F15	F14	15	415	1.597	0.821	0 776	0.51	
L1	C20	18	10	55 204	1.435	53.769	0 03	
L1A	L1	18	146	4.893	1.435	3.458	0.29	
L2	L1A	18	279	4.240	0.957	3 284	0 23	
L3	L2	18	223	4.150	0.957	3.193	0.23	

YORK TOWNSHIP FLOW ALTERNATIVES 2 &3
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4 150	0.957	3.193	0.23	
L5	L4	18	271	4 189	0.957	3.232	0.23	
L6	L5	18	100	7.253	0.957	6.296	0.13	
L7	L6	18	167	7.033	0.957	6.076	0.14	
L8	L7	15	149	2.799	0.937	1.862	0 33	
L9	L8	15	247	2.560	0.937	1.622	0.37	
L10	L9	15	133	5.708	0.090	5.617	0.02	
L11	L10	12	295	2.411	0.090	2.321	0.04	
L12	L11	12	226	1.920	0.090	1.829	0.05	
L9-1	L9	12	300	0.000	0.090	-0.090	0.00	62%
L9-2	L9-1	12	306	1.875	0.090	1.784	0.05	37%
L9-3	L9-2	12	375	1.487	0.090	1.396	0.06	23%
L9-4	L9-3	12	384	1 493	0.090	1.403	0.06	8%
L9-5	L9-4	12	249	2.204	0.090	2.114	0.04	
K2T	A46	48	202	110.517	13.226	97.292	0.12	
T1	K2T	24	8	21.952	9.748	12.204	0.44	
T2	T1	24	248	19.095	9.748	9.347	0.51	
T3	T2	24	285	8.791	9.748	-0 957	1.11	
T4	T3	24	226	8.882	9.748	-0.866	1.10	
T5	T4	24	203	8.668	9.748	-1.080	1.12	16%
T6	T5	24	171	8.778	9.748	-0.970	1.11	
T7	T6	24	53	9.043	9 748	-0.705	1.08	
T8	T7	24	75	8.778	9 748	-0.970	1.11	
T9	T8	24	300	8.778	9.748	-0 970	1.11	20%
T10	T9	24	133	8.791	9.748	-0.957	1.11	23%
T11	T10	24	330	8.772	9.748	-0.976	1.11	
T12	T11	24	169	8.772	9.748	-0.976	1.11	28%
T13	T12	24	195	8.798	9.748	-0.950	1.11	28%
T14	T13	24	171	9 043	9.748	-0.705	1.08	28%
T15	T14	24	299	11.041	9.748	1 293	0.88	25%
T16	T15	24	358	8.778	9.748	-0 970	1.11	26%
T17	T16	24	319	8.300	9.748	-1 448	1.17	
T18	T17	24	37	12.502	9.593	2.909	0.77	
T19	T18	24	235	12.676	9.593	3.083	0.76	
T20	T19	21	291	8.423	9 593	-1.170	1.14	
T21	T20	21	254	8 449	9 593	-1.144	1.14	
T22	T21	21	248	8.416	9.593	-1 176	1.14	
T23	T22	21	380	8 423	9.593	-1.170	1.14	
T24	T23	21	236	8 410	9.593	-1.183	1.14	
T25	T24	21	140	8 423	9.593	-1.170	1.14	
T26	T25	21	17	8.339	9.593	-1 254	1.15	
K27A	T26	18	15	9.961	2.043	7.919	0.20	
K28	K27A	15	38	4 771	1 092	3.678	0 23	

YORK TOWNSHIP FLOW ALTERNATIVES 4 & 5

Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN)	LENGTH (FT)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A1	PLANT	72	137	45 016	57 143	-12 127	1 27	44%
A2	A1	72	138	8 655	53 646	-44 990	7 15	36%
A3	A2	72	518	53 051	53 639	-0 588	1 01	36%
A4	A3	72	365	41 092	53 581	-12 489	1 30	34%
A5	A4	72	436	49 767	52 644	-2 877	1 06	35%
A6	A5	72	439	43 749	52 644	-8 895	1 20	38%
A7	A6	72	460	51 978	52 644	-0 666	1 01	39%
A8	A7	72	506	52 521	52 644	0 123	1 00	41%
A9	A8	72	263	46 251	52 644	-6 393	1 14	40%
A10	A9	72	360	46 852	52 566	5 714	1 12	38%
A11	A10	72	379	47 453	52 566	5 113	1 11	
A12	A11	72	70	49 198	52 566	-3 368	1 07	41%
A13	A12	72	366	45.016	43 982	1 034	0 98	37%
A14	A13	72	451	43 103	43 982	-0 879	1 02	36%
A15	A14	72	85	44 389	43 982	0 407	0 99	41%
A16	A15	54	81	24 389	28 416	-4 027	1 17	35%
A17	A16	54	202	22 036	28 416	6 380	1 29	34%
A18	A17	54	360	21 758	28 416	6 658	1 31	34%
A19	A18	54	358	13 038	28 416	-15 378	2 18	32%
A20	A19	54	370	11 551	28 416	-16 865	2.46	33%
A21	A20	54	168	25 598	28 416	-2 818	1 11	43%
A22	A21	54	297	70 627	28 358	42 269	0 40	39%
A23	A22	48	326	29 567	28 358	1 209	0 96	24%
A24	A23	48	102	42 883	28 358	14 525	0 66	26%
A25	A24	48	238	13 704	28.358	-14.654	2 07	32%
A26	A25	48	283	2 547	28.358	-25 811	11 14	39%
A27	A26	48	116	2 547	28.358	-25 811	11 14	31%
A28	A27	48	518	29.567	28 358	1 209	0 96	21%
A29	A28	48	392	2 547	28 358	-25 811	11 14	20%
A30	A29	48	335	23 323	28.358	-5 036	1 22	51%
A31	A30	48	97	71 254	27 983	43 271	0 39	60%
A32	A31	48	390	2 547	23 840	-21 293	9.37	62%
A33	A32	48	118	2 547	23 840	-21 293	9 37	75%
A34	A33	48	243	34 234	23 840	10 394	0.70	61%
A35	A34	48	93	2 547	23 840	-21 293	9 37	60%
A36	A35	48	193	2 547	23 840	-21 293	9 37	72%
A37	A36	48	70	62 334	23.840	38 494	0 38	77%
A38	A37	48	20	2.547	23.840	-21 293	9 37	73%
A39	A38	48	344	24 538	23 840	0 698	0 97	62%
A40	A39	48	225	2 547	23 840	-21 293	9 37	50%
A41	A40	48	199	26 813	23 840	2 973	0 89	57%
A42	A41	48	372	11 092	23 840	-12 747	2 15	64%
A43	A42	48	262	21 745	23 840	-2 094	1 10	73%
A44	A43	48	384	16 878	23 840	-6 962	1 41	53%
A45	A44	48	400	42 734	23 840	18 895	0 56	79%
A46	A45	48	108	72 243	23 840	48 403	0 33	36%
A54	A46	42	296	62 586	7 867	54 719	0 13	
A55	A54	42	283	16 723	7 867	8 856	0 47	
A56	A55	42	211	15 016	7 628	7 388	0 51	
A57	A56	42	163	18 694	7 628	11 067	0 41	
A58	A57	42	247	8 733	7 628	1 105	0 87	
A59	A58	42	326	13 575	7 550	6 025	0 56	
A60	A59	42	297	17 279	7 311	9 968	0 42	
A61	A60	42	303	25 708	7 311	18 397	0 28	
A62	A61	42	230	15 740	6 703	9 037	0 43	
A63	A62	42	201	17 376	6 703	10 672	0 39	
A64	A63	42	300	13 807	6 703	7 104	0 49	
A65	A64	42	247	22 405	6 703	15 701	0 30	
A66	A65	42	199	15 941	6 703	9 237	0 42	
A67	A66	42	357	26 677	6 703	19 974	0 25	
A68	A67	42	44	99 813	3 885	95 928	0 04	
A73	A68	24	369	8 623	3 794	4 829	0 44	
A74	A73	30	275	17.195	3 794	13 400	0 22	
A75	A74	30	28	30 401	3 794	26 606	0 12	
A76	A75	30	10	7 266	3 794	3 471	0 52	
A78	A76	30	12	160 304	3 471	156 833	0 02	
A79	A78	30	255	20 899	3 471	17 427	0 17	

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YORK TOWNSHIP FLOW ALTERNATIVES 4 & 5

Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT.)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
A80	A79	30	269	14 421	3 471	10 950	0 24	
A81	A80	30	280	13 516	3 471	10 045	0 26	
B10-1	B10A	15	65	5 423	0 853	4 570	0 16	
B10-2	B10-1	15	127	2.269	0 853	1 416	0 37	
B10-3	B10-2	12	204	1 248	0 853	0 394	0 68	
B10-3A	B10-3	12	206	1 105	0 853	0 252	0 77	
B10-4	B10-3A	12	65	1 080	0 853	0 226	0 79	
B10-4A	B10-4	12	359	1 092	0 853	0 239	0 78	
B10-4B	B10-4A	12	149	1 086	0 853	0 233	0 78	
B10-5	B10-4B	12	222	0 698	0.853	-0 155	1 22	
B10-6	B10-5	12	358	1 157	0.853	0 304	0 74	
B10-7	B10-6	12	155	1 997	0 853	1 144	0 43	
B10-8	B10-7	12	174	2 036	0 853	1 183	0 42	
B10-9	B10-8	12	335	1 997	0 853	1 144	0 43	
B10-10	B10-9	12	400	1 370	0 853	0 517	0 62	
B10-11	B10-10	12	225	1 183	0 853	0 330	0 72	
B10-12	B10-11	12	400	1 215	0 853	0 362	0 70	
B10-13	B10-12	12	275	1 202	0 853	0 349	0 71	
B10-14	B10-13	12	205	1 907	0 853	1 054	0 45	
B10-15	B10-14	12	200	1.713	0 853	0 860	0 50	
B10-16	B10-15	12	240	1 092	0 853	0 239	0 78	
B10-17	B10-16	12	400	1 092	0 853	0 239	0 78	
B10-18	B10-17	12	215	1 105	0 614	0.491	0 55	
B10-19	B10-18	12	233	1 118	0 614	0 504	0 55	
B10-20	B10-19	12	277	1 228	0 614	0 614	0 50	
B10-21	B10-20	12	180	1 228	0 614	0 614	0 50	
B10-22	B10-21	12	190	1 228	0 614	0 614	0 50	
B10-23	B10-22	12	139	1.222	0 614	0.608	0 50	
B10-24	B10-23	12	403	1 228	0 614	0 614	0 50	
B10-25	B10-24	12	125	1.383	0.614	0 769	0 44	
B10-26	B10-25	12	170	1.396	0 614	0 782	0 44	
B10-27	B10-26	12	251	1.383	0.614	0 769	0.44	
B10-28	B10-27	12	140	2 825	0 614	2 211	0 22	
B2	A12	36	348	24.305	8 584	15.721	0 35	
B3	B2	36	351	17.725	8.584	9 140	0 48	
B4	B3	36	86	17 608	8.584	9 024	0 49	
B5	B4	36	103	18.384	8.584	9.800	0 47	
B6	B5	36	236	13.523	8 584	4 939	0.63	
B7	B6	36	235	12.889	8.584	4 305	0 67	
B8	B7	36	246	17.039	8 584	8 455	0 50	
B9	B8	36	115	22.605	8 546	14 059	0 38	
B10	B9	36	141	14.758	8 429	6.328	0 57	
B10A	B10	36	107	16 962	8 222	8 739	0 48	
B11	B10A	36	156	16 962	7 369	9 593	0 43	
B12	B11	36	126	18 830	7 369	11 461	0 39	
B13	B12	36	329	11.273	7 369	3 904	0 65	
B14	B13	36	343	18 384	7 369	11 015	0 40	
B15	B14	30	200	10.530	7 369	3.161	0 70	
B16	B15	30	131	14.771	7.369	7 401	0 50	
B17	B16	30	22	34 486	7 369	27 117	0 21	
B18	B17	30	80	11 189	7 369	3 820	0 66	
B19	B18	30	220	13 691	6 858	6 833	0 50	
B20	B19	30	217	11 674	6 858	4 816	0 59	
B20B	B20	30	66	14 680	6 858	7 822	0 47	
B21	B20B	30	121	17 104	6 858	10 246	0 40	
B22	B21	30	259	11 849	6 858	4.990	0 58	
B23	B22	30	129	11 829	6 858	4 971	0 58	
B24	B23	30	338	12 631	6 858	5 772	0 54	
B25	B24	30	207	11 629	6 858	4 771	0 59	
B26	B25	30	199	14 570	6 858	7 712	0 47	
B27	B26	30	216	12.896	6.858	6 037	0 53	
B29	B27	30	194	13 103	6.858	6 244	0 52	
B30	B29	30	84	14 803	6 858	7 944	0 46	
B31	B30	30	386	11 920	5 772	6 147	0 48	
B32	B31	30	355	12 243	5 772	6.471	0 47	
B33	B32	30	267	12 178	5 772	6 406	0 47	
B34	B33	30	202	13.142	5 772	7 369	0 44	

YORK TOWNSHIP FLOW ALTERNATIVES 4 & 5
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
B35	B34	30	157	12 961	5 772	7 188	0 45	
B36	B35	30	285	14 331	4 816	9 515	0 34	
B37C	B36	30	116	21 034	4 816	16 218	0 23	
B38	B37C	30	262	13 103	4 816	8 287	0 37	
B39A	B38	30	192	12 521	4 518	8 003	0 36	
B39	B39A	12	46	5 514	0 918	4 596	0 17	
B40	B39	12	220	1 118	0 918	0 200	0 82	
B41	B40	12	229	1 144	0 918	0 226	0.81	
B42	B41	12	380	1 092	0 918	0 175	0 84	
B43	B42	12	389	1 092	0 918	0 175	0 84	
B44	B43	12	385	1 092	0 918	0 175	0 84	
B45	B44	12	404	1 099	0 905	0 194	0 83	
B46	B45	12	362	1 060	0 886	0 175	0 84	
B47	B46	12	352	1 092	0 886	0 207	0 81	
B48	B47	10	303	0 963	0 886	0 078	0 92	
B49	B48	10	195	0 918	0 633	0 284	0 69	
B50	B49	10	224	0 918	0.633	0 284	0.69	
B51	B50	10	242	0 918	0 633	0 284	0 69	
B52	B51	10	90	0 918	0 595	0.323	0 65	
B53	B52	10	250	0 924	0 595	0 330	0 64	
B54	B53	10	79	0 918	0.595	0 323	0 65	
B55	B54	10	193	0 918	0 595	0 323	0 65	
B56	B55	10	242	1 034	0.595	0 440	0 57	
C13-1	C13	15	150	9 451	1 183	8 268	0 12	
C13-2	C13-1	15	211	3 471	1.183	2 288	0 34	
C13-3	C13-2	15	300	4 473	1.183	3 290	0 26	
C13-4	C13-3	15	336	4 706	0 090	4 615	0 02	
C13-5	C13-4	15	33	1 991	0.090	1.900	0.05	
C13-6	C13-5	15	250	1.758	0 090	1 668	0.05	
C13-7	C13-6	15	278	1 694	0 090	1 603	0 05	
C13-8	C13-7	15	175	1.571	0 090	1.480	0 06	
C13-9	C13-8	15	396	1 131	0.090	1 041	0.08	
C13-10	C13-9	15	93	1.719	0 090	1 629	0.05	
C13-11	C13-10	15	383	1 642	0 090	1.551	0.05	
C13-12	C13-11	15	348	1.700	0 090	1 610	0 05	
C13-13	C13-12	15	364	1 629	0 090	1.538	0 06	
C13-14	C13-13	15	363	1.765	0 090	1 674	0.05	
C13-15	C13-14	15	349	1 700	0 090	1 610	0 05	
C13-16	C13-15	15	32	1.571	0 090	1.480	0 06	
C13-17	C13-16	12	51	1 674	0 090	1 584	0 05	
C13-18	C13-17	12	299	1 015	0.090	0 924	0 09	
C13-19	C13-18	12	299	0 937	0 090	0.847	0 10	
C13-20	C13-19	12	302	0.873	0 090	0 782	0 10	
C13-21	C13-20	12	369	0 937	0 090	0 847	0.10	
C13-22	C13-21	12	373	0.924	0.090	0.834	0.10	
C1	A15	39	183	35.533	15 572	19 961	0 44	
C2	C1	48	5	493 445	15 572	477 873	0 03	
C3	C2	39	100	8 009	15 572	-7 563	1.94	
C4	C3	30	272	19 017	10 433	8.584	0.55	
C5	C4	27	267	13.439	10 310	3.129	0 77	
C6	C5	27	300	13.439	10 310	3.129	0 77	
C7	C6	27	252	13 381	10 310	3.070	0 77	
C8	C7	27	179	13 465	10 310	3.154	0 77	
C9	C8	27	142	4.144	9 903	-5 760	2 39	
C11	C9	27	306	10 957	9 903	1 054	0 90	
C12	C11	27	340	10 976	9 903	1 073	0 90	
C13	C12	27	220	15 947	9 903	6 044	0 62	
C14	C13	27	185	11.752	8 727	3 025	0 74	
C15	C14	24	70	7 569	8.727	-1 157	1 15	
C16	C15	24	292	7 563	7 906	-0 343	1 05	
C17	C16	24	300	7 356	7 906	-0 549	1 07	
C18	C17	24	300	7 356	7 020	0 336	0 95	
C19	C18	24	249	11 273	7 020	4 253	0 62	
C20	C19	24	229	10 944	7 020	3 924	0 64	
C21	C20	24	170	11 138	5 042	6 096	0 45	
C23	C21	21	311	8 119	4 525	3 594	0 56	
C25	C23	21	456	8 229	4 525	3 704	0 55	

YORK TOWNSHIP FLOW ALTERNATIVES 4 & 5

Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN.)	LENGTH (FT)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
C26	C25	21	464	7 983	4 525	3 458	0 57	
C27	C26	21	352	7 990	4 525	3 465	0 57	
C28	C27	21	20	7 938	1 403	6 535	0 18	
C29	C28	15	511	3 258	0 924	2 334	0 28	
C30	C29	15	30	8 410	0 924	7 485	0 11	
C32	C30	15	147	8.410	0 924	7 485	0 11	
C33	C32	15	43	8 552	0 924	7 628	0 11	
C34	C33	15	248	3 963	0 924	3 038	0 23	
C35	C34	15	76	3 975	0 924	3 051	0 23	
C36	C35	15	185	4 059	0 924	3 135	0 23	
C37	C36	15	158	4 299	0.924	3 374	0 22	
C27-1	C27	12	8	19 858	2.612	17 246	0 13	
C27-2	C27-1	12	10	3 678	2 612	1 067	0 71	
C27-3	C27-2	12	213	1.732	2.612	-0 879	1 50	18%
C27-4	C27-3	12	230	1 862	2 612	-0 750	1 40	
C27-5	C27-4	12	30	1 862	2 612	-0 750	1 40	
C27-6	C27-5	12	200	1 875	2 612	-0 737	1 39	
C27-7	C27-6	12	192	1 868	2 612	-0 743	1 40	
C27-8	C27-7	12	200	1 849	2 612	-0 763	1 41	
C27-9	C27-8	12	175	1 939	2.612	-0 672	1 35	
C27-10	C27-9	12	8	3 523	2.566	0 957	0 73	76%
C15-1	C15	12	20	14 551	0.821	13 730	0 06	
C15-2	C15-1	12	300	3 025	0.821	2 204	0 27	
C15-3	C15-2	12	300	1 875	0.821	1 054	0 44	
C15-4	C15-3	12	315	1 745	0.821	0 924	0 47	
D1	C3	27	526	4 783	5.139	-0 356	1 07	
D2	D1	27	285	7 544	5.139	2 405	0 68	
D3	D2	27	284	6 257	5 139	1.118	0.82	
D4	D3	27	298	6 897	4.906	1 991	0 71	
D5	D4	27	58	6 833	4 906	1.926	0.72	
D6	D5	27	250	6 942	4.906	2.036	0 71	
D7	D6	27	153	7 563	4 906	2.657	0 65	
D8	D7	27	290	6.981	4.906	2 075	0 70	
D9	D8	27	394	9 295	4 906	4 389	0 53	
D10	D9	24	32	7 091	2.728	4 363	0 38	
D11	D10	24	293	6.742	2 728	4 014	0 40	
D12	D11	24	229	6 645	2 728	3.917	0 41	
D13	D12	24	50	4 758	2 728	2.030	0.57	
D14	D13	24	40	4.460	2.728	1 732	0 61	
D15	D14	24	361	6.037	2.728	3.310	0.45	
D16	D15	24	295	5 669	2.728	2.941	0 48	
D17	D16	24	250	5 727	2 728	2.999	0.48	
D18	D17	24	283	7 149	2.728	4 421	0 38	
D19	D18	18	277	3 355	2 728	0 627	0 81	
D20	D19	18	98	2 663	2 728	0 065	1 02	13%
D21	D20	18	158	2.566	2 728	-0.162	1 06	12%
D22	D21	18	269	2 663	2.728	-0 065	1 02	
D23	D22	18	36	4 829	2 728	2 101	0 56	
D24	D23	18	263	4.887	2 728	2.159	0 56	
D25	D24	15	268	4 900	2.728	2 172	0.56	
F1	A31	18	304	11 739	2.178	9 560	0.19	
F3	F1	18	372	6 154	2.178	3 975	0 35	
F5	F3	18	365	7 027	1 635	5 391	0 23	
F6	F5	18	219	2 896	1 635	1 261	0 56	
F7	F6	18	255	3 950	1 635	2 314	0 41	
F8	F7	18	146	2 178	1 635	0 543	0 75	
F9	F8	18	33	2 728	1 635	1 092	0 60	
F10	F9	18	38	2 702	1 635	1 067	0 61	
F11	F10	18	275	3 232	1 635	1 597	0.51	
F12	F11	18	275	3 316	1.635	1 681	0 49	
F13	F12	15	150	2 153	0 821	1 332	0 38	
F14	F13	15	182	1 823	0.821	1 002	0 45	
F15	F14	15	415	1 597	0.821	0 776	0 51	
L1	C20	18	10	55 204	1 435	53 769	0 03	
L1A	L1	18	146	4 893	1.435	3 458	0 29	
L2	L1A	18	279	4 240	0 957	3 284	0 23	
L3	L2	18	223	4 150	0 957	3 193	0 23	

YORK TOWNSHIP FLOW ALTERNATIVES 4 & 5
Flow Model Interceptor Capacities

MH UP	MH DN	DIAMETER (IN)	LENGTH (FT)	CAPACITY (MGD)	REQUIRED CAPACITY	CAPACITY AVAILABLE	PERCENT CAPACITY OF INTERCEPTOR	MH DEPTH PERCENT SURCHARGED
L4	L3	18	290	4 150	0 957	3 193	0 23	
L5	L4	18	271	4 189	0 957	3 232	0 23	
L6	L5	18	100	7 253	0.957	6 296	0 13	
L7	L6	18	167	7 033	0 957	6 076	0 14	
L8	L7	15	149	2 799	0 937	1.862	0 33	
L9	L8	15	247	2 560	0 937	1.622	0 37	
L10	L9	15	133	5.708	0 090	5 617	0 02	
L11	L10	12	295	2 411	0 090	2 321	0 04	
L12	L11	12	226	1.920	0 090	1.829	0 05	
L9-1	L9	12	300	0 000	0 090	-0.090	0 00	62%
L9-2	L9-1	12	306	1 875	0.090	1.784	0 05	37%
L9-3	L9-2	12	375	1 487	0 090	1 396	0 06	23%
L9-4	L9-3	12	384	1 493	0.090	1 403	0 06	8%
L9-5	L9-4	12	249	2 204	0 090	2 114	0 04	
K2T	A46	48	202	110 517	15 973	94 544	0 14	
T1	K2T	24	8	21.952	12 495	9.457	0 57	
T2	T1	24	248	19.095	12 495	6.600	0 65	
T3	T2	24	285	8.791	12.495	-3 704	1 42	
T4	T3	24	226	8 882	12 495	-3.613	1 41	
T5	T4	24	203	8 668	12.495	-3.827	1 44	35%
T6	T5	24	171	8 778	12 495	-3 717	1 42	
T7	T6	24	53	9 043	12 495	-3 452	1.38	
T8	T7	24	75	8 778	12 495	-3.717	1 42	
T9	T8	24	300	8 778	12 495	-3.717	1 42	54%
T10	T9	24	133	8 791	12 495	-3.704	1 42	63%
T11	T10	24	330	8 772	12 495	-3.723	1 42	
T12	T11	24	169	8 772	12 495	-3.723	1 42	81%
T13	T12	24	195	8 798	12 495	-3 697	1 42	84%
T14	T13	24	171	9 043	12 495	-3 452	1 38	87%
T15	T14	24	299	11 041	12 495	-1 454	1 13	91%
T16	T15	24	358	8.778	12 495	-3 717	1 42	97%
T17	T16	24	319	8 300	12 495	-4 195	1 51	
T18	T17	24	37	12 502	12 340	0 162	0 99	
T19	T18	24	235	12 676	12.340	0 336	0 97	
T20	T19	21	291	8 423	12 340	-3 917	1 47	
T21	T20	21	254	8 449	12 340	3 891	1 46	
T22	T21	21	248	8 416	12.340	-3 924	1 47	
T23	T22	21	380	8 423	12.340	-3 917	1 47	
T24	T23	21	236	8 410	12.340	-3 930	1 47	
T25	T24	21	140	8 423	12.340	-3 917	1 47	
T26	T25	21	17	8 339	12 340	-4 001	1 48	
K27A	T26	18	15	9 961	2 043	7.919	0 20	
K28	K27A	15	38	4 771	1 092	3 678	0 23	

CITY OF YORK

REVIEW OF ULTIMATE SEWAGE NEEDS

September 9, 1997

BH 70044-07-1-508-02

EXECUTIVE SUMMARY

This study projects the estimated ultimate sewage needs for the City of York. Ultimate is defined as total build out of all available developable areas and a dwelling vacancy rate of 5%. The ultimate planning period is considered to be in excess of 50 years.

The City of York currently owns 12.08 million gallons per day (M.G.D.) of the wastewater treatment plant's 26 M.G.D. capacity. As of 1996, the City is using 7.21 M.G.D. of its allocated capacity.

The City's ultimate sewage need as estimated by this study is 8.92 M.G.D., therefore, the excess capacity which the City is likely never to use is 3.16 M.G.D.

Based on the City's actual growth rate in terms of sewage flow over the past ten years, the estimated time to exhaust the projected ultimate need of 8.92 M.G.D. is 91 years. The typical planning period of wastewater treatment facilities is 20 years.

The projected sewage need of the City for a 20 year planning period based on the actual growth rate is 8.085 M.G.D. Therefore, the excess capacity based on a 20 year planning period is 3.995 M.G.D.

The wastewater treatment plant capacity which is considered to be excess and would be available for sale, lease or other arrangement to another municipality is between 3.16 M.G.D. and 3.995 M.G.D. The 8.92 M.G.D. ultimate flow would reserve capacity for every currently foreseeable need within the City's existing boundary for the next 50 or more years. The 8.085 M.G.D. would reserve capacity for growth in the typical 20 year planning period.

Once capacity is reallocated to one or more neighboring municipalities, it will be difficult to retrieve. Additional capacity could be obtained in the future by potential reductions of infiltration and inflow into the collection system, plant expansion/ rerate or acquisition by financial arrangement with a neighboring municipality.

I. PURPOSE

The purpose of this study is to determine the ultimate sewage need for the City of York and the amount of excess allocated wastewater treatment plant capacity remaining.

II. BACKGROUND

Buchart-Horn prepared a report entitled “Review of Sewage Treatment Capacity for the City of York, Pennsylvania” dated April 1997. This report is included as Appendix 1 of this document. As part of that report, it was preliminarily estimated that there were approximately 4.4 million gallons per day of excess allocated capacity within the plant that belonged to the City. The report concluded that a study should be conducted that would more precisely determine the City’s ultimate sewerage needs and the amount of available excess capacity.

III. ANALYSIS

This study determines the ultimate sewage needs of the City based on projections of future flow added to the existing flow as recorded in the Chapter 94 Reports. The future flow is projected based on development of:

- A prime area for growth within the City referred to in this report as the Rail Corridor
- Areas identified in the Chapter 94 report 5 year projections
- Miscellaneous undeveloped lots
- A reduction of the current vacancy rate within the City
- Allowance for potential significant industrial users

The Rail Corridor is a special zoning overlay called an “Enterprise Development Area” in which regulatory relief is provided to reduce public and private costs for development. Attached to this report is a plan showing the Rail Corridor within the City. Other areas for future flow are those areas identified in the Chapter 94 report for development within the next five years. These areas have flows already allocated to them based on current planning efforts. Additional flow from areas of undeveloped lots based on City surveys have been delineated. These areas are referred to in this report as Miscellaneous Infill. In addition, this study adjusts the current sewer usage to account for changes in the vacancy rate within the City. Finally an allowance amount of sewage flow is included for potential future industrial users to enter the City’s system.

A. Existing City Flows

The existing flow used in this study is the five year average for the years 1992-1996. Table 1, Existing Flows from 1992 through 1996, is based on the City's Chapter 94 Wasteload Management Reports. The City's five year average flow is 5.77 MGD and the City's 3 Month Maximum Average Flow is (5.77 x 1.25) 7.21 MGD.

B. Future Flows

1. Rail Corridor

The following is the method used to calculate the future flows within the Rail Corridor. The area of the Rail Corridor was determined by measuring the County Tax Parcel Maps supplied by the City. The Rail Corridor contains over 800 parcels. Each parcel within the Rail Corridor was logged based on area, zoning and sewer district. The York Water Company water consumption records were obtained from the City of York for the months of January 1996 through February 1997. This fourteen month period was used because it represents the most readily available recent records and provides at least one year worth of usable data. The average water consumption for each lot within the Rail Corridor was determined in order to establish the existing sewer flow for this area.

The York Water Company records provide the total amount of water used for a month. In order to use water meter records as a basis of average daily sewage flow, it is recommended that a correction factor be applied that will adjust the flows for other sources of flow such as inflow and infiltration.

Table 1
Existing Flows From 1992 through 1996

Municipality	Allocated Flow (MGD)	1992 (MGD)	1993 (MGD)	1994 (MGD)	1995 (MGD)	1996 (MGD)	Average Flow (MGD)
Manchester Township	**2.4349**	0.669	0.679	0.904	1.023	0.972	0.8494
North York Borough	**0.5158**	0.196	0.206	0.203	0.208	0.208	0.204
Spring Garden Township	**3.0115**	1.249	1.412	1.101	1.226	1.285	1.255
West Manchester Township	**4.5942**	1.784	2.053	1.671	1.869	2.133	1.902
West York Borough	**1.2005**	1.190	1.462	0.882	0.812	0.847	1.039
York Township	**2.1630**	0.977	0.985	1.305	1.445	1.810	1.304
City Flow Determined by subtraction	**12.0801**	4.600	5.818	6.773	5.030	6.647	5.774
Total Average Daily Flow	**26.000**	10.665	12.615	12.839	11.613	13.902	12.327
3 Month Maximum Flow		11.526	17.150	20.039	12.577	16.174	15.493
Ratio Average Daily Flow/ 3 Month Maximum Flow		1.081	1.360	1.561	1.083	1.163	1.250

* Flow data obtained from yearly Chapter 94 Reports
** Allocated flows based on Intermunicipal Agreements

Table 2
Correction Factor for Water Meter Records

	Flow meter Location	Flow Meter	Jan. 96 Flow (MG)	Feb. 96 Flow (MG)	March 96 Flow (MG)	April 96 Flow (MG)	May 96 Flow (MG)	June 96 Flow (MG)	July 96 Flow (MG)	August 96 Flow (MG)	Sept. 96 Flow (MG)	Oct. 96 Flow (MG)	Nov. 96 Flow (MG)	Dec. 96 Flow (MG)	Jan. 97 Flow (MG)	Feb. 97 Flow (MG)
1	Total Flow at WWTP	Influent Meter *	604.016	452.574	462.124	483.24	428.038	381.462	423.64	374.78	350.583	420.995	398.997	577.946	387.987	358.007
2	West Manchester	WM01**	42.691	28.531	26.546	26.988	25.005	22.411	41.694	40.226	20.53	24.584	23.01	36.609	25.28	27.106
3	Spring Garden	SG01**	12.515	10.887	9.074	10.362	6.942	4.297	4.582	3.731	4.439	6.24	6.476	12.872	5.444	5.412
4		SG02**	11.464	15.961	3.854	2.887	7.891	4.923	5.163	4.468	3.903	4.578	4.879	8.763	6.096	4.556
5		SG03**	16.062	10.767	10.956	12.206	10.482	8.837	9.574	7.351	6.705	9.416	9.642	14.694	8.951	8.053
6	York Township	YT01**	62.894	62.798	65.133	64.720	59.232	49.958	51.950	46.354	42.67	51.977	51.915	76.841	52.071	46.5
7	North York Borough	NY01**	5.674	4.581	4.654	4.579	4.402	4.004	4.131	3.830	3.858	3.782	3.532	4.548	3.960	3.477
8	Manchester Township	MN01**	3.390	3.001	3.170	3.071	3.274	3.150	3.349	3.286	3.239	3.308	3.027	3.245	2.986	2.895
9		MN02**	31.316	28.045	28.747	29.171	25.632	21.352	20.578	17.929	15.802	22.284	23.360	35.074	20.840	21.020
10	West York	WY01**	67.774	51.072	51.123	54.072	49.543	43.890	48.133	43.183	41.736	48.892	46.190	63.549	43.737	40.588
11	Flows from participaing Municipalities not recorded on the above meters.***	EDU Counts x 350 gal/day	13.38	13.38	13.38	13.41	13.41	13.41	13.42	13.42	13.42	13.38	13.38	13.38	13.46	13.46
12		Water Meters	13.68	13.68	13.68	12.36	12.36	12.36	12.65	12.65	12.65	16.28	16.28	16.28	13.28	13.28
13		Correction Factor	3.11	2.05	2.09	2.44	1.58	1.71	1.85	1.52	1.55	1.82	1.72	2.56	1.70	1.55
14		Corrected Water Meter Flow Formula: (Row 12* Row 13)	42.55	28.04	28.59	30.16	19.52	21.14	23.40	19.23	19.61	29.63	28.00	41.67	22.58	20.58
15		Total Other flow Formula: Row 14 + Row 11	55.93	41.42	41.97	43.57	32.93	34.55	36.82	32.65	33.03	43.01	41.38	55.05	36.04	34.04
16	City Flow Portion Formula: Row 1 - Sum (Row 2 through Row 11 + Row 15)		294.31	195.51	216.90	231.61	202.71	184.09	197.67	171.77	174.67	202.92	185.59	266.70	182.58	164.36
17	York Water Meter Records for Total City Water Useage		94.72	95.28	103.98	94.80	128.01	107.95	107.01	113.08	112.83	111.44	107.10	104.10	107.41	106.07
18	Correction Factor (Formula: Row 16/ Row 17)		3.11	2.05	2.09	2.44	1.58	1.70	1.85	1.52	1.55	1.82	1.72	2.56	1.70	1.55

* Information obtained from WWTP Monthly Discharge Monitoring Reports Table " Plant Sewage Flows"

** Information obtained from monthly flow meter records supplied by the City of York

*** Information obtained from quarterly reports on the "Computation of Sewage Flows" See Appendix

Data excluded due to periods of extremely wet weather conditions.

Each parcel in the Rail Corridor is delineated along with the appropriate area and zoning district. The area was determined by manually scaling the County Tax Parcel Maps. Although the Maps are drawn to scale, some areas do not scale the same as indicated by the dimensions. Therefore, the area of each parcel is an estimate and not the actual area of each parcel.

The actual water consumption records for occupied parcels was determined by the York Water Company meter records. Many parcels are not developed and not all lots have water usage records attributed to them. Therefore, the flow per developed lot per zoning district was used to determine the anticipated flow for the undeveloped lots.

A listing of each parcel, along with the existing water usage, calculated sewage flow and the estimated future additional sewage flow is provided in Table 3, Rail Corridor Projected Flows. Table 3 is included as Appendix 2.

A summary of the estimated additional future sewage flow for each zoning district is provided in Table 4, Rail Corridor Estimated Future Additional Sewage Flow.

2. Other Areas for Development or Redevelopment

a. Areas Identified in the Chapter 94 Report

The City of York has identified other areas outside the Rail Corridor where development is expected within the next five years. These areas are listed in either the 1996 Chapter 94 Report and/or in a recently completed review of the Boundary Avenue area proposed for development by Crispus Attucks.

The estimated future additional flow for these other undeveloped areas has been obtained from the 1996 Chapter 94 Report which based the flow determination on one of the following basis: gallons per day per square foot, gallons per day per person or gallons per day per equivalent dwelling units. These other undeveloped or redeveloped areas located outside the Rail Corridor are listed in Table 5, Estimated Future Additional Flow for (Re) Development Outside the Rail Corridor.

Table 4
Rail Corridor Estimated Future Additional Sewage Flows

Zone District	Developed Area (Acre)	Flow / Dev. Area (g.p.d. / Dev. Acre / Zone)	Total Acre/ Zone	Future Development Area (Acres)	Correction Factor (See Table 1)	Correction Estimated Future Additional Flow (g.p.d.)
General Commercial (CG)	9.67	377	39.25	29.58	1.80	20,073
Commercial Waterfront (CW)	5.05	597	17.21	12.16	1.80	13,067
Heavy Industrial (IH)	56.32	901	195.82	139.50	1.80	226,241
Light Industrial (IL)	13.68	363	41.56	27.88	1.80	18,217
Mixed Residential (RM)	1.01	4,054	4.50	3.49	1.80	25,467
Single Family Attached Residential (RS2)	7.43	2,800	16.32	8.89	1.80	44,806
Total:	93.16		314.66	221.50		347,871 Rnd: **350,000**

The estimated future additional flow from the Rail Corridor is approximately 350,000 g.p.d.

Table 5
Estimated Future Additional Flow for (Re)Development Outside of the Rail Corridor from Chapter 94 Report

(Re) Development	Future Flow (g.p.d)
City of York Business and Industrial Park Phase 1 & 2	1,400
City of York Business and Industrial Park Phase 3	80,000
Kenneth Rd.. & Route 30 - 3 Lots	4,200
Bob Hoffman Stadium Renovation	4,000
Smokestack Tract (Grant & Philadelphia Street)	1,320
Stract Building (Princess & George Streets)	3,750
252 S. George Street	300
Old Penn Hotel Site (Philadelphia & George Streets)	3,000
Downtown Visitors Center	2,400
Oak Lane (21 SF lots redev. to about 15 SF lots)	5,250
230 N. George Street (Antique Mall)	2,100
George &College, West side (Gerber Lot)	310
Post Office Annex (George & Hope)	320
York Industrial Plaza	1,250
226 W. Market Street (Swingers)	1,425
237-241 W. Market Street	2,000
Crispus Attucks Training Facility	7,500
158-200 S. Duke Street	2,450
346 S. George Street	110

Crispus Attucks Entertainment Complex	22,500
Crispus Attucks Grocery Store	4,500
Crispus Attucks Office Building	15,000
Crispus Attucks Housing	42,000
Total Future Flows for Areas other than the Rail Corridor:	207,085 Say: 210,000 g.p.d.

The estimated future additional flow for the developed areas outside the Rail Corridor is approximately 210,000 g.p.d.

b. Miscellaneous Infill

There are areas within the City that are undeveloped based on a recent survey by the City. These areas are referred to in this report as Miscellaneous Infill. To determine future flows which would be generated with development of land in these zones, flow factors were computed using historical data for the RS2 and RM zones. Actual flow data and 1990 census average density were used to generate an average flow per unit in each zone.

ZONE	ACTUAL FLOW	AVERAGE DENSITY	FLOW PER UNIT
Residential (RS2):	2,800 g.p.d./acre	11.2 units / acre	250 g.p.d.
Residential (RM):	4,054 g.p.d./acre	14.6 units / acre	278 g.p.d.

The flow per zoning district as determined in the Rail Corridor review was used to determine the flow associated with the acreage in each zoning district. For zoning districts where the flow was not quantified in Table 3 for the Rail Corridor, the flow per acre was approximated, based on the average density in a given zoning district. Comparing the RS2 flow of 11.2 units/acre with the RO and CN districts below, 250 g.p.d. was assumed to be a representative flow for use in the projections. In the RS1 district, 250 g.p.d. is used because it represents an acceptable average minimum flow in a residential unit. For zoning districts I and OS, a flow ratio was estimated based on experience with similar type uses. The following listing includes those zoning districts not listed in the Rail Corridor and the estimated sewage flow per acre:

ZONE	AVERAGE DENSITY	FLOW PER UNIT	PROJECTED FLOW ACRE
Residential (RS1):	2.6 units / acre	250 g.p.d.	650 g.p.d./acre
Residential (RO):	10.7 units / acre	250 g.p.d.	2,675 g.p.d./acre
Commercial (CN):	11.6 units / acre	250 g.p.d.	2,900 g.p.d./acre
Institutional (I):	N/A	N/A	5,000 g.p.d./acre
Open Space (OS):	N/A	N/A	100 g.p.d./acre

Table 6, Miscellaneous Infill Projected Flows lists each parcel, the zoning district, developable acres and the estimated future flow. Table 6 is included as Appendix 3.

Table 7, Summary of Miscellaneous Infill Areas, identifies that there is a total flow for these undeveloped parcels within the City to be 200,000 g.p.d.

Table 7
Summary of Miscellaneous Infill Areas

Zone District	Developed Area (Acre)	Flow / Dev. Area (g.p.d. / Dev. Acre / Zone)	Total Acre/ Zone	Future Development Area (Acres)	Correction Factor (See Table 1)	Correction Estimated Future Additional Flow (g.p.d.)
General Commercial (CG)	0	377	2.44	2.44	1.80	1,656
Commercial Waterfront (CW)	0	597	1.63	1.63	1.80	1,752

Commercial Neighbor (CN)	0	2,900	0.40	0.40	1.80	2,088
Heavy Industrial (IH)	0	901	7.70	7.70	1.80	12,486
Light Industrial (IL)	0	363	0.27	0.27	1.80	175
Institutional (I)	0	5,000	0.40	0.40	1.80	3,600
Open Space (OS)	0	100	64.59	64.59	1.80	11,626
Mixed Residential (RM)	0	4,054	3.62	3.62	1.80	26,416
Single Family Detached Residential (RS1)	0	650	2.21	2.21	1.80	2,586
Single Family Attached Residential (RS2)	0	2,800	21.65	21.65	1.80	109,116
Residential Office (RO)	0	2,675	0.75	0.75	1.80	3,611
Total:	0		105.66	105.66		175,112 Rnd: <u>**200,000**</u>

c. Vacancy Rates

According to the latest US Census Bureau information, the City has a residential vacancy rate of 8.2 %[1]. There are approximately

[1] Source: US Census Bureau, 1990. Census of Population and Housing. STF 3A, Variables H1 & H4.

18,500 dwelling units within the City. The City has a long term goal of decreasing the vacancy rate to 5%. Therefore, sewage capacity should be reserved for the reduced vacancy rate of 3.2%.

A 3.2 %reduction in vacancy equates to an addition 592 occupied existing dwellings (18,500 x 0.032). These additional occupied dwellings would provide an additional 207,200 g.p.d. of sewage flow (592 x 350 g.p.d./EDU). For the purpose of this study this calculated flow is rounded off to 210,000 g.p.d.

d. Industrial Users

The City would like to reserve capacity within the system to entice new industrial businesses to locate within the City. Therefore an extra amount of sewer capacity should be held in reserve to accommodate additional industry. The largest current industrial discharger to the City's system is Frito-Lay formerly Eagle Snacks. Although Frito-Lay is not located within the City, it is a good indicator of the type of business that could locate within the City. Frito-Lay is permitted to discharge 391,000 g.p.d. Other significant dischargers to the City's system are York Hospital with a normal water consumption of 220,000 g.p.d, and Stone Container with a 1995 average water consumption of 400,000 g.p.d. For the purpose of this study, an arbitrary amount of 400,000 g.p.d will be held for future industrial development within the City. This amount is in addition to the projected flow for existing developable industrial zone acres.

IV. SUMMARY OF FUTURE FLOW NEEDS

The following is a summary of the estimated future additional sewage needs for the City's undeveloped or redeveloped areas as determined by this study.

Rail Corridor:	350,000 g.p.d.
Chapter 94 Areas:	210,000
Miscellaneous Infill:	200,000
Vacancy Adjustments:	210,000
Industrial Users:	400,000
Total:	1,370,000 g.p.d.

The total estimated future additional flow is 1.37 M.G.D.

V. CONCLUSION

Treatment plant capacity is allocated to the connected municipalities according to the Intermunicipal Agreements. The remaining portion not attributed to the connected municipalities is the City's capacity and is 12.08 M.G.D. maximum flow for 24 hours during any period of seven consecutive days.

The ratio of three-month maximum average flow to average daily flow based on the five year data is 1.25 (7.21 M.G.D. ÷ 5.77 M.G.D.). Refer to Table 1. Therefore, the estimated three-month maximum average future additional flow would be 1.37 M.G.D. x 1.25 = 1.71 M.G.D. The resulting estimated City's ultimate flow would be 7.21 M.G.D. +1.71 M.G.D. = 8.92 M.G.D.

By subtracting the estimated ultimate City flow from the allocated capacity leaves an estimated excess capacity of 3.16 M.G.D. (12.08-8.92).

The above projection of ultimate City sewage needs does not consider any additional flows generated by changes in zoning. In addition, the estimated ultimate flow does not consider full occupancy of the City where every dwelling unit in the City contributes flow.

The City's average actual growth rate in terms of sewage flow for the past ten years is 15,000 g.p.d. Refer to Table 8, Actual Sewage Flow Growth Rate. Based on this average actual rate of growth, it would take 91 years to exhaust the ultimate reserve capacity of 1.37 M.G.D. estimated by this study.

Table 8
Actual Sewage Flow Growth Rate

Year	Actual Yearly Sewage Increase (gpd)	Chapter 94 Reference
1987	24,500	See Table 1, page 4
1988	9,050	See Table 1, page 4
1989	9,485	See Table 1, page 4

1990	4,800	See Table 1, page 7
1991	31,760	See Table 1, page 5
1992	19,380	See Table 1, page 5
1993	4,000	See Table 1, page 5
1994	30,055	See Table 2, page 4
1995	960	See Table 2, page 4
1996	7,795	See Table 2, page 4
Average	14,178	**Use 15,000 gpd/year**

The typical planning period for wastewater treatment facilities is 20 years due to such dynamic issues as changes in technology, stream discharge criteria, land use requirements and public laws. Using the City's actual growth rate, the estimated future flow for a 20 year period is 0.30 M.G.D. Adding an allowance of 0.40 M.G.D. for potential major industries locating within the City, a 20 year planning period additional flow would be 0.70 M.G.D. The three month maximum average future flow would be 0.70 M.G.D. x 1.25 = 0.875 M.G.D. The resulting estimated City's 20 year planning flow would be 7.21 M.G.D. + 0.875 M.G.D. = 8.085 M.G.D.

By subtracting the estimated 20 year planning period flow from the allocated capacity leaves an estimated excess capacity of 3.995 M.G.D. (12.08 - 8.085)

Therefore, the excess capacity available for sale, lease or other arrangement is between 3.16 M.G.D. and 3.995 M.G.D. The final decision is the City's to make.

Under the current method of calculating the City's sewage flow, all the infiltration and inflow (I/I) in the main interceptors within the City is allocated against the City's capacity. Therefore, if the City's excess allocated capacity is reallocated to a neighboring municipality, the City may experience increased pressure to eliminate I/I as the City reaches a build out condition. Eliminating excessive I/I is a means of regaining capacity. The Regional Act 537 Plan currently being prepared by the York City Sewer Authority will identify areas of potential excessive I/I in the City's collection system. Subsequent study by the City's staff will isolate the specific locations for possible correction.

REVIEW OF SEWAGE TREATMENT CAPACITY
FOR
THE CITY OF YORK, PENNSYLVANIA

APRIL 1997

Prepared by:

BUCHART-HORN, INC.
CONSULTING ENGINEERS AND PLANNERS
P.O. BOX 15040
YORK, PA 17405-7040

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EXECUTIVE SUMMARY

This report addresses the "reserve" sewage treatment capacity available to the City of York, Pennsylvania at the York City Wastewater Treatment Plant and the potential for sale of all or part of this unused capacity. The report also values that capacity based on the language of the existing intermunicipal agreements and identifies basic sewage transportation barriers to the sale of that capacity. The report identifies that the City of York has approximately 4.4 million gallons per day (MGD) of excess capacity at the plant. This capacity is valued at approximately fifteen million dollars depending on the circumstances of the sale.

BACKGROUND

In recent months several York-area municipalities have reached the limits of their sewer capacity at the neighboring Springettsbury Township plant. City staff has been preliminarily approached by staff from other municipalities regarding the possible sale of excess City-owned capacity at the City of York plant. This report provides a very rough calculation of the amount of capacity at the plant which could be considered excess, and the approximate value of that capacity based on current cost of construction. Basic issues of sewage transportation are also identified. The capacity calculations contained in this report are rough estimates intended solely for the use of the City of York in determining whether to enter into discussions regarding the sale of excess capacity. The City may wish to conduct a detailed assessment of future growth potential and sewage capacity use prior to undertaking serious negotiations.

ANALYSIS

Reserve capacity is typically provided in sewer expansion projects to meet needs during a fixed planning period. The City plant was expanded in 1977-1980 by the York City Sewer Authority from a capacity of 18 million gallons per day (18 MGD) to a capacity of 26 MGD to meet the needs of the City and of six "tributary" municipalities also served by the plant through the year 2010. At the time of the expansion the flow at the plant averaged between 16 and 18 MGD. The City's flow was about 11 MGD and was approaching the City's 11.65 MGD share of the 18 MGD plant capacity. The City had contracted to provide the remaining 6.35 MGD of capacity at the plant to six other "tributary" municipalities.

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The City's share of the new capacity to be provided by the 1977 expansion was 0.43 MGD. The remaining 7.57 MGD capacity in this project was built for the tributary municipalities. The City "sold" this capacity through intermunicipal agreements. The "buying" municipalities agreed to pay project cost debt service in proportion to their share of the new capacity. The municipalities would also pay their share of operations, maintenance, and administrative costs of the facilities based on their share of the flow. The municipalities also agreed to pay a share of costs for any upgrades or improvements in proportion to their share of the total 26 MGD capacity in the plant. The most significant upgrade was made in the early 1990's when the Sewer Authority built facilities to meet stringent new effluent limits.

The current allocation of capacity among the City and the tributary municipalities along with the estimated 1996 flows is listed below:

Municipality	Allocated Capacity Gallons	Estimated 1996 Gallons
Manchester Township	2,434,900	970,693
North York Borough	515,800	207,509
Spring Garden Township	3,011,500	1,284928
West Manchester Township	4,594,200	2,132,877
West York Borough	1,200,500	846,834
City of York	12,080,100	6,649,219
York Township	2,163,000	1,809940
TOTAL	26,000,000	13,902,000

In the early 1990's the flow to the treatment plant declined. Most of this decline was in the City's share of the flow. There are several causes of the decline in City flow. City population has decreased during the period, although this trend has apparently reversed in the past several years. Industry has increasingly conserved water as costs have risen. The installation of water meters in the City, and a change from fixed-rate charges for both sewer and water to water-consumption based fees has stimulated domestic water conservation.

Perhaps the major cause of the decline was the replacement of the Willis Run interceptor, the Tyler Run interceptor, and the Codorus Creek interceptor lines in the 1980's and 1990's. All of the infiltration into these old clay and brick pipes had been charged to the City. The City's flow is determined by subtraction. Each quarter of the year the metered flow from the tributary municipalities is subtracted from the plant flow. The balance is charged to the City. The sewer projects seem to have eliminated a significant source of leakage into the pipe. The installation of new metering devices at the plant during the upgrade project may also have contributed to the decline in measured flow. The older meter measured flow in the plant after return flows had entered the waste stream. These additional flows inflated the measured flow somewhat. The new meters were positioned to record the flow independent of return flows.

The average flow at the plant fell to 10.7 MGD in 1992. This was a dry year, but the average flows stayed below 13 MGD through 1995. The year 1996 was unusually wet; precipitation was close to the all-time record in York. The average system flow was 13.9 MGD and still well below the flows experienced in the 1980s. The plant experienced some extreme flows and operational problems in 1996, but operators managed to maintain compliance with all effluent limits. In January, the peak month as a result of rain and rapid snow melt after the "blizzard", the flow averaged 19.4 MGD and daily flows exceeded 26 MGD for seven days.

To address the issue of excess capacity requires information on present and future flows as well as available capacity. The Pennsylvania Department of Environmental Resources (Pa.D.E.P.) requires the City to prepare an annual wasteload management plan called a Chapter 94 Report. Pa.D.E.P. guidance specifies how plant flow is to be estimated and compared with available capacity. For purposes of this reserve capacity report, average flow and peak flow were determined using a modified Pa.D.E.P. wasteload management protocol. A twenty-year instead of a five-year projection was compared with available capacity. Flow data for 1996 were used to estimate current flow and a peaking factor. Flow projections from the 1996 wasteload management plan were extrapolated to develop the long term projection.

The wasteload management protocol estimates current and future flows. Two key parameters are obtained from historic records. The first is the average daily flow based on five years of data. The second is a peaking factor obtained by dividing the peak three-month average daily flow by the average daily flow. The use of a five year average moderates the effect of variations in rainfall among years. The increase in flows is projected based on anticipated development. The increase is added to the average daily flow to obtain the projection of future average flow. A projected peak three-month flow is then obtained through application of the peaking factor. This projected peak three-month flow is then compared to available capacity. The Pa.D.E.P. considers a system to be overloaded if the peak three-month flow exceeds the design capacity of the plant. This reduces the amount of reserve capacity by the difference between the average and peak three-month flows.

The average and peak three-month flows for the year 1996 are now available and the new five year average flow for the plant is 12.327 MGD. The peaking factor is 1.25. The City's 1996 five year average flow is 5.77 MGD. Its peak three-month flow is estimated to be 7.21 MGD.

The future needs of the City are relatively modest. The 1996 wasteload management plan projected that connections in the City would add an additional 94,000 gpd to the system in the next five years. The plan considered all vacant parcels that are likely to develop and also allocated some 7,000 gpd per year for miscellaneous development. A few larger tracts, e.g., the back of the property at York Catholic High School, were not included, but some of the development shown may not occur in the next five years. Some structures may also be vacated during that period. Historically the wasteload management projections have been high. For the purposes of this analysis the most recent projection is considered to be conservative and the growth shown was extrapolated to estimate an increase in flow of 376,000 gpd (0.38 MGD) by the year 2015.

The addition of a projected flow of 0.38 MGD to the City's current average flow of 5.77 MGD gives a value of 6.15 MGD for the City's projected average flow in the year 2015. This projection does not provide for major redevelopment with associated increases in population density or for new industry with high sewer demands. The City might choose to reserve 150,000 to 300,000 for such possibilities. This would increase the projection to 6.30 or 6.45 MGD.

This projection assumes that the City will not experience a decline in population or heavy industry. The Stone Container paper mill is the largest City sewer customer with a flow of more than 0.2 MGD. The projection also assumes that infiltration and inflow will not increase during the planning period.

The City's allocated capacity is 12.08 MGD. Its projected average and peak three-month flows are 6.15 MGD and 7.69 MGD (with no set aside for changes in density or an industry with special sewer demand). By subtraction there remains some 4.39 MGD of peak three-month capacity in excess of the City's needs during this twenty-year planning period. Assuming a constant peaking factor of 1.25, the average City capacity remaining at the end of the planning period is 3.51 MGD.

This is City capacity. Some of the tributary municipalities may have additional excess reserve capacity as well and others may have an ultimate need for additional capacity. A provision for the transfer of allocated capacity among member municipalities is included in each of the intermunicipal agreements (Paragraph 25). This provision indicates how the cost of such transfers is to be determined, but does not require such transfers. The current agreements include three loading limits, a maximum daily limit, a maximum 7-day limit, and a maximum hourly limit. Average flows are not to exceed the rates indicated by these limits in MGD during 1-day, 7-consecutive day, or 1-hour periods. The 7-day limit has been the basis of the allocation used for wasteload planning purposes as described above. The maximum daily limit is about 1.25 times larger and the maximum hourly limit is about 2.5 times larger than the 7-day limit. The City could sell as much as the peak three-month capacity remaining, 4.39 MGD, to a new user as a 7-day maximum and still insure compliance with the wasteload management requirements.

The City is in a unique position relative to the other user municipalities. The City leases the sewer system from the York City Sewer Authority. The lease requires payment of the lease rental and use of the facilities but does not say what the City may do with the capacity. The City has sold capacity in the past through intermunicipal agreements and may do so in the future. A legal review of the bond indenture and of all guarantees of the City as well as of the lease and of the existing intermunicipal agreements should be undertaken during the preparation of any new agreements for any "loan" or "sale" of additional gallons, but there appears to be nothing precluding additional sales. Unlike the tributary municipalities the City has no agreement allocating it capacity. Rather it is "allocated" the balance of capacity not allocated to others.

The City is of course responsible for regulatory compliance and management of the system. It must insure that adequate capacity is available to meet system needs. If the City were to sell or otherwise utilize more capacity than was available, it would have to take steps to provide additional capacity. It could not allow a system overload to develop, nor could it deny tributary municipalities capacity that they have reserved when they want it. The City does not, however, have the obligation to build or provide capacity to tributary municipalities beyond that already allocated.

This being said, the City appears to have up to 4.39 MGD (say 4.4 MGD) of excess reserve capacity. This capacity could be reserved or some or all of it could be sold or leased to other partners. The advantage of a sale would be financial. A disadvantage would be the loss of reserve capacity that could be used if the City were to experience much more rapid growth or excessive leakage into the system. Another disadvantage would be an increased risk of noncompliance during periods of very wet weather.

If a transfer is arranged among municipalities party to the agreements, the agreements describe how it is to be valued. The value is to be the amount paid to date for the capacity plus interest. The value may be estimated based on the debt service schedules in place since the 1977 expansion. Determination of the precise value would require a detailed analysis of the borrowings and a calculation of the current value of the debt service paid at the time of the transfer. For purposes of this review the value was estimated assuming that 100% of all payments during the period of 1977 through 1997 were for plant capacity and that the applicable interest rate is 5.25%. The compound value of City debt service during this period is $25,246,000. Assuming that all of this debt service was for 12.08 MGD of capacity, the value per MGD to the City is $2,090,000. The value of 4.4 MGD capacity would be approximately $9,200,000. This represents the cost to date, but not the balance of the cost. The municipality buying the capacity would pay the ongoing debt service for the capacity transferred.

The values reported in the previous paragraph are believed to include costs for interceptor replacement and the Sanitary Sewer Maintenance Building. These costs will have to be identified and removed. They may be 10-15% of the total. The values do not take into account costs incurred prior to 1977. Some judgement will have to be made as to how far back to go. The agreements were designed to address the transfer of capacity provided through the most recent expansion project. Strict application of the terms to the transfer of capacity provided in earlier projects may be impractical. Identifying debt service paid prior to 1977 and establishing what it was for may be impossible. Some negotiation may be necessary to establish a fair value.

The agreements do not appear to prevent the City from selling capacity to parties who are not currently part of the system, including other municipalities. The value of capacity to such parties could approximate the cost of the construction of new facilities. This cost depends on various factors, but currently appears to be in the range of three to four million dollars per MGD. This suggests a possible value of $13,000,000 to $18,000,000 for 4.4 MGD of flow.

The payment could be structured in various ways. The City has long term debt service associated with this capacity. The City could take a full payment and escrow funds to reduce future debt service or could take a smaller payment for costs incurred and let the buyer assume the future debt service for the capacity purchased.

Presumably any new party would pay treatment costs in proportion to usage as do the present users. There would be some increase in operations and maintenance costs associated with additional flow, but if the total flow remains within design limits, an increase in flow should result in a decrease in the cost per unit of flow. The currently budgeted annual expenses of the intermunicipal sewer fund are $4,301,800. This represents the cost of treatment at an average flow of 12.3 MGD. The estimated annual cost of treatment at an average flow of 12.3 MGD + 4.4 MGD = 16.7 MGD would be $4,900,000. This estimate assumes that no changes in personnel would be necessary and that increases in the cost of energy, chemicals, and biosolids disposal would be proportional to the increase in flow. If a new user conveyed 4.4 MGD to treatment, he would pay approximately $1,800,000 per year. Current users would pay $3,600,000 or some 16% less than they do now for their current flows. If the new user contributed less than 100% of his allocation, the savings in treatment costs to existing users would be proportionately less.

The conveyance of new flows to the plant for treatment is a separate issue from the treatment of new flows. Ideally a buyer of plant capacity would make provisions to deliver the flows to the plant. Transportation through City pipes is possible, but the capacity and planned flows in the existing pipes would have to be determined to insure that capacity is available. If not, new or upgraded pipes would have to be provided at a cost to the new user. The cost of providing new or upgraded pipes would depend on the volumes and distance involved. If new pipes had to cross the City the cost would be in the millions of dollars. As a practical matter a potential buyer of treatment capacity would consider both the cost of treatment capacity and of pipes against the cost of construction of treatment facilities at the location of the source of flows. Such a buyer might not agree to pay the full cost of the facilities.

The City's major sewer pipes include the Codorus Creek "trunkline" interceptor, the upper Codorus Creek interceptor, the Tyler Run interceptor, the Poorhouse Run interceptor, and the Willis Run interceptor. The Codorus Creek "trunkline" interceptor, the upper Codorus Creek interceptor, and the Tyler Run interceptor were replaced and enlarged in the 1990's. The Willis

Run interceptor was replaced and enlarged about 1980. The Poorhouse Run interceptor was reconstructed and probably enlarged in the 1950's and 1960's.

The cost of connecting flow through the existing Mill Creek connection which ties to the Codorus Creek interceptor very close to the treatment plant could be very low if the design flow were not to exceed the capacity of the existing pipe and siphon. This connection now serves Yorktowne Paper Mills in Spring Garden Township, but the connection was originally made by Springettsbury Township to convey its flow to the City of York plant. When Springettsbury Township built its own plant in the 1970's, the pipe was plugged with concrete upstream of the paper mill. A new interceptor was installed by Springettsbury Township to convey their flow to the new plant. The capacity of the connection is assumed to be in excess of 5.0 MGD. Some provision would have to be made to reestablish a connection and to measure and limit the flow. The cost would be much less than $100,000 if the transfer of flow can be accomplished through a gravity or vortex valve splitter system. The cost of the splitter system will depend on the configuration of existing facilities and the precision of flow control desired.

The operational cost of gravity pipes is very low. Under the current agreements a transportation fee is imposed by the City and the money collected under this provision is put in escrow for use in maintenance, repair, or replacement of lines.

Pa.D.E.P. approval of any new connection will be required. The regulatory requirements are dependent on the nature of and the location of a proposed connection. Most likely an Act 537 Amendment and a Part II (Construction) permit will be required. The City would have to demonstrate that capacity is available and the new user would have to show that this capacity is adequate for its needs. A sewer planning module may also be required from the new user when the connection is made showing the quantity of additional flow to be conveyed. The City or the new user would have to prepare a permit application for the construction of the connection. The City would also have to review the pretreatment program and if necessary amend it to insure that a new user enforces pretreatment requirements that are protective of the York system.

CONCLUSION

The City has a reserved capacity of 12.08 MGD at the York City Wastewater Treatment Plant and a projected peak flow of 7.69 MGD. This leaves approximately 4.4 MGD of peak capacity available for sale or loan. This capacity could have a market value in the range of fifteen million dollars less the cost of providing transportation for the additional flow. Sale of all or part of this capacity could be structured in various ways, but likely would provide an immediate cash payment and a reduction in future debt service costs to the City. Additional flow to the currently underloaded treatment plant would also reduce the treatment costs to the City and other user municipalities. The sale of reserve capacity would not interfere with anticipated growth in the City, but could limit greatly increased growth or the settlement of an industry with very high sewer demands. The treatment plant is capable of processing additional flow, but a higher flow increases the risk of violations during very wet weather flow conditions.

Transfer of capacity would require an agreement similar in form to existing agreements and planning approval of the Pennsylvania Department of Environmental Protection.

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	006800100002	4	214 OAK LN		0.24		89	1
CG	006800100003	4	240 W PRINCESS ST		0.62		233	1
CG	006800100022	4	216 OAK LN		0.29		111	1
CG	008500200001	5	201 N NEWBERRY ST		0.36		136	2
CG	008500200020	5	209 COTTAGE HILL RD		0.04		15	2
CG	008500200021	5	211 COTTAGE HILL RD		0.02		8	2
CG	008500200022	5	229 COTTAGE HILL RD	0.15		133		2
CG	008500200035	5	301 GRANT ST		1.77		669	2
CG	008500200036	5	303 GRANT ST		1.23		465	2
CG	012300300001	7	129 N PINE ST	0.03		193		5
CG	012300300002	7	131 N PINE ST	0.04		190		5
CG	012300300003	7	133 N PINE ST	0.03		162		5
CG	012300300004	7	135 N PINE ST	0.03		64		5
CG	012300300005	7	137 N PINE ST	0.03		29		5
CG	012300300006	7	139 N PINE ST		0.03		11	5
CG	012300300007	7	211 N PINE ST	0.05		176		5
CG	012300300008	7	213 N PINE ST		0.03		12	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	012300300009	7	215 N PINE ST	0.04		59		5
CG	012300300010	7	217 N PINE ST	0.03		33		5
CG	012300300011	7	219 N PINE ST		0.04		14	5
CG	012300300012	7	221 N PINE ST	0.04		103		5
CG	012300300013	7	223 N PINE ST	0.05		216		5
CG	012300300014	7	225 N PINE ST	0.04		245		5
CG	012300300015	7	227 N PINE ST	0.04		209		5
CG	012300300016	7	229 N PINE ST	0.04		270		5
CG	012300300017	7	231 N PINE ST	0.04		324		5
CG	012300300018	7	300 E CHESTNUT ST		0.04		17	5
CG	012300300019	7	302 E CHESTNUT ST		0.04		17	5
CG	012300300020	7	306 E CHESTNUT ST		0.04		17	5
CG	012300300021	7	308 E CHESTNUT ST		0.04		17	5
CG	012300300022	7	310 E CHESTNUT ST		0.04		17	5
CG	012300300023	7	312 E CHESTNUT ST		0.04		16	5
CG	012300300024	7	310 E WALNUT ST		0.02		9	5
CG	012300300025	7	312 E WALNUT ST		0.02		7	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	012300300026	7	314 E WALNUT ST		0.05		17	5
CG	012300300027	7	316 E WALNUT ST		0.04		16	5
CG	012300300028	7	318 E WALNUT ST		0.03		13	5
CG	012300300029	7	320 E WALNUT ST		0.03		13	5
CG	012300300030	7	322 E WALNUT ST		0.03		13	5
CG	012300300031	7	324 E WALNUT ST		0.03		13	5
CG	012300300032	7	326 E WALNUT ST		0.03		11	5
CG	012300300033	7	328 E WALNUT ST		0.03		10	5
CG	012300300034	7	330 E WALNUT ST		0.03		10	5
CG	012300300035	7	332 E WALNUT ST		0.03		10	5
CG	012300300036	7	334 E WALNUT ST		0.03		11	5
CG	012300300037	7	340 E WALNUT ST		1.63		616	5
CG	012300300038	7	376 E WALNUT ST		0.04		15	5
CG	012300300039	7	301 E WALNUT ST		0.03		11	5
CG	012300300040	7	303 E WALNUT ST		0.03		10	5
CG	012300300041	7	305 E WALNUT ST		0.03		11	5
CG	012300300042	7	307 E WALNUT ST		0.03		11	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	012300300043	7	309 E WALNUT ST		0.03		11	5
CG	012300300044	7	311 E WALNUT ST		0.03		11	5
CG	012300300045	7	313 E WALNUT ST		0.03		11	5
CG	012300300046	7	315 E WALNUT ST		0.02		9	5
CG	012300300047	7	317 E WALNUT ST		0.03		11	5
CG	012300300048	7	319 E WALNUT ST		0.03		11	5
CG	012300300049	7	321 E WALNUT ST		0.03		12	5
CG	012300300050	7	323 E WALNUT ST		0.04		14	5
CG	012300300051	7	325 E WALNUT ST		0.03		11	5
CG	012300300052	7	327 E WALNUT ST		0.03		11	5
CG	012300300053	7	329 E WALNUT ST		0.03		11	5
CG	012300300054	7	331 E WALNUT ST		0.03		11	5
CG	012300300055	7	333 E WALNUT ST		0.16		60	5
CG	012300300056	7	341 E WALNUT ST		0.40		152	5
CG	012300300058	7	312 E WALLACE ST		0 02		8	5
CG	012300300059	7	314 E WALLACE ST		0.02		8	5
CG	012300300060	7	316 E WALLACE ST		0.02		9	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	012300300061	7	318 E WALLACE ST		0.02		8	5
CG	012300300062	7	320 E WALLACE ST		0.02		8	5
CG	012300300063	7	322 E WALLACE ST		0.02		8	5
CG	012300300064	7	324 E WALLACE ST		0.02		9	5
CG	012300300065	7	326 E WALLACE ST		0.03		10	5
CG	012300300066	7	311 E FRANKLIN WY		0.01		5	5
CG	012300300067	7	313 E FRANKLIN WY		0.01		5	5
CG	012300300068	7	315 FRANKLIN WY		0 01		5	5
CG	013400300001	7	400 WALNUT ST		0.86		324	5
CG	013400300001A	7	400 E PHILADELPHIA ST		0.37		141	5
CG	013400300001B	7	409 E PHILADELPHIA ST	0.32		67		5
CG	014900200017	8	251 W COLLEGE AV		1.04		393	3
CG	014900200018	8	245 W COLLEGE AV		0.36		135	3
CG	015000200046	8	252 W COLLEGE AV		14.55		5502	3
CG	015000200047	8	246 W CHURCH AV		0.36		137	3
CG	015000200091	8	281 KINGS MILL RD	3.24		66		3
CG	035000100001	12	312 CHESTNUT ST	0.10		157		5

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TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL GENERAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CG	035000100001A	12	314 E CHESTNUT ST		0.49		183	5
CG	035000100002	12	350 CHESTNUT ST	1.17		132		5
CG	035000100003	12	319 CHESTNUT ST		2.59		977	5
CG	035000100005A	12	390 CHESTNUT ST	0.40		57		5
CG	035000100006	12	302 N BROAD ST	0.13		20		5
CG	035000100008	12	200 N BROAD ST		0.74		279	5
CG	035700300003	12	300 N SHERMAN ST	1.78		572		5
CG	035700300003A	12	300 HUDSON ST	0.28		58		5
CG	035800300024	12	299 N SHERMAN ST	1.57		113		5
TOTALS				9.67	29.58	3,648	11,183	
				Ave. Flow per Acre			377	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			20,130	

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL WATERFRONT ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CW	004400100022	3	31 N PERSHING AV		0.88		531	1
CW	004400100024A	3	160 W PHILADELPHIA ST		0.03		21	1
CW	004400100048	3	140 W PHILADELPHIA ST	0.31		17		1
CW	004400100050	3	146 W PHILADELPHIA ST	0.02		48		1
CW	004400100051	3	148 W PHILADELPHIA ST	0.02	0.02		15	1
CW	004400100052	3	150 W PHILADELPHIA ST	0.02		390		1
CW	004400100053	3	154 W PHILADELPHIA ST	0.02		181		1
CW	004400100054	3	156 W PHILADELPHIA ST	0.04		24		1
CW	004500100005	3	137 W PHILADELPHIA ST		0.55		329	1
CW	004500100006	3	147 W PHILADELPHIA ST		0.82		491	1
CW	004600100006	3	240 N BEAVER ST		2.03		1218	1
CW	004700100001	3	300 N BEAVER ST		0.96		576	1
CW	004800100001	3	201 W MARKET ST	1.57		10		1
CW	004900100001	3	205 W PHILADELPHIA ST		0.18		110	1
CW	004900100002	3	108 N PERSHING AV		0.04		24	1
CW	004900100003	3	110 N PERSHING AV		0.04		22	1
CW	004900100004	3	112 N PERSHING AV		0.04		22	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL WATERFRONT ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CW	004900100005	3	114 N PERSHING AV		0.03		21	1
CW	004900100006	3	116 N PERSHING AV		0.04		25	1
CW	004900100007	3	118 N PERSHING AV		0.04		23	1
CW	004900100008	3	120 N PERSHING AV		0.03		20	1
CW	004900100009	3	122 N PERSHING AV		0.03		20	1
CW	004900100010	3	124 N PERSHING AV		0.03		19	1
CW	004900100011	3	126 N PERSHING AV		0.03		19	1
CW	004900100012	3	128 N PERSHING AV		0.02		15	1
CW	004900100013	3	130 N PERSHING AV		0.50		303	1
CW	006600100001	4	200 W MARKET ST		0.69		413	1
CW	006600100012	4	38 S PERSHING AV		0.01		7	1
CW	006600100013	4	46 S PERSHING AV		0.12		70	1
CW	006600100014	4	50 S PERSHING AV		0.02		12	1
CW	006600100015	4	52 S PERSHING AV		0.02		13	1
CW	006600100016	4	54 S PERSHING AV		0.03		17	1
CW	006600100017	4	56 S PERSHING AV		0.04		27	1
CW	006600100018	4	30 S PERSHING AV		1.28		771	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL WATERFRONT ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CW	006700100001	4	210 W KING ST		0.02		11	1
CW	006700100002	4	218 W KING ST		0.02		15	1
CW	006700100003	4	238 W KING ST		1.14		682	1
CW	006700100004	4	100 S PERSHING AV		0.05		27	1
CW	006700100005	4	102 S PERSHING AV		0.04		25	1
CW	006700100006	4	104 S PERSHING AV		0.05		33	1
CW	006700100007	4	106 S PERSHING AV		0.05		32	1
CW	006700100008	4	108 S PERSHING AV		0.06		34	1
CW	006700100009	4	112 S PERSHING AV		0.14		87	1
CW	006700100010	4	114 S PERSHING AV		0.07		41	1
CW	006700100011	4	116 S PERSHING AV		0.07		43	1
CW	006700100012	4	118 S PERSHING AV		0.02		15	1
CW	006700100013	4	120 S PERSHING AV		0.04		27	1
CW	006700100014	4	122 S PERSHING AV		0.06		36	1
CW	006700100015	4	132 S PERSHING AV		0.82		492	1
CW	006700100026	4	124 S PERSHING AV		0.12		70	1
CW	017700100003	8	371 KINGS MILL RD	0.66		64		3

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

COMMERCIAL WATERFRONT ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
CW	017700100003A	8	300 KINGS MILL RD	0.27		109		3
CW	017700100004	8	371 KINGS MILL RD	0.35		64		3
CW	017700100005	8	373 KINGS MILL RD		0.36		218	3
CW	017700100006	8	0 PENN ST		0.34		204	3
CW	017700200002	8	301 KINGS MILL RD	1.33		583		3
CW	017800100020	8	370 KINGS MILL RD	0.16		357		3
CW	017800100021	8	372 KINGS MILL RD	0.04		112		3
CW	017800100022	8	374 KINGS MILL RD	0.04		309		3
CW	017800100023	8	376 KINGS MILL RD	0.05		26		3
CW	017800100024	8	378 KINGS MILL RD		0.05		29	3
CW	017800100025	8	380 KINGS MILL RD		0.06		35	3
CW	017800100026	8	384 KINGS MILL RD	0.06		554		3
CW	017800100027	8	386 KINGS MILL RD	0.06		169		3
TOTALS				**5.05**	**12.16**	**3,017**	**7,307**	
				Ave. Flow per Acre			**597**	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			**13,152**	

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	002500200010	2	441 E MARKET ST	2.98		31481		5
IH	002500200011	2	19 N BROAD ST	0.05		409		5
IH	002500200012	2	21 N BROAD ST	0.05		64		5
IH	002500200013	2	23 N BROAD ST		0.05		44	5
IH	002500200014	2	25 N BROAD ST		0.05		47	5
IH	002500200015	2	29 N BROAD ST		0.04		37	5
IH	002500200016	2	31 N BROAD ST		0.05		47	5
IH	002500200017	2	35 N BROAD ST	0.16		64		5
IH	002500200018	2	39 N BROAD ST		0.06		54	5
IH	002500200019	2	41 N BROAD ST	0.04		48		5
IH	002500200020	2	43 N BROAD ST	0.03		281		5
IH	002500200021	2	45 N BROAD ST	0.03		122		5
IH	002500200022	2	47 N BROAD ST	0.03		85		5
IH	002500200023	2	51 N BROAD ST		0.11		101	5
IH	002500200024	2	119 N BROAD ST		0.20		181	5
IH	004200100001	3	201 N BEAVER ST		0.05		41	1
IH	004200100002	3	203 N BEAVER ST		0.03		25	1

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	004200100003	3	209 N BEAVER ST	0.35		447		1
IH	004200100004	3	235 N BEAVER ST	2.08		353		1
IH	004200100020	3	24 NORTH ST		0.57		512	1
IH	004300100001	3	320 N GEORGE ST	0.47		93		1
IH	004300100002	3	326 N GEORGE ST		0.05		43	1
IH	004300100003	3	320 N GEORGE ST	0.49		93		1
IH	004300100004	3	320 N GEORGE ST	0.14		93		1
IH	004300100005	3	300 N GEORGE ST		0.25		229	1
IH	004300100006	3	332 N GEORGE ST		0.28		253	1
IH	004500100013	3	140 N PARK AV		1.06		951	1
IH	004600100001	3	200 N BEAVER ST	0.03		335		1
IH	004600100002	3	202 N BEAVER ST		0.04		33	1
IH	004600100003	3	204 N BEAVER ST	0.04		190		1
IH	004600100004	3	206 N BEAVER ST	0.04		150		1
IH	004600100005	3	208 N BEAVER ST		1.14		1029	1
IH	004600100005A	3	151 W GAY AV		0.04		39	1
IH	004600100007	3	201 N PERSHING AV		0.38		342	1

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	004600100008	3	111 W GAY AV		0.40		363	1
IH	004600100009	3	109 W GAY ST		0.33		300	1
IH	008400200050	5	201 N PENN ST	0.05		645		2
IH	012600200049	7	260 E YORK ST		0.26		231	1
IH	012700100002	7	315 N GEORGE ST	0.34		124		1
IH	012700100003	7	319 N GEORGE ST	0.04		150		1
IH	012700100004	7	321 N GEORGE ST	0 04		321		1
IH	012700100005	7	323 N GEORGE ST	0.04		62		1
IH	012700100006	1	325 N GEORGE ST	0.04		174		1
IH	012700100007	7	327 N GEORGE ST	0.05		76		1
IH	012700100008	7	329 N GEORGE ST		0.05		46	1
IH	012700100009	7	331 N GEORGE ST		0.05		43	1
IH	012700100010	7	333 N GEORGE ST	0.06		33		1
IH	012700100011	7	335 N GEORGE ST	0.05		141		1
IH	012700100012	7	337 N GEORGE ST		0 05		45	1
IH	012700100013	7	351 N GEORGE ST		0.44		394	1
IH	012700100014	7	10 WASHINGTON AV		0.01		10	1

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	012700100015	7	12 WASHINGTON AV		0.01		10	1
IH	012700100016	7	14 WASHINGTON AV		0.02		19	1
IH	012700100017	7	312 N COURT ST		0.04		32	1
IH	012700100018	7	322 N COURT ST		0.04		32	1
IH	012700100019	7	324 N COURT ST		0.04		32	1
IH	012700100020	7	326 N COURT ST		0.04		32	1
IH	012700100021	7	328 N COURT ST		0 04		32	1
IH	012700100022	7	330 N COURT ST		0.04		32	1
IH	012700100023	7	334 N COURT ST		0.04		32	1
IH	012700100024	7	336 N COURT ST		0.02		18	1
IH	012700100025	7	338 N COURT ST		0 02		18	1
IH	012700100026	7	370 N DUKE ST		1.72		1552	1
IH	012700100029	7	53 E NORTH ST	0.26		347		1
IH	012900100001	7	353 N DUKE ST		0.73		656	1
IH	012900100020	7	300 N QUEEN ST	0.65		119		1
IH	012900100026	7	149 PERRY AV		0.11		102	1
IH	012900100027	7	155 PERRY AV		0.05		44	1

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	013000100027	7	236 E ARCH ST		4.66		4199	1
IH	013000100035	7	311 WALT WY		0 03		24	1
IH	013000100037	7	315 WALT WY		0.03		24	1
IH	013100100025	7	412 N QUEEN ST		0.71		643	1
IH	013200100017	7	237 E ARCH ST		3.57		3214	1
IH	013200100019	7	251 E ARCH ST		0.43		388	1
IH	017800100028	8	365 W COTTAGE PL	3.46		36		3
IH	017800100028	8	365 W COTTAGE PL	3.46		169		3
IH	017900100020	8	360 W COTTAGE PL		0.14		125	3
IH	017900100021	8	366 W COTTAGE PL	0.29		17		3
IH	017900100022	8	367 ROSE AL		0.46		413	3
IH	018100100001	8	410 KINGS MILL RD		2.48		2237	3
IH	018100100002	8	423 KINGS MILL RD		5.24		4718	3
IH	030400400015	11	100 CARLISLE AV		1.10		991	2
IH	030600400001	11	701 W PHILADELPHIA ST		0.06		51	2
IH	030600400002	11	703 W PHILADELPHIA ST	0.09		63		2
IH	030600400003	11	705 W PHILADELPHIA ST	0.06		315		2

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	030600400004	11	707 W PHILADELPHIA ST	0.02		147		2
IH	030600400005	11	711 W PHILADELPHIA ST	0.04		197		2
IH	030600400006	11	713 W PHILADELPHIA ST	0.05		207		2
IH	030600400007	11	715 W PHILADELPHIA ST	0.08		157		2
IH	030600400008	11	717 W PHILADELPHIA ST	0.08		167		2
IH	030600400009	11	719 W PHILADELPHIA ST	0.08		216		2
IH	030600400010	11	721 W PHILADELPHIA ST	0.08		126		2
IH	030600400011	11	725 W PHILADELPHIA ST	0.08		162		2
IH	030600400012	11	727 W PHILADELPHIA ST		0.05		43	2
IH	030600400013	11	729 W PHILADELPHIA ST	0.04		136		2
IH	030600400014	11	731 W PHILADELPHIA ST		0.03		30	2
IH	030600400015	11	733 W PHILADELPHIA ST		0.51		458	2
IH	030600400016	11	785 W PHILADELPHIA ST	1.03		341		2
IH	030600400017	11	118 N BELVIDERE AV		0.03		28	2
IH	030600400018	11	706 W GAS AV		0.41		368	2
IH	030600400019	11	705 W PHILADELPHIA ST	0.04		315		2
IH	030600400020	11	710 W GAS AV		0.04		37	2

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	030600400021	11	713 W PHILADELPHIA ST	0.04		207		2
IH	030800500001	11	606 COMPANY ST	0.83		221		2
IH	031000500001	11	201 N WEST ST		1.35		1219	2
IH	031100500019	11	150 N HARTLEY ST		2.72		2453	2
IH	031100500020	11	144 N HARTLEY ST		0.36		322	2
IH	031200600001	11	407 W PHILADELPHIA ST		0.24		215	2
IH	031200600005	11	413 W PHILADELPHIA ST		1.79		1612	2
IH	031200600006	11	435 W PHILADELPHIA ST	0.35		102		2
IH	031200600006A	11	435 W GAS AV		0.25		229	2
IH	031200600007	11	445 W GAS AV		0.53		475	2
IH	031200600008	11	145 N HARTLEY ST	0.87		331		2
IH	031200600009	11	140 ROOSEVELT AV		0.16		147	2
IH	031200600010	11	198 ROOSEVELT AV		0.63		564	2
IH	031200600011	11	149 N HARTLEY ST		1.45		1306	2
IH	031300600014	11	145 ROOSEVELT AV		1.42		1278	2
IH	031500600001	11	210 ROOSEVELT AV		0.54		485	2
IH	031500600002	11	211 N HARTLEY ST		0.46		418	2

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	031500600003	11	220 ROOSEVELT AV		0.55		498	2
IH	031600200001	11	113 PARK ST		1.68		1513	2
IH	031800200001	11	501 LINCOLN ST		5.34		4814	2
IH	032700100001	11	600 LINCOLN ST		0.88		797	2
IH	032700100046	11	654 LINCOLN ST	0.39		68		2
IH	032700100047	11	656 LINCOLN ST		0 12		113	2
IH	032800400001	11	700 LINDEN AV		1.66		1497	2
IH	032800400002	11	710 LINDEN AV		1.38		1243	2
IH	032900400001	11	750 LINDEN AV		1.79		1610	2
IH	033000400001	11	190 CARLISLE AV		0.73		654	2
IH	033000400002	11	936 LINDEN AV		0.16		142	2
IH	033000400003	11	956 LINDEN AV		0.14		129	2
IH	033100400001	11	120 N RICHLAND AV		1.47		1329	2
IH	035100100001	12	200 N STATE ST		1.90		1710	4
IH	035100100002	12	300 N STATE ST		4.32		3891	4
IH	035200100001	12	400 N STATE ST		2.09		1882	4
IH	035300200015	12	600 E HAY ST		0.71		636	4

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	035300200016	12	501 N STATE ST		0.34		305	4
IH	035300200016A	12	501 N STATE ST		0.21		188	4
IH	035300200017	12	631 E HAY ST		0.50		452	4
IH	035300200018	12	651 E HAY ST		1.12		1005	4
IH	035500200007	12	700 HAY ST		0.05		42	4
IH	035500200008	12	704 HAY ST		0.19		170	4
IH	035500200009	12	712 E HAY ST		0.04		38	4
IH	035500200010	12	714 HAY ST		0.04		32	4
IH	035500200011	12	716 HAY ST		0.04		36	4
IH	035500200012	12	718 HAY ST		0.04		36	4
IH	035500200013	12	400 MULBERRY ST	0.32		137		4
IH	035500200015	12	701 HAY ST	1.09		259		4
IH	035500200016	12	519 N FRANKLIN ST		0.18		165	4
IH	035500200017	12	400 MULBERRY ST	1 27		137		4
IH	037900800001	12	525 E MARKET ST	4.54		1773		5
IH	037900800002	12	527 E MARKET ST		0.07		67	5
IH	037900800003	12	527 E MARKET ST		0.11		104	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	037900800004	12	529 E MARKET ST	0.07		297		5
IH	037900800005	12	26 N STATE ST	0.06		611		5
IH	037900800009	12	22 N STATE ST		0.04		34	5
IH	037900800010	12	26 N STATE ST	0.09		611		5
IH	037900800011	12	32 N STATE ST	0.03		121		5
IH	037900800012	12	34 N STATE ST	0.04		138		5
IH	037900800013	12	36 N STATE ST	0.04		71		5
IH	037900800024	12	450 E PHILADELPHIA ST		1.43		1285	5
IH	038000900017	12	470 E MARKET ST		1.24		1115	5
IH	038000900018	12	480 E MARKET ST	0.12		76		5
IH	038000900018	12	480 E MARKET ST	0.12		36		5
IH	038000900019	12	490 E MARKET ST	1.33		50		5
IH	038000900019	12	490 E MARKET ST	1.33		55		5
IH	038000900020	12	504 E MARKET ST	0.21		43		5
IH	038000900053	12	479 E KING ST		0.50		454	5
IH	038000900055	12	501 E KING ST	1.27		1869		5
IH	038101000041	12	609 E KING ST		0.78		699	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	038101000041A	12	539 E KING ST		0.07		65	5
IH	038101000052	12	627 E KING ST		0.04		32	5
IH	038101000053	12	629 E KING ST		0.04		32	5
IH	038101000054	12	631 E KING ST		0.04		34	5
IH	038101000055	12	633 E KING ST		0.03		30	5
IH	038101000056	12	635 E KING ST		0.03		30	5
IH	038101000057	12	637 E KING ST		0.03		30	5
IH	038101000058	12	639 E KING ST		0.03		30	5
IH	038101000059	12	641 E KING ST		0.03		30	5
IH	038101000060	12	642 E KING ST		0.04		40	5
IH	038101000061	12	643 E KING ST		0.08		70	5
IH	038101000065	12	600 E MASON ST		0.33		297	5
IH	038101000066	12	609 E KING ST		1.00		902	5
IH	038101000067	12	650 E MASON AV		0.06		55	5
IH	038101000067A	12	650 E MASON AV		0.06		51	5
IH	038101000068	12	652 E MASON AV		0.05		41	5
IH	038101000069	12	654 E MASON AV		0.04		39	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	038101000070	12	656 E MASON AV		0.05		41	5
IH	038101000071	12	658 E MASON AV		0.07		63	5
IH	039201000005	12	550 E KING ST	0.92		737		5
IH	039201000006	12	618 E KING ST		0.05		43	5
IH	039201000007	12	620 E KING ST		0.05		43	5
IH	039201000008	12	622 E KING ST		0.05		43	5
IH	039201000009	12	624 E KING ST		0.05		43	5
IH	039201000010	12	626 E KING ST		0.05		43	5
IH	039201000011	12	628 E KING ST		0.05		43	5
IH	039201000030	12	620 E KING ST		0.64		577	5
IH	039201000031	12	600 E KING ST		0.19		173	5
IH	039201000032	12	600 E KING ST		0.07		66	5
IH	039201000032A	12	655 EDISON ST		0.18		162	5
IH	039300900002	12	0 FULTON ST		1.33		1197	5
IH	039300900002A	12	0 FULTON ST		0.28		252	5
IH	039501000014	12	627 E PRINCESS ST		0.24		221	5
IH	039501000015	12	631 E PRINCESS ST		0.05		45	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	039501000016	12	633 E PRINCESS ST		0.10		90	5
IH	039501000017	12	641 E PRINCESS ST	0.14		255		5
IH	039501000018	12	645 E PRINCESS ST	0.06		335		5
IH	039501000019	12	647 E PRINCESS ST		0.06		57	5
IH	040201600001	12	1110 E PRINCESS ST	16.80		352		5
IH	040501500045	12	377 WHEATFIELD ST		0.10		88	5
IH	040501500046	12	381 WHEATFIELD ST	0.10		14		5
IH	040501500048	12	393 WHEATFIELD ST	0.20		31		5
IH	040501500049	12	397 WHEATFIELD ST	0.10		52		5
IH	040601500043	12	361 WARREN ST	0.24		65		5
IH	040601500059	12	0 CARR A;		0.24		213	5
IH	040801700001	12	400 S ALBEMARLE ST		1.64		1480	5
IH	040901800001	12	401 S ALBEMARLE ST	0.10		239		5
IH	040901800002	12	403 S ALBEMARLE ST		0.13		117	5
IH	040901800003	12	415 S ALBEMARLE ST	0.06		283		5
IH	040901800004	12	417 S ALBEMARLE ST	0.06		215		5
IH	040901800005	12	419 S ALBEMARLE ST		0.24		216	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	041001800001	12	419 ALBEMARLE ST		11.10		10004	5
IH	041101800001	12	1101 ELM ST		7.65		6890	5
IH	041501700001	12	423 NORWAY ST		0.67		607	5
IH	041501700018	12	928 ELM ST	0.07		198		5
IH	041501700027	12	951 ELM ST		4.22		3800	5
IH	041501700028	12	387 NORWAY ST		5.60		5046	5
IH	041501700030	12	382 WHEATFIELD ST		0.17		149	5
IH	041501700031	12	390 WHEATFIELD ST		0.09		80	5
IH	041501700032	12	392 WHEATFIELD ST		0.04		36	5
IH	041501700033	12	394 WHEATFIELD ST		0.04		36	5
IH	041501700034	12	396 WHEATFIELD ST		0.04		36	5
IH	041501700035	12	398 WHEATFIELD ST		0.04		36	5
IH	041601400031	12	380 NORWAY ST	0.95		85		5
IH	041601400031A	12	380 S SHERMAN ST		0.21		185	5
IH	041601400056	12	367 S SHERMAN ST	0.05		88		5
IH	041601400057	12	375 S SHERMAN ST		0.19		170	5
IH	041601400058	12	377 S SHERMAN ST		0.09		79	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	041601400070	12	1030 ELM ST		0.51		462	5
IH	041701300075	12	386 PATTISON ST		3.51		3164	5
IH	041801300002	12	564 E PRINCESS ST		0.36		327	5
IH	041801300003	12	554 E PRINCESS ST		0.03		30	5
IH	041801300004	12	556 E PRINCESS ST		0.04		32	5
IH	041801300005	12	558 E PRINCESS ST		0.04		32	5
IH	041801300006	12	560 E PRINCESS ST		0.04		34	5
IH	041801300007	12	564 E PRINCESS ST		0.19		170	5
IH	041801300008	12	501 PROSPECT ST		0.21		188	5
IH	041801300009	12	515 PROSPECT ST		0.43		384	5
IH	041801300010	12	517 PROSPECT ST		1.35		1216	5
IH	041801300011	12	535 PROSPECT ST		1.85		1669	5
IH	041901300002	12	454 E PRINCESS ST		5.37		4834	5
IH	042001300011	12	453 PROSPECT ST		0.04		40	5
IH	042001300012	12	455 PROSPECT ST		0.04		34	5
IH	042001300013	12	457 PROSPECT ST		0.04		34	5
IH	042001300014	12	459 PROSPECT ST		0.07		64	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	042001300015	12	465 PROSPECT ST		1.72		1547	5
IH	042001300016	12	402 LAMOUR ST		0.49		437	5
IH	042101300001	12	572 E PRINCESS ST		3.83		3446	5
IH	042101300002	12	600 E PRINCESS ST	3.00		41		5
IH	042101300003	12	554 E PRINCESS ST		0.64		580	5
IH	042101300004	12	601 PROSPECT ST		0.05		45	5
IH	042101300005	12	603 PROSPECT ST		0.09		78	5
IH	042101300006	12	619 PROSPECT ST		0.61		548	5
IH	042101300006A	12	639 PROSPECT ST		0.41		365	5
IH	042101300007	12	564 PRINCESS ST		1.19		1075	5
IH	042101300007A	12	566 E PRINCESS ST		0.36		326	5
IH	042201300022	12	719 PROSPECT ST		0.07		67	5
IH	042201300023	12	721 PROSPECT ST		0.11		99	5
IH	042201300024	12	725 PROSPECT ST		0.16		141	5
IH	042201300025	12	747 PROSPECT ST		0.71		643	5
IH	042201300026	12	757 PROSPECT ST		0.07		64	5
IH	042201300027	12	400 PATTISON ST		0.81		733	5

TABLE 3
RAIL CORRIDOR PROJECTED FLOWS
HEAVY INDUSTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IH	042201300028	12	420 PATTISON ST		0.44		394	5
IH	042301400001	12	419 PATTISON ST		1.00		905	5
IH	042301400025	12	416 NORWAY ST		0.53		480	5
IH	042301400026	12	418 NORWAY ST		0.09		84	5
IH	042301400027	12	420 NORWAY ST	0.08		56		5
IH	042301400028	12	422 NORWAY ST		0.09		77	5
IH	042301400029	12	224 NORWAY ST		0.16		147	5
IH	042301400032	12	401 S SHERMAN ST	0.45		262		5
IH	042301400033	12	461 S SHERMAN ST		0.13		115	5
IH	042301400034	12	400 S SHERMAN ST		0.90		813	5
IH	042301400035	12	420 S SHERMAN ST	0.93		918		5
TOTALS				56.32	139.50	50,715	125,687	
				Ave. Flow per Acre			901	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			226,236	

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TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

LIGHT INDUSTRIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IL	035800300023	12	316 N ALBEMARLE ST	1.68		274		5
IL	036100400028	12	390 EBERTS LN	0.90		1368		5
IL	036100400029	12	315 N ALBEMARLE ST	2.25		240		5
IL	036100400030	12	1059 FREDERICK CT		0.36		130	5
IL	036400400080	12	333 EBERTS LN	1.23		927		5
IL	036400400081	12	399 EBERTS LN	2.77		268		5
IL	036400400088	12	1251 E WALLACE ST		2.69		977	5
IL	036400400088A	12	305 EBERTS LN		19.36		7028	5
IL	036400400089	12	1200 E WALLACE ST		1.40		509	5
IL	036400400089A	12	1213 E WALLACE ST		1.17		424	5
IL	036500500013	12	126 N EAST ST		0.13		46	4
IL	036500500014	12	280 N EAST ST	3.79		172		4
IL	036500500018	12	203 N EAST ST	0.11		64		4
IL	036500500019	12	221 N EAST ST	0.47		115		4
IL	036500500020	12	261 N EAST ST		0.41		150	4
IL	041401700018	12	1038 ELM ST	0.25		492		5
IL	041401700018A	12	1054 ELM ST		0.74		270	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

LIGHT INDUSTRIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
IL	041401700019	12	1054 ELM ST		0.35		128	5
IL	041501700020	12	932 ELM ST	0.11		126		5
IL	041501700021	12	934 ELM ST	0.04		351		5
IL	041501700022	12	936 ELM ST	0.04		187		5
IL	041501700023	12	938 ELM ST	0.04		378		5
IL	041501700024	12	940 ELM TS		0.05		16	5
IL	041501700025	12	942 ELM ST		0.34		123	5
IL	041501700025A	12	946 ELM ST		0.88		319	5
TOTALS				13.68	27.88	4,963	10,119	
				Ave. Flow per Acre:			363	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			18,215	

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TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	012900100002	7	355 N DUKE ST	0.07		76		1
RM	012900100004	7	361 N DUKE ST	0.05		257		1
RM	012900100005	7	363 N DUKE ST	0.05		433		1
RM	012900100006	7	365 N DUKE ST		0.05		191	1
RM	012900100007	7	367 N DUKE ST	0.05		105		1
RM	012900100008	7	110 E ARCH ST		0.07		275	1
RM	012900100009	7	120 E ARCH ST		0.40		1611	1
RM	012900100010	7	136 E ARCH ST		0.03		103	1
RM	012900100011	7	138 E ARCH ST		0.03		103	1
RM	012900100012	7	140 E ARCH ST		0.03		103	1
RM	012900100013	7	142 E ARCH ST		0.03		103	1
RM	012900100014	7	144 E ARCH ST		0.03		107	1
RM	012900100015	7	146 E ARCH ST		0.02		99	1
RM	012900100016	7	148 E ARCH ST		0.03		115	1
RM	012900100017	7	150 E ARCH ST		0.03		115	1
RM	012900100018	7	152 E ARCH ST		0.03		115	1
RM	012900100019	7	154 E ARCH ST		0.06		248	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	012900100021	7	324 N QUEEN ST		0.07		275	1
RM	012900100022	7	320 N QUEEN ST	0.16		26		1
RM	012900100023	7	326 N QUEEN ST	0.03		167		1
RM	012900100024	7	328 N QUEEN ST	0.04		212		1
RM	012900100025	7	330 N QUEEN ST	0.04		109		1
RM	013000100001	7	301 N QUEEN ST		0.04		162	1
RM	013000100002	7	303 N QUEEN ST		0.04		146	1
RM	013000100003	7	305 N QUEEN ST	0.04		309		1
RM	013000100004	7	307 N QUEEN ST	0.03		202		1
RM	013000100005	7	309 N QUEEN ST	0.03		128		1
RM	013000100006	7	311 N QUEEN ST		0.06		229	1
RM	013000100007	7	313 N QUEEN ST	0.06		274		1
RM	013000100008	7	315 N QUEEN ST		0.06		229	1
RM	013000100009	7	317 N QUEEN ST	0.04		181		1
RM	013000100010	7	319 N QUEEN ST	0.04		78		1
RM	013000100011	7	321 N QUEEN ST	0.04		233		1
RM	013000100012	7	323 N QUEEN ST	0.03		183		1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	013000100013	7	331 N QUEEN ST		0.10		426	1
RM	013000100014	7	208 E ARCH ST		0.03		109	1
RM	013000100015	7	210 E ARCH ST		0.03		109	1
RM	013000100016	7	212 E ARCH ST		0.03		109	1
RM	013000100017	7	214 E ARCH ST		0.04		172	1
RM	013000100018	7	216 E ARCH ST		0.07		267	1
RM	013000100019	7	218 E ARCH ST		0.05		214	1
RM	013000100020	7	220 E ARCH ST		0.05		214	1
RM	013000100021	7	222 E ARCH ST		0.05		214	1
RM	013000100022	7	224 E ARCH ST		0.05		214	1
RM	013000100028	7	211 E HAY ST		0.03		130	1
RM	013000100029	7	213 E HAY ST		0.03		130	1
RM	013000100039	7	321 WALT WY		0.02		95	1
RM	013100100001	7	101 E ARCH ST		0.05		202	1
RM	013100100002	7	107 E ARCH ST		0.04		160	1
RM	013100100003	7	109 E ARCH ST		0.02		83	1
RM	013100100004	7	111 E ARCH ST		0.02		79	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	013100100005	7	113 E ARCH ST		0.04		163	1
RM	013100100006	7	115 E ARCH ST		0.05		199	1
RM	013100100007	7	117 E ARCH ST		0.09		355	1
RM	013100100008	7	121 E ARCH ST		0.09		367	1
RM	013100100010	7	127 E ARCH ST		0.03		121	1
RM	013100100011	7	129 E ARCH ST		0.03		121	1
RM	013100100012	7	131 E ARCH ST		0.02		100	1
RM	013100100013	7	135 E ARCH ST		0.01		56	1
RM	013100100013A	7	135 E ARCH ST		0.01		58	1
RM	013100100014	7	137 E ARCH ST		0.03		125	1
RM	013100100015	7	139 E ARCH ST		0.04		160	1
RM	013100100016	7	141 E ARCH ST		0.04		172	1
RM	013100100017	7	143 E ARCH ST		0.04		160	1
RM	013100100018	7	145 E ARCH ST		0.04		160	1
RM	013100100019	7	147 E ARCH ST		0.04		172	1
RM	013100100020	7	149 E ARCH ST		0.04		172	1
RM	013100100021	7	151 E ARCH ST		0.04		172	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	013100100022	7	153 E ARCH ST		0.04		172	1
RM	013100100023	7	400 N QUEEN ST	0.05		233		1
RM	013100100024	7	410 N QUEEN ST		0.23		917	1
RM	013100100026	7	135 E ARCH ST		0.02		61	1
RM	013100100027	7	200 N HOWARD ST		0.02		98	1
RM	013200100001	7	401 N QUEEN ST		0.04		151	1
RM	013200100002	7	402 N QUEEN ST	0.03		122		1
RM	013200100003	7	403 N QUEEN ST		0.03		113	1
RM	013200100004	7	405 N QUEEN ST	0.03		345		1
RM	013200100005	7	407 N QUEEN ST		0.03		136	1
RM	013200100006	7	409 N QUEEN ST		0.03		113	1
RM	013200100007	7	411 N QUEEN ST	0.04		255		1
RM	013200100008	7	413 N QUEEN ST		0.04		160	1
RM	013200100009	7	209 E ARCH ST		0.09		364	1
RM	013200100010	7	215 E ARCH ST		0.06		227	1
RM	013200100011	7	217 E ARCH ST		0.08		307	1
RM	013200100012	7	219 E ARCH ST		0.05		194	1

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RM	013200100012A	7	219 ARCH ST	0.07		176		1
RM	013200100013	7	225 E ARCH ST		0.05		196	1
RM	013200100013A	7	225 E ARCH ST		0.02		74	1
RM	013200100014	7	227 E ARCH ST		0.13		535	1
RM	013200100015	7	231 E ARCH ST		0.07		267	1
TOTAL				1.01	3.49	4,104	14,175	
				Ave. Flow per Acre			4,054	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			25,516	

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	008400200027	5	300 W SMYSER ST		0.05		150	2
RS2	008400200028	5	302 W SMYSER ST		0.03		83	2
RS2	008400200029	5	304 W SMYSER ST		0.06		166	2
RS2	008400200030	5	310 W SMYSER ST		0.06		155	2
RS2	008400200031	5	312 W SMYSER ST		0.05		138	2
RS2	008400200032	5	316 W SMYSER ST		0.05		138	2
RS2	008400200033	5	318 W SMYSER ST		0.05		127	2
RS2	008400200034	5	326 W SMYSER ST		0.05		133	2
RS2	008400200035	5	328 W SMYSER ST		0.03		83	2
RS2	008400200036	5	330 W SMYSER ST		0.03		89	2
RS2	008400200037	5	332 W SMYSER ST		0.03		89	2
RS2	008400200038	5	334 W SMYSER ST		0.03		89	2
RS2	008400200039	5	336 W SMYSER ST		0.03		89	2
RS2	008400200040	5	338 W SMYSER ST		0.04		100	2
RS2	008400200041	5	340 W SMYSER ST		0.04		100	2
RS2	008400200042	5	342 W SMYSER ST		0.02		53	2
RS2	008400200043	5	344 W SMYSER ST		0.02		46	2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	008400200044	5	346 W SMYSER ST		0.02		46	2
RS2	008400200045	5	348 W SMYSER ST		0.02		46	2
RS2	008400200046	5	350 W SMYSER ST		0.02		46	2
RS2	008400200047	5	352 W SMYSER ST		0.02		53	2
RS2	008400200048	5	354 W SMYSER ST		0.11		297	2
RS2	008500200002	5	207 N NEWBERRY ST		0.03		76	2
RS2	008500200003	5	209 N NEWBERRY ST		0.03		78	2
RS2	008500200004	5	211 N NEWBERRY ST	0.04		186		2
RS2	008500200005	5	213 N NEWBERRY ST		0.04		123	2
RS2	008500200006	5	215 N NEWBERRY ST	0.06		178		2
RS2	008500200007	5	217 N NEWBERRY ST	0.06		103		2
RS2	008500200008	5	221 N NEWBERRY ST		0.03		73	2
RS2	030700500027	11	119 N BELVIDERE AV		0.05		136	2
RS2	030700500028	11	121 N BELVIDERE AV		0.04		115	2
RS2	030700500029	11	123 BELVIDERE AV		0.04		109	2
RS2	030700500030	11	125 N BELVIDERE AV		0.04		109	2
RS2	030700500031	11	127 N BELVIDERE		0.05		143	2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	030700500032	11	129 N BELVIDERE AV		0.04		109	2
RS2	030700500033	11	131 N BELVIDERE AV		0.05		143	2
RS2	030700500038	11	124 N WEST ST	0.03		200		2
RS2	030700500039	11	126 N WEST ST	0.02		102		2
RS2	030700500040	11	132 N WEST ST		0.03		72	2
RS2	030700500041	11	134 N WEST ST	0.02		347		2
RS2	030700500042	11	606 COMPANY ST	0.05		221		2
RS2	030700500043	11	608 COMPANY ST	0.05		459		2
RS2	030700500044	11	610 COMPANY ST		0.05		134	2
RS2	030700500045	11	612 COMPANY ST	0.05		88		2
RS2	030700500046	11	614 COMPANY ST	0.05		114		2
RS2	030700500047	11	616 COMPANY ST		0.05		134	2
RS2	030700500048	11	620 COMPANY ST	0.07		243		2
RS2	030700500049	11	622 COMPANY ST	0.03		428		2
RS2	030700500050	11	624 COMPANY ST	0.03		208		2
RS2	030700500051	11	626 COMPANY ST		0.05		142	2
RS2	030700500052	11	628 COMPANY ST	0.05		283		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	030700500053	11	630 COMPANY ST	0.05		128		2
RS2	030700500054	11	632 COMPANY ST		0.04		119	2
RS2	030700500055	11	634 COMPANY ST	0.04		126		2
RS2	030700500056	11	636 COMPANY ST	0.04		62		2
RS2	030700500057	11	638 COMPANY ST		0.04		119	2
RS2	030700500058	11	640 COMPANY ST	0.05		110		2
RS2	030700500059	11	642 COMPANY ST	0.04		162		2
RS2	030700500060	11	644 COMPANY ST	0.04		215		2
RS2	030700500061	11	646 COMPANY ST		0.04		119	2
RS2	030700500062	11	648 COMPANY ST		0.04		119	2
RS2	030700500063	11	650 COMPANY ST	0.04		229		2
RS2	030700500064	11	652 COMPANY ST	0.04		224		2
RS2	030700500065	11	654 COMPANY ST	0.05		48		2
RS2	030700500066	11	656 COMPANY ST	0.06		216		2
RS2	030700500067	11	621 W GAS AV		0.01		37	2
RS2	030700500068	11	623 W GAS AV		0.01		37	2
RS2	030900500026	11	123 N WEST ST	0.04		162		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	030900500027	11	125 N WEST ST	0.04		167		2
RS2	030900500028	11	127 N WEST ST		0.04		99	2
RS2	030900500029	11	129 N WEST ST	0.04		350		2
RS2	030900500030	11	131 N WEST ST	0.04		164		2
RS2	030900500031	11	133 N WEST ST	0.04		145		2
RS2	030900500032	11	135 N WEST ST		0.04		99	2
RS2	030900500033	11	551 W PHILADELPHIA ST	0.04		86		2
RS2	030900500040	11	124 MANCHESTER ST	0.04		362		2
RS2	030900500041	11	126 MANCHESTER ST	0.04		67		2
RS2	030900500042	11	128 MANCHESTER ST	0.04		48		2
RS2	030900500043	11	130 MANCHESTER ST	0.04		200		2
RS2	030900500044	11	132 MANCHESTER ST	0.03		407		2
RS2	030900500045	11	134 MANCHESTER ST	0.03		12		2
RS2	030900500046	11	136 MANCHESTER ST	0.02		143		2
RS2	030900500047	11	560 COMPANY ST	0.02		511		2
RS2	030900500048	11	564 COMPANY ST		0.06		157	2
RS2	030900500049	11	566 COMPANY ST	0.05		152		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	030900500050	11	568 COMPANY ST	0.05		152		2
RS2	030900500051	11	570 COMPANY ST	0.05		107		2
RS2	030900500052	11	572 COMPANY ST	0.05		50		2
RS2	030900500053	11	574 COMPANY ST	0.05		202		2
RS2	030900500054	11	576 COMPANY ST	0.05		140		2
RS2	030900500055	11	578 COMPANY ST	0.04		150		2
RS2	030900500056	11	580 COMPANY ST	0.04		162		2
RS2	030900500057	11	582 COMPANY ST		0.04		115	2
RS2	030900500058	11	584 COMPANY ST	0.04		51		2
RS2	030900500059	11	586 COMPANY ST	0.04		174		2
RS2	030900500060	11	588 COMPANY ST	0.04		147		2
RS2	030900500061	11	590 COMPANY ST	0.03		136		2
RS2	030900500062	11	592 COMPANY ST		0.03		70	2
RS2	030900500063	11	590 COMPANY ST	0.03		136		2
RS2	031400600001	11	205 ROOSEVELT AV		0.63		1762	2
RS2	031400600036	11	202 N PENN ST	0.10		381		2
RS2	031400600037	11	204 N PENN ST	0.10		214		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	031400600038	11	206 N PENN ST	0.10		56		2
RS2	031400600039	11	208 N PENN ST	0.10		152		2
RS2	031400600040	11	210 N PENN ST	0.07		202		2
RS2	031400600041	11	212 N PENN ST	0.08		167		2
RS2	031400600042	11	216 N PENN ST	0.04		105		2
RS2	031400600043	11	218 N PENN ST	0.05		207		2
RS2	031400600091	11	412 ST PAUL ST		0.04		106	2
RS2	031400600092	11	414 ST PAUL ST		0.05		150	2
RS2	031400600093	11	424 ST PAUL ST		0.05		134	2
RS2	031400600094	11	424 ST PAUL ST		0.04		105	2
RS2	031400600095	11	432 ST PAUL ST		0.03		88	2
RS2	031400600096	11	434 ST PAUL ST		0.02		65	2
RS2	031400600097	11	436 ST PAUL ST		0.02		63	2
RS2	031400600097A	11	438 ST PAUL ST		0.01		33	2
RS2	032700100002	11	300 N WEST ST	0.05		347		2
RS2	032700100003	11	302 N WEST ST	0.05		219		2
RS2	032700100004	11	304 N WEST ST	0.05		209		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	032700100005	11	306 N WEST ST	0.05		105		2
RS2	032700100006	11	308 N WEST ST	0.05		278		2
RS2	032700100007	11	310 N WEST ST	0.05		205		2
RS2	032700100026	11	617 LINCOLN ST	0.04		323		2
RS2	032700100027	11	619 LINCOLN ST		0.04		101	2
RS2	032700100028	11	621 LINCOLN ST	0.04		373		2
RS2	032700100029	11	623 LINCOLN ST		0.04		101	2
RS2	032700100030	11	625 LINCOLN ST		0.04		101	2
RS2	032700100031	11	627 LINCOLN ST	0.04		243		2
RS2	032700100032	11	629 LINCOLN ST		0.04		101	2
RS2	032700100033	11	631 LINCOLN ST	0.04		57		2
RS2	032700100034	11	633 LINCOLN ST		0.04		101	2
RS2	032700100035	11	635 LINCOLN ST	0.04		74		2
RS2	032700100036	11	637 LINCOLN ST	0.04		186		2
RS2	032700100037	11	639 LINCOLN ST		0.04		101	2
RS2	032700100038	11	641 LINCOLN ST	0.04		109		2
RS2	032700100039	11	643 LINCOLN ST	0.04		450		2

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	032700100040	11	645 LINCOLN ST	0.04		197		2
RS2	032700100041	11	647 LINCOLN ST		0.04		99	2
RS2	032700100042	11	649 LINCOLN ST	0.04		159		2
RS2	032700100043	11	651 LINCOLN ST		0.04		101	2
RS2	032700100044	11	653 LINCOLN ST		0.04		101	2
RS2	032700100045	11	655 LINCOLN ST	0.04		271		2
RS2	032700100048	11	205 N BELVIDERE AV		0.04		123	2
RS2	032700100049	11	207 N BELVIDERE AV		0.04		123	2
RS2	032700100050	11	209 N BELVIDERE AV		0.04		123	2
RS2	032700100051	11	211 N BELVIDERE AV		0.04		123	2
RS2	032700100052	11	213 N BELVIDERE AV		0.04		123	2
RS2	032700100053	11	215 N BELVIDERE AV		0.04		123	2
RS2	039201000001	12	520 E KING ST	0.05		119		5
RS2	039201000002	12	522 E KING ST	0.05		196		5
RS2	039201000003	12	524 E KING ST		0.05		142	5
RS2	039201000004	12	526 E KING ST	0.05		187		5
RS2	039201000024	12	601 EDISON ST		0.06		161	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	039201000025	12	603 EDISON ST	0.07		108		5
RS2	039201000026	12	609 EDISON ST	0.09		275		5
RS2	039201000027	12	611 EDISON ST	0 06		341		5
RS2	039201000028	12	613 EDISON ST		0.06		179	5
RS2	039201000029	12	615 EDISON ST		0.19		538	5
RS2	039501000001	12	201 FULTON ST		0.05		148	5
RS2	039501000002	12	203 FULTON ST	0.05		15		5
RS2	039501000003	12	205 FULTON ST	0.05		63		5
RS2	039501000004	12	207 FULTON ST	0.05		132		5
RS2	039501000005	12	209 FULTON ST	0.05		93		5
RS2	039501000006	12	211 FULTON ST	0.05		137		5
RS2	039501000007	12	213 FULTON ST	0.05		70		5
RS2	039501000008	12	215 FULTON ST	0.05		117		5
RS2	039501000009	12	217 FULTON ST	0.05		235		5
RS2	039501000010	12	219 FULTON ST	0.03		55		5
RS2	039501000011	12	221 FULTON ST		0.03		94	5
RS2	039501000012	12	223 FULTON ST	0.05		132		5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	039501000013	12	617 E PRINCESS ST	0.06		29		5
RS2	039501000029	12	618 EDISON ST	0.05		60		5
RS2	039501000030	12	620 EDISON ST	0.05		79		5
RS2	039501000031	12	622 EDISON ST	0.05		90		5
RS2	039501000032	12	624 EDISON ST	0.05		268		5
RS2	039501000033	12	626 EDISON ST	0.05		19		5
RS2	039501000034	12	630 EDISON ST	0.16		144		5
RS2	039501000035	12	634 EDISON ST	0.13		90		5
RS2	039501000036	12	638 EDISON ST	0.07		89		5
RS2	039501000037	12	640 EDISON ST	0.06		86		5
RS2	039501000038	12	642 E KING ST		0.16		447	5
RS2	040501500016	12	1010 E PRINCESS ST		0.06		158	5
RS2	040501500036	12	384 S ALBEMARLE ST	0.10		137		5
RS2	040501500036A	12	380 S ALBEMARLE ST	0.10		278		5
RS2	040501500037	12	388 S ALBEMARLE ST	0.10		178		5
RS2	040501500038	12	394 S ALBEMARLE ST	0.10		145		5
RS2	040501500039	12	398 S ALBEMARLE ST	0.10		108		5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	040501500040	12	315 WHEATFIELD ST	0.09		169		5
RS2	040501500041	12	329 WHEATFIELD ST	0.50		257		5
RS2	040501500042	12	341 WHEATFIELD ST	0.10		105		5
RS2	040501500043	12	343 WHEATFIELD ST		0.10		274	5
RS2	040501500044	12	375 WHEATFIELD ST		0.49		1371	5
RS2	040501500050	12	314 S SIMPSON ST		0.05		138	5
RS2	040501500051	12	316 S SIMPSON ST		0.05		140	5
RS2	040501500052	12	300 CAMBRIDGE ST		0.05		140	5
RS2	040501500053	12	326 S SIMPSON ST		0.20		554	5
RS2	040501500054	12	320 S SIMPSON ST		0.10		277	5
RS2	040501500055	12	336 S SIMPSON ST		0.03		90	5
RS2	040501500056	12	338 S SIMPSON ST		0.03		90	5
RS2	040501500057	12	340 S SIMPSON ST		0.03		90	5
RS2	040501500058	12	342 S SIMPSON ST		0.03		90	5
RS2	040501500059	12	344 S SIMPSON ST		0.03		90	5
RS2	040501500060	12	346 S SIMPSON ST		0.03		90	5
RS2	040501500061	12	350 SIMPSON ST	0.10		181		5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	040501500062	12	352 S SIMPSON ST		0.05		138	5
RS2	040501500063	12	354 S SIMPSON ST		0.10		277	5
RS2	040501500064	12	356 S SIMPSON ST		0.05		138	5
RS2	040501500065	12	358 S SIMPSON ST		0.10		277	5
RS2	040501500066	12	360 S SIMPSON ST		0.05		138	5
RS2	040501500067	12	366 S SIMPSON ST		0.20		554	5
RS2	040501500067A	12	378 S SIMPSON ST		0.05		138	5
RS2	040501500068	12	380 S SIMPSON ST		0.04		118	5
RS2	040501500069	12	382 S SIMPSON ST		0.03		83	5
RS2	040501500070	12	384 S SIMPSON ST		0.03		83	5
RS2	040501500071	12	386 S SIMPSON ST		0.03		83	5
RS2	040501500072	12	388 S SIMPSON ST		0.03		83	5
RS2	040501500073	12	390 S SIMPSON ST		0.04		104	5
RS2	040501500074	12	400 S SIMPSON ST		0.16		457	5
RS2	040501500075	12	402 SIMPSON ST		0.13		374	5
RS2	040501500077	12	315 S SIMPSON ST		0.03		85	5
RS2	040501500078	12	317 S SIMPSON ST		0.03		82	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	040501500079	12	319 S SIMPSON ST		0.03		82	5
RS2	040501500080	12	321 S SIMPSON ST		0.03		82	5
RS2	040501500081	12	323 S SIMPSON ST		0.03		82	5
RS2	040501500082	12	325 S SIMPSON ST		0.05		144	5
RS2	040501500083	12	327 S SIMPSON ST		0.10		281	5
RS2	040501500084	12	331 S SIMPSON ST		0.10		274	5
RS2	040501500085	12	335 S SIMPSON ST		0.10		274	5
RS2	040501500086	12	337 S SIMPSON ST		0.05		144	5
RS2	040501500087	12	347 S SIMPSON ST		0.20		549	5
RS2	040501500088	12	351 S SIMPSON ST		0.05		144	5
RS2	040501500089	12	353 S SIMPSON ST		0.05		144	5
RS2	040501500090	12	355 S SIMPSON ST		0.05		144	5
RS2	040501500091	12	357 S SIMPSON ST		0.05		144	5
RS2	040501500092	12	363 S SIMPSON ST		0.10		274	5
RS2	040501500093	12	367 S SIMPSON ST		0.27		754	5
RS2	040501500093A	12	379 S SIMPSON ST		0.02		69	5
RS2	040501500094	12	379 S SIMPSON ST		0.04		103	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	040501500095	12	381 S SIMPSON ST		0.11		309	5
RS2	040501500096	12	383 S SIMPSON ST		0.29		823	5
RS2	040601500011	12	318 WHEATFIELD ST	0.06		69		5
RS2	040601500012	12	320 WHEATFIELD ST	0.06		78		5
RS2	040601500013	12	322 WHEATFIELD ST	0.06		362		5
RS2	040601500014	12	324 WHEATFIELD ST		0.06		171	5
RS2	040601500015	12	330 WHEATFIELD ST	0.05		200		5
RS2	040601500016	12	332 WHEATFIELD ST	0.06		119		5
RS2	040601500017	12	336 WHEATFIELD ST	0.06		112		5
RS2	040601500018	12	338 WHEATFIELD ST	0.06		247		5
RS2	040601500019	12	380 WHEATFIELD ST	0.73		282		5
RS2	042201300001	12	409 GIRARD AV		0.49		1369	5
RS2	042201300013	12	433 GIRARD AV		0.02		61	5
RS2	042201300014	12	701 PROSPECT ST		0.03		81	5
RS2	042201300015	12	703 PROSPECT ST		0.02		64	5
RS2	042201300016	12	705 PROSPECT ST		0.04		98	5
RS2	042201300017	12	707 PROSPECT ST		0.04		98	5

TABLE 3

RAIL CORRIDOR PROJECTED FLOWS

SINGLE FAMILY ATTACHED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)	Drainage Basin
RS2	042201300018	12	709 PROSPECT ST		0.04		98	5
RS2	042201300019	12	711 PROSPECT ST		0.04		104	5
RS2	042201300020	12	713 PROSPECT ST		0.04		98	5
RS2	042201300021	12	715 PROSPECT ST		0.03		92	5
TOTALS				7.43	8.89	20,804	24,919	
				Ave Flow per Acre			2,800	
				Corrected by a Factor of 1.8 for Estimated Future Flow:			44,854	

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
GENERAL COMMERCIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
CG	12-432-19-30-A	7	438 VANDER AV		0.03		11
CG	14-483-13-6-A	4	858 ROOSEVELT AV		0.30		115
CG	3-46-1-5-A	12	151 W GAY AV		0.04		17
CG	4-68-1-2	3	214 OAK LN		0.22		84
CG	4-68-1-22	4	216 OAK LN		0.29		108
CG	4-68-1-3	4	240 W PRINCESS ST		0.60		227
CG	7-123-3-56	14	341 E WALNUT ST		0.38		144
TOTALS				**0.00**	**2.44**	**0**	**706**
				Ave. Flow per Acre			**377**
				Corrected by a Factor of 1.8 for Estimated Future Flow:			**1,270**

TABLE 6

MISCELLANEOUS INFILL PROJECTED FLOWS

COMMERCIAL WATERFRONT ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
CW	4-67-1-4	4	100 S PERSHING AV		0.04		26
CW	4-67-1-2	4	218 W KING ST		0 02		14
CW	4-66-1-12	4	38 S PERSHING AV		0.01		5
CW	4-66-1-19	4	219 W KING ST		0.05		27
CW	4-66-1-20	4	221 W KING ST		0.11		64
CW	4-67-1-26	4	124 S PERSHING AV		0.11		67
CW	4-67-1-25	4	211 W PRINCESS ST		0.16		98
CW	4-67-1-3	4	238 W KING ST		1.11		661
CW	4-67-1-1	4	210 W KING ST		0.02		10
CW	3-44-1-49	3	142 W PHILADELPHIA ST		0 00		0
TOTALS				0.00	1.63	0	973
				Ave. Flow per Acre			597
				Corrected by a Factor of 1.8 for Estimated Future Flow:			1,752

TABLE 6

MISCELLANEOUS INFILL PROJECTED FLOWS

NEIGHBORHOOD COMMERCIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
CN	12-374-7-81	12	742 E CLARKE AV		0.02		55
CN	12-373-7-2	12	803 E MARKET ST		0.04		113
CN	12-373-7-1	12	801 E MARKET ST		0.03		87
CN	12-399-16-53	12	1020 POPLAR ST		0.09		252
CN	9-201-3-82	9	199 S HARTLEY ST		0.05		154
CN	9-201-3-81	9	487 W PRINCESS ST		0.02		67
CN	1-5-2-114	1	430 S COURT ST		0.15		435
TOTALS				0.00	0.40	0	1,163
				Ave. Flow per Acre			2,900
				Corrected by a Factor of 1.8 for Estimated Future Flow:			2,093

TABLE 6

MISCELLANEOUS INFILL PROJECTED FLOWS

INSTITUTIONAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
I	8-188-5-5	8	262 W SPRINGETTSBURY AV		0.05		255
I	8-188-5-4	8	260 W SPRINGETTSBURY AV		0.05		250
I	8-188-5-3	8	258 W SPRINGETTSBURY AV		0.05		245
I	8-188-5-1	8	254 W SPRINGETTSBURY AV		0.08		395
I	8-188-5-6	8	264 W SPRINGETTSBURY AV		0.11		530
I	8-188-5-2	8	256 W SPRINGETTSBURY AV		0.06		300
TOTALS				0.00	0.40	0	1,975

Ave. Flow per Acre:	5,000
Corrected by a Factor of 1.8 for Estimated Future Flow:	3,555

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
HEAVY INDUSTRIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
IH	3-43-1-4	3	320 N GEORGE ST		0.13		121
IH	3-43-1-5	3	300 N GEORGE ST		0.24		219
IH	12-379-8-24	12	450 E PHILADELPHIA ST		1.34		1208
IH	5-85-2-1	5	201 N NEWBERRY ST		0.40		359
IH	5-85-2-20	5	209 COTTAGE HILL RD		0.04		35
IH	3-46-1-7	3	201 N PERSHING AV		0.62		559
IH	12-355-2-10	12	714 HAY ST		0.03		31
IH	12-355-2-11	12	716 HAY ST		0.03		31
IH	12-381-10-52	12	627 E KING ST		0.04		32
IH	12-355-2-9	12	712 E HAY ST		0.04		37
IH	12-381-10-53	12	629 E KING ST		0.04		32
IH	12-381-10-54	12	631 E KING ST		0.04		33
IH	12-381-10-67-A	12	650 E MASON AV		0.06		50
IH	12-355-2-8	12	704 HAY ST		0.18		166
IH	12-409-18-2	12	403 S ALBEMARLE ST		0.13		114
IH	12-379-8-3	12	527 E MARKET ST		0.11		101
IH	12-355-2-12	12	718 HAY ST		0.04		35
IH	5-85-2-21	5	211 COTTAGE HILL RD		0.03		28

TABLE 6

MISCELLANEOUS INFILL PROJECTED FLOWS

HEAVY INDUSTRIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
IH	7-131-1-25	7	412 N QUEEN ST		0.68		613
IH	7-132-1-17	7	237 E ARCH ST		3.48		3135
TOTALS				0.00	7.70	0	6,937
				Ave. Flow per Acre			901
				Corrected by a Factor of 1.8 for Estimated Future Flow			12,486

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
LIGHT INDUSTRIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
IL	12-413-18-21	12	1146 ELM ST		0.03		10
IL	10-264-2-21	10	345 E COTTAGE PL		0.12		42
IL	12-365-5-13	12	126 N EAST ST		0.12		45
TOTALS				0.00	0.27	0	97
				Ave. Flow per Acre			363
				Corrected by a Factor of 1.8 for Estimated Future Flow:			175

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
OPEN SPACES ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
OS	12-425-23-4	12	0		64.21		6421
OS	7-127-1-12	7	337 N GEORGE ST		0.05		18
OS	7-127-1-13	7	351 N GEORGE ST		0.33		120
TOTALS				0.00	64.59	0	6,559
				Ave. Flow per Acre			100
				Corrected by a Factor of 1.8 for Estimated Future Flow:			11,805

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RM	4-62-1-8	4	52 W PRINCESS ST		0.01		20
RM	4-62-1-7	4	50 W PRINCESS ST		0.02		73
RM	10-251-1-4	10	214 E COLLEGE AV		0.02		61
RM	4-62-1-4	4	40 W PRINCESS ST		0.06		259
RM	4-62-1-5	4	42 W PRINCESS ST		0.06		259
RM	7-126-2-15	7	231 E CHESTNUT ST		0.04		170
RM	4-62-1-3	4	36 W PRINCESS ST		0 07		272
RM	10-259-1-60	10	528 SUSQUEHANNA ST		0.02		93
RM	10-251-1-105	10	304 SUSQUEHANNA ST		0.01		57
RM	4-62-1-2	4	34 W PRINCESS ST		0.03		138
RM	10-258-1-129	10	528 MILLER LN		0.02		61
RM	10-258-1-83	10	523 MCKENZIE ST		0.05		199
RM	10-258-1-101	10	557 MCKENZIE ST		0.02		83
RM	10-258-1-84	10	525 MCKENZIE ST		0.05		191
RM	10-258-1-79	10	515 MCKENZIE ST		0.05		195
RM	10-258-1-82-A	10	520 MILLER LN		0.02		81
RM	10-254-1-76	10	117 E CHARLES LN		0.03		134
RM	10-258-1-78	10	513 MCKENZIE ST		0.04		182
RM	10-254-1-74	10	113 E CHARLES LN		0.03		118
RM	10-258-1-105	10	528 MCKENZIE ST		0.03		141
RM	10-254-1-10	10	431 S DUKE ST		0.06		223
RM	10-254-1-52	10	142 E SOUTH ST		0.02		99
RM	10-266-4-8	10	722 MCKENZIE ST		0.15		622

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RM	10-252-2-34	10	335 E SOUTH ST		0.28		1123
RM	10-258-1-43	10	132 E MAPLE ST		0 14		577
RM	10-251-1-114	10	259 E SOUTH ST		0.01		36
RM	10-252-2-36-A	10	324 LIBERTY CT		0.23		932
RM	4-62-1-10	4	201 S BEAVER ST		0.03		126
RM	10-254-1-5	10	419 S DUKE ST		0.04		166
RM	10-252-2-38	10	340 LIBERTY CT		0.18		742
RM	10-252-2-39	10	342 LIBERTY CT		0.20		791
RM	4-62-1-9	4	54 W PRINCESS ST		0.01		45
RM	7-126-2-13	7	225 E CHESTNUT ST		0.03		138
RM	4-62-1-22	4	210 S CHERRY LN		0.03		134
RM	10-250-1-92	10	341 E HOWARD ST		0.01		57
RM	1-4-2-82	1	38 E CHURCH AV		0.02		73
RM	1-4-2-85	1	44 E CHURCH AV		0.02		69
RM	1-4-2-84	1	42 E CHURCH AV		0.02		73
RM	1-4-2-83	1	40 E CHURCH AV		0.02		73
RM	1-4-2-80	1	34 E CHURCH AV		0.02		73
RM	1-4-2-81	1	36 E CHURCH AV		0.02		73
RM	4-62-1-1	4	32 W PRINCESS ST		0 05		199
RM	10-250-1-91	10	131 E CHURCH AV		0.06		247
RM	1-4-2-79	1	32 E CHURCH AV		0.02		73
RM	1-4-2-78	1	30 E CHURCH AV		0.02		69
RM	1-4-2-86	1	46 E CHURCH AV		0.02		73

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RM	4-61-1-45	4	51 W PRINCESS ST		0.03		101
RM	1-4-2-93	1	337 S COURT ST		0.04		170
RM	1-4-2-94	1	339 S COURT ST		0.03		134
RM	7-126-2-12	7	223 E CHESTNUT ST		0.03		138
RM	7-131-1-13	7	135 E ARCH ST		0.01		53
RM	1-4-2-92	1	335 S COURT ST		0.04		150
RM	7-126-2-14	7	227 E CHESTNUT ST		0.03		130
RM	1-5-2-63	1	426 S DUKE ST		0.06		235
RM	1-5-2-64	1	428 S DUKE ST		0.04		158
RM	1-4-2-95	1	341 S COURT ST		0.05		195
RM	1-4-2-98	1	347 S COURT ST		0.05		195
RM	1-4-2-97	1	345 S COURT ST		0.05		195
RM	1-4-2-96	1	343 S COURT ST		0.05		195
RM	10-259-1-61	10	530 SUSQUEHANNA ST		0.02		65
RM	10-254-1-75	10	115 E CHARLES LN		0.00		0
RM	10-259-1-62	10	532 SUSQUEHANNA ST		0.02		65
RM	7-126-2-9	7	217 E CHESTNUT ST		0.03		138
RM	4-67-1-20	4	150 S PERSHING AV		0.03		101
RM	10-250-1-87	10	142 E CHURCH AV		0.02		97
RM	7-126-2-4	7	207 E CHESTNUT ST		0.03		109
RM	4-67-1-21	4	152 S PERSHING AV		0.03		130
RM	4-61-1-42	4	43 W PRINCESS ST		0.04		162
RM	4-67-1-19	4	148 S PERSHING AV		0.02		100

TABLE 6

MISCELLANEOUS INFILL PROJECTED FLOWS

MIXED RESIDENTIAL ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RM	10-250-1-85	10	138 E CHURCH AV		0.03		126
RM	10-250-1-89	10	146 E CHURCH ST		0.02		93
RM	10-260-2-5	10	322 E MAPLE ST		0.12		478
RM	10-250-1-90	10	148 E CHURCH AV		0.02		73
RM	10-250-1-86	10	140 E CHURCH AV		0.03		126
RM	10-250-1-88	10	144 E CHURCH ST		0.02		89
RM	10-250-1-84	10	136 E CHURCH AV		0.04		162
RM	10-250-1-68	10	127 E SOUTH ST		0.05		191
RM	7-123-3-55	7	333 E WALNUT ST		0.15		624
TOTALS				0.00	3.62	0	14,667
				Ave. Flow per Acre			4,054
				Corrected by a Factor of 1.8 for Estimated Future Flow:			26,401

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
RESIDENTIAL OFFICE ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RO	8-142-3-14	8	432 S GEORGE ST		0.05		123
RO	12-404-18-7-A	12	363 S ALBEMARLE ST		0.09		246
RO	8-180-5-9-B	8	400 W JACKSON ST		0.11		302
RO	8-143-3-2	8	504 S GEORGE ST		0.11		294
RO	12-404-18-7	12	353 S ALBEMARLE ST		0.39		1033
TOTALS				0.00	0.75	0	1,998
				Ave. Flow per Acre			2,675
				Corrected by a Factor of 1.8 for Estimated Future Flow:			3,597

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
SINGLE FAMILY RESIDENTIAL DETTACHED ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RS1	11-341-3-3	11	451 MADISON AV		0.14		92
RS1	12-353-2-16-A	12	501 N STATE ST		0.20		132
RS1	11-340-3-6	11	417 MADISON AV		0.22		144
RS1	14-554-10-14	14	396 PENNSYLVANIA AV		0.19		121
RS1	14-624-1-15	14	1000 MARBROOK LN		0 07		46
RS1	14-537-6-8	14	1014 KELLY DR		0.12		79
RS1	11-340-3-7	11	365 MADISON AV		0.04		23
RS1	8-189-6-2	8	922 S PERSHING AV		0.57		370
RS1	8-189-6-1	8	201 W SPRINGETTSBURY AV		0.07		48
RS1	10-271-4-14	10	137 E SPRINGETTSBURY AV		0.28		179
RS1	10-271-4-15	10	139 E SPRINGETTSBURY AV		0.23		150
RS1	11-340-3-8	11	667 MADISON AV		0.05		32
RS1	8-189-6-5	8	231 W SPRINGETTSBURY AV		0.03		20
TOTALS				0.00	2.21	0	1,434
				Ave. Flow per Acre			650
				Corrected by a Factor of 1.8 for Estimated Future Flow:			2,581

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
SINGLE FAMILY RESIDENTIAL ATTACHED ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RS2	9-198-4-27	9	277 W PRINCESS ST		0 62		1739
RS2	9-198-4-26	9	157 S NEWBERRY ST		0.06		179
RS2	9-198-4-25	9	155 S NEWBERRY ST		0.06		179
RS2	9-198-4-24	9	153 S NEWBERRY ST		0.06		171
RS2	12-358-3-19	12	941 E HAY ST		0.13		350
RS2	8-189-6-3	8	233 W SPRINGETTSBURY AV		1.53		4276
RS2	12-354-2-63	12	601 E CHESTNUT ST		0.05		129
RS2	9-198-4-23	9	151 S NEWBERRY ST		0 07		199
RS2	9-198-4-22	9	147 S NEWBERRY ST		0.07		199
RS2	10-253-2-30	10	340 E SOUTH ST		0.40		1120
RS2	10-253-2-29	10	357 LIBERTY CT		3 41		9548
RS2	12-354-2-68	12	611 E CHESTNUT ST		0.05		129
RS2	11-309-5-14	11	581 W PHILADELPHIA ST		0.16		451
RS2	12-364-4-21	12	1223 E PHILADELPHIA ST		0.04		123
RS2	10-256-2-34	10	392 E MAPLE ST		1.30		3640
RS2	9-238-5-20	9	346 W COLLEGE AV		0.03		73
RS2	13-443-4-10	13	0		0.09		238
RS2	9-238-5-24	9	354 W COLLEGE AV		0.03		81
RS2	9-238-5-21	9	348 W COLLEGE AV		0.03		73
RS2	12-361-4-22	12	1059 E HAY ST		0 08		210
RS2	13-443-2-1	13	0		0.11		308
RS2	12-372-7-112	12	0 WALLACE ST		0.35		977
RS2	12-370-6-54	12	944 E PHILADELPHIA ST		0.00		0

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
SINGLE FAMILY RESIDENTIAL ATTACHED ZONING DISTRICT

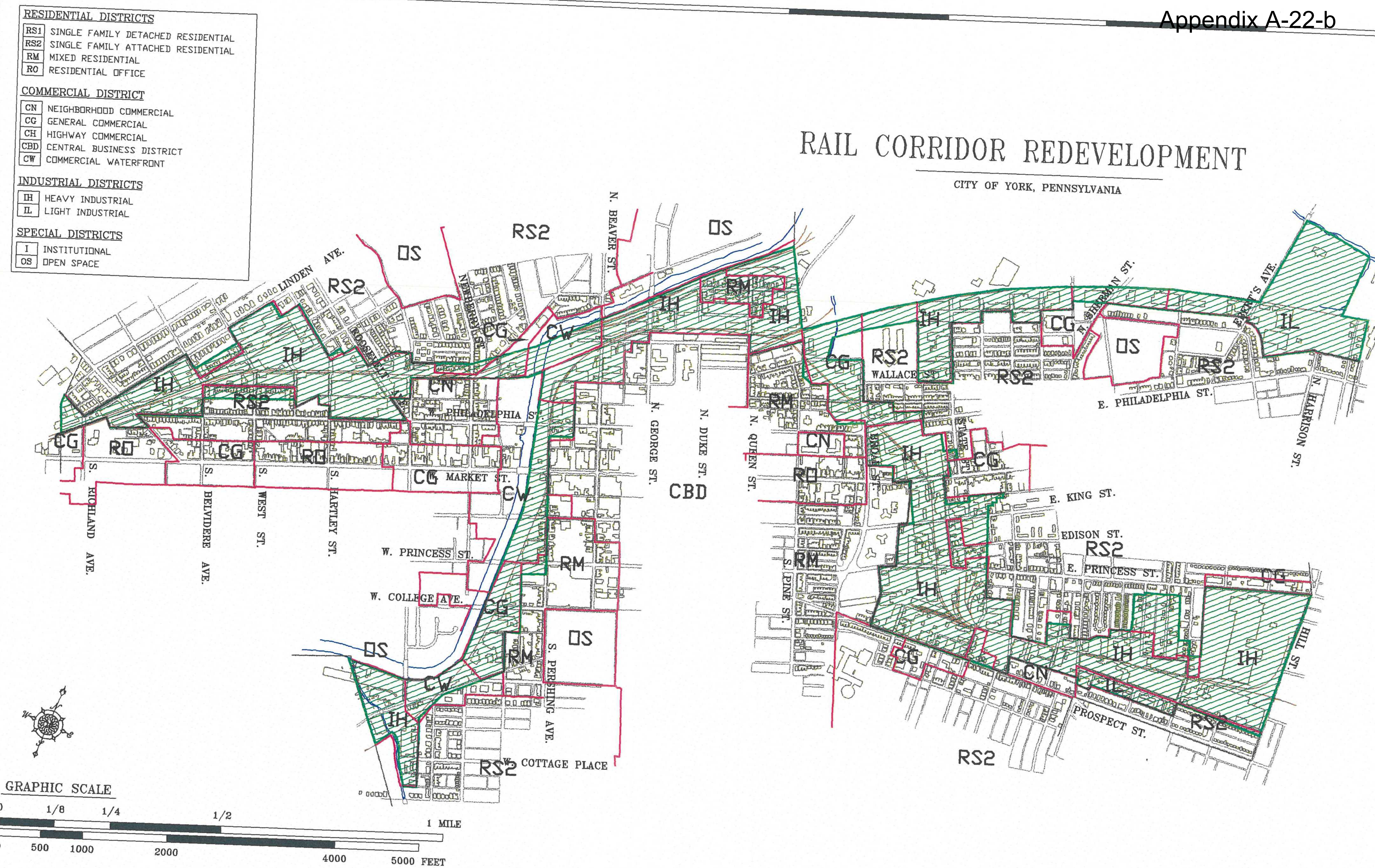
Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RS2	12-368-6-21-A	12	1122 E PHILADELPHIA ST		0.10		288
RS2	13-443-2-2	13	0		0.11		308
RS2	9-238-5-23	9	352 W COLLEGE AV		0.03		73
RS2	12-364-4-32	12	1275 E PHILADELPHIA ST		0.10		272
RS2	9-238-5-17	9	340 W COLLEGE AV		0.03		73
RS2	9-230-5-20	9	425 W PRINCESS ST		0.10		269
RS2	9-229-6-7	9	465 W PRINCESS SW		0.02		48
RS2	9-221-7-31	9	917 CODORUS ST		0.20		546
RS2	9-201-3-75	9	473 W PRINCESS ST		0.02		59
RS2	9-199-3-48	9	104 S NEWBERRY ST		0.15		414
RS2	9-201-3-37-A	9	134 S PENN ST		0 03		95
RS2	9-238-5-22	9	350 W COLLEGE AV		0.03		73
RS2	9-238-5-18	9	342 W COLLEGE AV		0.03		73
RS2	12-368-6-21	12	1017 WAYNE AV		0.10		288
RS2	9-238-5-19	9	344 W COLLEGE AV		0.03		73
RS2	9-200-3-2	9	414 W KING ST		0 03		90
RS2	12-383-11-30-A	12	881 E KING ST		1.22		3416
RS2	12-404-16-2	12	340 S ALBEMARLE ST		0.05		143
RS2	13-449-1-53	13	629 SMITH ST		0 04		109
RS2	14-470-11-28	14	468 PENNSYLVANIA AV		0 06		171
RS2	12-383-11-30	12	815 E KING ST		0.00		0
RS2	12-428-20-62	12	720 E SOUTH ST		0.25		700
RS2	8-170-5-36	8	261 W SPRINGETTSBURY AV		0.20		563

TABLE 6
MISCELLANEOUS INFILL PROJECTED FLOWS
SINGLE FAMILY RESIDENTIAL ATTACHED ZONING DISTRICT

Zone District	County Tax Map ID	Ward	Street Address	Developed Area (Acres)	Future Developement Area (Acres)	Existing Estimated Flows (gpd)	Future Estimated Flows (gpd)
RS2	14-476-11-23	14	735 ROOSEVELT AV		0.10		269
RS2	9-200-3-22	9	443 SALEM AV		0.42		1162
RS2	12-428-20-55	12	627 GIRARD AV		0.08		218
RS2	12-429-20-3	12	714 E MAPLE ST		0.05		134
RS2	12-361-4-25	12	1061 E HAY ST		0.12		333
RS2	12-361-4-26	12	1083 E HAY ST		0.26		720
RS2	12-433-19-21	12	555 E MAPLE ST		0.02		56
RS2	9-230-5-45	9	224 S PENN ST		0.18		515
RS2	12-358-3-22	12	957 E HAY ST		1.02		2859
RS2	12-401-16-19	12	145 S HARTMAN ST		0.19		538
RS2	12-434-19-1	12	515 E BOUNDARY AV		3.44		9643
RS2	12-433-19-20	12	611 E SOUTH ST		3.78		10592
RS2	12-433-19-19	12	640 VANDER AV		0.21		596
RS2	12-431-20-31	12	626 E BOUNDARY AV		0.12		342
RS2	9-232-4-16	9	245 S NEWBERRY ST		0.04		115
TOTALS				0.00	21.65	0	60,626
				Ave. Flow per Acre			2,800
				Corrected by a Factor of 1.8 for Estimated Future Flow:			109,127

RAIL CORRIDOR REDEVELOPMENT

CITY OF YORK, PENNSYLVANIA



PREPARED BY BUREAU OF CITY PLANNING/ENGINEERING
SEPTEMBER 1997
BASE MAP SOURCE: 1992 AERIAL PHOTOGRAPHY

Tyler Run Sewer Replacements

BUCHART HORN, INC.

Exhibit 1

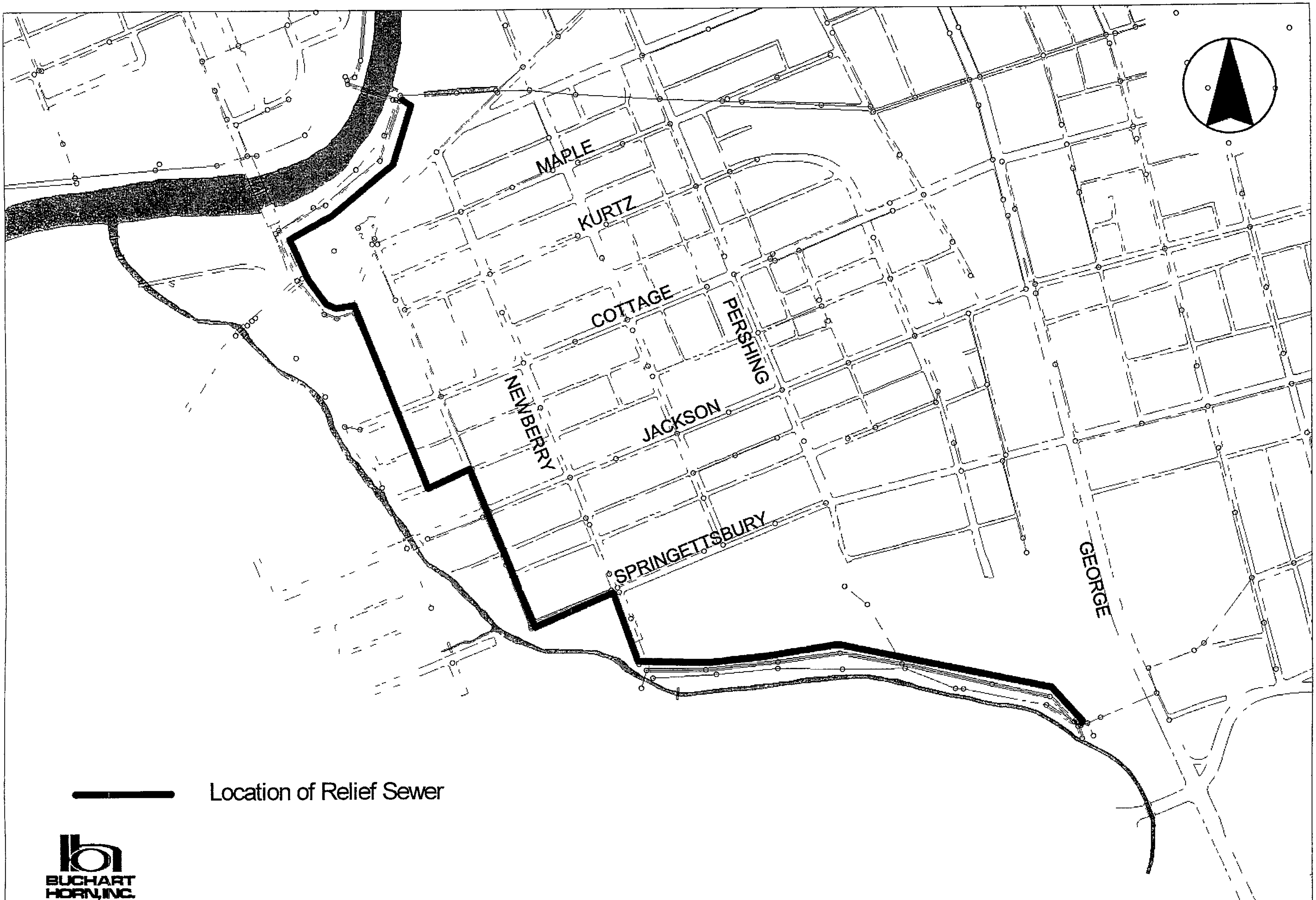


Exhibit 2

Tyler Run Relief Sewer

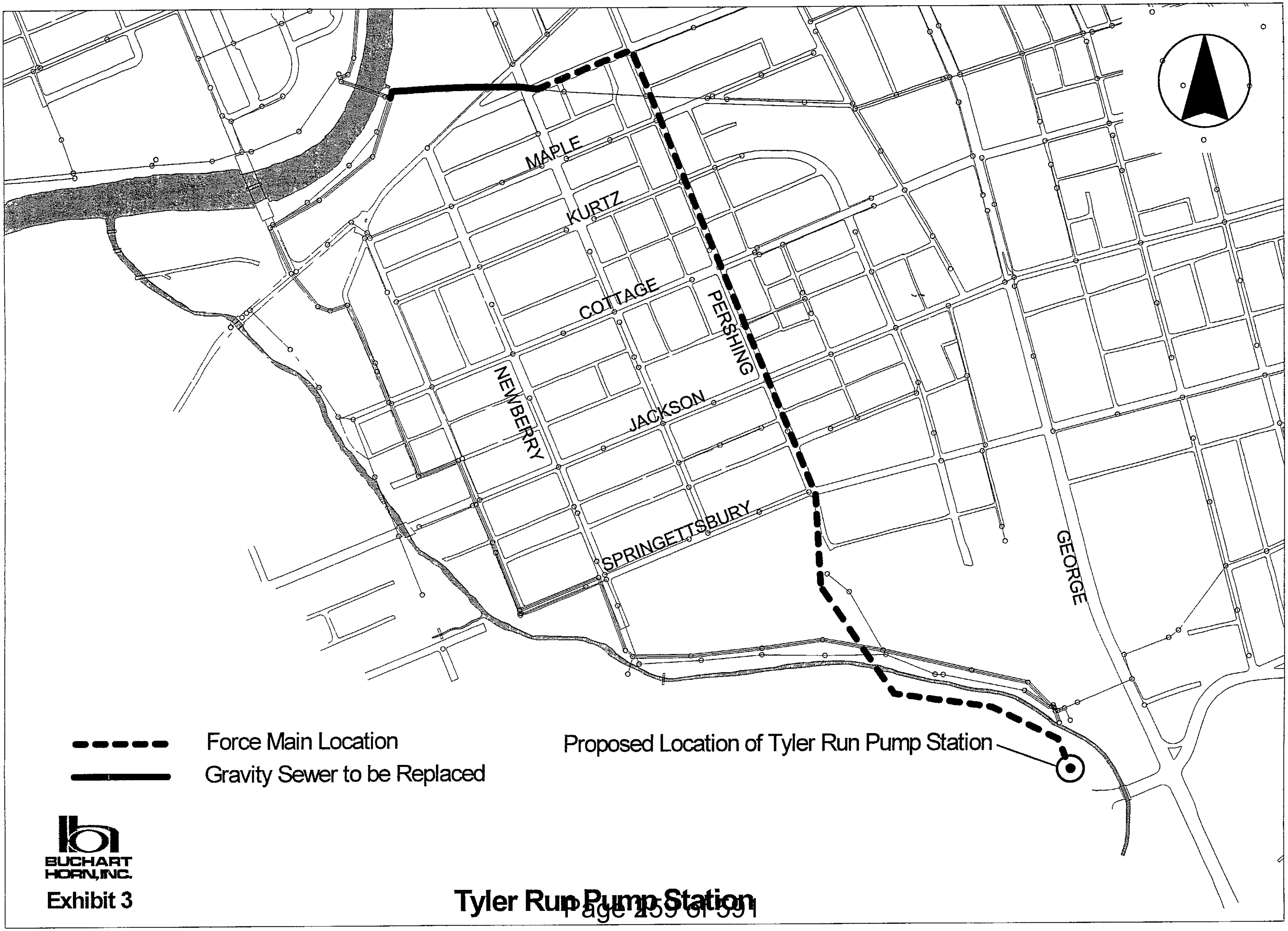


Exhibit 3

Tyler Run Pump Station

Location Plan of Overloaded Interceptor Segments

Based on Modeling Results

Legend

- Overloaded Under Peak Existing Flows
- Overloaded Under Peak 10 Year Flows
- Overloaded Under Peak 20 Year and Ultimate Flows
- Overloaded Under York Township Alternatives 2 and 3 Peak Flows
- Overloaded Under York Township Alternatives 4 and 5 Peak Flows
- Sanitary Sewers

BUCHART HORN, INC.

Exhibit 4

Location of Service Areas with Excessive Inflow and Infiltration

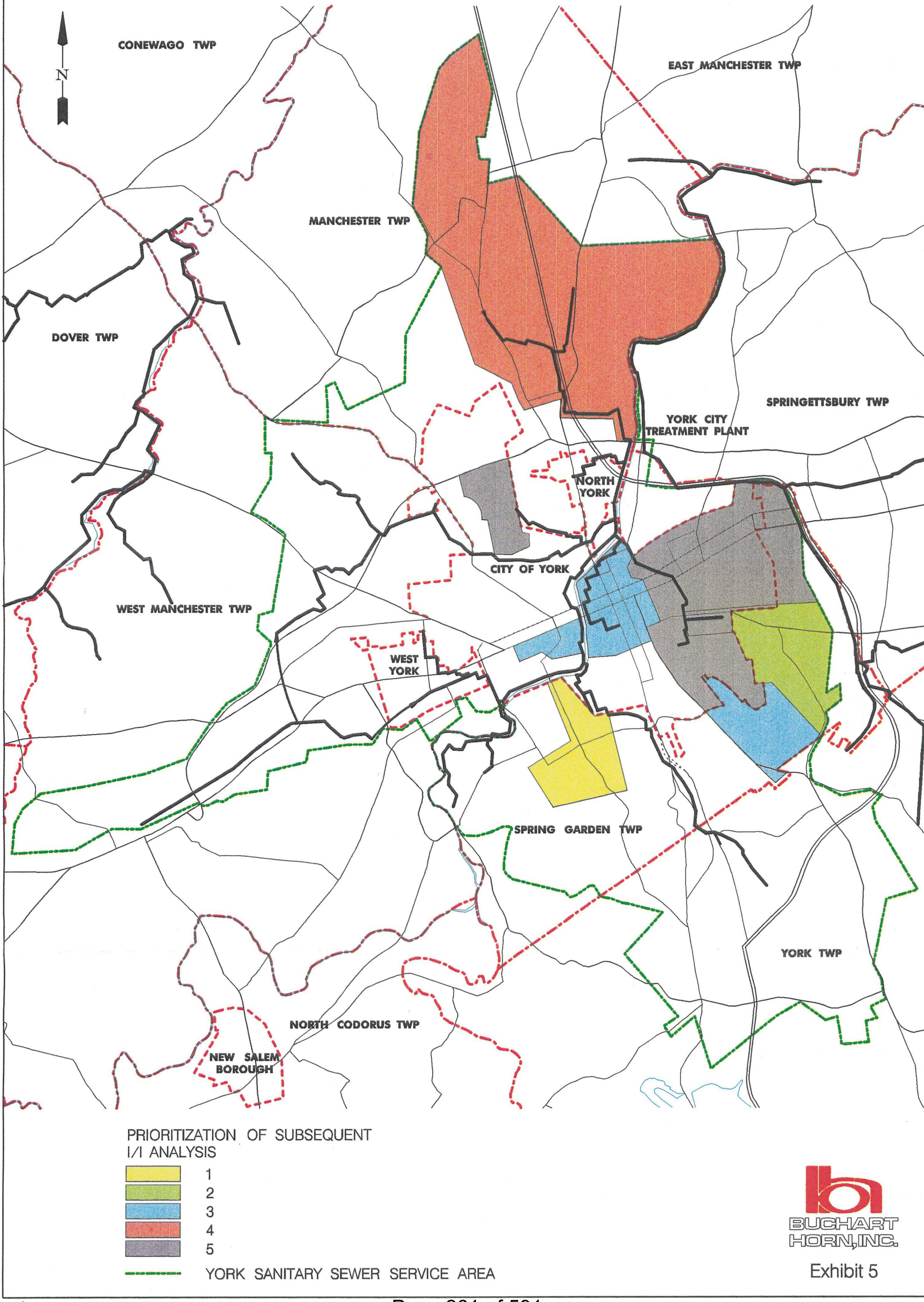


Exhibit 5

Alternative 2A

Project YCSA 637 Plan
Local
Subject Alternative 2A

Estimate No 72526
Estimator BPG
Checker EGW 06 11 98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Ins) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT EST MATERIAL	UNIT PRICE LABOR	TOT EST LABOR	UNIT PRICE EQUIPMENT	TOT EST EQUIPMENT	UNIT PRICE SUBCONT	SUBCONT	TOTAL ADJUSTED
	0			$0		$0		$0		$0	[illegible]
[illegible]	3	ea	6,950 00	$20 850	1,042 50	$3 128		$0		$0	$24 548
	0			$0		$0		$0		$0	$0
[illegible]	3	ea	14,300 00	$42 900	2,145 00	$6 435		$0		$0	$61 375
	0			$0		$0		$0		$0	$0
[illegible]	1	ea	170,450 00	$170,450	52,140 00	$52 140		$0		$0	$377 551
	0			$0		$0		$0		$0	$0
[illegible]	2	ea	8,965 00	$17,930	1,344 75	$2 690		$0		$0	$34 011
				$252 130		$64 392		$0		$0	$532 486
Plant Local Cost Adjustment			0 00%	$0	0 00%	$0	0 00%	$0		n/a	
				$252 130		$64 392		$0		$0	
Tax & Insurance				$15 128		$23,181		n/a		n a	
				$267,258		$87,573		$0		$0	

ESTIMATE SUMMARY

MATERIAL		$267 258
LABOR		$87 573
EQUIPMENT		$0
SUBCONTRACTS		$0
		$354 831
PROFIT	10%	$35 483
		$390 314
GEN CONDITIONS & OVERHEAD	7%	$27,322
		$417 636
BONDING & INSURANCE	2%	$8 353
		$425,989
CONTINGENCY	25%	$106 497
		$532 486
INFLATION - ONE YEAR	0%	$0
		$532,486

TOTAL ESTIMATED CONSTRUCTION COST $532 000

Alternative 2B

Project YCSA 537 Plan
Location
... Alternative 2B

Estimate No 72526
Estimator BPG
Checker EGW 06/11/98

Sales Tax 8%
Labor Burden (Payroll Taxes and Insur.) 36%

12-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT EST MATERIAL	UNIT PRICE LABOR	TOT EST LABOR	UNIT PRICE EQUIPMENT	TOT EST EQUIPMENT	UNIT PRICE SUBCONT	SUBCONT	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
	2	ea	25,130 00	$50 260	3,783 50	$7 539		$0		$0	$95 336
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	1900	lf	42 00	$79 800	18 40	$34 900	5 05	$9 595		$0	$212 669
	1900	lf		$0	6 20	$11 780	3 96	$7 524		$0	$65 333
	1900	lf	1 58	$3 002	3 65	$6 935		$0		$0	$18 [illegible]
	7	ea	1,625 00	$11 375	126 00	$882	57 50	$403		$0	$20 499
	4	ea	1,625 00	$6 500	126 00	$504	57 50	$230		$0	$11 713
	1	ea	1,325 00	$1,325	189 00	$189	86 00	$86		$0	$2 622
	3	ea	7 000 00	$21 000	200 00	$600		$0		$0	$34 830
	1	ea	11 300 00	$11 300	1,350 00	$1 350	269 00	$269		$0	$21 134
	2	ea	3 500 00	$7 000	200 00	$400		$0		$0	$11 551
	2	ea	2,754 00	$5 508	200 00	$400		$0		$0	$9 578
	0 5	day		$0	383 00	$192	59 20	$30		$0	$430
	0			$0		$0		$0		$0	$0
	1	ea	24 000 00	$24 000	200 00	$200		$0		$0	$38 535
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	1	ls		$0		$0		$0	500 00	$500	$750
	1	ea	1,500 00	$1 500	630 00	$630	395 00	$395		$0	$4 265
	2	cy		$0		$0		$0	300 00	$600	$900
	2	ea	2,754 00	$5 508	200 00	$400		$0		$0	$9 578
	1	ea	110 00	$110	50 50	$51		$0		$0	$278
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	1	ls		$0		$0		$0	700 00	$700	$1 050
	1	ea	3,250 00	$3 250	1,250 00	$1 250	785 00	$785		$0	$8 890
	6	cy		$0		$0		$0	300 00	$1 667	$2 501
	40	lf	12 35	$494	6 05	$242	0 50	$20		$0	$1 370
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	1	ls		$0		$0		$0	1,000 00	$1 000	$1 501
	1	ea	16,426 00	$16 426	1,642 60	$1,643		$0		$0	$29 467
	8	cy		$0		$0		$0	300 00	$2,512	$3 [illegible]
	3	ea	620 00	$1 860	86 50	$260		$0		$0	$3 488
	12	vf	58 00	$696	11 40	$137	0 94	$11		$0	$1 403
	1	ea	110 00	$110	50 50	$51		$0		$0	$278
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	20	lf	35 00	$700	17 55	$351	4 81	$96		$0	$1 9[illegible]4
	20	lf		$0	6 20	$124	3 96	$79		$0	$3[illegible]
	20	lf	1 58	$32	3 65	$73		$0		$0	$199

20" dia 90 deg	1	ea	1,075.00	$1 075	129.00	$129	58.50	$59	$0	$2 061
[illegible]	2	ea	3,000 00	$6 000	200 00	$400		$0	$0	$10 361
[illegible]	2	[illegible]	6 500 00	$13 000	200 00	$400		$0	$0	$21 496
[illegible]	0 5	day		$0	383 00	$192	$8.70	$30	$0	$436
[illegible]	2	ea	2 500 00	$5 000	200 00	$400		$0	$0	$8 770
	0			$0		$0		$0	$0	$0
	1	ls	60,261 00	$60,261	50 330 00	$50 330		$0	$0	$198 578
	0			$0		$0		$0	$0	$0
				$337 092		$122 992		$19,611	$6 979	$827 1?5
Local Cost Adjustment			0 00%	$0	0 00%	$0	0 00%	$0	n/a	
				$337 092		$122 992		$19 611	$6 979	
Tax & Insurance				$20 225		$44 277		n/a	n/a	
				$357 317		$167 268		$19,611	$6 979	

ESTIMATE SUMMARY

MATERIAL		$357 317
LABOR		$167 268
EQUIPMENT		$19 611
SUBCONTRACTS		$6 979
		$551 175
PROFIT	10%	$55 118
		$606 293
GEN CONDITIONS & OVERHEAD	7%	$42 440
		$648,733
BONDING & INSURANCE	2%	$12,975
		$661 708
CONTINGENCY	25%	$165 427
		$827 135
INFLATION ONE YEAR	0%	$0
		$827 135
TOTAL ESTIMATED CONSTRUCTION COST		$827,000

Alternative 2C

Project YCSA 537 Plan

Alternative 2C

Sales Tax 6%
Labor Burden (Payroll Taxes and Insur.) 36%

Estimate No 72528
Estimator BFG
Checker [illegible] 9/29/98

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT EST MATERIAL	UNIT PRICE LABOR	TOT EST LABOR	UNIT PRICE EQUIPMENT	TOT EST EQUIPMENT	UNIT PRICE SUBCONT	SUBCONT	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
[illegible]	3	ea	6 950 00	$20 850	1,042 50	$3 128		$0		$0	$3[illegible] 549
	0			$0		$0		$0		$0	$0
[illegible]	3	ea	14 300 00	$42 900	2,145 00	$6 435		$0		$0	$81 375
	0			$0		$0		$0		$0	$0
[illegible]	1	ls	150 050 00	$150 050	52 140 00	$52 140		$0		$0	$346 532
	0			$0		$0		$0		$0	$0
[illegible]	2	ea	8 965 00	$17 930	1 344 75	$2 690		$0		$0	$34 011
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
[illegible]	1525	lf	58 20	$88 755	25 00	$38 125	6 00	$9 150		$0	$242 [illegible]
[illegible]	1525	lf		$0	6 20	$9 455	3 96	$6 039		$0	$25 359
	1525	lf	1 58	$2 410	3 65	$5 566		$0		$0	$15 [illegible]
	2	ea	1 800 00	$3 600	150 00	$300	65 00	$130		$0	$6 534
	1	ea	1 600 00	$1 600	200 00	$200	100 00	$100		$0	$3 [illegible]
[illegible]	0 5	day		$0	383 60	$192	59 20	$30		$0	$406
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	1	ls		$0		$0		$0	700 00	$700	$1 050
[illegible]	1	ea	3,250 00	$3 250	1 250 00	$1 250	785 00	$785		$0	$5 599
	6	cy		$0		$0		$0	300 00	$1 667	$2 501
[illegible]	40	lf	12 3[illegible]	$494	6 05	$242	0 50	$20		$0	$1 310
	0			$0		$0		$0		$0	$0
				$332 739		$119 722		$16 254		$2 367	$801 573
[illegible] Adjustment			0 00%	$0	0.00%	$0	0 00%	$0		n/a	
				$332 739		$119 722		$16 254		$2 367	
[illegible]				$19 964		$43 100		n/a		n/a	
				$352 703		$162 822		$16 254		$2,367	

ESTIMATE SUMMARY

MATERIAL		$352 703
LABOR		$162 877
EQUIPMENT		$16 254
SUBCONTRACTS		$2 367
		$534 145
PROFIT	10%	$53 415
		$587 560
GEN. CONDITIONS & OVERHEAD	7%	$41,129
		$628 689
BONDING & INSURANCE	2%	$12 574
		$641 263
CONTINGENCY	25	$160 316
		$801 578
INFLATION - ONE YEAR	0%	$0
		$801 578
TOTAL ESTIMATED CONSTRUCTION COST		$802,000

Alternate 3A

Project: YCSA 537 Plan
Location
Subject Alternative 3A
file j \proj\72526\estimate\plant\ycs537_3 wk4

Estimate No **72526**
Estimator BPG
Checker EGW 06/11/98

State Sales Tax: 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Wet Well	0			$0		$0		$0		$0	$0
excavation/backfill	1	ls		$0		$0		$0	2,500.00	$2,500	$3 752
concrete	52	cy		$0		$0		$0	300.00	$15,600	$23 411
aluminum hatch	2	ea	620.00	$1 240	86.50	$173		$0		$0	$2 326
	0			$0		$0		$0		$0	$0
Submersible pump (90 hp)	2	ea	41,500.00	$83,000	6,225.00	$12,450		$0		$0	$157,439
	0			$0		$0		$0		$0	$0
Piping	0			$0		$0		$0		$0	$0
16" solid wedge gate valve	2	ea	5,250.00	$10,500	680.00	$1 360	134.00	$268		$0	$19 880
16" check valve	2	ea	4,550.00	$9 100	340.00	$680	67.00	$134		$0	$16 064
16' dia dip	63	lf	23.50	$1,481	12.60	$794	2.49	$157		$0	$4,211
16' dia , 45 deg	2	ea	625.00	$1 250	73.50	$147	33.50	$67		$0	$2 389
16" dia 90 deg	2	ea	625.00	$1,250	73.50	$147	33.50	$67		$0	$2,389
16" dia tee	1	ea	360.00	$360	86.00	$86		$0		$0	$748
pipe supports @ 8-0 oc (3angles & u-bolt)	8	ea		$0		$0		$0	500.00	$4,000	$6,003
	0			$0		$0		$0		$0	$0
Electrical	1	ls	64,522.00	$64,522	52,960.00	$52,960		$0		$0	$210,723
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$172,703		$68,797		$693		$22,100	$449,334
Mean s Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$172 703		$68 797		$693		$22,100	
Taxes & Insurance				$10,362		$24,767		n/a		n/a	
				==========		==========		==========		==========	
				$183 065		$93,564		$693		$22 100	

ESTIMATE SUMMARY:

MATERIAL		$183 065
LABOR		$93,564
EQUIPMENT		$693
SUBCONTRACTS		$22,100
		==========
		$299,421
PROFIT	10%	$29,942
		==========
		$329,363
GEN CONDITIONS & OVERHEAD	7%	$23,055
		==========
		$352 419
BONDING & INSURANCE	2%	$7,048
		==========
		$359,467
CONTINGENCY	25%	$89,867
		==========
		$449,334
INFLATION - ONE YEAR	0%	$0
		==========
		$449,334
TOTAL ESTIMATED CONSTRUCTION COST		**$449,000**

Alternate 3B

Project: YCSA 537 Plan
Location
Subject Alternative 3B
file j \proj\72526\estimate\plant\ycs537_3 wk4

Estimate No **72526**
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Wet Well	0			$0		$0		$0		$0	$0
excavation/backfill	1	ls		$0		$0		$0	2,000.00	$2 000	$3,001
concrete	32	cy		$0		$0		$0	300.00	$9,600	$14 406
aluminum hatches	2	ea	620.00	$1,240	86.50	$173		$0		$0	$2 326
	0			$0		$0		$0		$0	$0
Submersible pump (90 hp)	1	ea	41,500.00	$41 500	6,225.00	$6,225		$0		$0	$78,719
	0			$0		$0		$0		$0	$0
Piping	0			$0		$0		$0		$0	$0
16 solid wedge gate valve	1	ea	5,250.00	$5 250	680.00	$680	134.00	$134		$0	$9 940
16" check valve	1	ea	4,550.00	$4 550	340.00	$340	67.00	$67		$0	$8 032
16 dia dip	63	lf	23.50	$1,481	12.60	$794	2.49	$157		$0	$4 211
16' dia 45 deg	2	ea	625.00	$1,250	73.50	$147	33.50	$67		$0	$2,389
16" dia 90 deg	2	ea	625.00	$1 250	73.50	$147	33.50	$67		$0	$2 389
pipe supports @ 8-0' oc (3angles & u-bolt)	8	ea		$0		$0		$0	500.00	$4 000	$6,003
	0			$0		$0		$0		$0	$0
Electrical	1	ls	44,511.00	$44,511	37,980.00	$37,980		$0		$0	$148 318
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$101,032		$46 486		$492		$15,600	$279,735
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$101,032		$46,486		$492		$15 600	
Taxes & Insurance				$6,062		$16,735		n/a		n/a	
				==========		==========		==========		==========	
				$107 093		$63 221		$492		$15 600	

ESTIMATE SUMMARY:

MATERIAL		$107,093
LABOR		$63 221
EQUIPMENT		$492
SUBCONTRACTS		$15 600
		==========
		$186,406
PROFIT	10%	$18,641
		==========
		$205,047
GEN CONDITIONS & OVERHEAD	7%	$14 353
		==========
		$219,400
BONDING & INSURANCE	2%	$4,388
		==========
		$223 788
CONTINGENCY	25%	$55,947
		==========
		$279,735
INFLATION - ONE YEAR	0%	$0
		==========
		$279 735
TOTAL ESTIMATED CONSTRUCTION COST		**$280,000**

Alternate 3C

Project: YCSA 537 Plan
Location
Subject Alternative 3C
file j \proj\72526\estimate\plant\ycs537_3 wk4

Estimate No 72526
Estimator BPG
Checker EGW 06/11/98

State Sales Tax: 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Screw pump w/ accessories	1	ea	106,000.00	$106,000	6,000.00	$6,000		$0		$0	$180,861
	0			$0		$0		$0		$0	$0
Screw pump structure	1	ea		$0		$0		$0	107,273.86	$107,274	$160,983
	0			$0		$0		$0		$0	$0
Cover for screw pump	235	sf		$0		$0		$0	20.00	$4,700	$7,053
	0			$0		$0		$0		$0	$0
Electrical	1	ls	21,261.00	$21,261	21,980.00	$21,980		$0		$0	$78,680
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$127,261		$27,980		$0		$111,974	$427,577
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$127,261		$27,980		$0		$111,974	
Taxes & Insurance				$7,636		$10,073		n/a		n/a	
				==========		==========		==========		==========	
				$134,897		$38,053		$0		$111,974	

ESTIMATE SUMMARY:

MATERIAL		$134,897
LABOR.		$38,053
EQUIPMENT		$0
SUBCONTRACTS.		$111,974
		==========
		$284,923
PROFIT	10%	$28,492
		==========
		$313,416
GEN CONDITIONS & OVERHEAD.	7%	$21,939
		==========
		$335,355
BONDING & INSURANCE.	2%	$6,707
		==========
		$342,062
CONTINGENCY	25%	$85,515
		==========
		$427,577
INFLATION - ONE YEAR	0%	$0
		==========
		$427,577
TOTAL ESTIMATED CONSTRUCTION COST		**$428,000**

Alternate 3D

Project. YCSA 537 Plan
Location.
Subject. Alternative 3D
file j \proj\72526\estimate\plant\ycs537_3 wk4

Estimate No.. 72526
Estimator. BPG
Checker: EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur.) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Screw pump w/ accessories	1	ea	106,000.00	$106,000	6,000.00	$6,000		$0		$0	$180,861
	0			$0		$0		$0		$0	$0
Screw pump structure	1	ea		$0		$0		$0	107,273.86	$107,274	$160,983
	0			$0		$0		$0		$0	$0
Cover for screw pump	235	sf		$0		$0		$0	20.00	$4,700	$7,053
	0			$0		$0		$0		$0	$0
Increase rpm on existing pumps	3	ea	5,000.00	$15,000	750.00	$2,250		$0		$0	$28,453
	0			$0		$0		$0		$0	$0
Electrical	1	ls	21,261.00	$21,261	21,980.00	$21,980		$0		$0	$78,680
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$142,261		$30,230		$0		$111,974	$456,030
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$142,261		$30,230		$0		$111,974	
Taxes & Insurance				$8,536		$10,883		n/a		n/a	
				==========		==========		==========		==========	
				$150,797		$41,113		$0		$111,974	

ESTIMATE SUMMARY:

MATERIAL		$150,797
LABOR		$41,113
EQUIPMENT		$0
SUBCONTRACTS.		$111,974
		==========
		$303,883
PROFIT.	10%	$30,388
		==========
		$334,272
GEN CONDITIONS & OVERHEAD	7%	$23,399
		==========
		$357,671
BONDING & INSURANCE	2%	$7,153
		==========
		$364,824
CONTINGENCY	25%	$91,206
		==========
		$456,030
INFLATION - ONE YEAR	0%	$0
		==========
		$456,030
TOTAL ESTIMATED CONSTRUCTION COST		$456,000

Alternate 3E

Project: YCSA 537 Plan		Estimate No	72526
Location		Estimator:	BPG
Subject: Alternative 3E		Checker:	EGW 06/11/98
file j \proj\72526\estimate\plant\ycs537_3 wk4			
State Sales Tax	6%	29-Jun-98	
Labor Burden (Payroll Taxes and Insur).	36%		

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Screw pump w/ accessories	2	ea	68,000.00	$136,000	6,000.00	$12,000		$0		$0	$240,828
	0			$0		$0		$0		$0	$0
Screw pump structure	2	ea		$0		$0		$0	107,273.86	$214,548	$321,966
	0			$0		$0		$0		$0	$0
Cover for screw pump	470	sf		$0		$0		$0	20.00	$9,400	$14,106
	0			$0		$0		$0		$0	$0
Increase rpm on existing pumps	3	ea	5,000.00	$15,000	750.00	$2,250		$0		$0	$28,453
	0			$0		$0		$0		$0	$0
Electrical	1	ls	42,522.00	$42,522	43,960.00	$43,960		$0		$0	$157,359
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$193,522		$58,210		$0		$223,948	$762,713
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$193,522		$58,210		$0		$223,948	
Taxes & Insurance				$11,611		$20,956		n/a		n/a	
				==========		==========		==========		==========	
				$205,133		$79,166		$0		$223,948	

ESTIMATE SUMMARY:

MATERIAL		$205,133
LABOR·		$79,166
EQUIPMENT·		$0
SUBCONTRACTS.		$223,948
		==========
		$508,247
PROFIT.	10%	$50,825
		==========
		$559,071
GEN CONDITIONS & OVERHEAD.	7%	$39,135
		==========
		$598,206
BONDING & INSURANCE:	2%	$11,964
		==========
		$610,170
CONTINGENCY	25%	$152,543
		==========
		$762,713
INFLATION - ONE YEAR	0%	$0
		==========
		$762,713
TOTAL ESTIMATED CONSTRUCTION COST		**$763,000**

Alternate 3F

Project: YCSA 537 Plan
Location:
Subject Alternative 3F
file j \proj\72526\estimate\plant\ycs537_3 wk4

Estimate No : 72526
Estimator. BPG
Checker. EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Screw pump w/ accessories	2	ea	68,000.00	$136,000	6,000.00	$12,000		$0		$0	$240,828
	0			$0		$0		$0		$0	$0
Screw pump structure	2	ea		$0		$0		$0	107,273.86	$214,548	$321,966
	0			$0		$0		$0		$0	$0
Cover for screw pump	470	sf		$0		$0		$0	20.00	$9,400	$14,106
	0			$0		$0		$0		$0	$0
Electrical	1	ls	42,522.00	$42,522	43,960.00	$43,960		$0		$0	$157,359
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$178,522		$55,960		$0		$223,948	$734,260
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$178,522		$55,960		$0		$223,948	
Taxes & Insurance				$10,711		$20,146		n/a		n/a	
				==========		==========		==========		==========	
				$189,233		$76,106		$0		$223,948	

ESTIMATE SUMMARY:

MATERIAL		$189,233
LABOR:		$76,106
EQUIPMENT:		$0
SUBCONTRACTS		$223,948
		==========
		$489,287
PROFIT	10%	$48,929
		==========
		$538,215
GEN CONDITIONS & OVERHEAD	7%	$37,675
		==========
		$575,890
BONDING & INSURANCE:	2%	$11,518
		==========
		$587,408
CONTINGENCY:	25%	$146,852
		==========
		$734,260
INFLATION - ONE YEAR	0%	$0
		==========
		$734,260
TOTAL ESTIMATED CONSTRUCTION COST		**$734,000**

Alternate 3G

Project: YCSA 537 Plan
Location
Subject Alternative 3G
file J:\proj\72526\estimate\plantlycs537_3 wk4

Estimate No **72526**
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Trailer mounted pumps	2	ea	57,500.00	$115 000		$0		$0		$0	$182 932
	0			$0		$0		$0		$0	$0
Suction line	0			$0		$0		$0		$0	$0
10" dip	20	ea	13.40	$268	6.80	$136	1.34	$27		$0	$744
wall supports at 8'-0" oc	3	ea		$0		$0		$0	300.00	$900	$1,351
10' quick disconnect	2	ea	192.00	$384	98.00	$196		$0		$0	$1,011
10 plug valve	2	ea	1,835.00	$3,670	200.00	$400		$0		$0	$6,654
	0			$0		$0		$0		$0	$0
Discharge line	0			$0		$0		$0		$0	$0
12" dip	63	lf	16.80	$1 058	8.50	$536		$0		$0	$2,777
wall supports at 8'-0 oc	8	ea		$0		$0		$0	400.00	$3 200	$4,802
12' quick disconnect	2	ea	286.00	$572	115.00	$230		$0		$0	$1,379
12" plug valve	2	ea	2,450.00	$4,900	220.00	$440		$0		$0	$8,693
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$125 852		$1,938		$27		$4,100	$210,343
Mean s Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$125,852		$1,938		$27		$4,100	
Taxes & Insurance				$7,551		$698		n/a		n/a	
				==========		==========		==========		==========	
				$133,404		$2,635		$27		$4,100	

ESTIMATE SUMMARY:

MATERIAL		$133,404
LABOR		$2,635
EQUIPMENT		$27
SUBCONTRACTS		$4,100
		==========
		$140,165
PROFIT	10%	$14,017
		==========
		$154,182
GEN CONDITIONS & OVERHEAD	7%	$10,793
		==========
		$164,975
BONDING & INSURANCE	2%	$3,299
		==========
		$168,274
CONTINGENCY	25%	$42,069
		==========
		$210,343
INFLATION - ONE YEAR	0%	$0
		==========
		$210,343
TOTAL ESTIMATED CONSTRUCTION COST		**$210,000**

Alternative 4A

Project: YCSA 537 Plan
Location
Subject Alternative 4A
file j \proj\72526\estimate\plant\ycs537_4 WK4

Estimate No · **72526**
Estimator· BPG
Checker· EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Modifications to existing pumps	1	ls	3,000.00	$3,000	450.00	$450		$0		$0	$5,691
	0			$0		$0		$0		$0	$0
Chlorine control equipment	1	ls	20,000.00	$20,000	3,000.00	$3,000		$0		$0	$37,937
	0			$0		$0		$0		$0	$0
Piping	0			$0		$0		$0		$0	$0
1" dia pvc	50	lf	0.93	$47	1.88	$94		$0		$0	$266
excavation/backfill	50	lf		$0	2.59	$130	1.52	$76		$0	$378
bedding	50	lf	0.26	$13	0.61	$31		$0		$0	$83
pavement trench repair	13	sy	6.30	$84	15.05	$201	2.12	$28		$0	$586
	0			$0		$0		$0		$0	$0
Electrical	1	ls		$0		$0		$0	4,500.00	$4,500	$6,753
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$23,144		$3,905		$104		$4,500	$51,693
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$23,144		$3,905		$104		$4,500	
Taxes & Insurance				$1,389		$1,406		n/a		n/a	
				==========		==========		==========		==========	
				$24,532		$5,310		$104		$4,500	

ESTIMATE SUMMARY:

MATERIAL		$24,532
LABOR		$5,310
EQUIPMENT		$104
SUBCONTRACTS		$4,500
		==========
		$34,447
PROFIT	10%	$3,445
		==========
		$37,891
GEN CONDITIONS & OVERHEAD	7%	$2,652
		==========
		$40,544
BONDING & INSURANCE	2%	$811
		==========
		$41,355
CONTINGENCY	25%	$10,339
		==========
		$51,693
INFLATION - ONE YEAR	0%	$0
		==========
		$51,693
TOTAL ESTIMATED CONSTRUCTION COST		**$52,000**

Alternative 4B

Project: YCSA 537 Plan
Location
Subject Alternative 4B
file j \proj\72526\estimate\plant\ycs537_4 WK4

Estimate No **72526**
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

12-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Chlorine control equipment	1	ls	20,000.00	$20,000	3,000.00	$3,000		$0		$0	$37,937
	0			$0		$0		$0		$0	$0
Electrical	1	ls		$0		$0		$0	3,750.00	$3,750	$5,628
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$20,000		$3,000		$0		$3,750	$43,565
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$20,000		$3,000		$0		$3,750	
Taxes & Insurance				$1,200		$1,080		n/a		n/a	
				==========		==========		==========		==========	
				$21,200		$4,080		$0		$3,750	

ESTIMATE SUMMARY:

MATERIAL		$21,200
LABOR		$4,080
EQUIPMENT		$0
SUBCONTRACTS		$3,750
		==========
		$29,030
PROFIT	10%	$2,903
		==========
		$31,933
GEN CONDITIONS & OVERHEAD	7%	$2,235
		==========
		$34,168
BONDING & INSURANCE	2%	$683
		==========
		$34,852
CONTINGENCY	25%	$8,713
		==========
		$43,565
INFLATION - ONE YEAR	0%	$0
		==========
		$43,565
TOTAL ESTIMATED CONSTRUCTION COST		**$44,000**

Alternative 5A

Project: YCSA 537 Plan
Location·
Subject Alternative 5A
file j \proj\72526\estimate\plant\ycs537_5 wk4

Estimate No · 72526
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Filters (3 each)	1	ls	570,000.00	$570,000	57,000.00	$57,000		$0		$0	$1,023,040
	0			$0		$0		$0		$0	$0
Increased sand trap	1	ls		$0		$0		$0	5,000.00	$5,000	$7,503
	0			$0		$0		$0		$0	$0
Building	1	ls		$0		$0		$0	1,384,659.00	$1,384,659	$2,077,923
	0			$0		$0		$0		$0	$0
Electrical	1	ls	75,500.00	$75,500	42,600.00	$42,600		$0		$0	$207,042
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$645,500		$99,600		$0		$1,389,659	$3,315,509
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$645,500		$99,600		$0		$1,389,659	
Taxes & Insurance				$38,730		$35,856		n/a		n/a	
				==========		==========		==========		==========	
				$684,230		$135,456		$0		$1,389,659	

ESTIMATE SUMMARY·

MATERIAL		$684,230
LABOR		$135,456
EQUIPMENT		$0
SUBCONTRACTS		$1,389,659
		==========
		$2,209,345
PROFIT	10%	$220,935
		==========
		$2,430,280
GEN CONDITIONS & OVERHEAD	7%	$170,120
		==========
		$2,600,399
BONDING & INSURANCE	2%	$52,008
		==========
		$2,652,407
CONTINGENCY	25%	$663,102
		==========
		$3,315,509
INFLATION - ONE YEAR	0%	$0
		==========
		$3,315,509
TOTAL ESTIMATED CONSTRUCTION COST		**$3,316,000**

Alternative 5B

Project: YCSA 537 Plan
Location·
Subject Alternative 5B
file J \proj\72526\estimate\plant\ycs537_5 wk4

Estimate No · 72526
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Filters (2 each)	1	ls	385,000.00	$385,000	38,500.00	$38,500		$0		$0	$691,001
	0			$0		$0		$0		$0	$0
Increased sand trap	1	ls		$0		$0		$0	5,000.00	$5,000	$7,503
	0			$0		$0		$0		$0	$0
Building	1	ls		$0		$0		$0	923,106.00	$923,106	$1,385,282
	0			$0		$0		$0		$0	$0
Electrical	1	ls	53,200.00	$53,200	28,800.00	$28,800		$0		$0	$143,405
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$438,200		$67,300		$0		$928,106	$2,227,191
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$438,200		$67,300		$0		$928,106	
Taxes & Insurance				$26,292		$24,228		n/a		n/a	
				==========		==========		==========		==========	
				$464,492		$91,528		$0		$928,106	

ESTIMATE SUMMARY:

MATERIAL		$464,492
LABOR		$91,528
EQUIPMENT		$0
SUBCONTRACTS		$928,106
		==========
		$1,484,126
PROFIT	10%	$148,413
		==========
		$1,632,539
GEN CONDITIONS & OVERHEAD	7%	$114,278
		==========
		$1,746,816
BONDING & INSURANCE	2%	$34,936
		==========
		$1,781,753
CONTINGENCY	25%	$445,438
		==========
		$2,227,191
INFLATION - ONE YEAR	0%	$0
		==========
		$2,227,191
TOTAL ESTIMATED CONSTRUCTION COST		$2,227,000

Alternative 5C

Project: YCSA 537 Plan
Location.
Subject· Alternative 5C (Retrofit of existing filters)
file j \proj\72526\estimate\plant\ycs537_5 wk4

Estimate No 72526
Estimator. BPG
Checker: EGW 08/31/98

State Sales Tax: 6%
Labor Burden (Payroll Taxes and Insur.): 36%

31-Aug-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Retrofit existing filters (equipment)	1	ls		$0		$0		$0	650,000.00	$650,000	$975,439
	0			$0		$0		$0		$0	$0
Remove sand and underdrain plate	10	days		$0	806.60	$8,066	213.80	$2,138		$0	$19,670
	0			$0		$0		$0		$0	$0
Electrical	15	days		$0	742.00	$11,130		$0		$0	$22,715
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$19,196		$2,138		$650,000	$1,017,825
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$19,196		$2,138		$650,000	
Taxes & Insurance				$0		$6,911		n/a		n/a	
				==========		==========		==========		==========	
				$0		$26,107		$2,138		$650,000	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$26,107
EQUIPMENT		$2,138
SUBCONTRACTS·		$650,000
		==========
		$678,245
PROFIT	10%	$67,824
		==========
		$746,069
GEN CONDITIONS & OVERHEAD	7%	$52,225
		==========
		$798,294
BONDING & INSURANCE:	2%	$15,966
		==========
		$814,260
CONTINGENCY.	25%	$203,565
		==========
		$1,017,825
INFLATION - ONE YEAR	0%	$0
		==========
		$1,017,825
TOTAL ESTIMATED CONSTRUCTION COST		$1,018,000

Alternative 6A

Project: YCSA 537 Plan
Location
Subject Alternative 6A (Two Channels)
file ı \proj\72526\estimate\plant\ycs537_6 wk4

Estimate No 72526
Estimator BPG
Checker EGW 06/11/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
UV equipment	1	ea	574,600.00	$574,600	5,000.00	$5,000		$0		$0	$924,230
	0			$0		$0		$0		$0	$0
UV tank	0			$0		$0		$0		$0	$0
6' weir gate w/ electric operator	2	ea	7,500.00	$15,000	1,125.00	$2,250		$0		$0	$28,453
aluminum grating	432	sf	18.05	$7,798	1.05	$454	0.09	$39		$0	$13,388
excavation/backfill	2	day		$0	550.80	$1,102	706.55	$1,413		$0	$4,369
concrete	89	cy		$0		$0		$0	300.00	$26,700	$40,068
core drill 36' hole in existing tank	0 5	day		$0	383.60	$192	59.20	$30		$0	$436
	0			$0		$0		$0		$0	$0
Effluent pipe	0			$0		$0		$0		$0	$0
48' dia PCCP	60	lf	101.00	$6,060	19.10	$1,146	41.00	$2,460		$0	$15,670
excavation/backfill	60	lf		$0	12.60	$756	10.10	$606		$0	$2,452
bedding	60	lf	3.79	$227	8.70	$522		$0		$0	$1,427
48' dia , 90 deg	2	ea	3,874.00	$7,748	105.00	$210	65.50	$131		$0	$12,950
48" dia wall piece	1	ea	1,860.00	$1,860	105.00	$105	65.50	$66		$0	$3,271
	0			$0		$0		$0		$0	$0
Outlet box at cascade	0			$0		$0		$0		$0	$0
excavation/backfill	0 5	day		$0	550.80	$275	706.55	$353		$0	$1,092
concrete	7	cy		$0		$0		$0	300.00	$2,100	$3,151
48" dia wall piece	1	ea	1,860.00	$1,860	105.00	$105	65.50	$66		$0	$3,271
existing wall demo	1	ls		$0		$0		$0	500.00	$500	$750
	0			$0		$0		$0		$0	$0
Building (54' x 14')	756	sf		$0		$0		$0	98.00	$74,088	$111,182
	0			$0		$0		$0		$0	$0
Electrical	1	ls	67,611.00	$67,611	46,575.00	$46,575		$0		$0	$202,606
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$682,764		$58,691		$5,163		$103,388	$1,368,767
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$682,764		$58,691		$5,163		$103,388	
Taxes & Insurance				$40,966		$21,129		n/a		n/a	
				==========		==========		==========		==========	
				$723,730		$79,820		$5,163		$103,388	

ESTIMATE SUMMARY:

MATERIAL		$723,730
LABOR		$79,820
EQUIPMENT		$5,163
SUBCONTRACTS		$103,388
		==========
		$912,101
PROFIT	10%	$91,210
		==========
		$1,003,311
GEN CONDITIONS & OVERHEAD	7%	$70,232
		==========
		$1,073,543
BONDING & INSURANCE	2%	$21,471
		==========
		$1,095,014
CONTINGENCY	25%	$273,753
		==========
		$1,368,767
INFLATION - ONE YEAR	0%	$0
		==========
		$1,368,767
TOTAL ESTIMATED CONSTRUCTION COST		**$1,369,000**

Alternative 6B

Project· YCSA 537 Plan
Location
Subject Alternative 6B (One Channel)
file I \proj\72526\estimate\plant\ycs537_6 wk4

Estimate No 72526
Estimator BPG
Checker· JAK 6/29/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

29-Jun-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
UV equipment	1	ea	287,300.00	$287,300	2,500.00	$2,500		$0		$0	$462,115
	0			$0		$0		$0		$0	$0
UV tank	0			$0		$0		$0		$0	$0
6 weir gate w/ electric operator	1	ea	7,500.00	$7,500	1,125.00	$1,125		$0		$0	$14,226
aluminum grating	216	sf	18.05	$3,899	1.05	$227	0.09	$19		$0	$6,694
excavation/backfill	1	day		$0	550.80	$551	706.55	$707		$0	$2,184
concrete	48	cy		$0		$0		$0	300.00	$14,400	$21,610
core drill 36" hole in existing tank	0 5	day		$0	383.60	$192	59.20	$30		$0	$436
	0			$0		$0		$0		$0	$0
Effluent pipe	0			$0		$0		$0		$0	$0
36" dia PCCP	60	lf	68.50	$4,110	17.35	$1,041	37.50	$2,250		$0	$12,039
excavation/backfill	60	lf		$0	12.60	$756	10.10	$606		$0	$2,452
bedding	60	lf	3.79	$227	8.70	$522		$0		$0	$1,427
36" dia 90 deg	2	ea	1,975.00	$3,950	84.00	$168	52.50	$105		$0	$6,784
36" dia wall piece	1	ea	680.00	$680	84.00	$84	52.50	$53		$0	$1,332
	0			$0		$0		$0		$0	$0
Outlet box at cascade	0			$0		$0		$0		$0	$0
excavation/backfill	0 5	day		$0	550.80	$275	706.55	$353		$0	$1,092
concrete	7	cy		$0		$0		$0	300.00	$2,100	$3,151
36" dia wall piece	1	ea	680.00	$680	84.00	$84	52.50	$53		$0	$1,332
existing wall demo	1	ls		$0		$0		$0	500.00	$500	$750
	0			$0		$0		$0		$0	$0
Building (54' x 7')	378	sf		$0		$0		$0	98.00	$37,044	$55,591
	0			$0		$0		$0		$0	$0
Electrical	1	ls	45,074.00	$45,074	31,050.00	$31,050		$0		$0	$135,070
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$353,420		$38,575		$4,175		$54,044	$728,287
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$353,420		$38,575		$4,175		$54,044	
Taxes & Insurance				$21,205		$13,887		n/a		n/a	
				==========		==========		==========		==========	
				$374,625		$52,462		$4,175		$54,044	

ESTIMATE SUMMARY:

MATERIAL		$374,625
LABOR		$52,462
EQUIPMENT		$4,175
SUBCONTRACTS		$54,044
		==========
		$485,306
PROFIT	10%	$48,531
		==========
		$533,837
GEN CONDITIONS & OVERHEAD	7%	$37,369
		==========
		$571,205
BONDING & INSURANCE	2%	$11,424
		==========
		$582,629
CONTINGENCY	25%	$145,657
		==========
		$728,287
INFLATION - ONE YEAR	0%	$0
		==========
		$728,287
TOTAL ESTIMATED CONSTRUCTION COST		**$728,000**

Codorus Creek and Poor House Run Interceptor Alternatives

GENERAL ESTIMATE

Project: York City Sewer Authority Regional Act 537 Plan
Location York City, Codorus Creek
Subject Sewer Interceptor
file j \proj\72526\estimate\codorus\intercep wk4

Estimate No 72526
Estimator BPG
Checker EGW 07/15/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

15-Jul-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54" dia	608	lf		$0		$0		$0	121.50	$73,872	$92,340
exc /backfill (8' wide 12' deep)	608	lf		$0		$0		$0	30.53	$18,559	$23,199
bedding	608	lf		$0		$0		$0	17.13	$10,415	$13,019
	0			$0		$0		$0		$0	$0
rcp 54' dia	2193	lf		$0		$0		$0	121.50	$266,450	$333,062
exc /backfill (8 wide 15' deep)	2193	lf		$0		$0		$0	36.66	$80,395	$100,494
bedding	2193	lf		$0		$0		$0	17.13	$37,566	$46,958
	0			$0		$0		$0		$0	$0
rcp 54' dia	609	lf		$0		$0		$0	121.50	$73,994	$92,492
exc /backfill (8' wide 18' deep)	609	lf		$0		$0		$0	43.84	$26,696	$33,369
bedding	609	lf		$0		$0		$0	17.13	$10,432	$13,040
	0			$0		$0		$0		$0	$0
rcp 48" dia	1521	lf		$0		$0		$0	105.00	$159,705	$199,631
exc /backfill (8' wide 15' deep)	1521	lf		$0		$0		$0	36.85	$56,049	$70,061
bedding	1521	lf		$0		$0		$0	13.74	$20,899	$26,123
	0			$0		$0		$0		$0	$0
rcp 48" dia	4453	lf		$0		$0		$0	105.00	$467,565	$584,456
exc /backfill (8' wide 18' deep)	4453	lf		$0		$0		$0	43.84	$195,197	$243,997
bedding	4453	lf		$0		$0		$0	13.74	$61,180	$76,475
	0			$0		$0		$0		$0	$0
rcp 60" dia	238	lf		$0		$0		$0	138.00	$32,844	$41,055
exc /backfill (10' wide, 20' deep)	238	lf		$0		$0		$0	69.30	$16,493	$20,617
bedding	238	lf		$0		$0		$0	17.13	$4,077	$5,096
	0			$0		$0		$0		$0	$0
rcp 60' dia	428	lf		$0		$0		$0	138.00	$59,064	$73,830
exc /backfill (10' wide 24' deep)	428	lf		$0		$0		$0	111.65	$47,786	$59,733
bedding	428	lf		$0		$0		$0	17.13	$7,332	$9,165
	0			$0		$0		$0		$0	$0
rcp 72" dia	465	lf		$0		$0		$0	184.00	$85,560	$106,950
exc /backfill (10' wide 20' deep)	465	lf		$0		$0		$0	69.30	$32,225	$40,281
bedding	465	lf		$0		$0		$0	24.75	$11,509	$14,386
	0			$0		$0		$0		$0	$0
rcp 78" dia	370	lf		$0		$0		$0	244.50	$90,465	$113,081
exc /backfill (10' wide 20' deep)	370	lf		$0		$0		$0	69.30	$25,641	$32,051
bedding	370	lf		$0		$0		$0	33.63	$12,442	$15,552
	0			$0		$0		$0		$0	$0
remove manholes	23	ea		$0		$0		$0	409.00	$9,407	$11,759
	0			$0		$0		$0		$0	$0
manholes	42	ea		$0		$0		$0	8,415.00	$353,430	$441,788
	0			$0		$0		$0		$0	$0
tunnel (complete includes 60 carrier pipe & mh	1	ls		$0		$0		$0	2,000,000.00	$2,000,000	$2,500,000

	0			$0		$0		$0		$0	$0
Bypass Pumping (35mgd 24hrs/day mh to mh)	49	wk		$0		$0		$0	16,381.00	$802,669	$1,003,336
	0			$0		$0		$0		$0	$0
Pavement restoration (trench)	5153	sy		$0		$0		$0	44.00	$226,732	$283,415
	0			$0		$0		$0		$0	$0
Overlay	5153	sy		$0		$0		$0	3.30	$17,005	$21,256
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$5,393,653	$6,742,066
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$5,393,653	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$5,393,653	

ESTIMATE SUMMARY·

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$5,393,653
		==========
		$5,393,653
PROFIT	-included-	$0
		==========
		$5,393,653
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$5,393,653
BONDING & INSURANCE	-included-	$0
		==========
		$5,393,653
CONTINGENCY	25%	$1,348,413
		==========
		$6,742,066
INFLATION - ONE YEAR	0%	$0
		==========
		$6,742,066

TOTAL PROBABLE ESTIMATED CONSTRUCTION COST ⟶ $6,700,000

GENERAL ESTIMATE

Project: York City Sewer Authority Regional Act 537 Plan
Location York City, Poor House Run
Subject Sewer Interceptor
file j \proj\72526\estimate\poorhous\intercep wk4

Estimate No 72526
Estimator BPG
Checker· EGW 07/15/98

State Sales Tax 6%
Labor Burden (Payroll Taxes and Insur) 36%

15-Jul-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54' dia	100	lf		$0		$0		$0	121.50	$12,150	$15,188
exc /backfill (8 wide 15' deep)	100	lf		$0		$0		$0	36.66	$3,666	$4,583
bedding	100	lf		$0		$0		$0	17.13	$1,713	$2,141
	0			$0		$0		$0		$0	$0
rcp 42" dia	1618	lf		$0		$0		$0	88.50	$143,193	$178,991
exc /backfill (8' wide 18' deep)	1618	lf		$0		$0		$0	43.84	$70,933	$88,666
bedding	1618	lf		$0		$0		$0	13.74	$22,231	$27,789
	0			$0		$0		$0		$0	$0
remove manholes	9	ea		$0		$0		$0	409.00	$3,681	$4,601
	0			$0		$0		$0		$0	$0
manholes	9	ea		$0		$0		$0	8,415.00	$75,735	$94,669
	0			$0		$0		$0		$0	$0
railroad boring (42" carrier)	100	lf		$0		$0		$0	1,100.00	$110,000	$137,500
rcp 42" dia	100	lf		$0		$0		$0	88.50	$8,850	$11,063
	0			$0		$0		$0		$0	$0
Bypass Pumping (15mgd 24hrs/day mh to mh)	8	wk		$0		$0		$0	12,500.00	$100,000	$125,000
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$552,152	$690,191
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$552,152	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$552,152	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$552,152
		==========
		$552,152
PROFIT	-included-	$0
		==========
		$552,152
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$552,152
BONDING & INSURANCE	-included-	$0
		==========
		$552,152
CONTINGENCY	25%	$138,038
		==========
		$690,191
INFLATION - ONE YEAR	0%	$0
		==========
		$690,191
TOTAL PROBABLE ESTIMATED CONSTRUCTION COST →		**$690,000**

York Township
Alternatives 2, 3, 4 & 5

Replacement Option

Project: York City Sewer Authority Regional Act 537 Plan
Location York City
Subject York Township Alt 2 & 3
file I \rc\36\bgresco\estimate\york3 wk4

Estimate No
Estimator BPG HDS/EGw
Checker

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

11-May-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54 dia	97	lf		$0		$0		$0	121 50	$11,786	$14,732
exc /backfill (8 wide 17 deep)	97	lf		$0		$0		$0	43 84	$4,252	$5,316
bedding	97	lf		$0		$0		$0	17 13	$1,662	$2,077
	0			$0		$0		$0		$0	$0
rcp 60" dia	168	lf		$0		$0		$0	138 00	$23,184	$28,980
exc backfill (8 widde 18 deep)	168	lf		$0		$0		$0	43 84	$7,365	$9,206
bedding	168	lf		$0		$0		$0	17 13	$2,878	$3,597
	0			$0		$0		$0		$0	$0
rcp 78 dia	436	lf		$0		$0		$0	244 50	$106,602	$133,253
exc /backfill (10 wide 18 deep)	436	lf		$0		$0		$0	69 30	$30,215	$37,769
bedding	436	lf		$0		$0		$0	33 83	$14,750	$18,437
	0			$0		$0		$0		$0	$0
rcp 84" dia	518	lf		$0		$0		$0	305 00	$157,990	$197,488
exc /backfill (10 wide 18 deep)	518	lf		$0		$0		$0	69 30	$35,897	$44,872
bedding	518	lf		$0		$0		$0	33 83	$17,524	$21,905
	0			$0		$0		$0		$0	$0
remove manholes	8	ea		$0		$0		$0	409 00	$3,272	$4,090
	0			$0		$0		$0		$0	$0
manholes	8	ea		$0		$0		$0	8,415 00	$67,320	$84,150
	0			$0		$0		$0		$0	$0
rcp 30" dia	875	lf		$0		$0		$0	60 00	$52,500	$65,625
exc /backfill (6' wide 6-8)	875	lf		$0		$0		$0	15 18	$13,283	$16,603
bedding	875	lf		$0		$0		$0	5.89	$5,154	$6,442
	0			$0		$0		$0		$0	$0
rcp 30" dia	364	lf		$0		$0		$0	60 00	$21,840	$27,300
exc./backfill (6' wide, 8-10)	364	lf		$0		$0		$0	18.48	$6,727	$8,408
bedding	364	lf		$0		$0		$0	5 89	$2,144	$2,680
	0			$0		$0		$0		$0	$0
rcp 30" dia	1712	lf		$0		$0		$0	60.00	$102,720	$128,400
exc /backfill (6' wide 10-12)	1712	lf		$0		$0		$0	23 49	$40,206	$50,258
bedding	1712	lf		$0		$0		$0	5.89	$10,084	$12,605
	0			$0		$0		$0		$0	$0
rcp 30" dia	293	lf		$0		$0		$0	60 00	$17,580	$21,975
exc /backfill (6' wide, 14-16)	293	lf		$0		$0		$0	25.08	$7,348	$9,186
bedding	293	lf		$0		$0		$0	5.89	$1,726	$2,157
	0			$0		$0		$0		$0	$0
rcp 30" dia	224	lf		$0		$0		$0	60.00	$13,440	$16,800
exc./backfill (6' wide, 16-18)	224	lf		$0		$0		$0	28.66	$6,419	$8,023
bedding	224	lf		$0		$0		$0	5.89	$1,319	$1,649
	0			$0		$0		$0		$0	$0
rcp 30" dia	75	lf		$0		$0		$0	60.00	$4,500	$5,625
exc./backfill (6' wide, 18-20)	75	lf		$0		$0		$0	28 66	$2,149	$2,686
bedding	75	lf		$0		$0		$0	5.89	$442	$552
	0			$0		$0		$0		$0	$0
rcp 24" dia	793	lf		$0		$0		$0	39 50	$31,324	$39,154

exc./backfill (4 wide 0-6)	793	lf		$0		$0		$0	11 18	$8,863	$11,078
bedding	793	lf		$0		$0		$0	5.75	$4,560	$5,700
	0			$0		$0		$0		$0	$0
rcp 24" dia	616	lf		$0		$0		$0	39 50	$24,332	$30,415
exc /backfill (4' wide 6 8)	616	lf		$0		$0		$0	15 18	$9,351	$11,689
bedding	616	lf		$0		$0		$0	5 75	$3,542	$4,428
	0			$0		$0		$0		$0	$0
rcp 24 dia	157	lf		$0		$0		$0	39.50	$6,202	$7,752
exc./backfill (4 wide, 8-10)	157	lf		$0		$0		$0	18 48	$2,901	$3,627
bedding	157	lf		$0		$0		$0	5 75	$903	$1,128
	0			$0		$0		$0		$0	$0
remove manholes	24	ea		$0		$0		$0	409 00	$9,816	$12,270
	0			$0		$0		$0		$0	$0
manholes complete (5' dia 12' deep)	24	ea		$0		$0		$0	5,307.50	$127,380	$159,225
	0			$0		$0		$0		$0	$0
Bypass Pumping(14mgd 8 hrs/day mh to mh)	22	week		$0		$0		$0	6,250 00	$137,500	$171,875
	0			$0		$0		$0		$0	$0
Bypass pumping (40 mgd 24 hrs/ day mh to mh)	12	weeks		$0		$0		$0	22,500 00	$270,000	$337,500
	0			$0		$0		$0		$0	$0
Pavement restoration (trench)	1498	sy		$0		$0		$0	44.00	$65,912	$82,390
	0			$0		$0		$0		$0	$0
Overlay	3787	sy		$0		$0		$0	3 30	$12,497	$15,621
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$1,509,358	$1,886,698
Mean's Local Cost Adjustment			0 00%	$0	0 00%	$0	0 00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,509,358	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,509,358	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$1,509,358
		==========
		$1,509,358
PROFIT	-included-	$0
		==========
		$1,509,358
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$1,509,358
BONDING & INSURANCE	-included-	$0
		==========
		$1,509,358
CONTINGENCY	25%	$377,340
		==========
		$1,886,698
INFLATION - ONE YEAR	0%	$0
		==========
		$1,886,698
TOTAL ESTIMATED CONSTRUCTION COST		**$1,900,000**

Sewer Replacement Option

Project: **York City Sewer Authority Regional Act 537 Plan**
Location York City
Subject York Township Alt4 and 5
file r \rc\36\bgresco\estimate\york4_5 wk4

Estimate No
Estimator BPG
Checker HDS/ECW

11-May-98

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54" dia	784	lf		$0		$0		$0	121 50	$95,256	$119,070
exc /backfill (8' wide, 17' deep)	784	lf		$0		$0		$0	43.84	$34,371	$42,963
bedding	784	lf		$0		$0		$0	17.13	$13,430	$16,787
	0			$0		$0		$0		$0	$0
rcp 60 dia	265	lf		$0		$0		$0	138 00	$36,570	$45,713
exc./backfill (8 wide 18 deep)	265	lf		$0		$0		$0	43.84	$11,616	$14,520
bedding	265	lf		$0		$0		$0	17 13	$4,539	$5,673
	0			$0		$0		$0		$0	$0
rcp 84 dia	1920	lf		$0		$0		$0	305.00	$585,600	$732,000
exc /backfill (10 wide 18 deep)	1920	lf		$0		$0		$0	69 30	$133,056	$166,320
bedding	1920	lf		$0		$0		$0	33 83	$64,944	$81,180
	0			$0		$0		$0		$0	$0
remove manholes	14	ea		$0		$0		$0	409 00	$5,726	$7,158
	0			$0		$0		$0		$0	$0
manholes	14	ea		$0		$0		$0	8,415 00	$117,810	$147,263
	0			$0		$0		$0		$0	$0
rcp 30 dia	1028	lf		$0		$0		$0	60 00	$61,680	$77,100
exc /backfill (6 wide 0 6)	1028	lf		$0		$0		$0	11 18	$11,489	$14,361
bedding	1028	lf		$0		$0		$0	5 89	$6,050	$7,562
	0			$0		$0		$0		$0	$0
rcp 30 dia	1528	lf		$0		$0		$0	60 00	$91,680	$114,600
exc /backfill (6 wide 6-8)	1528	lf		$0		$0		$0	15 18	$23,195	$28,994
bedding	1528	lf		$0		$0		$0	5 89	$9,000	$11,250
	0			$0		$0		$0		$0	$0
rcp 30 dia	521	lf		$0		$0		$0	60 00	$31,260	$39,075
exc./backfill (6 wide, 8-10)	521	lf		$0		$0		$0	18.48	$9,628	$12,035
bedding	521	lf		$0		$0		$0	5 89	$3,069	$3,836
	0			$0		$0		$0		$0	$0
rcp 30" dia	1712	lf		$0		$0		$0	60.00	$102,720	$128,400
exc./backfill (6' wide, 10 12)	1712	lf		$0		$0		$0	23 49	$40,206	$50,258
bedding	1712	lf		$0		$0		$0	5 89	$10,084	$12,605
	0			$0		$0		$0		$0	$0
rcp 30' dia	293	lf		$0		$0		$0	60 00	$17,580	$21,975
exc /backfill (6 wide, 14-16)	293	lf		$0		$0		$0	20.74	$6,075	$7,594
bedding	293	lf		$0		$0		$0	5.89	$1,726	$2,157
	0			$0		$0		$0		$0	$0
rcp 30" dia	224	lf		$0		$0		$0	60.00	$13,440	$16,800
exc./backfill (6' wide, 16-18)	224	lf		$0		$0		$0	28.66	$6,419	$8,023
bedding	224	lf		$0		$0		$0	5 89	$1,319	$1,649
	0			$0		$0		$0		$0	$0
rcp 30" dia	75	lf		$0		$0		$0	60.00	$4,500	$5,625
exc./backfill (6' wide, 18-20)	75	lf		$0		$0		$0	28 66	$2,149	$2,686
bedding	75	lf		$0		$0		$0	5.89	$442	$552
	0			$0		$0		$0		$0	$0
remove manholes	26	ea		$0		$0		$0	409 00	$10,634	$13,293

	0			$0		$0		$0		$0	$0
manholes complete (5 dia 12 deep)	26	ea		$0		$0		$0	5,307.50	$137,995	$172,494
	0			$0		$0		$0		$0	$0
Bypass Pumping(14mgd, 8 hrs/day, mh to mh)	22	week		$0		$0		$0	6,250 00	$137,500	$171,875
	0			$0		$0		$0		$0	$0
Bypass Pumping (40 mgd 24hours/ day, mh to m	30	week		$0		$0		$0	22,500 00	$675,000	$843,750
	0			$0		$0		$0		$0	$0
Pavement restoration(trench)	1514	sy		$0		$0		$0	44.00	$66,616	$83,270
	0			$0		$0		$0		$0	$0
Overlay	3836	sy		$0		$0		$0	3 30	$12,659	$15,824
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$2,597,032	$3,246,290
Mean's Local Cost Adjustment			0 00%	$0	0 00%	$0	0 00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$2,597,032	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$2,597,032	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$2 597 032
		==========
		$2,597,032
PROFIT	-included-	$0
		==========
		$2 597 032
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$2,597,032
BONDING & INSURANCE	-included-	$0
		==========
		$2,597,032
CONTINGENCY	25%	$649,258
		==========
		$3,246,290
INFLATION - ONE YEAR	0%	$0
		==========
		$3,246,290
TOTAL ESTIMATED CONSTRUCTION COST		**$3,300,000**

Relief Sew... Option

Project: **York City Sewer Authority Regional Act 537 Plan**
Location York City
Subject York Township Alt 2 & 3
file r \rc\36\bgresco\estimate\york3 wk4

Estimate No
Estimator BPG
Checker HDS/ECW

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

11-May-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54 dia	97	lf		$0		$0		$0	121 50	$11,786	$14,732
exc./backfill (8 wide 17 deep)	97	lf		$0		$0		$0	43 84	$4,252	$5,316
bedding	97	lf		$0		$0		$0	17.13	$1,662	$2,077
				$0		$0		$0		$0	$0
rcp 60 dia	168	lf		$0		$0		$0	138 00	$23,184	$28,980
exc backfill (8 widde, 18' deep)	168	lf		$0		$0		$0	43 84	$7,365	$9,206
bedding	168	lf		$0		$0		$0	17 13	$2,878	$3,597
				$0		$0		$0		$0	$0
rcp 78 dia	436	lf		$0		$0		$0	244 50	$106,602	$133,253
exc./backfill (10 wide, 18 deep)	436	lf		$0		$0		$0	69 30	$30,215	$37,769
bedding	436	lf		$0		$0		$0	33.83	$14,750	$18,437
				$0		$0		$0		$0	$0
rcp 84 dia	518	lf		$0		$0		$0	305 00	$157,990	$197,488
exc./backfill (10 wide 18' deep)	518	lf		$0		$0		$0	69 30	$35,897	$44,872
bedding	518	lf		$0		$0		$0	33 83	$17,524	$21,905
				$0		$0		$0		$0	$0
remove manholes	8	ea		$0		$0		$0	409.00	$3,272	$4,090
	0			$0		$0		$0		$0	$0
manholes	8	ea		$0		$0		$0	8,415 00	$67,320	$84,150
	0			$0		$0		$0		$0	$0
pvc 12 dia	1028	lf		$0		$0		$0	49 00	$50,372	$62,965
exc /backfill (0 6) included	1028	lf		$0		$0		$0		$0	$0
bedding (included)	1028	lf		$0		$0		$0		$0	$0
rock excavation	171	cy		$0		$0		$0	81 95	$14,013	$17,517
pvc 12" dia	1528	lf		$0		$0		$0	52 00	$79,456	$99,320
exc /backfill (6-8) included	1528	lf		$0		$0		$0		$0	$0
bedding (included)	1528	lf		$0		$0		$0		$0	$0
rock excavation	340	cy		$0		$0		$0	81.95	$27,863	$34,829
pvc 12" dia	521	lf		$0		$0		$0	53.00	$27,613	$34,516
exc /backfill (8-10) included	521	lf		$0		$0		$0		$0	$0
bedding (included)	521	lf		$0		$0		$0		$0	$0
rock excavation	145	cy		$0		$0		$0	81.95	$11,883	$14,853
pvc 12" dia	1712	lf		$0		$0		$0	67 00	$114,704	$143,380
exc /backfill (10-12) included	1712	lf		$0		$0		$0		$0	$0
bedding (included)	1712	lf		$0		$0		$0		$0	$0
rock excavation	571	cy		$0		$0		$0	81 95	$46,793	$58,492
pvc 12' dia	293	lf		$0		$0		$0	102.00	$29,886	$37,358
exc /backfill (14-16) included	293	lf		$0		$0		$0		$0	$0
bedding (included)	293	lf		$0		$0		$0		$0	$0
rock excavation	130	cy		$0		$0		$0	81.95	$10,654	$13,317
pvc 12" dia	299	lf		$0		$0		$0	130.00	$38,870	$48,588
exc./backfill (16-18') included	299	lf		$0		$0		$0		$0	$0
bedding (included)	299	lf		$0		$0		$0		$0	$0
rock excavation	150	cy		$0		$0		$0	81.95	$12,293	$15,366
manholes complete (4' dia 12' deep)	26	ea		$0		$0		$0	4,730.00	$122,980	$153,725

	0			$0		$0		$0		$0	$0
Bypass pumping (40 mgd 24 hrs/ day mh to mh)	12	weeks		$0		$0		$0	22,500.00	$270,000	$337,500
	0			$0		$0		$0		$0	$0
Pavement restoration (trench)	1514	sy		$0		$0		$0	44 00	$66,616	$83,270
	0			$0		$0		$0		$0	$0
Overlay	3836	sy		$0		$0		$0	3 30	$12,659	$15,824
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$1,421,351	$1,776,689
Mean's Local Cost Adjustment			0 00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,421,351	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,421,351	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$1,421,351
		==========
		$1,421,351
PROFIT	included-	$0
		==========
		$1,421,351
GEN CONDITIONS & OVERHEAD	included-	$0
		==========
		$1,421,351
BONDING & INSURANCE	-included-	$0
		==========
		$1,421,351
CONTINGENCY	25%	$355,338
		==========
		$1,776,689
INFLATION - ONE YEAR	0%	$0
		==========
		$1,776,689

TOTAL ESTIMATED CONSTRUCTION COST **$1,800,000**

Relief Sew.., Option

Project: York City Sewer Authority Regional Act 537 Plan
Location York City
Subject York Township Alt4 and 5
file r \rc\36\bgresco\estimate\york4_5 wk4

Estimate No ·
Estimator BPG
Checker HDS/ECW

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

11-May-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54' dia	784	lf		$0		$0		$0	121 50	$95,256	$119,070
exc./backfill (8 wide 17 deep)	784	lf		$0		$0		$0	43 84	$34,371	$42,963
bedding	784	lf		$0		$0		$0	17.13	$13,430	$16,787
				$0		$0		$0		$0	$0
rcp 60 dia	265	lf		$0		$0		$0	138 00	$36,570	$45,713
exc./backfill (8 wide 18 deep)	265	lf		$0		$0		$0	43 84	$11,616	$14,520
bedding	265	lf		$0		$0		$0	17 13	$4,539	$5,673
				$0		$0		$0		$0	$0
rcp 84 dia	1920	lf		$0		$0		$0	305 00	$585,600	$732,000
exc /backfill (10 wide 18 deep)	1920	lf		$0		$0		$0	69 30	$133,056	$166,320
bedding	1920	lf		$0		$0		$0	33 83	$64,944	$81,180
				$0		$0		$0		$0	$0
remove manholes	14	ea		$0		$0		$0	409 00	$5,726	$7,158
	0			$0		$0		$0		$0	$0
manholes	14	ea		$0		$0		$0	8,415 00	$117,810	$147,263
	0			$0		$0		$0		$0	$0
rcp 18 dia	235	lf		$0		$0		$0	27 00	$6,345	$7,931
exc /backfill (0 6)	235	lf		$0		$0		$0	11 18	$2,627	$3,284
bedding	235	lf		$0		$0		$0	5 54	$1,302	$1,627
rock excavation	52	cy		$0		$0		$0	81 95	$4,261	$5,327
rcp 18 dia	912	lf		$0		$0		$0	27 00	$24,624	$30,780
exc /backfill (6 8)	912	lf		$0		$0		$0	15 18	$13,844	$17,305
bedding	912	lf		$0		$0		$0	5 54	$5,052	$6,316
rock excavation	270	cy		$0		$0		$0	81 95	$22,127	$27,658
rcp 18' dia	364	lf		$0		$0		$0	27 00	$9,828	$12,285
exc /backfill (8 10)	364	lf		$0		$0		$0	18.48	$6,727	$8,408
bedding	364	lf		$0		$0		$0	5 54	$2,017	$2,521
rock excavation	135	cy		$0		$0		$0	81 95	$11,063	$13,829
rcp 18' dia	1712	lf		$0		$0		$0	27.00	$46,224	$57,780
exc /backfill (10-12)	1712	lf		$0		$0		$0	23 49	$40,215	$50,269
bedding	1712	lf		$0		$0		$0	5.54	$9,484	$11,856
rock excavation	761	cy		$0		$0		$0	81.95	$62,364	$77,955
rcp 18' dia	293	lf		$0		$0		$0	27 00	$7,911	$9,889
exc /backfill (14-16)	293	lf		$0		$0		$0	20.74	$6,077	$7,596
bedding	293	lf		$0		$0		$0	5.54	$1,623	$2,029
rock excavation	174	cy		$0		$0		$0	81 95	$14,259	$17,824
rcp 18" dia	299	lf		$0		$0		$0	27.00	$8,073	$10,091
exc./backfill (16-18')	299	lf		$0		$0		$0	28.66	$8,569	$10,712
bedding	299	lf		$0		$0		$0	5 54	$1,656	$2,071
rock excavation	199	cy		$0		$0		$0	81.95	$16,308	$20,385
pvc 15" dia	1566	lf		$0		$0		$0	49 74	$77,893	$97,366
exc /backfill (0-15') (included)	1566	lf		$0		$0		$0		$0	$0
bedding (included)	1566	lf		$0		$0		$0		$0	$0
rock excavation	653	cy		$0		$0		$0	81.95	$53,513	$66,892
manholes complete (4', 12' deep)	26	ea		$0		$0		$0	4,290 00	$111,540	$139,425

	0			$0		$0		$0		$0	$0
Bypass Pumping (40 mgd 24hours/ day, mh to m	30	week		$0		$0		$0	22,500.00	$675,000	$843,750
	0			$0		$0		$0		$0	$0
Pavement restoration(trench)	1514	sy		$0		$0		$0	44 00	$66,616	$83,270
	0			$0		$0		$0		$0	$0
Overlay	3836	sy		$0		$0		$0	3 30	$12,659	$15,824
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$2,432,720	$3,040,900
Mean's Local Cost Adjustment			0 00%	$0	0 00%	$0	0 00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$2,432,720	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$2,432,720	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$2,432,720
		==========
		$2,432,720
PROFIT	included-	$0
		==========
		$2,432,720
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$2 432 720
BONDING & INSURANCE	-included-	$0
		==========
		$2,432,720
CONTINGENCY	25%	$608,180
		==========
		$3,040,900
INFLATION - ONE YEAR	0%	$0
		==========
		$3,040,900
TOTAL ESTIMATED CONSTRUCTION COST		**$3,000,000**

Pump Stat...n/Force Main Option

Project: York City Sewer Authority Regional Act 537 Plan
Location York City
Subject York Township Alt 2 & 3
file ı \rc\36\bgresco\estimate\york3 wk4

Estimate No
Estimator BPG
Checker ADS/GCW

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

11-May-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
PS 1 5 MGD	1500000	gal		$0		$0		$0	0.50	$750,000	$937,500
	0			$0		$0		$0		$0	$0
Force Main	0			$0		$0		$0		$0	$0
dip 14 dia	3890	lf		$0		$0		$0	42.00	$163,380	$204,225
exc /backfill (4 wide 6 deep)	3890	lf		$0		$0		$0	11 18	$43,490	$54,363
bedding	3890	lf		$0		$0		$0	5 54	$21,551	$26,938
stream crossing	50	lf		$0		$0		$0	112 00	$5,600	$7,000
rock excavation	346	cy		$0		$0		$0	81 95	$28,355	$35,443
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54 dia	97	lf		$0		$0		$0	121 50	$11,786	$14,732
exc /backfill (8 wide 17' deep)	97	lf		$0		$0		$0	43 84	$4,252	$5,316
bedding	97	lf		$0		$0		$0	17.13	$1,662	$2,077
	0			$0		$0		$0		$0	$0
rcp 60 dia	168	lf		$0		$0		$0	138 00	$23,184	$28,980
exc backfill (8' widde 18' deep)	168	lf		$0		$0		$0	43 84	$7,365	$9,206
bedding	168	lf		$0		$0		$0	17.13	$2,878	$3,597
	0			$0		$0		$0		$0	$0
rcp 78" dia	436	lf		$0		$0		$0	244.50	$106,602	$133,253
exc./backfill (10 wide 18' deep)	436	lf		$0		$0		$0	69 30	$30,215	$37,769
bedding	436	lf		$0		$0		$0	33 83	$14,750	$18,437
	0			$0		$0		$0		$0	$0
rcp 84' dia	518	lf		$0		$0		$0	305 00	$157,990	$197,488
exc./backfill (10 wide 18' deep)	518	lf		$0		$0		$0	69.30	$35,897	$44,872
bedding	518	lf		$0		$0		$0	33 83	$17,524	$21,905
	0			$0		$0		$0		$0	$0
remove manholes	8	ea		$0		$0		$0	409 00	$3,272	$4,090
	0			$0		$0		$0		$0	$0
manholes	8	ea		$0		$0		$0	8,415 00	$67,320	$84,150
	0			$0		$0		$0		$0	$0
rcp 30" dia (12' deep)	8	lf		$0		$0		$0	60.00	$480	$600
exc/backfill	8	lf		$0		$0		$0	23 49	$188	$235
bedding	8	lf		$0		$0		$0	5.89	$47	$59
	0			$0		$0		$0		$0	$0
pvc 15" dia (12 deep)	749	lf		$0		$0		$0	49 07	$36,753	$45,942
exc./backfill (included)	749	lf		$0		$0		$0		$0	$0
bedding (included)	749	lf		$0		$0		$0		$0	$0
	0			$0		$0		$0		$0	$0
remove manholes	6	ea		$0		$0		$0	409.00	$2,454	$3,068
	0			$0		$0		$0		$0	$0
manholes complete	6	ea		$0		$0		$0	5,307 00	$31,842	$39,803
	0			$0		$0		$0		$0	$0
railroad borings (fig 2@ 50')	100	lf		$0		$0		$0	371 00	$37,100	$46,375
	0			$0		$0		$0		$0	$0
Bypass pumping (40 mgd, 24 hrs/ day, mh to mh)	12	weeks		$0		$0		$0	22,500.00	$270,000	$337,500
	0			$0		$0		$0		$0	$0
Pavement restoration (trench)	336	sy		$0		$0		$0	44 00	$14,784	$18,480

	0			$0		$0		$0		$0	$0
Overlay	1009	sy		$0		$0		$0	3 30	$3,330	$4,162
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========
				$0		$0		$0		$1,894,050	$2,367,563
Mean's Local Cost Adjustment			0 00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,894,050	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$1,894,050	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$1,894,050
		==========
		$1 894,050
PROFIT	-included-	$0
		==========
		$1,894,050
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$1,894,050
BONDING & INSURANCE	-included-	$0
		==========
		$1,894,050
CONTINGENCY	25%	$473,513
		==========
		$2,367,563
INFLATION - ONE YEAR	0%	$0
		==========
		$2,367,563
TOTAL ESTIMATED CONSTRUCTION COST		**$2,400,000**

Pump Station/ Force Main Option

Project: York City Sewer Authority Regional Act 537 Plan
Location York City
Subject York Township Alt4 and 5
file ı \rc\36\bgresco\estimate\york4_5 wk4

Estimate No ·
Estimator BPG
Checker HDS/EGW

State Sales Tax 6 0%
Labor Burden (Payroll Taxes and Insur) 36%

11-May-98

DESCRIPTION OF WORK	QUANTITY	UNIT	UNIT PRICE MATERIAL	TOT. EST. MATERIAL	UNIT PRICE LABOR	TOT. EST. LABOR	UNIT PRICE EQUIPMENT	TOT. EST. EQUIPMENT	UNIT PRICE SUBCONT.	SUBCONT.	TOTAL ADJUSTED
	0			$0		$0		$0		$0	$0
PS 4 5 MGD	4500000	gal		$0		$0		$0	0.40	$1,800,000	$2,250,000
	0			$0		$0		$0		$0	$0
Force Main	0			$0		$0		$0		$0	$0
dip 20 dia	3890	lf		$0		$0		$0	71.50	$278,135	$347,669
exc /backfill (4 wide 6 deep)	3890	lf		$0		$0		$0	11 18	$43,475	$54,343
bedding	3890	lf		$0		$0		$0	5 54	$21,566	$26,958
stream crossing	50	lf		$0		$0		$0	112.00	$5,600	$7,000
rock excavation	346	cy		$0		$0		$0	81 95	$28,355	$35,443
Gravity Sewer	0			$0		$0		$0		$0	$0
rcp 54' dia	784	lf		$0		$0		$0	121 50	$95,256	$119,070
exc./backfill (8 wide 17' deep)	784	lf		$0		$0		$0	43 84	$34,371	$42,963
bedding	784	lf		$0		$0		$0	17.13	$13,430	$16,787
	0			$0		$0		$0		$0	$0
rcp 60 dia	265	lf		$0		$0		$0	138 00	$36,570	$45,713
exc /backfill (8 wide 18' deep)	265	lf		$0		$0		$0	43 84	$11,616	$14,520
bedding	265	lf		$0		$0		$0	17 13	$4,539	$5,673
	0			$0		$0		$0		$0	$0
rcp 84 dia	1920	lf		$0		$0		$0	305.00	$585,600	$732,000
exc /backfill (10 wide, 18 deep)	1920	lf		$0		$0		$0	69 30	$133,056	$166,320
bedding	1920	lf		$0		$0		$0	33 83	$64,944	$81,180
	0			$0		$0		$0		$0	$0
remove manholes	14	ea		$0		$0		$0	409.00	$5,726	$7,158
	0			$0		$0		$0		$0	$0
manholes	14	ea		$0		$0		$0	8,415 00	$117,810	$147,263
	0			$0		$0		$0		$0	$0
rcp 30" dia (12 DEEP)	8	lf		$0		$0		$0	60 00	$480	$600
exc / backfill	8	lf		$0		$0		$0	23.49	$188	$235
bedding	8	lf		$0		$0		$0	5.89	$47	$59
	0			$0		$0		$0		$0	$0
rcp 18 dia (12' deep)	749	lf		$0		$0		$0	27.00	$20,223	$25,279
exc./backfill	749	lf		$0		$0		$0	23 49	$17,594	$21,993
bedding	749	lf		$0		$0		$0	5 89	$4,412	$5,515
	0			$0		$0		$0		$0	$0
remove manholes	6	ea		$0		$0		$0	409 00	$2,454	$3,068
	0			$0		$0		$0		$0	$0
manholes complete (5 dia , 12 deep)	6	ea		$0		$0		$0	5,307.50	$31,845	$31,845
	0			$0		$0		$0		$0	$0
railroad borings (fig 2 @ 50' ea)	100	lf		$0		$0		$0	371.00	$37,100	$46,375
	0			$0		$0		$0		$0	$0
Bypass Pumping (40 mgd,24hours/ day, mh to m	30	week		$0		$0		$0	22,500 00	$675,000	$843,750
	0			$0		$0		$0		$0	$0
Pavement restoration(trench)	336	sy		$0		$0		$0	44.00	$14,784	$18,480
	0			$0		$0		$0		$0	$0
Overlay (12' where big gravity sewer occurs)	1009	sy		$0		$0		$0	3.30	$3,330	$4,162
	0			$0		$0		$0		$0	$0
				==========		==========		==========		==========	==========

				$0		$0		$0		$4,087,504	$5,101,419
Mean's Local Cost Adjustment			0.00%	$0	0.00%	$0	0.00%	$0		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$4,087,504	
Taxes & Insurance				$0		$0		n/a		n/a	
				==========		==========		==========		==========	
				$0		$0		$0		$4,087,504	

ESTIMATE SUMMARY:

MATERIAL		$0
LABOR		$0
EQUIPMENT		$0
SUBCONTRACTS		$4,087,504
		==========
		$4,087,504
PROFIT	-included-	$0
		==========
		$4,087,504
GEN CONDITIONS & OVERHEAD	-included-	$0
		==========
		$4,087,504
BONDING & INSURANCE	-included-	$0
		==========
		$4,087,504
CONTINGENCY	25%	$1,021,876
		==========
		$5,109,380
INFLATION - ONE YEAR	0%	$0
		==========
		$5,109,380
TOTAL ESTIMATED CONSTRUCTION COST		**$5,100,000**

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

06/29/98
Prepared by BAY
Checked by LAL

Alternative No 1 No Action Alternative

1 - No Action

Present Worth	O & M Cost	Project Cost
	7,479	0
Total Present Worth		7,479

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		0
Year 1	510	
Year 2	520	
Year 3	531	
Year 4	541	
Year 5	552	
Year 6	563	
Year 7	574	
Year 8	586	
Year 9	598	
Year 10	609	
Year 11	622	
Year 12	634	
Year 13	647	
Year 14	660	
Year 15	673	
Year 16	686	
Year 17	700	
Year 18	714	
Year 19	728	
Year 20	743	

Assumptions		
Estimated Construction Cost	$	0
25% Associated Project Cost	$	0
Estimated Project Cost	$	0
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	0
Electrical Cost	$	400
Total Additional O & M Cost	$	500

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

J \proj\72526\estimate\plant\WWTPALT1 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

06/29/98
Prepared by BAY
Checked by LAL

Alternative No 2 Increase Capacity to Convey Raw/Primary Treated Water to Train 3

	2A - Upgrade Train 3 Raw Waste Pumps and Primary Effluent Pumps		2B - Install Additional Train 3 Raw Waste Pumps at Train 1 Pumping Station		2C - Upgrade Train 3 Raw Waste Pumps and Effluent Pumps & Install Force Main	
Present Worth	O & M Cost	Project Cost	O & M Cost	Project Cost	O & M Cost	Project Cost
	8,975	665,000	43,380	1,033,750	4,488	1,002,500
Total Present Worth		673,975		1,077,130		1,006,988

Year	2A Estimated Additional O & M Cost	2A Estimated Project Cost	2B Estimated Additional O & M Cost	2B Estimated Project Cost	2C Estimated Additional O & M Cost	2C Estimated Project Cost
Year 0		665,000		1,033,750		1,002 500
Year 1	612		2,958		306	
Year 2	624		3,017		312	
Year 3	637		3,078		318	
Year 4	649		3,139		325	
Year 5	662		3,202		331	
Year 6	676		3,266		338	
Year 7	689		3,331		345	
Year 8	703		3,398		351	
Year 9	717		3,466		359	
Year 10	731		3,535		366	
Year 11	746		3,606		373	
Year 12	761		3,678		380	
Year 13	776		3,751		388	
Year 14	792		3,826		396	
Year 15	808		3,903		404	
Year 16	824		3 981		412	
Year 17	840		4,061		420	
Year 18	857		4,142		428	
Year 19	874		4,225		437	
Year 20	892		4,309		446	

Assumptions	2A	2B	2C
Estimated Construction Cost	$ 532,000	$ 827,000	$ 802 000
25% Associated Project Cost	$ 133,000	$ 206,750	$ 200,500
Estimated Project Cost	$ 665,000	$ 1,033,750	$ 1,002,500
O & M Cost			
Routine O & M	$ 0	$ 100	$ 0
Equipment Maint & Repair	$ 0	$ 2,500	$ 0
Electrical Cost	$ 600	$ 300	$ 300
Total Additional O & M Cost	$ 600	$ 2,900	$ 300

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

J \proj\72526\estimate\plant\WWTPALT2 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

	06/29/98
Prepared by	BAY
Checked by	LAL
page 1 of 3	

Alternative No 3 Increase Capacity to Convey Effluent from Train 2

Present Worth	3A - Install Two Submersible Pumps in Screw Pump Wet Well		3B - Install One Submersible Pump in Screw Pump Wet Well		3C - Install One Additional Screw Pump (with Spare Parts)	
	O & M Cost	Project Cost	O & M Cost	Project Cost	O & M Cost	Project Cost
	68,810	561,250	35,901	350,000	83,769	535,000
Total Present Worth		630,060		385,901		618,769

Year	3A Estimated Additional O & M Cost	3A Estimated Project Cost	3B Estimated Additional O & M Cost	3B Estimated Project Cost	3C Estimated Additional O & M Cost	3C Estimated Project Cost
Year 0		561,250		350,000		535,000
Year 1	4 692		2,448		5 712	
Year 2	4,786		2,497		5,826	
Year 3	4,882		2,547		5 943	
Year 4	4,979		2,598		6,062	
Year 5	5,079		2,650		6 183	
Year 6	5,180		2,703		6,307	
Year 7	5,284		2,757		6 433	
Year 8	5,390		2,812		6,561	
Year 9	5,497		2,868		6,693	
Year 10	5 607		2,926		6,826	
Year 11	5,720		2,984		6,963	
Year 12	5,834		3,044		7,102	
Year 13	5,951		3,105		7,244	
Year 14	6,070		3,167		7,389	
Year 15	6 191		3,230		7 537	
Year 16	6,315		3,295		7,688	
Year 17	6,441		3,361		7 841	
Year 18	6,570		3,428		7,998	
Year 19	6,701		3,496		8,158	
Year 20	6,835		3,566		8,321	

Assumptions	3A	3B	3C
Estimated Construction Cost	$ 449,000	$ 280,000	$ 428 000
25% Associated Project Cost	$ 112,250	$ 70,000	$ 107 000
Estimated Project Cost	$ 561 250	$ 350,000	$ 535,000
O & M Cost			
Routine O & M	$ 100	$ 100	$ 100
Equipment Maint & Repair	$ 4,200	$ 2,000	$ 5 300
Electrical Cost	$ 300	$ 300	$ 200
Total Additional O & M Cost	$ 4,600	$ 2 400	$ 5 600

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

j \proj\72526\estimate\plant\WWTPALT3 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

Alternative No 3 Increase Capacity to Convey Effluent from Train 2

3D - Install One Additional Screw Pump (with Spare Parts & Upgrade of Existing Pumps)

Present Worth	O & M Cost	Project Cost
	83,769	570,000
Total Present Worth		653,769

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		570,000
Year 1	5 712	
Year 2	5,826	
Year 3	5 943	
Year 4	6,062	
Year 5	6,183	
Year 6	6,307	
Year 7	6,433	
Year 8	6,561	
Year 9	6 693	
Year 10	6,826	
Year 11	6,963	
Year 12	7,102	
Year 13	7,244	
Year 14	7,389	
Year 15	7,537	
Year 16	7,688	
Year 17	7,841	
Year 18	7,998	
Year 19	8,158	
Year 20	8 321	

Assumptions		
Estimated Construction Cost.	$	456,000
25% Associated Project Cost	$	114,000
Estimated Project Cost	$	570 000
O & M Cost.		
Routine O & M	$	100
Equipment Maint & Repair	$	5,300
Electrical Cost	$	200
Total Additional O & M Cost	$	5,600

3E - Install Two Additional Screw Pumps (with Upgrade of Existing Pumps)

Present Worth	O & M Cost	Project Cost
	106,207	953,750
Total Present Worth		1,059,957

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		953,750
Year 1	7,242	
Year 2	7,387	
Year 3	7,535	
Year 4	7,685	
Year 5	7,839	
Year 6	7,996	
Year 7	8,156	
Year 8	8,319	
Year 9	8,485	
Year 10	8 655	
Year 11	8,828	
Year 12	9 005	
Year 13	9,185	
Year 14	9,368	
Year 15	9,556	
Year 16	9,747	
Year 17	9 942	
Year 18	10,141	
Year 19	10,343	
Year 20	10,550	

Assumptions		
Estimated Construction Cost	$	763,000
25% Associated Project Cost	$	190,750
Estimated Project Cost	$	953,750
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	6,800
Electrical Cost	$	200
Total Additional O & M Cost	$	7,100

3F - Install Two Additional Screw Pumps (with Spare Parts & w/o Upgrade of Existing Pumps)

Present Worth	O & M Cost	Project Cost
	127,149	917,500
Total Present Worth		1,044 649

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		917,500
Year 1	8,670	
Year 2	8,843	
Year 3	9,020	
Year 4	9,201	
Year 5	9,385	
Year 6	9,572	
Year 7	9,764	
Year 8	9 959	
Year 9	10,158	
Year 10	10 361	
Year 11	10 569	
Year 12	10,780	
Year 13	10,996	
Year 14	11,216	
Year 15	11,440	
Year 16	11,669	
Year 17	11,902	
Year 18	12,140	
Year 19	12,383	
Year 20	12,631	

Assumptions		
Estimated Construction Cost	$	734,000
25% Associated Project Cost	$	183,500
Estimated Project Cost	$	917,500
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	8 100
Electrical Cost	$	300
Total Additional O & M Cost	$	8,500

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

J \proj\72526\estimate\plant\WWTPALT3 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

Alternative No 3 Increase Capacity to Convey Effluent from Train 2

3G - Install Two Trailer Mounted Suction Lift Pumps		
Present Worth		
	O & M Cost	Project Cost
	89,752	262,500
Total Present Worth		352,252

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		262 500
Year 1	6,120	
Year 2	6 242	
Year 3	6,367	
Year 4	6,495	
Year 5	6 624	
Year 6	6 757	
Year 7	6,892	
Year 8	7,030	
Year 9	7,171	
Year 10	7,314	
Year 11	7 460	
Year 12	7,609	
Year 13	7,762	
Year 14	7,917	
Year 15	8,075	
Year 16	8,237	
Year 17	8,401	
Year 18	8,569	
Year 19	8,741	
Year 20	8,916	

Assumptions		
Estimated Construction Cost	$	210 000
25% Associated Project Cost	$	52 500
Estimated Project Cost	$	262,500
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	5,800
Fuel Cost	$	100
Total Additional O & M Cost	$	6,000

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

j \proj\72526\estimate\plant\WWTPALT3 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

06/29/98
Prepared by BAY
Checked by LAL

Alternative No 4 Provide Disinfection to Train 2 Overflow and Utilize Existing Storm Water Pumps

4A - Hypochlorite Disinfection		
Present Worth	O & M Cost	Project Cost
	50,860	65,000
Total Present Worth		115 860

4B - Chlorine Disinfection		
Present Worth	O & M Cost	Project Cost
	85 265	55,000
Total Present Worth		140,265

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		65,000
Year 1	3,468	
Year 2	3 537	
Year 3	3 608	
Year 4	3 680	
Year 5	3,754	
Year 6	3,829	
Year 7	3,906	
Year 8	3 984	
Year 9	4,063	
Year 10	4,145	
Year 11	4,227	
Year 12	4 312	
Year 13	4,398	
Year 14	4 486	
Year 15	4 576	
Year 16	4,667	
Year 17	4 761	
Year 18	4,856	
Year 19	4,953	
Year 20	5 052	

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		55,000
Year 1	5 814	
Year 2	5,930	
Year 3	6,049	
Year 4	6,170	
Year 5	6,293	
Year 6	6 419	
Year 7	6 548	
Year 8	6 678	
Year 9	6 812	
Year 10	6,948	
Year 11	7,087	
Year 12	7,229	
Year 13	7 374	
Year 14	7 521	
Year 15	7,671	
Year 16	7,825	
Year 17	7,981	
Year 18	8,141	
Year 19	8,304	
Year 20	8 470	

Assumptions		
Estimated Construction Cost	$	52,000
25% Associated Project Cost	$	13 000
Estimated Project Cost	$	65 000
O & M Cost		
Routine O & M	$	400
Equipment Maint & Repair	$	1,200
Electrical Cost	$	400
Chemical Cost	$	1 400
Total Additional O & M Cost	$	3,400

Estimated Construction Cost	$	44 000
25% Associated Project Cost	$	11 000
Estimated Project Cost	$	55,000
O & M Cost		
Routine O & M	$	400
Equipment Maint & Repair	$	4 000
Electrical Cost	$	400
Chemical Cost	$	900
Total Additional O & M Cost	$	5 700

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

J \proj\72526\estimate\plant\WWTPALT4 WK4

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

08/31/98
Prepared by BAY
Checked by LAL

Alternative No 5 Increase Effluent Filtration System Capacity

	5A - Install Three New Sand Filter Units		5B - Install Two New Sand Filter Units		5C - Retrofit Existing Filters	
Present Worth	O & M Cost	Project Cost	O & M Cost	Project Cost	O & M Cost	Project Cost
	429,315	4,145,000	290,199	2,783,750	1,496	1,272,500
Total Present Worth		4,574,315		3,073,949		1,273,996

Year	5A Estimated Additional O & M Cost	5A Estimated Project Cost	5B Estimated Additional O & M Cost	5B Estimated Project Cost	5C Estimated Additional O & M Cost	5C Estimated Project Cost
Year 0		4,145,000		2,783,750		1,272,500
Year 1	29,274		19,788		102	
Year 2	29,859		20,184		104	
Year 3	30,457		20,587		106	
Year 4	31,066		20,999		108	
Year 5	31,687		21,419		110	
Year 6	32,321		21,848		113	
Year 7	32,967		22,285		115	
Year 8	33,627		22,730		117	
Year 9	34,299		23,185		120	
Year 10	34,985		23,648		122	
Year 11	35,685		24,121		124	
Year 12	36,399		24,604		127	
Year 13	37,127		25,096		129	
Year 14	37,869		25,598		132	
Year 15	38,626		26,110		135	
Year 16	39,399		26,632		137	
Year 17	40,187		27,165		140	
Year 18	40,991		27,708		143	
Year 19	41,810		28,262		146	
Year 20	42,647		28,827		149	

Assumptions

	5A	5B	5C
Estimated Construction Cost	$ 3,316,000	$ 2,227,000	$ 1,018,000
25% Associated Project Cost	$ 829,000	$ 556,750	$ 254,500
Estimated Project Cost	$ 4,145,000	$ 2,783,750	$ 1,272,500
O & M Cost			
Routine O & M	$ 100	$ 100	$ 100
Equipment Maint & Repair	$ 28,500	$ 19,250	$ 0
Electrical Cost	$ 100	$ 50	$ 0
Total Additional O & M Cost	$ 28,700	$ 19,400	$ 100

Interest Rate	5 00%
Inflation Rate	2 00%
Years.	20

Note· The Present Worth calculation is performed using 1998 dollar values.

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York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

06/29/98

Prepared by	BAY
Checked by	LAL

Alternative No 6 Increase UV Disinfection Capacity

6A - Increase UV Disinfection Capacity with Two Channels

Present Worth	O & M Cost	Project Cost
	436,794	1,711,250
Total Present Worth		2,148,044

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		1,711,250
Year 1	29,784	
Year 2	30,380	
Year 3	30,987	
Year 4	31,607	
Year 5	32,239	
Year 6	32 884	
Year 7	33,542	
Year 8	34,212	
Year 9	34,897	
Year 10	35,595	
Year 11	36,307	
Year 12	37,033	
Year 13	37,773	
Year 14	38,529	
Year 15	39,299	
Year 16	40,085	
Year 17	40 887	
Year 18	41,705	
Year 19	42,539	
Year 20	43,390	

Assumptions		
Estimated Construction Cost	$	1,369,000
25% Associated Project Cost	$	342,250
Estimated Project Cost	$	1,711,250
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	28,700
Electrical Cost	$	400
Total Additional O & M Cost	$	29,200

6B - Increase UV Disinfection Capacity with One Channel

Present Worth	O & M Cost	Project Cost
	219,893	910,000
Total Present Worth		1,129,893

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		910,000
Year 1	14,994	
Year 2	15,294	
Year 3	15,600	
Year 4	15,912	
Year 5	16,230	
Year 6	16,555	
Year 7	16,886	
Year 8	17,223	
Year 9	17,568	
Year 10	17,919	
Year 11	18,278	
Year 12	18,643	
Year 13	19,016	
Year 14	19,396	
Year 15	19,784	
Year 16	20,180	
Year 17	20,584	
Year 18	20,995	
Year 19	21,415	
Year 20	21,843	

Assumptions		
Estimated Construction Cost	$	728,000
25% Associated Project Cost	$	182,000
Estimated Project Cost	$	910,000
O & M Cost		
Routine O & M	$	100
Equipment Maint & Repair	$	14 400
Electrical Cost	$	200
Total Additional O & M Cost	$	14,700

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Note The Present Worth calculation is performed using 1998 dollar values

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York Township Alternatives

York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

09/14/98
Prepared by BAY
Checked by LAL

York Township Alternative Nos. 2 and 3

Replacement Sewer	O & M Cost	Project Cost
Present Worth	0	2,375,000
Total Present Worth		2,375,000

Relief Sewer	O & M Cost	Project Cost
Present Worth	14,959	2,250,000
Total Present Worth		2,264,959

Pump Station & Force Main	O & M Cost	Project Cost
Present Worth	275,240	3,000,000
Total Present Worth.		3,275,240

Year	Replacement Sewer: Estimated Additional O & M Cost	Replacement Sewer: Estimated Project Cost	Relief Sewer: Estimated Additional O & M Cost	Relief Sewer: Estimated Project Cost	Pump Station & Force Main: Estimated Additional O & M Cost	Pump Station & Force Main: Estimated Project Cost
Year 0		2,375,000		2,250,000		3,000,000
Year 1	0		1,020		18,768	
Year 2	0		1,040		19,143	
Year 3	0		1,061		19,526	
Year 4	0		1,082		19,917	
Year 5	0		1,104		20,315	
Year 6	0		1,126		20,721	
Year 7	0		1,149		21,136	
Year 8	0		1,172		21,559	
Year 9	0		1,195		21,990	
Year 10	0		1,219		22,429	
Year 11	0		1,243		22,878	
Year 12	0		1,268		23,336	
Year 13	0		1,294		23,802	
Year 14	0		1,319		24,278	
Year 15	0		1,346		24,764	
Year 16	0		1,373		25,259	
Year 17	0		1,400		25,764	
Year 18	0		1,428		26,280	
Year 19	0		1,457		26,805	
Year 20	0		1,486		27,341	

Assumptions.

Replacement Sewer		
Estimated Construction Cost	$	1,900,000
25% Associated Project Cost	$	475,000
Estimated Project Cost	$	2,375,000
Additional O & M Cost	$	0

Relief Sewer		
Estimated Construction Cost	$	1,800,000
25% Associated Project Cost	$	450,000
Estimated Project Cost	$	2,250,000
Additional O & M Cost		
Gravity System	$	1,000

Pump Station & Force Main		
Estimated Construction Cost	$	2,400,000
25% Associated Project Cost	$	600,000
Estimated Project Cost	$	3,000,000
Additional O & M Cost		
Routine O & M	$	4,200
Equipment Maint & Repair	$	5,600
Electrical Cost	$	8,600
Total Additional O & M Cost	$	18,400

Interest Rate	5 00%
Inflation Rate	2 00%
Years:	20

Note The Present Worth calculation is performed using 1998 dollar values.

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York City Sewer Authority
Regional Act 537 Plan
Collection Alternatives

09/14/98
Prepared by BAY
Checked by LAL

York Township Alternative Nos 4 and 5

Replacement Sewer

Present Worth	O & M Cost	Project Cost
	0	4,125,000
Total Present Worth		4,125,000

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		4,125,000
Year 1	0	
Year 2	0	
Year 3	0	
Year 4	0	
Year 5	0	
Year 6	0	
Year 7	0	
Year 8	0	
Year 9	0	
Year 10	0	
Year 11	0	
Year 12	0	
Year 13	0	
Year 14	0	
Year 15	0	
Year 16	0	
Year 17	0	
Year 18	0	
Year 19	0	
Year 20	0	

Assumptions		
Estimated Construction Cost	$	3,300,000
25% Associated Project Cost	$	825,000
Estimated Project Cost	$	4,125,000
Additional O & M Cost	$	0

Interest Rate	5 00%
Inflation Rate	2 00%
Years	20

Relief Sewer

Present Worth	O & M Cost	Project Cost
	14,959	3,750,000
Total Present Worth		3,764,959

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		3,750,000
Year 1	1,020	
Year 2	1,040	
Year 3	1,061	
Year 4	1,082	
Year 5	1,104	
Year 6	1,126	
Year 7	1,149	
Year 8	1,172	
Year 9	1,195	
Year 10	1,219	
Year 11	1,243	
Year 12	1,268	
Year 13	1,294	
Year 14	1,319	
Year 15	1,346	
Year 16	1,373	
Year 17	1,400	
Year 18	1,428	
Year 19	1,457	
Year 20	1,486	

Estimated Construction Cost	$	3,000,000
25% Associated Project Cost	$	750,000
Estimated Project Cost	$	3,750,000
Additional O & M Cost		
Gravity System	$	1,000

Pump Station & Force Main

Present Worth	O & M Cost	Project Cost
	492,142	6,375,000
Total Present Worth		6,867,142

Year	Estimated Additional O & M Cost	Estimated Project Cost
Year 0		6,375,000
Year 1	33,558	
Year 2	34,229	
Year 3	34,914	
Year 4	35,612	
Year 5	36,324	
Year 6	37,051	
Year 7	37,792	
Year 8	38,548	
Year 9	39,319	
Year 10	40,105	
Year 11	40,907	
Year 12	41,725	
Year 13	42,560	
Year 14	43,411	
Year 15	44,279	
Year 16	45,165	
Year 17	46,068	
Year 18	46,989	
Year 19	47,929	
Year 20	48,888	

Estimated Construction Cost	$	5,100,000
25% Associated Project Cost	$	1,275,000
Estimated Project Cost	$	6,375,000
Additional O & M Cost		
Routine O & M	$	4,200
Equipment Maint & Repair	$	13,500
Electrical Cost	$	15,200
Total Additional O & M Cost	$	32,900

Note The Present Worth calculation is performed using 1998 dollar values

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The Township of Manchester
YORK COUNTY PENNSYLVANIA

3289 SUSQUEHANNA TRAIL
YORK, PENNSYLVANIA 17402
Telephone: 717-764-4646 / 764-8327

April 8, 1998 GC-98-0171

Mr. Lawrence Lutter, P. E.
Buchart-Horn, Inc.
P. O. Box 15040
York, PA 17405

RE: York City Sewer Act 537 Plan Draft Needs Assessment (BH #72526)

Dear Larry:

I am writing in response to your March 6, 1998 memo in the above-referenced matter and the subsequent discussions at the March 17, 1998 York City Sewer Municipal User Group meeting and the March 31, 1998 joint York City/Springettsbury Township Sewer User Group meeting.

As requested, we have reviewed the Table 2 projected flows based on the Annual Average flow definition. While there appears to be some deviation from the projection included in the 1997 Chapter 94 Report, we generally agree with the Average Annual flow projections shown on Table 2. It should be noted that the ultimate proposed flows includes 95,000 gpd allocated to the Prospect Hill Cemetery. In reality, we cannot foresee the development of this property. While Table 2 identifies a future capacity deficit of 56,235 gpd, the deficit is eliminated if the Prospect Hill Cemetery flows are reduced or deleted.

Please contact Zoning/Planning Officer Stewart S. Olewiler, III or me if you have any questions.

Thank you.

Sincerely,

MANCHESTER TOWNSHIP

Dave Raver

David A. Raver
Township Manager

DAR/jmb

ADR

cc: Stewart S. Olewiler, III, Zoning/Planning Officer
Richard Resh, C. S. Davidson, Inc.

North York Borough

Municipal Building 350 E. 6th Ave. York, Pa. 17404
Telephone 717-845-3976 Fax 717-852-9394

June 2, 1998

Mr. Lawrence A. Lutter, P.E.
Buchart-Horn, Inc.
P. O. Box 15040
York, PA 17405-7040

Re: North York Borough
York City Sewer Authority Act 537 Plan Update
Future Flow Projections

Dear Mr. Lutter:

This letter is to notify you that North York Borough Council has reviewed and concurs with the flows submitted to your office by C. S. Davidson, Inc., on behalf of the Borough, for the City of York's Act 537 Plan Update.

If you require any additional information, please contact Paul J. Sauers, III or Richard G. Resh at C. S. Davidson, Inc.

Sincerely,

NORTH YORK BOROUGH COUNCIL

Steven A. Stahlman

Steven A. Stahlman,
Council President

PJS/SAS/vs
Copy: Paul J. Sauers, III
C. S. Davidson, Inc.

s:\wpdata\vgs\7155pjs

SPRING GARDEN TOWNSHIP

ADMINISTRATION

558 S. OGONTZ STREET
YORK, PA 17403-5709

PHONE (717) 848-2858
FAX (717) 854-8257

APR

April 9, 1998

Larry Lutter
Buchart Horn, Inc.
PO Box 15040
York, PA 17405

RE: York City Sewer Authority Regional Act 537 Plan
Draft Needs Assessment
BH #72526

Dear Mr. Lutter:

This is in response to your memorandum of March 6, 1998 requesting review and comment on the Draft Needs Assessment for the York City Act 537 Plan by the various municipalities involved.

Please be advised that Spring Garden Township confirms the projected future flows as indicated on Table 2 (page 6) of the report.

Spring Garden Township also confirms the existing allocated capacity of 3,011,500 G.P.D. as our permitted capacity in accord with the Intermunicipal Agreement.

If you have any questions, do not hesitate to contact this office.

Sincerely,

William J Conn

William J. Conn, Township Manager
SPRING GARDEN TOWNSHIP

Cc: Richard G. Resh, C.S. Davidson, Inc.

WEST MANCHESTER TOWNSHIP
2501 Catherine Street
York, PA 17404

FAX COVER SHEET

DATE:	April 14, 1998	**TIME:**	86:30 AM
TO:	Larry Lutter Buchart Horn, Inc.	**PHONE:** **FAX:**	852-1483 852-1613
FROM:	Jan Dell West Manchester Twp	**PHONE:** **FAX:**	792-3505 792-4374
RE:	Regional Act 537 Plan, Draft Needs Assessment		

Number of pages including cover sheet· 1

Message

Dear Larry:

The numbers contained in the Draft Needs Assessment study you have used for the projected future flows of West Manchester Township, appear to be fine.

We are not requestng a revision of allocated capacity at this time. However, we will keep you informed of our negotiations with York Township concerning the sale of excess capacity.

THE BOROUGH OF WEST YORK
PENNSYLVANIA

1700 WEST PHILADELPHIA STREET • YORK, PENNSYLVANIA 17404 • PHONE (717) 846-8889 • FAX (717) 854-2924

March 17, 1998

Buchart Horn, Inc.
445 W. Philadelphia Street
York, PA 17404

ATTN: Larry A. Lutter

RE: York City Sewer Authority
Regional Act 537 Plan
Draft Needs Assessment BH#72526

Dear Mr. Lutter:

West York Borough Council at their meeting of March 16, 1998 confirmed that the Draft Needs Assessment BH#72526 was reviewed and approved the projected future flows as identified in the report.

The existing allocated capacity for West York Borough will be maintained.

If you require additional information, please contact me.

Very truly yours,
WEST YORK BOROUGH COUNCIL

Kathy L. Altland

Kathy L. Altland
Borough Secretary

pc: Council, Mayor

Richard Resh, C.S. Davidson, Inc.

file

YORK TOWNSHIP

25 Oak Street, York, Pennsylvania 17402-4972 • Phone (717) 741-3861 • Fax (717) 741-5009

May 29, 1998

Larry Lutter
Buchart Horn, Inc.
445 West Philadelphia Street
PO Box 15040
York, PA 17405-7040

Dear Larry:

Please accept this letter as acknowledgement that the flow projections provided in the March 1998 needs projection are correct for York Township. If you have any further questions please don't hesitate to contact me.

Sincerely,

Mark E. Derr
Township Manager

ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA

Mayor Charles H. Robertson

DIVISION OF COMMUNITY AFFAIRS

Director's Office
849-2272

Business Development
849-2272

Health
849-2252

Housing Rehabilitation
849-2264

Planning/Engineering
849-2307

Zoning/Permits
849-2256

DIVISION OF PUBLIC SERVICES

Director's Office
849-2245

Building/Electrical Maintenance
845-9351

Environmental Services
849-2245

Highway Maintenance
849-2320

Recreation & Parks
854-1587

July 15, 1998

David Shirk
Buchart-Horn, Inc.
445 West Philadelphia Street
P. O. Box 15040
York, PA 17405-7040

Dave:

The City of York has reviewed the existing and projected municipal annual average sewage flows as shown in Table 4-5 of the draft Act 537 plan submitted July 14, 1998. The flow figures are acceptable.

Sincerely,

Veronica Whaley

Veronica Whaley
Environmental Planner

enclosure

c: file

First Capital Of The United States

1 Marketway West • 3rd Floor • York, Pennsylvania 17401-1231 • FAX (717) 849-2329

ANNUAL AVERAGE

TABLE 4-5
Summary of Existing and Projected Municipal Flows

Muncipality	1997 Annual Average Flows	Proposed 5 Year	Proposed 10 Year	Proposed 20 Year	Proposed Ultimate	Based on Current Permits of 26 MGD: ALLOCATED FLOWS	Based on Current Permits of 26 MGD: ALLOCATED EXCESS OR (DEFFICIENCIES)
MANCHESTER	1,000,971	2,191,351	2,288,425	2,483,425	2,594,325	2,434,900	(159,425)
NORTH YORK	206,649	215,049	220,299	230,799	236,049	515,800	279,751
SPRINGETTSBURY		3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0
SPRING GARDEN	1,214,960	1,667,160	1,934,510	2,315,710	2,361,960	3,011,500	649,540
WEST MANCHESTER	1,862,303	2,269,203	2,362,203	2,513,703	2,531,203	4,594,200	2,062,997
WEST YORK	814,690	836,740	843,740	857,740	864,740	1,200,500	335,760
YORK TWP	1,605,689	2,351,509	2,357,059	2,426,534	2,451,034	2,163,000	(288,034)
CITY OF YORK	4,276,506	5,884,500	5,959,500	6,109,500	8,580,000	8,580,100	100
TOTALS	10,981,768	18,915,512	19,465,736	20,437,411	23,119,311	26,000,000	2,880,689

YORK TWP. ALTERNATIVES

Alternative 3	1,605,689			3,000,000	3,024,500	2,163,000	(861,500)
TOTALS	10,981,768			21,010,877	23,692,777	26,000,000	2,307,223
Alternatives 4 & 5	1,605,689			4,100,000	4,124,500	2,163,000	(1,961,500)
TOTALS	10,981,768			22,110,877	24,792,777	26,000,000	1,207,223

J:\PROJ\72526\MODEL\TABLE2 WK4

RECEIVED JUL 14 1998

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

York Office
38 North Duke Street • York, PA 17401
(717) 846-4805 • FAX (717) 846-5811

Gettysburg Office
50 West Middle Street • Gettysburg, PA 17325
(717) 337-3021 • FAX (717) 337-0782

February 5, 1998

Larry A. Lutter, P.E., Project Manager
Buchart-Horn, Inc.
PO Box 15040
York, PA 17405-7040

Re: Needs Survey Forms
York City Sewer Authority (Act 537)
Regional Sewage Facilities Plan

Dear Larry:

In response to your October 8, 1997 request to the 6 outside user municipalities, we are providing you with documentation for the future wastewater flows needs from the surrounding Townships and Boroughs. We have enclosed one copy of the following information:

York Township
3 Needs Survey Forms dated 1/31/98
4 pages Projected Connections to City of York Treatment Plant dated 1/5/98

North York Borough
3 Needs Survey Forms dated 1/31/98
1 page Projected Connections to City of York Treatment Plant dated 1/23/98

Manchester Township
7 Needs Survey Forms dated 1/31/98
6 pages Projected Connections to City of York Treatment Plant dated 1/30/98

Spring Garden Township
39 Needs Survey Forms dated 1/17/98
7 pages Projected Connections to City of York Treatment Plant dated 1/17/98

West York Borough
2 Needs Survey Forms dated 1/31/98
1 page Projected Connections to City of York Treatment Plant dated 12/23/97

West Manchester Township
19 Needs Survey Forms dated 1/31/98
2 pages Projected Connections to City of York Treatment Plant dated 1/31/98

This data should address Item Nos. 1 through 4 contained in your 1/8/97 letter. Information pertaining to Item Nos. 5 through 8 will be furnished at a later date. On behalf of West Manchester Township, the wastewater flow projections contained on the Needs Survey Forms should be used to

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

recompute future capacity requirements for the Roosevelt Avenue sewer study. Jan R. Dell, Township Administrator, has elected to substantially reduce the future West Manchester Township needs for this area, hopefully reducing the scope of required improvements to the existing Willis Run interceptor system.

Where there is no existing permanent flow meter data, we assumed a peaking factor of 2.5. Peaking factors at each metered point of connection are based upon the ratio of the "Peak 15 Minute Maximum Daily Flow" divided by the "Monthly Average Daily Flow". In one instance at City Manhole No. 71, we assumed a 4.0 peaking factor from the Richland Avenue pump station to represent the pump discharge rate from Spring Garden Township.

Needs Survey Forms were also prepared for the following two new points of connection to the City system as allowed by current Intermunicipal Agreement Amendments:

- City Manhole No.A67 from Spring Garden Township
- City Manhole No. IP2-1 from Manchester Township

If you elect to modify peaking factors, please contact our office and we will recalculate and reissue the appropriate Needs Survey Forms. I will be unable to attend the 3/19/98 technical meeting and request that this meeting with the affected engineering firms be rescheduled to 3/16/98 or 3/23 - 3/26/98. If there are any other questions, please contact me.

Very truly yours,

C.S. DAVIDSON, INC.

Richard G. Resh

RGR/kbh/5666
Enclosures
Copy: Mark E. Derr, York Township Manager (w/encl)
David A. Raver, Manchester Township Manager (w/encl)
William J. Conn, Spring Garden Township Manager (w/encl)
Dora Ream, Secretary, North York Borough (w/encl)
Kathy Altland, West York Borough Manager (w/encl)
Jan R. Dell, Administrator, West Manchester Township (w/encl)

File: 12926-3E

Larry LAL
Dave DMS

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

York Office
38 North Duke Street • York, PA 17401
(717) 846-4805 • FAX (717) 846-5811

Gettysburg Office
50 West Middle Street • Gettysburg, PA 17325
(717) 337-3021 • FAX (717) 337-0782

April 14, 1998

Via Fax: 852-1613
Lawrence A. Lutter, P. E.
Buchart-Horn, Inc.
PO Box 15040
York, PA 17405-7040

Re: 3/98 Needs Assessment - Draft
York City Sewer Authority
Regional Act 537 Plan

Dear Larry:

Our office has completed a review of the draft report dated March 1998 and offer the following comments:

1. In developing Table No. 2, we discovered an error on our Needs Survey Form for City Manhole No. A1 (City Flow Meter MNO1) for Manchester Township. We have submitted a revised Needs Survey Form dated 4/13/98 and a copy of the corrected projections to the City of York WWTP (Exhibit No. MT-6).

2. The draft report did not include the Manchester Township Needs Survey for City Manhole B10-17 dated 3/9/98 for Manchester Township. By adding this new point of connection and incorporating the modification in Item 1 above, Table No. 2 should reflect the attached corrected Municipal Flows.

3. Two small discrepancies in the Existing Flow and the 10 Year Flows for Spring Garden Township were also identified. We are unable to verify how this discrepancy originated.

4. All other wastewater flow projections in Table No. 2 for West Manchester and York Townships and North York and West York Boroughs match the Need Survey data previously furnished by our office on 2/5/98.

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

York City Sewer Authority
Regional Act 537 Plan

April 14, 1998

We have begun work on the Regional Sewer Service Map and intend to furnish the necessary information by Monday, 4/20/98 as requested in your 4/3/98 letter. If there are any questions please contact me.

Very truly yours,

C. S. DAVIDSON, INC.

Richard G. Resh

Enclosures
cc: David A. Raver, Manager (w/encl)
Manchester Township
William J. Conn, Manager (w/encl)
Spring Garden Township
Jan R. Dell, Administrator
West Manchester Township
Mark E. Derr, Manager
York Township
Kathy Altland, Manager
West York Borough
Dora Ream, Secretary
North York Borough
RGR/dec3098

YORK CITY SEW[illegible] UTHORITY
REGIONAL AC[illegible] 537 PLAN
NEEDS SURVEY

Appendix A-22-b

Municipality: Manchester Township

Date Prepared: January 31, 1998

Connection Point: 3 - Along Codorus Creek 250' of Ninth Avenue Extended and Toronita Street

Peaking Factor: 3.35 (Actual)

Prepared By: Richard G. Resh

City Manhole Number: 4
City Flow Meter: MN02

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	106,000	303	355,100	303	3/94 thru 8/97 Monthly Average Daily flow
1998-2005	21,520	61	72,092	61	
Year 2005	127,520	364	427,192	364	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	127,520	364	427,192	364	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	127,520	364	427,192	364	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	127,520	364	427,192	364	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\manneed wb3(File C)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality Manchester Township

Date Prepared: January 31, 1998 (revised April 13, 1998)

Connection Point: 1 - Meter located along York City Access Road 250' east of Toronita Street at WWTP Administrative Building

Peaking Factor: 1 63 (Actual)

Prepared By. Richard G. Resh

City Manhole Number: A1
City Flow Meter: MN01

Planning Period	Average Daily Flow GPD	Average Daily Flow EDUs	Peak Daily Flow GPD	Peak Daily Flow EDUs	Remarks
Existing	769,350	2,198	1,254,041	2,198	3/94 thru 8/97 Monthly Daily Average Flow (3)
1998-2005	1,000,410	2,858	1,630,668	2,858	
Year 2005	1,769,760	5,056	2,884,709	5,056	1997 Chapter 94 Report
2006-2010	77,074	220	125,631	220	
Year 2010	1,846,834	5,277	3,010,340	5,277	1997 Chapter 94 Report
2011-2020	155,000	443	252,650	443	
Year 2020 (1)	2,001,834	5,719	3,262,990	5,719	1997 Chapter 94 Report
2021-Max	75,900	217	123,717	217	
Ultimate(2)	2,077,734	5,936	3,386,707	5,936	1997 Chapter 94 Report

(1). Allocation for 20 year wastewater treatment planning
(2) Allocation for Ultimate conveyance system planning
(3). Less 41,650 GPD from City of York Pine Hill Farm users

Note Provide separate data for each connection point Identify manhole, street location, etc.

m \kbhq15\manneed wb3(File A)

Appendix A-22-b

Municipality: Manchester Township

Peaking Factor: 2.50 (Assumed)

Date Prepared: January 31, 1998

Prepared By: Richard G. Resh

Connection Point: 7 - Blackbridge Road at Eleventh Avenue Extended (abandoned)

City Manhole Number: A1A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	68,113	195	170,283	195	Oct , Nov., Dec., 1997 - water use
1998-2005	0	0	0	0	
Year 2005	68,113	195	170,283	195	No Growth
2006-2010	0	0	0	0	
Year 2010	68,113	195	170,283	195	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	68,113	195	170,283	195	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	68,113	195	170,283	195	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\manneed wb3(File G)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Manchester Township

Date Prepared: March 9, 1998

Connection Point: On Pennsylvania Avenue at Fireside Road Intersection

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh

City Manhole Number: B10-17
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	0	0	0	0	No existing flow from cemetary
1998-2005	0	0	0	0	
Year 2005	0	0	0	0	1997 Chapter 94 Report
2006-2010	20,000	57	50,000	57	
Year 2010	20,000	57	50,000	57	1997 Chapter 94 Report
2011-2020	40,000	114	100,000	114	
Year 2020 (1)	60,000	171	150,000	171	1997 Chapter 94 Report
2021-Max	35,000	100	87,500	100	
Ultimate(2)	95,000	271	237,500	271	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m.\kbhq15\manneed wb3(File H)

YORK CITY SEWI UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Manchester Township

Peaking Factor: 2 50 (Assumed)

Date Prepared: January 31, 1998

Prepared By: Richard G. Resh

Connection Point: 5 - In Vogelsong Road 70' east of Roosevelt Avenue

City Manhole Number: IP2-1
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	0	0	0	0	Oct., Nov., Dec., 1997 - EDU count/water use
1998-2005	12,950	37	32,375	37	
Year 2005	12,950	37	32,375	37	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	12,950	37	32,375	37	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	12,950	37	32,375	37	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	12,950	37	32,375	37	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\manneed wb3(File E)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Manchester Township

Date Prepared: January 31, 1998

Connection Point: 4 - In Clugston Road 300' north of GPU Energy right-of-way in York City Industrial Park

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh

City Manhole Number: IP2-13
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	36,750	108	91,875	108	Oct., Nov., Dec., 1997 - EDU count/water use
1998-2005	155,500	444	388,750	444	
Year 2005	192,250	552	480,625	552	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	192,250	552	480,625	552	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	192,250	552	480,625	552	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	192,250	552	480,625	552	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\manneed wb3(File D)

C-S DAVIDSON INC

Revised April 13 1998
EXHIBIT NO MT-5

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
1 Tom Beshore Evenbreth Heights (2 EDU's @ 350 GPD)	700	0		700	0	0	0	0	0	0	0	700	0	0	0	0	700	MN02	4
*2 John Dauber Estate (D Sacenllos & Lehr's Exxon Tract) 1700 North George Street (1 Comm @ 14 800 GPD)	14,800	0		7,400	7,400	0	0	0	0	0	0	14 800	0	0	0	0	14 800	MN02	4
3 Susquehanna Village York Condominium Constructors Susquehanna Trail (60 Units @ 250 GPD)	15,000	13,350		1,650	0	0	0	0	0	0	0	1 650	0	0	0	0	1 650	MN01	
4 Rishel Tract (Industrial)(5) Robert A Kinsley Inc Blackbndge Road (19 9 Acres @ 878 GPD/Ac)	17,477	2,135		10 000	2 865	2 477	0	0	0	0	0	15,342	0	0	0	0	15 342	MN01	1
5 Rutter's Property Masonic Dnve & Parklyn Lane PA DEP Permit No 6782406 (5 Acres @ 1 400 GPD/Ac)	7,000	0		3,000	2 000	1,000	1,000	0	0	0	0	7,000	0	0	0	0	7 000	MN01	1
6 Manchester Business Park Assoc Farmbrook Ind Park (4) PA DEP Permit No 6780405 (10 0 Acres @ 2 000 GPD/Ac)	20 000	4,200		10,000	5,800	0	0	0	0	0	0	15 800	0	0	0	0	15 800	MN01	1
7 Wagman Properties (4) Farmbrook Ind Park PA DEP Permit No 6780405 (7 02 Ac @ 2 000 GPD/Ac)	14 045	2,500		10,000	1,545	0	0	0	0	0	0	11,545	0	0	0	0	11 545	MN01	1
8 York Industnes Amelia Street (4 Ind @ 500 GPD)	2,000	1,968		32	0	0	0	0	0	0	0	32	0	0	0	0	32	MN01	1
9 Northgate Associates 1500 N George Street (1 Comm @ 5,100GPD)	5,100	1,200		1,500	1,300	1,000	100	0	0	0	0	3,900	0	0	0	0	3 900	MN02	4
10 Bob Behler (4) DIA Investments 3350 Farmtrail Road Lot #20 (1 Ind @ 7,450GPD)	7,450	0		4,000	3,450	0	0	0	0	0	0	7,450	0	0	0	0	7,450	MN01	1
11 Slater Hill Masonic Dnve (100 Apts @ 250 GPD)	25,000	3,000		10,000	10,000	2,000	0	0	0	0	0	22,000	0	0	0	0	22,000	MN01	1
12 Eugene Stumpf Bnar Bend (Phase I) (15 Lots @ 350 GPD)	5,250	1,400		2,450	700	700	0	0	0	0	0	3 850	0	0	0	0	3,850	MN01	1
13 York Casket Blackbndge Road (1 Industrial @ 3,510 GPD)	3,510	0		0	0	0	0	1,510	1,000	1,000	0	3,510	0	0	0	0	3,510	MN01	1

Appendix A-22-b

C G DAVIDSON INC

Revised April 13 1998
EXHIBIT NO MT-5

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
14 Hayshire Meadows (8) Haymeadow Drive (2 EDU's @ 350 GPD)	700	350		350	0	0	0	0	0	0	0	350	0	0	0	0	350	MN01	1
15 Lutheran Social Services Paul Sprenkle Tract (128 Apts @ 250 GPD)	32 000	17 408		9,500	4,500	592	0	0	0	0	0	14 592	0	0	0	0	14,592	MN01	1
16 Susan R Creep 1450 Breezeview Drive (1 Lot @ 350 GPD)	350	0		0	0	0	0	0	350	0	0	350	0	0	0	0	350	MN02	4
17 Michael Barshinger - Phase I (formerly D K Beard Jr) (57 EDU s @ 350 GPD)	19 950	700		7,500	7 000	4,750	0	0	0	0	0	19 250	0	0	0	0	19 250	MN01	1
18 Spring Meadows (PRD) Church Road Area (400 EDU's @ 250 GPD)	100 000	0		10,000	10,000	10 000	10,000	10,000	10,000	10,000	10,000	80 000	20 000	0	0	0	100 000	MN01	1
*19 CAVO Development Emig/Blackbridge Rds (1 Ind @ 20 000 GPD)	20,000	0		2,000	5,000	3 000	3,000	3,000	2,000	2,000	0	20 000	0	0	0	0	20 000	MN01	1
20 Winter Welding (5) Flour Mill Rd West (1 Ind @ 770 GPD)	770	624		146	0	0	0	0	0	0	0	146	0	0	0	0	146	MN01	1
*21 Henry Mohr - The Manor Group 1800 Block N George Street (8 76 Ac @ 1000 GPD/Acre)	8 760	0		5 000	3,760	0	0	0	0	0	0	8 760	0	0	0	0	8 760	MN01	1
*22 Rutters Commercial Area Susquehanna Tr N/O Lightner (10 Ac @ 1000 GPD/Acre)	10 000	0		5,000	5,000	0	0	0	0	0	0	10 000	0	0	0	0	10 000	MN01	1
23 Valcour (4) Farmbrook Industrial Park (1 Industrial @ 1,600 GPD)	1,600	1,147		453	0	0	0	0	0	0	0	453	0	0	0	0	453	MN01	
24 Rene DeBrabander Rear Greenbriar Road (25 EDU's @ 350 GPD)	8,750	3,150		4,550	1,050	0	0	0	0	0	0	5,600	0	0	0	0	5 600		IP2-13
*25 The Arc of York County (8) 2870 Haymeadow Drive (1 Commercial @ 1,000 GPD)	1 000	0		1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	1 000	MN01	1
*26 Sinking Springs Farm Office Area (4 Acres @ 1000 GPD/Acre)	4 000	0		2 000	2,000	0	0	0	0	0	0	4 000	0	0	0	0	4 000	MN01	1
27 Penn State Investors Bentz Tract (2 EDU s @ 350 GPD)	700	0		700	0	0	0	0	0	0	0	700	0	0	0	0	700	MN01	1
28 York County Solid Waste (6) Authority Incinerator PA DEP Permit No 6787408 (1 Ind @ 90 0[illegible])	90,000	43 176		0	0	0	[illegible]	0	10,000	10,000	10 000	30,000	16,824	0	0	0	[illegible]4	MN01	1

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - 05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
*29 White Oak Associates KH-189 Commercial (10 76 Ac @ 1000 GPD/Acre)	10 760	760		3 000	3 000	3 000	1,000	0	0	0	0	10 000	0	0	0	0	10 000	MN01	1
30 David Fahs 500 Block Church Road (1 EDU @ 350 GPD)	350	0		350	0	0	0	0	0	0	0	350	0	0	0	0	350	MN01	1
*31 Penn State Investors Detwiler Tract - Stillmeadow Lane (5 EDU s @ 350 GPD)	1,750	0		1,750	0	0	0	0	0	0	0	1 750	0	0	0	0	1 750	MN01	1
*32 Tyrone Miller (north side)	3 500			350	700	2 100	350	0	0	0	0	3,500	0	0	0	0	3 500	MN01	
*33 Raintree Land Co (4) Industrial Park (77 5 Acres @ 1 000 GPD)	77 500	5 000		10,000	10 000	10 000	10,000	10,000	10,000	10 000	2,500	72 500	0	0	0	0	72 500	MN01	1
34 The Dominion (PRD) CBD Development Inc (469 1 EDU's @ 350 GPD)	164 200	12,900		25,000	25 000	25 000	25,000	25 000	25,000	1,300	0	151 300	0	0	0	0	151 300	MN01	1
35 Krammes (Car Wash) N George Street (1 Comm @ 660 GPD)	660	242		418	0	0	0	0	0	0	0	418	0	0	0	0	418	MN01	1
36 Commonwealth Supply Co (4) Farmbrook Ind Park 3335 Farmtrail Road PA DEP Permit No 6780405 (1 Ind @ 1000 GPD)	1 000	315		631	0	0	0	0	54	0	0	685	0	0	0	0	685	MN01	1
*37 Brandywine Crossings Paul Sprenkle Tract (78 EDU's @ 350 GPD)	27,300	3 500		10 500	10 500	2,100	700	0	0	0	0	23 800	0	0	0	0	23 800	MN01	1
38 Chesterbrook (Residential)(5) Robert A Kinsley, Inc Woodland View Drive (57 EDU's @ 350 GPD)	19,950	6 300		8,750	4,200	700	0	0	0	0	0	13,650	0	0	0	0	13 650	MN01	1
*39 David Heiner - 35 Edwards Ave	350			350	0	0	0	0	0	0	0	350	0	0	0	0	350	MN01	1
40 Federal Express (4) 505 Farmbrook Drive Farmbrook Ind Park PA DEP Permit No 6780405 (1 Comm @ 1 500 GPD))	1 500	347		0	0	0	0	0	1,153	0	0	1,153	0	0	0	0	1,153	MN01	1
41 Wilner Realty 351 Loucks Road North Mall Renovation (1 Comm @ 2 970 GPD)	2 970	1,200		1,050	720	0	0	0	0	0	0	1,770	0	0	0	0	1,770	MN02	4
42 Central York School Dist New Roundtown School 500 Block Church Road (1 School @ 1,960 GPD)	1,960	1 500		460	0	0	0	0	0	0	0	460	0	0	0	0	460	MN01	1

C S DAVIDSON INC

Revised April 13 1998
EXHIBIT NO MT 5

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
*43 Stewart Associates - Bull Rd (25 acres W of Greenbriar Rd) (92 8 EDU's @ 350 GPD)	32,500	0		1,050	9,800	9,100	7,300	2,500	2,750	0	0	32,500	0	0	0	0	32 500		IP2-13
44 James Kraft/Aslan Heights 75 acres Claystone Rd Area (160 EDU's @ 350 GPD) DEP Code A3-67939-217-3	56 000	9 800		14,000	14,000	14 000	3,150	1 050	0	0	0	46,200	0	0	0	0	46 200		IP2 13
*45 Kemper Tract Claystone Road Area (40 EDU s @ 350 GPD)	25 000	0		700	7 000	7,150	3 500	3 500	3 150	0	0	25 000	0	0	0	0	25 000		IF
*46 Church Rd /Roosevelt Ave Manchester Twp Municipal Authority (55 EDU s @ 350 GPD)	19 250	4 900		3 500	1 050	4 900	4,900	0	0	0	0	14 350	0	0	0	0	14 350		IP2-13
*47 PAK Property Brandywine Lane (76 EDUs @ 350 GPD)	26 600	0		1,050	7 000	7,000	7,000	4,550	0	0	0	26,600	0	0	0	0	26 600	MN01	1
48 Roundtown Heights (4) Manchester Twp Mun Authority (2 EDU's @ 350 GPD)	700	0		0	0	0	0	0	700	0	0	700	0	0	0	0	700	MN01	1
49 USA Direct (5) Blackbridge Road (32 EDU's @ 350 GPD)	11,200	5,530		0	0	0	0	0	2,000	2,000	1,670	5 670	0	0	0	0	5 670	MN01	1
*50 George Kain Office 2800 N George Street (5 82 Ac @ 1000 GPD/Acre)	5 820	0		3 500	2 320	0	0	0	0	0	0	5 820	0	0	0	0	5 820	MN01	1
51 Harris Hub Woodlandview Drive DER Code A3-67939-229-3 (1 Ind @ 4385 GPD)	4 385	3 346		0	0	0	0	0	0	500	539	1 039	0	0	0	0	1 039	MN01	1
*52 Highland Partnership Greenbriar & Scotch (27 EDUs @ 350 GPD)	9,450	0		3 500	5,950	0	0	0	0	0	0	9 450	0	0	0	0	9,450		IP2-1
53 Manchester Twp Mun Auth (4) Aurora Heights Sewers DER Code A3-67939-222-3z (19 EDU's @ 350 GPD)	6,650	1,050		1,050	1,050	1,050	1,050	1,050	350	0	0	5 600	0	0	0	0	5 600	MN01	1
54 Manchester Twp Mun Auth Foustown Area Sewers DEP Code A3-67939-223 3z (2 EDU s @ 350 GPD)	700	350		350	0	0	0	0	0	0	0	350	0	0	0	0	350		IP2 13
*55 Dallmeyer Property (Rutters) 2300 Block Susquehanna Trail (19 Ac @ 1 000 GPD/Acre)	19 000	0		5,000	5 000	4,000	4,000	1,000	0	0	0	19 000	0	0	0	0	19 000	MN01	1
*56 Tan Bach Industrial (4) 3385 Susquehanna Trail (1 Industrial @ 585 GPD)	585	0		585	0	0	0	0	0	0	0	585	0	0	0	0	585	MN01	1

C S DAVIDSON INC

Revised April 13 1998
EXHIBIT NO MT-5

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - 05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
*57 Dan Beard Ind Area Blackbridge Road (70 Ac x 1 000 GPD/Ac)	70 000	0		20 000	20 000	10 000	10 000	10 000	0	0	0	70 000	0	0	0	0	70 000	MN01	1
*58 Briar Bend Phase IV (65 EDU s @ 350 GPD)	22 750	0		7 000	7,000	7,000	1,750	0	0	0	0	22,750	0	0	0	0	22 750	MN01	1
59 Tyrone Miller Brandywine Lane (6 EDU s @ 350 GPD)	2,100	0		1,400	700	0	0	0	0	0	0	2 100	0	0	0	0	2 100	MN01	1
*60 Pauline U Rishel (Res) (5) Woodland View Drive 65 Ac x 2 units/Ac (140 units @ 350 GPD)	49,000	0		10,500	10,500	10,500	10,500	7,000	0	0	0	49,000	0	0	0	0	49 000	MN01	1
61 Richard D Poole, Inc - Rishel (5) Woodland View Drive (35 Ac @ 1,000 GPD/Ac)	35,000	0		10,000	10,000	5,000	5,000	5,000	0	0	0	35,000	0	0	0	0	35,000	MN01	1
62 Highland Partnership (residual) (1 Commercial @ 3,000 GPD)	1 050			1,050	0	0	0	0	0	0	0	1,050	0	0	0	0	1 050		IP2-1
*63 Brookfield Estates (4) GBBM & R Partnership DEP Code No (10 EDUs @ 350 GPD/EDU)	3,500	1,050		2,100	350	0	0	0	0	0	0	2,450	0	0	0	0	2 450	MN01	1
64 Michael Barshinger White Oak Manor Condos (144 EDUs x 250 GPD)	36,000	8,000		12,500	12,500	3,000	0	0	0	0	0	28 000	0	0	0	0	28 000	MN01	1
65 Shearer Industrial (4)	2,100	0		2,100	0	0	0	0	0	0	0	2 100	0	0	0	0	2 100	MN01	1
66 MicroAge	400	0		400	0	0	0	0	0	0	0	400	0	0	0	0	400	MN01	1
67 Ream Printing	800	0		800	0	0	0	0	0	0	0	800	0	0	0	0	800	MN01	1
68 Stewart Associates (Ind) 20 39 AC	20 000	0		7,500	7,500	2,500	2,500	0	0	0	0	20,000	0	0	0	0	20,000		IF
69 Highland Partnership (office)	2,450	0		2 450	0	0	0	0	0	0	0	2 450	0	0	0	0	2 450		IP2-1
70 Christian Life Church	4,500	0		4,500	0	0	0	0	0	0	0	4,500	0	0	0	0	4,500		IP2-13
71 Highland Partnership (Adams) Greenbriar & Brandywine (20 EDUs @ 350 GPD)	7,000	0		5,250	1,750	0	0	0	0	0	0	7 000	0	0	0	0	7,000		IP2-13
*72 Sinking Springs Farm Medium Density Residential	113,400	0		0	0	0	0	0	0	0	0	0	0	40 000	40 000	33 400	113,400	MN01	1
*73 Sinking Springs Farm High Density Residential/Office	65,000	0	KH&176	0	0	0	0	0	0	0	0	0	0	20 000	20 000	25 000	65 000	MN01	1
*74 Boyer Farm (Del Hauck)	13,300	0	LH&79	1,050	0	1,750	1,750	1,750	1,750	1,750	1,750	11,550	1,750	0	0	0	13 300	MN01	1
*75 David Fahs (Residual Lands)	35 000	0	LH&78	0	3,500	3,500	3,500	3,500	3,500	3,500	3,500	24,500	10,500	0	0	0	35 000	MN01	1
*76 Township Building (RFP)	1,500	0		1,500	0	0	0	0	0	0	0	1 500	0	0	0	0	1 500	MN01	1
*77 Shindel	13 400	0	LH&69	2,680	2,680	2,680	2,680	2,680	0	0	0	13,400	0	0	0	0	13,400	MN01	1

C S DAVIDSON, INC

Revised April 13 1998
EXHIBIT NO MT-5

MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Gallons Currently Reserved	Gallons Currently Used	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - 05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
				All Projected Connections in Gallons per Day (GPD)															
*78 Stillmeadow Church of Nazerene	5,000	0	KH&167A	3,000	2,000	0	0	0	0	0	0	5 000	0	0	0	0	5 000	MN01	1
*79 First Assembly of God	1,500	0	KH&170-A	1,500	0	0	0	0	0	0	0	1,500	0	0	0	0	1,500	MN01	1
*80 Rutters Commercial (approx 80 acres)	80,000	0	KH&171C	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	80,000	0	0	0	0	80,000	MN01	1
81 Pump Station #2 Phaseout	10,500	0	0	0	0	0	0	0	0	0	0	0	10 500	0	0	0	10 500	MN01	1
*82 Prospect Hill Cemetary	95 000	0	JH&70	0	0	0	0	0	0	0	0	0	20 000	20,000	20 000	35 000	95 000		B10-17
*83 Miscellaneous Development (10 EDU's/Yr @ 350 GPD)	98 000	0		3,500	3 500	3,500	3,500	3,500	3,500	3 500	3,500	28 000	17 500	17 500	17 500	17 500	98 000	MN01	
TOTALS	1 755,752	162,398	N/A	316,605	272,640	175,049	133,230	106,590	87,257	55,550	43,459	1 190,380	97,074	97,500	97 500	110,900	1 593,354		

NOTES

				1998	1999	2000	2001	2002	2003	2004	2005	98 - 05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons
* No reservation agreement on file																	
(4) Project is tributary to Farmbrook Industrial Park Pump Station No 4				30,919	12,195	1,050	1,050	1,050	2 257	0	0	48,521	0	0	0	0	48 521
(5) Project is tributary to Blackbridge Road Pump Station No 5				39,396	27,565	18,677	15,500	12 000	2 000	2,000	1,670	118 808	0	0	0	0	118,808
(6) Project is tributary to Blackbridge Road Pump Station No 6				0	0	0	0	0	10,000	10,000	10,000	30,000	16 824	0	0	0	46,824
(8) Project is tributary to Hayshire Meadows Pump Station No 8				1,350	0	0	0	0	0	0	0	1 350	0	0	0	0	1 350
Subtotal York City MH No 1	1 450,182	141,798	N/A	257,555	215,120	136,399	111,780	99,540	81,007	55,550	43,459	1 000,410	77 074	77 500	77 500	75,900	1 308 384
Subtotal York City MH No 4	23 920	2,400	N/A	10,650	9,420	1,000	100	0	350	0	0	21,520	0	0	0	0	21 520
Subtotal York City MH No IP2-1	12,950	0	N/A	7,000	5,950	0	0	0	0	0	0	12,950	0	0	0	0	12 950
Subtotal York City MH No IP2-13	173,700	18,200	N/A	41,400	42,150	37,650	21,350	7,050	5 900	0	0	155 500	0	0	0	0	155,500
Subtotal York City MH No B10-17	95,000	0	N/A	0	0	0	0	0	0	0	0	0	20 000	20 000	20 000	35 000	95 000
Total	1,755,752	162,398	N/A	316,605	272,640	175,049	133,230	106,590	87,257	55,550	43,459	1,190,380	97,074	97,500	97 500	110 900	1,593 354

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YORK CITY SE\ AUTHORITY
REGIONAL AC T 537 PLAN
NEEDS SURVEY

Appendix A-22-b

Municipality: North York Borough

Date Prepared: January 31, 1998

Connection Point: 3 - Ninth Avenue Extended at Codorus Creek Trunkline

Peaking Factor: 2.76 (Actual)

Prepared By: Richard G. Resh, C S. Davidson, Inc.

City Manhole Number: 4
City Flow Meter: NY01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	137,000	391	378,120	391	3/94 thru 8/97 Monthly Average Daily Flow
1998-2005	5,600	16	15,456	16	
Year 2005	142,600	407	393,576	407	1997 Chapter 94 Report
2006-2010	3,500	10	9,660	10	
Year 2010	146,100	417	403,236	417	1997 Chapter 94 Report
2011-2020	7,000	20	19,320	20	
Year 2020 (1)	153,100	437	422,556	437	1997 Chapter 94 Report
2021-Max	3,500	10	9,660	10	
Ultimate(2)	156,600	447	432,216	447	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\nybneed(File A)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: North York Borough

Date Prepared: January 31, 1998

Connection Point: 4 - Toronita Street Extended at Codorus Creek Trunkline

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

City Manhole Number: 7-1
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	202	1	505	1	Oct., Nov., Dec., 1997 water use
1998-2005	0	0	0	0	
Year 2005	202	1	505	1	No Growth
2006-2010	0	0	0	0	
Year 2010	202	1	505	1	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	202	1	505	1	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	202	1	505	1	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\nybneed(File B)

YORK CITY SEV AUTHORITY
REGIONAL AC I 537 PLAN
NEEDS SURVEY

Municipality: North York Borough

Date Prepared: January 31, 1998

Connection Point: 5 - Fifth Avenue Extended at Codorus Creek Trunkline

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

City Manhole Number: 9
City Flow Meter: N/A

Planning Period	Average Daily Flow		Peak Daily Flow		Remarks
	GPD	EDUs	GPD	EDUs	
Existing	20,982	60	52,455	60	Oct , Nov., Dec., 1997 water use + 33.3% EDU count
1998-2005	2,800	8	7,000	8	
Year 2005	23,782	68	59,455	68	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	25,532	73	63,830	73	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	29,032	83	72,580	83	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	30,782	88	76,955	88	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\nybneed(File C)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: North York Borough

Date Prepared: January 31, 1998

Connection Point: 6 - 250' west of North George Street at Willis Run Interceptor

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

City Manhole Number: B9D
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	48,465	138	121,163	0	Oct., Nov., Dec., 1997 water use + 66.7% EDu count
1998-2005	0	0	0	0	
Year 2005	48,465	138	121,163	0	No Growth
2006-2010	0	0	0	0	
Year 2010	48,465	138	121,163	0	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	48,465	138	121,163	0	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	48,465	138	121,163	0	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\nybneed(File D)

C S DAVIDSON, INC

January 23, 1998
EXHIBIT NO NYB-1

NORTH YORK BOROUGH
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

	Name & Description	Map & Parcel	All Projected Connections in Gallons per Day (GPD) 1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
1	New structures on existing vacant lots or apartment conversions (1 EDU/year)	varies	350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800	N/A	9
2	New structures on existing vacant lots or apartment conversions (1 EDU/year)	varies	350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800	NY01	4
3	Expansion of existing industrial or commercial uses (1 EDU/year)	varies	350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800	NY01	4
4	New structures on existing vacant lots or apartment conversions		0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/A	7-1
5	New structures on existing vacant lots or apartment conversions		0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/A	B9B
	TOTALS		1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	8,400	5,250	5,250	5,250	5,250	29,400		

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YORK CITY SEWL ..UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 4.0 (Pumped Discharge)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 24 - Richland Avenue at Zinns Quarry Road

City Manhole Number: 71

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,637	5	6,548	5	October Quarter 1997 - EDU count/water use
1998-2005	2,800	8	11,200	8	
Year 2005	4,437	13	17,748	13	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	4,437	13	17,748	13	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	4,437	13	17,748	13	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	4,437	13	17,748	13	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

Appendix A-22-b

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 25 - Kings Mill Road west of South Penn Street

City Manhole Number: K9

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	21,680	62	54,200	62	October Quarter 1997 - EDU count/water use
1998-2005	700	2	1,750	2	
Year 2005	22,380	64	55,950	64	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	22,380	64	55,950	64	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	22,380	64	55,950	64	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	22,380	64	55,950	64	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWL .UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 3.68 (Actual)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 37 - Norway Street at Church Street
(Flow Meter at Courtland Street)

City Manhole Number: C27-10S
City Flow Meter: SG03

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	283,646	810	1,043,817	810	3/94 thru 8/97Monthly Average Daily flow (3)
1998-2005	19,650	56	72,312	56	
Year 2005	303,296	866	1,116,129	866	1997 Chapter 94 Report
2006-2010	9,100	26	33,488	26	
Year 2010	312,396	892	1,149,617	892	1997 Chapter 94 Report
2011-2020	3,500	10	12,880	10	
Year 2020 (1)	315,896	902	1,162,497	902	1997 Chapter 94 Report
2021-Max	1,750	5	6,440	5	
Ultimate(2)	317,646	907	1,168,937	907	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

(3): Less 9,354GPD from York Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G Resh, C.S Davidson, Inc

Connection Point: 38 - Boundary Avenue west of Wheatlyn Drive

City Manhole Number: C27-10J
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	5,275	15	13,188	15	October Quarter 1997 - EDU count/water use
1998-2005	3,150	9	7,875	9	
Year 2005	8,425	24	21,063	24	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	10,175	29	25,438	29	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	13,675	39	34,188	39	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	15,425	44	38,563	44	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point Identify manhole, street location, etc

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YORK CITY SEWL AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc

Connection Point: 39 - East Prospect Street at Ablemarle Street

City Manhole Number: C27-20

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	16,971	53	42,428	53	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	16,971	53	42,428	53	No Growth
2006-2010	0	0	0	0	
Year 2010	16,971	53	42,428	53	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	16,971	53	42,428	53	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	16,971	53	42,428	53	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point Identify manhole, street location, etc

YORK CITY SEWER AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S Davidson, Inc.

Connection Point: 40 - East Prospect Street at Lancaster Avenue

City Manhole Number: C27-23

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	19,951	58	49,878	58	October Quarter 1997 - EDU count/water use
1998-2005	350	1	875	1	
Year 2005	20,301	59	50,753	59	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	20,301	59	50,753	59	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	20,301	59	50,753	59	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	20,301	59	50,753	59	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWL AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 41 - Hill Street near East Prospect Street

City Manhole Number: C27-26
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	21,943	65	54,858	65	October Quarter 1997 - EDU count/water use
1998-2005	1,050	3	2,625	3	
Year 2005	22,993	68	57,483	68	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	22,993	68	57,483	68	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	22,993	68	57,483	68	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	22,993	68	57,483	68	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S Davidson, Inc

Connection Point: 42 - Elm Street at Hill Street

City Manhole Number: L12-12
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	13,293	43	33,233	43	October Quarter 1997 - EDU count/water use
1998-2005	2,450	7	6,125	7	
Year 2005	15,743	50	39,358	50	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	15,743	50	39,358	50	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	15,743	50	39,358	50	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	15,743	50	39,358	50	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc

YORK CITY SEWL ,UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc

Connection Point: 43 - Hill Street at Fourth Avenue

City Manhole Number: L9-13

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	7,700	22	19,250	22	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	7,700	22	19,250	22	No Growth
2006-2010	0	0	0	0	
Year 2010	7,700	22	19,250	22	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	7,700	22	19,250	22	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	7,700	22	19,250	22	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G Resh, C.S. Davidson, Inc

Connection Point: 44 - South Harrison Street north of Princess St./Third Ave.

City Manhole Number: L9-12

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	11,363	34	28,408	34	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	11,363	34	28,408	34	No Growth
2006-2010	0	0	0	0	
Year 2010	11,363	34	28,408	34	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	11,363	34	28,408	34	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	11,363	34	28,408	34	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc

YORK CITY SEWL ,UTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Appendix A-22-b

Municipality: Spring Garden Township

Peaking Factor: 2 5 (Assumed)

Date Prepared: January 17, 1998

Prepared By· Richard G. Resh, C.S Davidson, Inc

Connection Point: 45 - South Harrison Street at Second Avenue/Poplar Street

City Manhole Number: L9-5F

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	10,150	29	25,375	29	October Quarter 1997 - EDU count
1998-2005	350	1	875	1	
Year 2005	10,500	30	26,250	30	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	10,500	30	26,250	30	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	10,500	30	26,250	30	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	10,500	30	26,250	30	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2). Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

Appendix A-22-b

YORK CITY SEWER AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc

Connection Point: 46 - South Harrison Street at First Avenue/Edison Street

City Manhole Number: L9-4F

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	7,350	21	18,375	21	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	7,350	21	18,375	21	No Growth
2006-2010	0	0	0	0	
Year 2010	7,350	21	18,375	21	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	7,350	21	18,375	21	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	7,350	21	18,375	21	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc

Appendix A-22-b

YORK CITY SEWE UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2 5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc.

Connection Point: 47 - East Market Street east of East Street

City Manhole Number: L7-16

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	3,150	9	7,875	9	October Quarter 1997 - EDU count
1998-2005	350	1	875	1	
Year 2005	3,500	10	8,750	10	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	3,500	10	8,750	10	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	3,500	10	8,750	10	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	3,500	10	8,750	10	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2). Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S Davidson, Inc

Connection Point: 48 - East Philadelphia Street at East Street

City Manhole Number: C13-30

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	14,350	42	35,875	42	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	14,350	42	35,875	42	No Growth
2006-2010	0	0	0	0	
Year 2010	14,350	42	35,875	42	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	14,350	42	35,875	42	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	14,350	42	35,875	42	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Appendix A-22-b

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S Davidson, Inc

Connection Point: 26 - Jackson Street East of Virginia Avenue

City Manhole Number: K14

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	7,350	21	18,375	21	October Quarter 1997 - EDU count
1998-2005	350	1	875	1	
Year 2005	7,700	22	19,250	22	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	7,700	22	19,250	22	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	7,700	22	19,250	22	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	7,700	22	19,250	22	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note. Provide separate data for each connection point. Identify manhole, street location, etc.

Appendix A-22-b

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 4.38 (Actual)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 27 - Springettsbury Avenue east of Virginia Avenue

City Manhole Number: K16

City Flow Meter: SG01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	208,000	594	911,040	594	3/94 thru 8/97Monthly Average Daily flow
1998-2005	47,950	137	210,021	137	
Year 2005	255,950	731	1,121,061	731	1997 Chapter 94 Report
2006-2010	19,250	55	84,315	55	
Year 2010	275,200	786	1,205,376	786	1997 Chapter 94 Report
2011-2020	21,000	60	91,980	60	
Year 2020 (1)	296,200	846	1,297,356	846	1997 Chapter 94 Report
2021-Max	1,750	5	7,665	5	
Ultimate(2)	297,950	851	1,305,021	851	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWL .UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By· Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 28 - Along Tyler Run north Country Club Road

City Manhole Number: K28
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	30,850	88	77,125	88	October Quarter 1997 - EDU count/water use
1998-2005	2,800	8	7,000	8	
Year 2005	33,650	96	84,125	96	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	35,400	101	88,500	101	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	38,900	111	97,250	111	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	40,650	116	101,625	116	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc

Connection Point: 29 - Irving Road north of Rathton Road

City Manhole Number. K40-20
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	21,000	60	52,500	60	October Quarter 1997 - EDU count
1998-2005	7,000	20	17,500	20	
Year 2005	28,000	80	70,000	80	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	28,000	80	70,000	80	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	28,000	80	70,000	80	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	28,000	80	70,000	80	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point Identify manhole, street location, etc.

YORK CITY SEWE JTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc.

Connection Point: 30 - Rathton Road west of Peyton Road

City Manhole Number: K40-6

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	26,950	77	67,375	77	October Quarter 1997 - EDU count
1998-2005	7,350	21	18,375	21	
Year 2005	34,300	98	85,750	98	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	34,300	98	85,750	98	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	34,300	98	85,750	98	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	34,300	98	85,750	98	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared. January 17, 1998

Prepared By: Richard G. Resh, C S Davidson, Inc.

Connection Point: 31 - Cadot Alley east of Arlington Road

City Manhole Number. K50

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,050	3	2,625	3	October Quarter 1997 - EDU count
1998-2005	2,100	6	5,250	6	
Year 2005	3,150	9	7,875	9	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	3,150	9	7,875	9	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	3,150	9	7,875	9	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	3,150	9	7,875	9	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point Identify manhole, street location, etc

YORK CITY SEWE. .UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S Davidson, Inc.

Connection Point: 32 - South Queen Street at Cadot Alley

City Manhole Number: K48
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	700	2	1,750	2	October Quarter 1997 - EDU count
1998-2005	2,450	7	6,125	7	
Year 2005	3,150	9	7,875	9	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	3,150	9	7,875	9	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	3,150	9	7,875	9	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	3,150	9	7,875	9	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc.

Connection Point: 33 - Rathton Road west of South Pine Street/Hillcroft Lane

City Manhole Number: SG-633

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	28,274	82	70,685	82	October Quarter 1997 - EDU count/water use
1998-2005	9,800	28	24,500	28	
Year 2005	38,074	110	95,185	110	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	39,824	115	99,560	115	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	43,324	125	108,310	125	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	45,074	130	112,685	130	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWL.. AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S Davidson, Inc.

Connection Point: 34 - Rathton Road at South Pine Street/Hillcroft Lane

City Manhole Number: C40-14

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,750	5	4,375	5	October Quarter 1997 - EDU count
1998-2005	1,050	3	2,625	3	
Year 2005	2,800	8	7,000	8	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	2,800	8	7,000	8	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,800	8	7,000	8	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,800	8	7,000	8	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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Appendix A-22-b

YORK CITY SEWER AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc

Connection Point: 35 - Rathton Road east of South Pine Street/Hillcroft Lane

City Manhole Number: C40-17

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	3,150	9	7,875	9	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	3,150	9	7,875	9	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	3,150	9	7,875	9	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	3,150	9	7,875	9	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	3,150	9	7,875	9	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEV AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 36 - Edgar Street at Crone Alley

City Manhole Number: C51B

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,100	6	5,250	6	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	2,100	6	5,250	6	No Growth
2006-2010	0	0	0	0	
Year 2010	2,100	6	5,250	6	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,100	6	5,250	6	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,100	6	5,250	6	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.57 (Actual)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 36A - East side Poorhouse Run south of Rockdale Avenue in Memorial Park

City Manhole Number: C39N

City Flow Meter: SG02A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	222,393	635	571,550	635	12/94 thru 8/97Monthly Average Daily flow (3)
1998-2005	14,000	40	35,980	40	
Year 2005	236,393	675	607,530	675	1997 Chapter 94 Report
2006-2010	8,750	25	22,488	25	
Year 2010	245,143	700	630,018	700	1997 Chapter 94 Report
2011-2020	11,200	32	28,784	32	
Year 2020 (1)	256,343	732	658,802	732	1997 Chapter 94 Report
2021-Max	0	0	0	0	
Ultimate(2)	256,343	732	658,802	732	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

(3): Less 18,607 GPD from York Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEW AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 49 - Loucks Mill Road at Lock Lane

City Manhole Number: C4

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	27,357	78	68,393	78	October Quarter 1997 - water use
1998-2005	5,600	16	14,000	16	
Year 2005	32,957	94	82,393	94	1997 Chapter 94 Report
2006-2010	3,500	10	8,750	10	
Year 2010	36,457	104	91,143	104	1997 Chapter 94 Report
2011-2020	7,000	20	17,500	20	
Year 2020 (1)	43,457	124	108,643	124	1997 Chapter 94 Report
2021-Max	3,500	10	8,750	10	
Ultimate(2)	46,957	134	117,393	134	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.02 (Actual)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: 52 - Along Tyler Run north of Country Club Road thru York Township Tyler Run Interceptor

City Manhole Number: K27

City Flow Meter: YT01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	127,272	364	257,089	364	October Quarter 1997 - EDU count/water use
1998-2005	78,050	223	157,661	223	
Year 2005	205,322	587	414,750	587	1997 Chapter 94 Report
2006-2010	50,750	145	102,515	145	
Year 2010	256,072	732	517,265	732	1997 Chapter 94 Report
2011-2020	10,500	30	21,210	30	
Year 2020 (1)	266,572	762	538,475	762	1997 Chapter 94 Report
2021-Max	5,250	15	10,605	15	
Ultimate(2)	271,822	777	549,080	777	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEW. .UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc.

Connection Point: North side of Codorus Creek east of Richland Avenue in Bantz Park

City Manhole Number: A67

City Flow Meter: Future SG04

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	0	0	0	0	Under Construction
1998-2005	187,900	537	469,750	537	
Year 2005	187,900	537	469,750	537	1997 Chapter 94 Report
2006-2010	167,250	478	418,125	478	
Year 2010	355,150	1,015	887,875	1,015	1997 Chapter 94 Report
2011-2020	310,500	887	776,250	887	
Year 2020 (1)	665,650	1,902	1,664,125	1,902	1997 Chapter 94 Report
2021-Max	25,250	72	63,125	72	
Ultimate(2)	690,900	1,974	1,727,250	1,974	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - East side South Harrison Street from Third Avenue to East Market Street

City Manhole Number: L7-14 to L9-12

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	5,600	16	14,000	16	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	5,600	16	14,000	16	No Growth
2006-2010	0	0	0	0	
Year 2010	5,600	16	14,000	16	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	5,600	16	14,000	16	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	5,600	16	14,000	16	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEW\ .UTHORITY

REGIONAL ACT 537 PLAN

NEEDS SURVEY

Appendix A-22-b

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - South side West Springettsbury Avenue west of South Newberry Street

City Manhole Number: K17

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,400	4	3,500	4	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	1,400	4	3,500	4	No Growth
2006-2010	0	0	0	0	
Year 2010	1,400	4	3,500	4	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	1,400	4	3,500	4	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	1,400	4	3,500	4	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - East side of South Edgar Street
south of Springdale Avenue

City Manhole Number: C48

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	7,484	21	18,710	21	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	7,484	21	18,710	21	No Growth
2006-2010	0	0	0	0	
Year 2010	7,484	21	18,710	21	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	7,484	21	18,710	21	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	7,484	21	18,710	21	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWL UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - East side of South Edgar Street north of Springdale Avenue

City Manhole Number: C46B

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,100	6	5,250	6	October Quarter 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	2,100	6	5,250	6	No Growth
2006-2010	0	0	0	0	
Year 2010	2,100	6	5,250	6	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,100	6	5,250	6	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,100	6	5,250	6	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - East side of South Edgar Street
south of Creston Road

City Manhole Number: C53

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	700	2	1,750	2	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	700	2	1,750	2	No Growth
2006-2010	0	0	0	0	
Year 2010	700	2	1,750	2	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	700	2	1,750	2	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	700	2	1,750	2	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWI UTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - North side of Mt. Rose Avenue west of Norway Street

City Manhole Number: C27-14 thru C27-16

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	207	1	516	1	October Quarter 1997 - water use
1998-2005	24,000	69	60,000	69	
Year 2005	24,207	70	60,516	70	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	24,207	70	60,516	70	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	24,207	70	60,516	70	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	24,207	70	60,516	70	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor. 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S. Davidson, Inc

Connection Point: DC - Along Codorus Creek near Grantley Road

City Manhole Number: A58
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	10,138	29	25,345	29	October Quarter 1997 - EDU count/water use
1998-2005	5,600	16	14,000	16	
Year 2005	15,738	45	39,345	45	1997 Chapter 94 Report
2006-2010	3,500	10	8,750	10	
Year 2010	19,238	55	48,095	55	1997 Chapter 94 Report
2011-2020	7,000	20	17,500	20	
Year 2020 (1)	26,238	75	65,595	75	1997 Chapter 94 Report
2021-Max	3,500	10	8,750	10	
Ultimate(2)	29,738	85	74,345	85	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

Appendix A-22-b

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C.S. Davidson, Inc.

Connection Point: DC - South side of East Prospect Street from Albemarle Street to Hill Street

City Manhole Number: C27-20 to C27-26

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,800	8	7,000	8	October Quarter 1997 - EDU count
1998-2005	0	0	0	0	
Year 2005	2,800	8	7,000	8	No Growth
2006-2010	0	0	0	0	
Year 2010	2,800	8	7,000	8	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,800	8	7,000	8	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,800	8	7,000	8	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2 5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G Resh, C.S. Davidson, Inc.

Connection Point: DC - Along Tyler Run at York College of Pennsylvania

City Manhole Number: T17

City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	37,526	107	93,815	107	October Quarter 1997 - EDU count/water use
1998-2005	25,000	71	62,500	71	
Year 2005	62,526	178	156,315	178	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	62,526	178	156,315	178	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	62,526	178	156,315	178	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	62,526	178	156,315	178	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

YORK CITY SE\ AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: Spring Garden Township

Peaking Factor: 2.5 (Assumed)

Date Prepared: January 17, 1998

Prepared By: Richard G. Resh, C S Davidson, Inc

Connection Point: DC - South George Street north of Rathton Road

City Manhole Number: T25
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	350	1	875	1	October Quarter 1997 - EDU count/water use
1998-2005	350	1	875	1	
Year 2005	700	2	1,750	2	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	700	2	1,750	2	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	700	2	1,750	2	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	700	2	1,750	2	No Growth

(1): Allocation for 20 year wastewater treatment planning

(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

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C S DAVIDSON INC

January 17, 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
					All Projected Connections in Gallons per Day (GPD)															
1 Regents Glen (Wilmac) Indian Rock Dam Road Res 1800 EDU's @ 350 GPD	630 000	0	630 000		20 000	20 000	20 000	20 000	20 000	20 000	20,000	20 000	160 000	150 000	150 000	150,000	20 000	630,000	A67	
Comm 32 Acres	27 000	0	27 000	31&1	2 000	2 000	2 000	2,000	2,000	2 000	2 000	2 000	16 000	11 000	0	0	0	27,000	A67	
2 Wilmac Commercial Tracts Richland Avenue (3 tracts @ 1 500 Gal/site)	4 500	0	4,500	31&1 29&1A	0	500	500	500	500	500	500	500	3 500	1 000	0	0	0	4 500	A67	
4 Wyndham Hills South Wyndham Drive South (75 lots @ 350 GPD)	26,350	11 650	14,700	32	2,800	2 800	2 800	2 800	2 800	700	0	0	14 700	0	0	0	0	14,700	K27	YT01
5 Rosenmiller Farm a Ph 3 - Grantley Road (29 lots @ 350 GPD)	10,150	5 600	4,550	31	1,750	1 750	1,050	0	0	0	0	0	4 550	0	0	0	0	4,550	K27	YT01
b Ph 5 - Starcross Road (8 lots @ 350 GPD)	2,800	1 400	1,400	HI	700	700	0	0	0	0	0	0	1 400	0	0	0	0	1,400	K27	YT01
c. Tract 2 - Starcross Road (1 lot @ 350 GPD)	350	0	350	II&4C	350	0	0	0	0	0	0	0	350	0	0	0	0	350	K27	YT01
6 York College of PA Country Club Road Gymnasium Addition (15,000 GPD) Student Housing (10,000 GPD)	25 000	0	25,000	27&184	25,000	0	0	0	0	0	0	0	25 000					25,000	T17	
7 Mt Rose Shopping Center Mt Rose Avenue Restaurant (4,000 GPD) Vacant Giant Store (9,000 GPD) Vacant Land (11,000 (GPD)	24 000	0	24,000	32&2	24,000	0	0	0	0	0	0	0	24 000					24,000	C27-16	
8 Oakridge Sanitary Sewer District DER Permit No 6772422 (130 EDUs @ 350 GPD)	45,500	0	45,500	23	0	0	0	0	0	0	0	0	0	45,500	0	0	0	45,500	K27	YT01
9 Kroy Industrial Park 702 S Richland Avenue (70 Employees @ 35 GPD)	2 450	0	2,450	30&1A	1,225	0	1 225	0	0	0	0	0	2 450					2,450	71	
10 York Water Company Grantley Road (6 Lots @ 350 GPD)	2 100	1,750	350	II&3S	350	0	0	0	0	0	0	0	350					350	K16	SG01
11 Craig E Schaszberger 1665 Mt Rose Avenue PA DER Code No P3-67003-050-II (1 EDU @ 350 GPD)	350	0	350	15&32A	350	0	0	0	0	0	0	0	350					350	C27-10S	SG03

C S DAVIDSON INC

January 17 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
					All Projected Connections in Gallons per Day (GPD)															
12 Robert Hirschman Lot Nos 11 & 12 on southeast corner Wyndham Drive & Country Club Road (2 EDUs @ 350 GPD)	700	0	700	32&100A 32&100B	0	0	0	0	700	0	0	0	700					700	K16	SG01
13 Verdan Hills Verdan Ct & Sleepy Hollow Road (10 Lots @ 350 GPD)	3 500	0	3 500	23&175	3,500	0	0	0	0	0	0	0	3 500					3,500	K27	YT01
14 Michael Vetter South George Street (20 Units @ 350 GPD)	7,000	0	7,000	24&106	7,000	0	0	0	0	0	0	0	7 000					7,000	K27	YT01
15 Wyndham Hills Sewer District #2 DER Code No P3-67003-06803																				
a Summit Circle South & Wyndham Dr South (22 Lots @ 350 GPD)	7,700	2,100	5,600	32	1,750	1,750	1 750	350	0	0	0	0	5 600					5,600	K27	YT01
b. Rosewood Lane & Dogwood Circle (13 Lots @ 350 GPD)	4,550	0	4,550	32	1,050	1,050	1 050	1,050	350	0	0	0	4,550					4,550	K27	YT01
c. Southwynd (39 Lots @ 350 GPD)	13,650	8,400	5,250	31	2,800	1,050	1 050	350	0	0	0	0	5,250					5,250	K27	YT01
d. Oakdale Drive (11 Lots @ 350 GPD)	3,850	1,750	2,100	31	1,050	1,050	0	0	0	0	0	0	2,100					2,100	K27	YT01
16 Penn State York Campus 1031 Edgecomb Avenue Auditorium & Library Addition	2,500	0	2,500	17&5	0	0	0	2,500	0	0	0	0	2,500					2,500	C27-10S	SG03
17 Smallbrook Lane Sewer Extension (16 EDUs @ 350 GPD)	5,600	2,450	3,150	32	1,050	1,050	1,050	0	0	0	0	0	3 150					3,150	K16	SG01
18 Wyndham Hills North Side (180 EDUs @ 350 GPD)	63,000	0	63,000	32	3,500	3,500	3 500	3 500	3,500	3,500	3,500	3,500	28 000	17,500	17,500	0	0	63,000	K16	SG01
19 Unconnected Residential Properties and Vacant Lots Service Area - Direct Connections	350	0	350	varies	350								350					350	T25	
20 Unconnected Residential Properties and Vacant Lots - Service Area 24	350	0	350	varies	350								350					350	71	
21 Unconnected Residential Properties and Vacant Lots - Service Area 25	700	0	700	varies	350	350							700					700	K9	
22 Unconnected Residential Properties and Vacant Lots - Service Area 26	350	0	350	varies	350								350					350	K14	

C S DAVIDSON INC

January 17 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	All Projected Connections in Gallons per Day (GPD) 1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
23 Unconnected Residential Properties and Vacant Lots - Service Area 27	12,950	0	12,950	varies	1,750	1,750	1,750	1,750	1,750	1,750	1,750	700	12,950					12,950	K16	SG01
24 Unconnected Residential Properties and Vacant Lots - Service Area 29	7,000	0	7,000	varies	1,050	1,050	1,050	1,050	1,050	1,050	700		7,000					7,000	K40 2D	
25 Unconnected Residential Properties and Vacant Lots - Service Area 30	7,350	0	7,350	varies	1,050	1,050	1,050	1,050	1,050	1,050	1,050		7,350					7,350	K40-6	
26 Unconnected Residential Properties and Vacant Lots - Service Area 31	2,100	0	2,100	varies	350	350	350	350	350	350			2,100					2,100	K50	
27 Unconnected Residential Properties and Vacant Lots - Service Area 32	2,450	0	2,450	varies	350	350	350	350	350	350	350		2,450					2,450	K48	
28 Unconnected Residential Properties and Vacant Lots - Service Area 33	7,000	0	7,000	varies	1,050	1,050	1,050	1,050	1,050	1,050	700		7,000					7,000	SG-633	
29 Unconnected Residential Properties and Vacant Lots - Service Area 34	1,050	0	1,050	varies	350	350	350						1,050					1,050	C40-14	
30 Unconnected Residential Properties and Vacant Lots - Service Area 36	33,950	0	33,950	varies	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	14,000	8,750	8,750	2,450		33,950	C39N	SG02
31 Unconnected Residential Properties and Vacant Lots - Service Area 37	21,350	0	21,350	varies	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	14,000	7,350				21,350	C27-10S	SG03
32 Unconnected Residential Properties and Vacant Lots - Service Area 38	350	0	350	varies	350								350					350	C27-10J	
33 Unconnected Residential Properties and Vacant Lots - Service Area 40	350	0	350	varies	350								350					350	C27-23	
34 Unconnected Residential Properties and Vacant Lots - Service Area 41	1,050	0	1,050	varies	350	350	350						1,050					1,050	C27-26	
35 Unconnected Residential Properties and Vacant Lots - Service Area 42	2,450	0	2,450	varies	350	350	350	350	350	350	350		2,450					2,450	L12-12	
36 Unconnected Residential Properties and Vacant Lots - Service Area 45	350	0	350	varies	350								350					350	L9-5F	
37 Unconnected Residential Properties and Vacant Lots - Service Area 47	350	0	350	varies	350								350					350	L7-16	
38 Unconnected Residential Properties and Vacant Lots - Service Area 50	2,450	0	2,450	varies	350	350	350	350	350	350	350		2,450					2,450	K27	YT01

C S DAVIDSON INC

January 17, 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	All Projected Connections in Gallons per Day (GPD) 1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
39 Unconnected Residential Properties and Vacant Lots Service Area 51	5 950	0	5 950	varies	1,050	1,050	1 050	1,050	1,050	700			5 950					5 950	K27	YT01
40 Unconnected Residential Properties and Vacant Lots Service Area 51B	1 050	0	1 050	varies	350	350	350						1 050					1,050	K27	YT01
41 Unconnected Residential Properties and Vacant Lots - Service Area 53	10 150	0	10,150	varies	1,750	1,750	1,750	1 750	1 750	1,400			10 150					10,150	K27	YT01
42 Unconnected Residential Properties and Vacant Lots - Service Area 53A	350	0	350	varies	350								350					350	K27	YT01
43 Unconnected Residential Properties and Vacant Lots - Service Area 54	350	0	350	varies	350								350					350	K27	YT01
44 Unconnected Residential Properties and Vacant Lots - Service Area 55	350	0	350	varies	350								350					350	K27	YT01
45 Miscellaneous Commercial Growth (1 EDU/year @ 350 GPD) - Area 53	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1 750	1,750	1,750	1,750	9,800	K27	YT01
46 Miscellaneous Commercial Growth (1 EDU/year @ 350 GPD) - Area 28	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1,750	1,750	1,750	1,750	9,800	K28	
47 Miscellaneous Commercial Growth (1 EDU/year @ 350 GPD) - Area 33	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800	SG-633	
48 Miscellaneous Commercial Growth (1 EDU/year @ 350 GPD) - Area 35	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9 800	C27-10S	SG03
49 Miscellaneous Industrial Growth (2 EDUs/year @ 350 GPD) - Area 49	19,600	0	19,600	varies	700	700	700	700	700	700	700	700	5 600	3,500	3,500	3,500	3,500	19,600	C4	
50 Miscellaneous Industrial Growth (2 EDUs/year @ 350 GPD) - Area DC	19,600	0	19,600	varies	700	700	700	700	700	700	700	700	5 600	3,500	3,500	3,500	3,500	19,600	A58	
51 Miscellaneous Residential Growth (2 EDUs/year @ 350 GPD) - Area 28	19,600	0	19 600	varies	700	700	700	700	700	700	700	700	5 600	3 500	3,500	3,500	3,500	19,600	K27	YT01
52 Miscellaneous Residential Growth (3 EDUs/year @ 350 GPD) - Area 36	29 400	0	29,400	varies	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1 050	8 400	5,250	5,250	5,250	5 250	29,400	A67	YT01
53 Miscellaneous Residential Growth (1 EDU/year @ 350 GPD) - Area 27	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1 750	1,750	1,750	1,750	9,800	K16	SG03
54 Miscellaneous Industrial Growth (1 EDU/year @ 350 GPD) - Area 38	9 800	0	9 800	varies	350	350	350	350	350	350	350	350	2 800	1 750	1,750	1,750	1,750	9 800	C27-10J	

C S DAVIDSON, INC

January 17, 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description		Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	1998	1999	All Projected Connections in Gallons per Day (GPD) 2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
	TOTALS	1,182,100	35,100	1,147,000		122,975	56 450	54,875	50,900	47,700	43,850	40,000	35,450	452 200	267 350	202,500	178 700	46 250	1,147,000		

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C S DAVIDSON, INC

January 17 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
					All Projected Connections in Gallons per Day (GPD)															
9 Kroy Industrial Park	2,450	0	2,450	30&1A	1,225	0	1,225	0	0	0	0	0	2,450					2,450	71	
20 Unconnected Residential Properties	350	0	350	varies	350								350					350	71	
SUBTOTAL	2,800	0	2,800	0	1,575	0	1,225	0	0	0	0	0	2,800	0	0	0	0	2,800		
50 Miscellaneous Industrial Growth	19,600	0	19,600	varies	700	700	700	700	700	700	700	700	5 600	3,500	3 500	3,500	3 500	19,600	A58	
1 Regents' Glen (Wilmac)-residential	630,000	0	630,000		20,000	20 000	20 000	20 000	20 000	20,000	20 000	20,000	160,000	150,000	150,000	150,000	20 000	630 000	A67	
1 Regents' Glen (Wilmac)-commercial	27,000	0	27,000	31&1	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2 000	16,000	11,000	0	0	0	27,000	A67	
2 Wilmac Commercial Tracts	4500	0	4,500	29&1A	0	500	500	500	500	500	500	500	3,500	1,000	0	0	0	4 500	A67	
52 Miscellaneous Residential Growth	29,400	0	29,400	varies	1,050	1,050	1 050	1 050	1 050	1,050	1,050	1 050	8 400	5 250	5 250	5 250	5 250	29,400	A67	YT01
SUBTOTAL	690,900	0	690,900	0	23,050	23,550	23,550	23,550	23,550	23,550	23,550	23,550	187,900	167,250	155,250	155,250	25,250	690,900		
11 Craig E Schaszberger	350	0	350	15&32A	350	0	0	0	0	0	0	0	350					350	C27-10S	SG03
16 Penn State York Campus	2,500	0	2,500	17&5	0	0	0	2,500	0	0	0	0	2,500					2,500	C27-10S	SG03
31 Unconnected Residential Properties	21,350	0	21,350	varies	1,750	1,750	1,750	1 750	1 750	1,750	1,750	1 750	14 000	7,350				21 350	C27-10S	SG03
48 Miscellaneous Commercial Growth	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1 750	1 750	1,750	1 750	9,800	C27-10S	SG03
SUBTOTAL	34,000	0	34,000	0	2,450	2,100	2,100	4,600	2,100	2,100	2,100	2,100	19,650	9,100	1,750	1,750	1,750	34,000		
32 Unconnected Residential Properties	350	0	350	varies	350								350					350	C27-10J	
51 Miscellaneous Industrial Growth	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1,750	1,750	1,750	1 750	9,800	C27-10J	
SUBTOTAL	10,150	0	10,150	0	700	350	350	350	350	350	350	350	3,150	1,750	1,750	1,750	1,750	10,150		
7 Mt. Rose Shopping Center	24,000	0	24,000	32&2	24,000	0	0	0	0	0	0	0	24 000					24,000	C27-16	
33 Unconnected Residential Properties	350	0	350	varies	350								350					350	C27-23	
34 Unconnected Residential Properties	1,050	0	1,050	varies	350	350	350						1,050					1,050	C27-26	
49 Miscellaneous Industrial Growth	19 600	0	19,600	varies	700	700	700	700	700	700	700	700	5,600	3 500	3,500	3 500	3 500	19 600	C4	
29 Unconnected Residential Properties	1,050	0	1,050	varies	350	350	350						1,050					1 050	C40-14	
30 Unconnected Residential Properties	33,950	0	33,950	varies	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1 750	14 000	8,750	8,750	2,450		33,950	C39N	
22 Unconnected Residential Properties	350	0	350	varies	350								350					350	K14	
10 York Water Company	2,100	1,750	350	II&3S	350	0	0	0	0	0	0	0	350					350	K16	SG01
12 Robert Hirschman	700	0	700	32&100B	0	0	0	0	700	0	0	0	700					700	K16	SG01
17 Smallbrook Lane Sewer Extension	5,600	2 450	3,150	32	1,050	1,050	1,050	0	0	0	0	0	3 150					3,150	K16	SG01
18 Wyndham Hills North Side	63,000	0	63,000	32	3,500	3,500	3 500	3,500	3 500	3 500	3 500	3 500	28 000	17 500	17,500	0	0	63,000	K16	SG01
23 Unconnected Residential Properties	12,950	0	12,950	varies	1,750	1,750	1,750	1,750	1,750	1,750	1,750	700	12 950					12,950	K16	SG01
53 Miscellaneous Residential Growth	9,800	0	9 800	varies	350	350	350	350	350	350	350	350	2 800	1 750	1,750	1 750	1 750	9,800	K16	SG03
SUBTOTAL	94,150	4,200	89,950	0	7,000	6,650	6,650	5,600	6,300	5,600	5,600	4,550	47,950	19,250	19,250	1,750	1,750	89,950		
4 Wyndham Hills South	26 350	11 650	14,700	32	2 800	2,800	2 800	2,800	2 800	700	0	0	14 700	0	0	0	0	14,700	K27	YT01
5 c. Rosenmiller Farm-Tract 2-Starcross Road	350	0	350	II&4C	350	0	0	0	0	0	0	0	350	0	0	0	0	350	K27	YT01
5 b Rosenmiller Farm-Ph 5 - Starcross Road	2,800	1,400	1,400	HI	700	700	0	0	0	0	0	0	1,400	0	0	0	0	1,400	K27	YT01
5 a Rosenmiller Farm-Ph 3-Grantley Road	10,150	5,600	4,550	31	1,750	1,750	1,050	0	0	0	0	0	4 550	0	0	0	0	4,550	K27	YT01
8 Oakridge Sanitary Sewer District	45,500	0	45,500	23	0	0	0	0	0	0	0	0	0	45 500	0	0	0	45,500	K27	YT01
13 Verdan Hills	3 500	0	3,500	23&175	3,500	0	0	0	0	0	0	0	3 500					3 500	K27	YT01
14 Michael Vetter	7,000	0	7,000	24&106	7,000	0	0	0	0	0	0	0	7,000					7,000	K27	YT01

C S DAVIDSON INC

January 17, 1998
EXHIBIT NO SGT-4

SPRING GARDEN TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Original Proposed Gallons	Previously Connected	Net Gallons	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No	Flow Meter
					All Projected Connections in Gallons per Day (GPD)															
15 d Oakdale Drive-Wyndahm Hills	3,850	1,750	2,100	31	1,050	1,050	0	0	0	0	0	0	2,100					2,100	K27	YT01
15 a Summit Circle S & Wyndham Dr S	7,700	2,100	5,600	32	1,750	1,750	1,750	350	0	0	0	0	5,600					5,600	K27	YT01
15 b Rosewood Lane & Dogwood Circle	4,550	0	4,550	32	1,050	1,050	1,050	1,050	350	0	0	0	4,550					4,550	K27	YT01
15 c. Southwynd-Wyndham Hills	13 650	8 400	5 250	31	2,800	1,050	1,050	350	0	0	0	0	5,250					5 250	K27	YT01
38 Unconnected Residential Properties	2,450	0	2,450	varies	350	350	350	350	350	350	350		2,450					2,450	K27	YT01
39 Unconnected Residential Properties	5,950	0	5,950	varies	1,050	1 050	1,050	1,050	1,050	700			5,950					5,950	K27	YT01
40 Unconnected Residential Properties	1,050	0	1,050	varies	350	350	350						1,050					1,050	K27	YT01
41 Unconnected Residential Properties	10,150	0	10,150	varies	1,750	1,750	1,750	1,750	1,750	1,400			10 150					10,150	K27	YT01
42 Unconnected Residential Properties	350	0	350	varies	350								350					350	K27	YT01
43 Unconnected Residential Properties	350	0	350	varies	350								350					350	K27	YT01
44 Unconnected Residential Properties	350	0	350	varies	350								350					350	K27	YT01
45 Miscellaneous Commercial Growth	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2 800	1,750	1,750	1,750	1,750	9,800	K27	YT01
51 Miscellaneous Residential Growth	19,600	0	19,600	varies	700	700	700	700	700	700	700	700	5 600	3,500	3 500	3 500	3 500	19,600	K27	YT01
SUBTOTAL	**175,450**	**30,900**	**144,550**	**94**	**28,350**	**14,700**	**12,250**	**8,750**	**7,350**	**4,200**	**1,400**	**1,050**	**78,050**	**50,750**	**5,250**	**5,250**	**5,250**	**144,550**		
46 Miscellaneous Commercial Growth	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2,800	1,750	1 750	1,750	1,750	9,800	K28	
24 Unconnected Residential Properties	7,000	0	7,000	varies	1,050	1,050	1,050	1,050	1,050	1,050	700		7,000					7,000	K40-D	
25 Unconnected Residential Properties	7,350	0	7,350	varies	1,050	1,050	1,050	1,050	1,050	1,050	1,050		7,350					7,350	K40-6	
27 Unconnected Residential Properties	2,450	0	2,450	varies	350	350	350	350	350	350	350		2 450					2,450	K48	
26 Unconnected Residential Properties	2,100	0	2,100	varies	350	350	350	350	350	350			2 100					2,100	K50	
21 Unconnected Residential Properties	700	0	700	varies	350	350							700					700	K9	
35 Unconnected Residential Properties	2,450	0	2,450	varies	350	350	350	350	350	350	350		2,450					2,450	L12-12	
37 Unconnected Residential Properties	350	0	350	varies	350								350					350	L7-16	
36 Unconnected Residential Properties	350	0	350	varies	350								350					350	L9-5F	
28 Unconnected Residential Properties	7,000	0	7,000	varies	1 050	1,050	1,050	1,050	1,050	1 050	700		7 000					7,000	SG-633	
47 Miscellaneous Commercial Growth	9,800	0	9,800	varies	350	350	350	350	350	350	350	350	2,800	1 750	1 750	1,750	1,750	9,800	SG-633	
SUBTOTAL	**16,800**	**0**	**16,800**	**0**	**1,400**	**1,400**	**1,400**	**1,400**	**1,400**	**1,400**	**1,050**	**350**	**9,800**	**1,750**	**1,750**	**1,750**	**1,750**	**16,800**		
6 York College of PA	25,000	0	25,000	27&184	25,000	0	0	0	0	0	0	0	25,000					25,000	T17	
19 Unconnected Residential Properties	350	0	350	varies	350								350					350	T25	

M \KBHQ4\SGTYKCTY(file B) wb1

Appendix A-22-b

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 1 - Richland Avenue 150' south of West College Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 72A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	350	1	875	1	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	350	1	875	1	No Growth
2006-2010	0	0	0	0	
Year 2010	350	1	875	1	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	350	1	875	1	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	350	1	875	1	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File A)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 2 - Richland Avenue 50' south of West College Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 76
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	104,587	299	261,468	299	4th Quarter 1997 EDU count
1998-2005	2,800	8	7,000	8	
Year 2005	107,387	307	268,468	307	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	109,137	312	272,843	312	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	112,637	322	281,593	322	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	114,387	327	285,968	327	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File B)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 3 - Richland Avenue at Zinn's Quarry Road

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 71A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	20,931	61	52,328	61	4th Quarter 1997 EDU count/water use
1998-2005	2,800	8	7,000	8	
Year 2005	23,731	69	59,328	69	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	25,481	74	63,703	74	1997 Chapter 94 Report
2011-2020	1,750	5	4,375	5	
Year 2020 (1)	27,231	79	68,078	79	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	28,981	84	72,453	84	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m:\kbhq15\wmanneed(File C)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 4 - West Locust Street 150' west of Richland Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 76-1A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	3,901	12	9,753	12	4th Quarter 1997 EDU count/water use
1998-2005	0	0	0	0	
Year 2005	3,901	12	9,753	12	No Growth
2006-2010	0	0	0	0	
Year 2010	3,901	12	9,753	12	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	3,901	12	9,753	12	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	3,901	12	9,753	12	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File D)

Appendix A-22-b

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 5 - West Poplar Street between Richland Avenue and Dewey Street

Peaking Factor: 2.09 (Actual)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 81
City Flow Meter. WY01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	749,760	1,878	1,566,998	1,878	12/94 thru 8/97 Monthly Average Flow (3)
1998-2005	14,200	41	29,678	41	
Year 2005	763,960	1,919	1,596,676	1,919	1997 Chapter 94 Report
2006-2010	4,500	13	9,405	13	
Year 2010	768,460	1,931	1,606,081	1,931	1997 Chapter 94 Report
2011-2020	8,000	23	16,720	23	
Year 2020 (1)	776,460	1,954	1,622,801	1,954	1997 Chapter 94 Report
2021-Max	3,500	10	7,315	10	
Ultimate(2)	779,960	1,964	1,630,116	1,964	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 812,240 GPD or 52% from West York Borough

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File E)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 6 - Along Willis Run 475' west of Roosevelt Avenue

Peaking Factor: 2 08 (Actual)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B40A
City Flow Meter: WM01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	841,000	2,403	1,749,280	2,403	12/94 thru 8/97 Monthly Average Flow
1998-2005	374,800	1,071	779,584	1,071	
Year 2005	1,215,800	3,474	2,528,864	3,474	1997 Chapter 94 Report
2006-2010	83,250	238	173,160	238	
Year 2010	1,299,050	3,712	2,702,024	3,712	1997 Chapter 94 Report
2011-2020	134,750	385	280,280	385	
Year 2020 (1)	1,433,800	4,097	2,982,304	4,097	1997 Chapter 94 Report
2021-Max	8,750	25	18,200	25	
Ultimate(2)	1,442,550	4,122	3,000,504	4,122	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File F)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 7 - Along Willis Run 400' south of Fahs Street

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B44
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	4,900	14	12,250	14	4th Quarter 1997 water use
1998-2005	0	0	0	0	
Year 2005	4,900	14	12,250	14	No Growth
2006-2010	0	0	0	0	
Year 2010	4,900	14	12,250	14	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	4,900	14	12,250	14	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	4,900	14	12,250	14	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m:\kbhq15\wmanneed(File G)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 8 - Along Willis Run 100' south of Fahs Street

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B44 to B45
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	4,900	14	12,250	14	4th Quarter 1997 water use
1998-2005	0	0	0	0	
Year 2005	4,900	14	12,250	14	No Growth
2006-2010	0	0	0	0	
Year 2010	4,900	14	12,250	14	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	4,900	14	12,250	14	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	4,900	14	12,250	14	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File H)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 9 - Along Willis Run at Fahs Street Extended

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B45
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,800	8	7,000	8	4th Quarter 1997 water use
1998-2005	0	0	0	0	
Year 2005	2,800	8	7,000	8	No Growth
2006-2010	0	0	0	0	
Year 2010	2,800	8	7,000	8	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,800	8	7,000	8	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,800	8	7,000	8	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File I)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 10 - Roosevelt Avenue at Fahs Street

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B38-11A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	102,924	294	257,310	294	4th Quarter 1997 water use
1998-2005	0	0	0	0	
Year 2005	102,924	294	257,310	294	No Growth
2006-2010	0	0	0	0	
Year 2010	102,924	294	257,310	294	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	102,924	294	257,310	294	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	102,924	294	257,310	294	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File J)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 11 - Along Roosevelt Avenue between Wood Street and Community Place

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B38- to B38-4C
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,050	3	2,625	3	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	1,050	3	2,625	3	No Growth
2006-2010	0	0	0	0	
Year 2010	1,050	3	2,625	3	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	1,050	3	2,625	3	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	1,050	3	2,625	3	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File K)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 12 - Various connections along Willis Run from Wood Street to Marbrook Lane

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B38-B51
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	4,900	14	12,250	14	4th Quarter 1997 water use
1998-2005	2,800	8	7,000	8	
Year 2005	7,700	22	19,250	22	1997 Chapter 94 Report
2006-2010	1,750	5	4,375	5	
Year 2010	9,450	27	23,625	27	1997 Chapter 94 Report
2011-2020	3,500	10	8,750	10	
Year 2020 (1)	12,950	37	32,375	37	1997 Chapter 94 Report
2021-Max	1,750	5	4,375	5	
Ultimate(2)	14,700	42	36,750	42	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File L)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 13 - Richland Avenue at Madison Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 76-10
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	700	2	1,750	2	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	700	2	1,750	2	No Growth
2006-2010	0	0	0	0	
Year 2010	700	2	1,750	2	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	700	2	1,750	2	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	700	2	1,750	2	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \\bhq15\wmanneed(File M)

Appendix A-22-b

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 14 - Along Madison Avenue from Richland Avenue to Smyser Alley

Peaking Factor: 2 50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 76-11 to 76-12
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,750	5	4,375	5	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	1,750	5	4,375	5	No Growth
2006-2010	0	0	0	0	
Year 2010	1,750	5	4,375	5	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	1,750	5	4,375	5	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	1,750	5	4,375	5	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File N)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 15 - Along Roosevelt Avenue 300' north of US Route 30 Bypass

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C S. Davidson, Inc.

City Manhole Number: B57
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,400	4	3,500	4	4th Quarter 1997 EDU count/water use
1998-2005	9,500	27	23,750	27	
Year 2005	10,900	31	27,250	31	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	10,900	31	27,250	31	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	10,900	31	27,250	31	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	10,900	31	27,250	31	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File O)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 16 - Albright Avenue 25' south of Willis Run

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B-8
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	14,350	41	35,875	41	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	14,350	41	35,875	41	No Growth
2006-2010	0	0	0	0	
Year 2010	14,350	41	35,875	41	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	14,350	41	35,875	41	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	14,350	41	35,875	41	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File P)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 17 - Along Hamilton Avenue between Albright Avenue and North George Street

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 26 to 27
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	700	2	1,750	2	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	700	2	1,750	2	No Growth
2006-2010	0	0	0	0	
Year 2010	700	2	1,750	2	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	700	2	1,750	2	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	700	2	1,750	2	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File Q)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 18 - Along North George Street from Willis Run to First Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B10 to 27-3
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	350	1	875	1	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	350	1	875	1	No Growth
2006-2010	0	0	0	0	
Year 2010	350	1	875	1	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	350	1	875	1	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	350	1	875	1	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File R)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 19 - Along Richland Avenue from West College Avenue to Zinn's Quarry Road

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: 72-B to 71
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,050	3	2,625	3	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	1,050	3	2,625	3	No Growth
2006-2010	0	0	0	0	
Year 2010	1,050	3	2,625	3	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	1,050	3	2,625	3	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	1,050	3	2,625	3	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \bhq15\wmanneed(File S)

C S DAVIDSON, INC.

January 31, 1998
EXHIBIT NO WMT-8

WEST MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
		All Projected Connections in Gallons per Day (GPD)															
1 West Manchester Mall		2,000	1,500	1,000	1,000	1,000	1,000	1,000	1,000	9,500	5,000	5,000	5,000	0	24,500	WM01	B40A
**2 George & Joanne Ream		1,000	1,000	1,000	1,000	0	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
3 Stanley Works		0	0	0	0	0	0	0	0	0	1,000	1,000	1,000	0	3,000	WM01	B40A
4 Greens/Kemp Foods		0	0	0	0	1,000	1,000	1,000	0	3,000	1,000	1,000	1,000	0	6,000	WM01	B40A
5 Loucks Associates		1,000	1,000	1,000	1,000	0	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
****6 Chronister/Spangler PO (Adjacent Myers Farm)		700	700	700	0	0	0	0	0	2,100	0	0	0	0	2,100	WM01	B40A
7 Lehr PO Rodney Road		700	0	700	0	0	0	0	0	1,400	0	0	0	0	1,400	WM01	B40A
8 The Greens @ Westgate - Phase II		3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	28,800	7,200	4,250	0	0	40,250	WM01	B40A
****9 Normandie Ridge		5,000	10,000	5,000	5,000	0	0	0	0	25,000	0	0	0	0	25,000	WM01	B40A
****10 Barrington Place		5,000	5,000	5,000	5,000	5,000	0	0	0	25,000	0	0	0	0	25,000	WM01	B40A
11 Richard Poole		0	1,000	0	0	0	0	0	0	1,000	0	0	0	0	1,000	WM01	B40A
12 Rudy PO (Kenneth Trolley Point) 6 Ac 700GPD/Ac		0	1,000	1,000	1,000	1,000	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
13 Manchester Heights Sr Housing		5,000	5,000	5,000	5,000	2,750	0	0	0	22,750	0	0	0	0	22,750	WM01	B40A
14 Hillside/Richardson, 31 EDUs @ 350 GPD		0	10,850	0	0	0	0	0	0	10,850	0	0	0	0	10,850	WM01	B40A
*15 Tuscany Tract, 36 Apts 250 GPD		0	1,500	1,500	1,500	1,500	0	0	0	6,000	0	0	0	0	6,000	WM01	B40A
16 National Housing Corp 120 Apts @ 250 GPD		3,500	6,000	6,000	6,000	6,000	2,500	0	0	30,000	0	0	0	0	30,000	WM01	B40A
17 Lanecor Commerce Center Expansion		1,000	1,000	1,000	1,000	0	0	0	0	4,000	2,000	0	0	0	6,000	WM01	B40A
**18 Voith Hydro Ind Expansion		0	0	5,000	0	0	0	0	0	5,000	5,000	0	0	0	10,000	WM01	B40A
**19 Susquehanna Broadcasting		0	3,000	3,000	3,000	0	0	0	0	9,000	5,000	5,000	5,000	0	24,000	WM01	B40A
**20 Pfaltzgraff West		0	5,000	5,000	5,000	5,000	0	0	0	20,000	5,000	5,000	5,000	0	35,000	WM01	B40A
**21 West York Ind Park Expansions		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	8,000	3,000	3,000	3,000	0	17,000	WM01	B40A
**22 Baker Ind , Emigs Mill Road, 140 Ac 1,000 GPD		5,000	10,000	5,000	5,000	5,000	0	0	0	30,000	5,000	5,000	5,000	0	45,000	WM01	B40A
23 Delco Plaza Expansions		350	350	500	0	0	0	0	0	1,200	0	0	0	0	1,200	WM01	B40A
24 Cecil Grace, Marion Extended 3 EDUs/350 GPD		350	350	350	0	0	0	0	0	1,050	0	0	0	0	1,050	WM01	B40A
25 Taughinbaugh Walter Street 3 EDUs/350 GPD		350	350	350	0	0	0	0	0	1,050	0	0	0	0	1,050	WM01	B40A
26 W Sprenkle Carlisle Road, 5 Ac 700 GPD/Ac		0	0	0	0	0	0	0	0	0	2,500	1,000	0	0	3,500	WM01	B40A

C S DAVIDSON, INC

January 3, [illegible]
EXHIBIT NO WMT-8

WEST MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
		All Projected Connections in Gallons per Day (GPD)															
**27 W Y I P , Kinard, 3 Ac 1,000 GPD/Ac		0	1,000	0	0	0	0	0	0	1,000	1,000	1,000	0	0	3,000	WM01	B40A
***28 Myers Farm		0	0	3,000	3,000	3,000	3,000	3,000	3,000	18,000	6,000	6,000	9,000	0	39,000	WM01	B40A
**29 J E Baker, Rt. 30 West		0	0	3,000	3 000	3,000	3,000	3,000	3,000	18,000	3,000	3,000	3,000	0	27,000	WM01	B40A
30 Sultner Tract		3,000	1,000	1,000	3,000	1,000	0	0	0	9,000	0	0	0	0	9,000	WM01	B40A
31 Spahr, R3, 4 Ac 1,000 GPD/Ac		0	1,000	1,000	1,000	1,000	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
32 Kemp Sterner, Marion Street Ext 4 Ac 1,050 GPD/Ac		2,100	2,100	0	0	0	0	0	0	4,200	0	0	0	0	4,200	WM01	B40A
**33 Smyser Tract, 160 Ac 1,050 GPD/Ac		0	0	5,000	5,000	5,000	5,000	5,000	5,000	30,000	10,000	10,000	10,000	0	60,000	WM01	B40A
****34 Don-El Roosevelt Avenue		0	0	5,000	5,000	5,000	0	0	0	15,000	10,000	10,000	10,000	0	45,000	WM01	B40A
35 Haviland Road South, 2 EDUs 350 GPD		350	350	0	0	0	0	0	0	700	0	0	0	0	700	WM01	B40A
36 Haviland Road North, 10 EDUs 350 GPD		0	350	350	350	350	350	350	350	2,450	1,050	0	0	0	3,500	WM01	B40A
37 Spring Street, 10 EDUs 350 GPD		0	0	0	350	350	350	350	350	1,750	1,750	0	0	0	3,500	WM01	B40A
38 West Manchester Township Misc Development 5 EDUs per year 350 GPD		1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	14,000	8,750	8,750	8,750	8,750	49,000	WM01	B40A
SUBTOTAL MH B40A:		**42,750**	**76,750**	**72,800**	**67,550**	**53,300**	**22,550**	**20,050**	**19,050**	**374,800**	**83,250**	**69,000**	**65,750**	**8,750**	**601,550**		
39 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800		B38
40 Stewart Tract/Weis Markets		2,500	4,000	2,000	1,000	0	0	0	0	9,500	0	0	0	0	9,500		B57
41 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800		71A
***42 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,750	9,800		76
*43 Fed Paper, Neiman, 5 Ac 1,000 GPD/Ac		0	1,000	1,000	1,000	0	0	0	0	3,000	1,000	1,000	0	0	5,000	WY01	81
*44 Orion West, 16 Lots 350 GPD		1,400	1,400	1,400	1,400	0	0	0	0	5,600	0	0	0	0	5,600	WY01	81
45 West Manchester Township Misc Development 2EDUs per year 350 GPD		700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,500	19,600	WY01	81
SUBTOTAL MH 81:		**2,100**	**3,100**	**3,100**	**3,100**	**700**	**700**	**700**	**700**	**14,200**	**4,500**	**4,500**	**3,500**	**3,500**	**30,200**		
TOTALS:		**47,000**	**82,500**	**76,550**	**70,300**	**55,050**	**24,300**	**21,800**	**20,800**	**398,300**	**92,000**	**77,750**	**74,500**	**17,500**	**660,050**		
* Tributary to King Street Pump Station		1,400	3,900	3,900	3,900	1,500	0	0	0	14,600	1,000	1,000	0	0	16,600		
** Tributary to West Market Street Pump Station		7,000	21,000	28,000	23,000	19,000	9,000	9,000	9,000	125,000	37,000	32,000	31,000	0	225,000		
*** Tributary to South Adams Street Pump Station		0	0	3,000	3,000	3,000	3,000	3,000	3,000	18,000	6,000	6,000	9,000	0	39,000		
**** Tributary to Bull Road Pump Station		11,050	16,050	10,700	10,000	5,000	0	0	0	52,800	0	0	0	0	52,800		

M \KBHQ4\WMTCTY wb3

YORK CITY SEW AUTHORITY
REGIONAL AC 537 PLAN
NEEDS SURVEY

Appendix A-22-b

Municipality: West York Borough

Date Prepared: January 31, 1998

Connection Point: 2 - Richland Avenue 50' south of West College Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh

City Manhole Number: 72A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,450	7	6,125	7	4th Quater 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	2,450	7	6,125	7	No Growth
2006-2010	0	0	0	0	
Year 2010	2,450	7	6,125	7	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,450	7	6,125	7	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,450	7	6,125	7	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 749,760 GPD or 48% from West Manchester Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wybneed wb3(File A)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West York Borough

Date Prepared: January 31, 1998

Connection Point: 7 - West Poplar Street between Richland Avenue and Dewey Street

Peaking Factor: 2.09 (Actual)

Prepared By: Richard G. Resh

City Manhole Number: 81
City Flow Meter: WY01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	812,240	2,109	1,697,582	2,109	12/94 thru 8/97 Monthly Average Flow (3)
1998-2005	22,050	63	46,085	63	
Year 2005	834,290	2,172	1,743,667	2,172	1997 Chapter 94 Report
2006-2010	7,000	20	14,630	20	
Year 2010	841,290	2,192	1,758,297	2,192	1997 Chapter 94 Report
2011-2020	14,000	40	29,260	40	
Year 2020 (1)	855,290	2,232	1,787,557	2,232	1997 Chapter 94 Report
2021-Max	7,000	20	14,630	20	
Ultimate(2)	862,290	2,252	1,802,187	2,252	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 749,760 GPD or 48% from West Manchester Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wybneed wb3(File A)

C S DAVIDSON, INC

December 23, 1997
EXHIBIT NO WYB-6

WEST YORK BOROUGH
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Proposed Total Gallons	Map/ Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No.
			All Projected Connections in Gallons per Day (GPD)															
1 201 North Adams Street (20 Apts @ 350 GPD)	7000	16/35	0	7000	0	0	0	0	0	0	7,000	0	0	0	0	7,000	WY01	81
2 Advance Auto Parts 1824 West Market Street (1 commercial)	350	12/29A & 12/28	350	0	0	0	0	0	0	0	350	0	0	0	0	350	WY01	81
3 Unconnected Existing Properties (10 homes @ 350 GPD)	3,500	varies	700	700	700	700	700	0	0	0	3,500	0	0	0	0	3,500	WY01	81
4 Apartment Conversions (2 Units/Year @ 350 GPD)	19,400	varies	700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,500	19,600	WY01	81
5 Miscellaneous New Development (2 EDUs/year @ 350 GPD)	19,400	varies	700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,500	19,600	WY01	81
TOTALS	49,650		2,450	9,100	2,100	2,100	2,100	1,400	1,400	1,400	22,050	7,000	7,000	7,000	7,000	50,050		

M \KBHQ4\WYBCITY wb1

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 36A - East side Poorhouse Run south of Rockdale Avenue in Memorial Park

Peaking Factor: 2 57 (Actual)

Prepared By: Richard G. Resh, C. S Davidson, Inc.

City Manhole Number: C39N
City Flow Meter: SG02A

Planning Period	Average Daily Flow		Peak Daily Flow		Remarks
	GPD	EDUs	GPD	EDUs	
Existing	18,607	53	47,820	53	July, Aug., Sept., 1997 EDu count/water use
1998-2005	5,600	16	14,392	16	
Year 2005	24,207	69	62,212	69	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	24,207	69	62,212	69	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	24,207	69	62,212	69	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	24,207	69	62,212	69	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\yktpneed(File A)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 37 - Norway Street at Church Street
(flow meter at Courtland Street)

Peaking Factor: 3.68 (Actual)

Prepared By: Richard G. Resh, C. S Davidson, Inc.

City Manhole Number: C27-105
City Flow Meter: SG03

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	9,354	28	34,423	28	July, Aug., Sept., 1997 EDu count/water use
1998-2005	5,000	14	18,400	14	
Year 2005	14,354	42	52,823	42	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	14,354	42	52,823	42	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	14,354	42	52,823	42	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	14,354	42	52,823	42	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\yktpneed(File B)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 52 - Along Tyler Run north of Country Club Road

Peaking Factor: 2.02 (Actual)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: K27
City Flow Meter: YT01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,577,728	4,508	3,187,011	4,508	3/94 thru 10/97 Monthly Average Daily Flow (3)
1998-2005	735,220	2,101	1,485,144	2,101	
Year 2005	2,312,948	6,609	4,672,155	6,609	1997 Chapter 94 Report
2006-2010	5,550	16	11,211	16	
Year 2010	2,318,498	6,624	4,683,366	6,624	1997 Chapter 94 Report (4)
2011-2020	69,475	199	140,340	199	
Year 2020 (1)	2,387,973	6,823	4,823,706	6,823	1997 Chapter 94 Report
2021-Max	24,500	70	49,490	70	
Ultimate(2)	2,412,473	6,893	4,873,196	6,893	

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 127,272 GPD from Spring Garden Township users
(4): Allows for 205,200 GPD flow reduction due to phase-out of Spangler Meadows, Spry, and Leader Heights Crossing pump stations

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\yktpneed(File C)

C.S. DAVIDSON, INC.

January 5, 1998
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
			All Projected Connections in Gallons per Day (GPD)														
101	Copper Beech Tree 85 condos/Tyler Run	HI&308A	4,200	4,200	4,200	4,200	4,200	4,200	350	0	25,550					25,550	K27
102	Copper Beech Tree Tyler Run/residual	HI&308E	4,900	4,900	4,900	4,900	4,900	0	0	0	24,500					24,500	K27
103	Oak Village (1) condos/Oak Street	HI&291C	0	0	0	0	0	0	0	0	0					0	K27
104	Rosenmiller III single family homes	HI&549 to 560	700	700	350	0	0	0	0	0	1,750					1,750	K27
105	York Jewish Community Center expansion	II&32A	3,000	0	2,000	0	0	0	0	0	5,000					5,000	C27-10S
106	Apple Hill commercial	HI&458	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	40,000	10,000				50,000	K27
107	Glatfelters Insurance commercial	HI&154	750	750	750	900	0	0	0	0	3,150					3,150	K27
108	Temple Baptist Church (2)(3) Pine Grove Road - commercial	HI&143	3,500	3,500	0	0	0	0	0	0	7,000					7,000	K27
109	Copper Beech Tree South Queen Street - commercial	HI&308D	23,000	0	0	0	0	0	0	0	23,000					23,000	K27
109A	Copper Beech Tree St Charles Way - commercial	HI&308D	8,850	0	0	0	0	0	0	0	8,850					8,850	K27
110	Copper Beech Tree Dew Drop Road - residential	HI&308C	0	3,500	3,500	0	0	0	0	0	7,000					7,000	K27
111	Briggs Circle (1) Oak Street - residential	HJ&	350	350	0	0	0	0	0	0	700					700	K27
112	Southfork residential	24	700	700	700	700	350	0	0	0	3,150					3,150	K27
113	Queen's Crest South Queen Street - residential	9&25	5,600	0	0	0	0	0	0	0	5,600					5,600	C39N
114	Pine Grove Commons (2) commercial	19&145	1,150	0	0	0	0	0	0	0	1,150					1,150	K27
115	Richard Geever (2)(3) Leader Heights Road - commercial	HI&130E	2,500	2,500	2,820	0	0	0	0	0	7,820					7,820	K27
116	Country Meadows (2)(3) Leader Heights Road - commercial	HI&130M	2,975	2,975	2,975	2,975	2,975	0	0	0	14,875					14,875	K27

C S. DAVIDSON, INC.

January 5, 19
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
				All Projected Connections in Gallons per Day (GPD)													
117	Garden Terrace/Pantano Dew Drop Road - residential	3&114A	2,100	2,450	0	0	0	0	0	0	4,550					4,550	K27
118	Bergdoll Dew Drop Road - residential	1+I&241B	350	0	0	0	0	0	0	0	350					350	K27
120	Rosenmiller IV/Condos residential	HI&459	1,400	1,400	1,400	1,400	1,400	1,400	700	0	9,100					9,100	K27
121	York Twp Water & Sewer (7) Leader Heights Project	varies	127,750	0	0	0	0	0	0	0	127,750					127,750	K27
122	Southwynd (8) residential	HI&513 to 517	350	350	700	700	350	0	0	0	2,450	0				2,450	K27
123	Spangler Meadows (phaseout) (5) residential	HI&9R	2,400	2,400	2,400	2,400	2,400	2,400	2,400	3,200	20,000	(42,100)				(22,100)	K27
124	York Manor (phaseout) (5) residential		1,050	1,050	700	700	1,050	0	0	0	4,550	(4,900)				(350)	K27
125	M & G Mobile Home Park (1) residential	HJ&258	1,750	0	0	0	0	0	0	0	1,750					1,750	K27
126	Spry Pump Station (Phaseout) (1) (400 EDUs @ 350 GPD)	HI&9N	0	0	0	0	0	0	0	0	0	(140,000)				(140,000)	K27
127	Cornerstone Development (phaseout) Leader Heights Road - residential(6)	HI&90	7,700	7,700	0	0	0	0	0	0	15,400	(18,200)				(2,800)	K27
128	Manor Care Pauline Drive - commercial	4&49C	0	0	0	0	0	0	0	0	0					0	K27
129	Ray Markey (7) residential	HI&385F	4,725	4,725	0	0	0	0	0	0	9,450					9,450	K27
130	Gulf Property/Leader Heights commercial	HI&151	1,500	0	0	0	0	0	0	0	1,500					1,500	K27
131	Balanced Care/Knob Hill commercial	HI&308A	8,250	0	0	0	0	0	0	0	8,250					8,250	K27
132	Emory Grove Property Dew Drop Road	HI&185	0	0	0	10,500	10,500	10,500	10,500	10,500	52,500	52,500				105,000	K27
133	David Godfrey Property Cherry Street	HI&184A HI&186	0	0	0	7,000	7,000	7,000	7,000	7,000	35,000	35,000				70,000	K27
134	Carl Daehnke Powder Mill Road	20&174	700	700	1,100	5,025	5,025	5,025	5,025	5,025	27,625	25,225				52,850	K27

C S DAVIDSON, INC

January 5, 1998
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

All Projected Connections in Gallons per Day (GPD)

Project No	Name and Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
135	James Ilyes Ebony Drive	HI&242	0	0	0	4,900	4,900	4,900	4,900	4,900	24,500	24,500				49,000	K27
136	Susquehanna Heights (7) residential/commercial	19	0	0	10,850	0	0	0	0	0	10,850					10,850	K27
137	Reynolds Mill Area (7) residential	5	0	0	0	0	0	0	0	37,100	37,100					37,100	K27
138	Lentzlyn/York Gospel Center (7)	33	0	0	0	0	0	0	0	15,000	15,000					15,000	K27
139	Roger Perry (7) Indian Rock Dam Road	HI&479	0	0	0	3,710	3,710	3,710	3,710	3,710	18,550	18,550				37,100	K27
140	Heil Markey (7) Indian Rock Dam Road	HI&469	0	0	0	2,240	2,240	2,240	2,240	2,240	11,200	11,200	11,200			33,600	K27
141	James Markey (7) Indian Rock Dam Road	HI&468B	700	3,500	3,500	3,500	3,500	3,500	2,800	0	21,000					21,000	K27
142	John Houck (7) Monument Drive	HI&460	0	0	0	0	0	0	0	0	0	9,275	9,275			18,550	K27
143	York Township emergency permits	varies	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	11,200	7,000	7,000	7,000	7,000	39,200	K27
144	Shipley Stores/Leader Heights (7) commercial	HI&151	3,000	3,000	0	0	0	0	0	0	6,000					6,000	K27
145	Exit 4 Inc /Leader Heights (2)(3) motel/80 rooms	HI&130D	4,000	4,000	0	0	0	0	0	0	8,000					8,000	K27
146	Dr. Stanton Lebouitz/Powder Mill commercial	HI&155	1,050	1,050	0	0	0	0	0	0	2,100					2,100	K27
147	Dale Markey Farm/R. Jeffers (7) residential	HI&468	700	3,500	3,500	3,500	6,300	0	0	0	17,500					17,500	K27
148	Eckard/Leader Heights commercial	36&204 36&205	2,500	2,500	0	0	0	0	0	0	5,000					5,000	K27
149	Charles Vernon (1) commercial	HI&7	500	0	0	0	0	0	0	0	500					500	K27
150	Kinsley /Graham commercial - St Charles Way	HI&308D	0	30,000	0	0	0	0	0	0	30,000					30,000	K27
151	Miscellaneous New Development 10 EDUs/Year @ 350 GPD	varies	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	28,000	17,500	17,500	17,500	17,500	98 000	K27
	TOTALS		244,550	102,300	56,245	69,150	70,700	54,775	49,525	98,575	745,820	5,550	44,975	24,500	24,500	845,345	

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No

All Projected Connections in Gallons per Day (GPD)

(1) Tributary to Spry Pump Station
(2) Tributary to Marlborugh Pump Station
(3) Tributary to Joppa Road Pump Station
(4) Tributary to Leader Heights Pump Station
(5) Tributary to Spangler Meadows Pump Station
(6) Tributary to Leader Heights Crossings Pump Station
(7) Tributary to Imperial Drive Pump Station
(8) Tributary to Spring Garden Township Southwynd Pump Station

M \KBHQ5\YTCTY WB1

Gannett Fleming
ENGINEERS AND PLANNERS

MEMORANDUM

TO: Phil Briddell, YCSA
Mark Derr, York Township
Larry Lutter, Buchart-Horn, Inc.
Jim Noel, Springettsbury Township
Richard Resh, C.S. Davidson
Mike Schober, Buchart-Horn, Inc.

FROM: Mark Malarich/Bob Shaffer, Gannett Fleming

DATE: January 12, 1998

SUBJECT: Description of York Township Preliminary Alternatives
York Township Act 537 Update

We distributed to the attendees of the December 30, 1997 Technical Meeting of the Springettsbury/York WWTP Planning Group a letter from our office dated December 29th presenting the estimated flows associated with the preliminary alternatives developed for the York Township Act 537 Plan update. As noted in the letter, we are relying on Buchart-Horn staff to provide us with planning level cost information for any necessary conveyance or treatment plant modifications within the Springettsbury and York systems for the flow alternatives presented in the letter.

As discussed at the meeting, York Township is divided into two wastewater treatment service basins; the York City Basin and the Springettsbury Basin. Pennsylvania Route 74 (South Queens Street) is generally the dividing line between the two basins with flows generated to the west of Route 74 conveyed to the York City WWTP and flow generated to the east of Route 74 conveyed to the Springettsbury WWTP for processing. There are currently eight pumping stations in the York Township sewer system. Several of these pumping stations are located close to the border between the Springettsbury basin and the York City basin. The majority of the alternatives developed for the Township's Act 537 Plan update involve redirecting pumping station flow from one of the service basins to the other service basin. We are also evaluating the construction of a wastewater treatment plant in York Township that would treat some of the flow generated in the Township's Springettsbury service basin. The facility would apply its treated effluent to area golf courses during the summer and practice stream discharge into Mill Creek during the winter.

The attached two tables generally described changes to the current facility format associated with each option. York City Basin Alternative No.2 and Springettsbury Basin Alternative No.7 keep the existing format, whereas all the other alternatives redirect some flow from one basin to the other basin or add a new treatment facility within York Township.

York Township staff is projecting approximately 9,100 new EDUs will connect to its sewer system during the planning period. The majority of these new EDUs will be from residential development. When establishing the flows associated with each alternative, we also looked at the impact of reducing the average flow per residential EDU from the current planning rate of 350 gpd/EDU to

31364
c:\wpdocs\york\alt_trans mem

250 gpd/EDU. Therefore, there is some duplication of alternative descriptions in the attached tables depending on whether the 350 gpd/EDU figure or the 250 gpd/EDU figure was used to project future flows. Whenever the total flow from a 350 gpd/EDU option is the same as the total flow from a 250 gpd/EDU option, only one alternative description is given in the tables.

Please give us a call if you have any questions or need any other information.

TABLE 1.
YORK TOWNSHIP ACT 537 UPDATE
POTENTIAL WASTEWATER CONVEYANCE AND TREATMENT ALTERNATIVES

YORK CITY WWTP SERVICE BASIN

Alternative[1] No.	Estimated Annual Average Flow (mgd)	Description[2]
1	2.50	Redirect the Oak Street and Spangler Meadows pumping station flows from York City Basin to Springettsbury Basin.
2	2.75	No changes to existing format.
3	3.00	Redirect the Green Valley pumping station flow from the Springettsbury Basin to York City Basin.
4	3.90	Redirect the Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. (New residential EDUs @ 250 gpd/EDU).
5	4.10	Redirect the Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. (New residential EDUs @ 350 gpd/EDU).

Notes:

(1) See December 29, 1997 letter from Robert Shaffer to Larry Lutter for further information on the alternatives.

(2) Proposed changes to existing facility format.

TABLE 2.
YORK TOWNSHIP ACT 537 UPDATE
POTENTIAL WASTEWATER CONVEYANCE AND TREATMENT ALTERNATIVES

SPRINGETTSBURY WWTP SERVICE BASIN

Alternative[1] No.	Estimated Annual Average Flow (mgd)	Description[2]
1	1.40	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin Reroute Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. New Residential EDUs @ 250 gpd/EDU.
2	1.80	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin Reroute Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. New Residential EDUs @ 350 gpd/EDU
3	2.00	Reroute Green Valley and Honey Valley pumping station flows from Springettsbury Basin to York City Basin. New Residential EDUs @ 250 gpd/EDU
4	2.50	Construct wastewater treatment facility in York Township to process some of the flows from the Township's Springettsbury Basin New Residential EDUs @ 250 gpd/EDU.
5	3.00	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin.
6	3.30	Reroute Green Valley pumping station flow from Springettsbury Basin to York City Basin.
7	3.50	No changes to existing format (New residential EDUs @ 350 gpd/EDU).
8	3.85	Reroute Oak Street and Spangler Meadows pumping station flows from York City Basin to Springettsbury Basin.

Notes:

(1) See December 29, 1997 letter from Robert Shaffer to Larry Lutter for further information on the alternatives.

(2) Proposed changes to existing facility format.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY PROTECTION
BUREAU OF WATERWAYS ENGINEERING

For Department Use Only
PNDI Search Number / Map ____
Reviewer DOUGLASS
Date 3/31/98 Phone No ____
675476

SUPPLEMENT NO. 1
PENNSYLVANIA NATURAL DIVERSITY INVENTORY SEARCH FORM

A. This Supplement No 1 provides the site information necessary to perform a computer search for species of special concern listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Wildlife Code. Records regarding species of special concern are maintained in a computer data base called the "Pennsylvania Natural Diversity Inventory" (PNDI) The information in PNDI is routinely updated. Results of this PNDI search are valid for one year.

B. Please complete the information below and mail to the appropriate regional office or the delegated County Conservation District prior to completing a Chapter 105 environmental assessment or any other permit application. (SEE REVERSE SIDE FOR LIST OF OFFICES AND ADDRESSES)

C This Supplement No. 1 will be returned to you with information relevant to your project concerning species of special concern. Include it and any correspondence received from the agencies below, with your submission of any Permit Application.

NAME: TED FRIDIRICI

ADDRESS: C/O BUCHART HORN INC
445 WEST PHILADELPHIA ST
PO BOX 15040
YORK PA 17405-7040

PHONE: (717) 852-1419

PROJECT LOCATION: ALONG CODORUS CREEK & TYLER RUN IN YORK PA

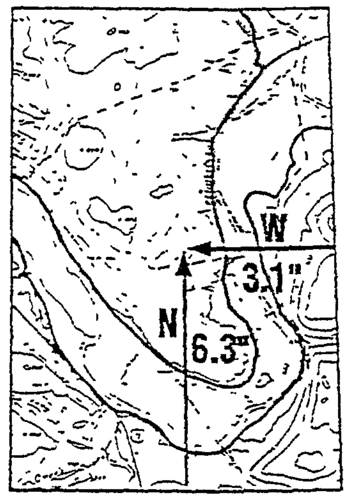
COUNTY YORK

TWP./MUNICIPALITY: SPRINGETTSBURY

U.S.G.S. 7½ Minute Quadrangle
YORK

PROJECT SIZE (in acres) Include entire area relevant to your project.
≈ 10

U S G.S. QUADRANGLE MAP



ANYTOWN, PA

North (Up) 12 TO 20 inches
West (to the left) 14 inches

INDICATE PROJECT LOCATION TO THE NEAREST ONE TENTH INCH MEASURING FROM THE EDGE OF THE MAP IMAGE FROM THE LOWER RIGHT CORNER.

Attach an 8½" x 11" photocopy (DO NOT REDUCE) of the section of the U.S.G.S. Quadrangle Map which identifies the project location and outlines the approximate boundaries of the project.

FOR DEPARTMENT USE ONLY

☒ TD No known record of habitats for species of special concern has been identified in the area designated above

☐ No impact to species of special concern. (PNDI staff person ____________ on ____________).
initials date

☐ Potential impact to species of special concern. Written recommendations on measures necessary to resolve this matter will be provided by

☐ Dept. of Conservation & Natural Resources
Bureau of Forestry/FAS
P O Box 8552
Harrisburg, PA 17105-8552
717-787-3444

☐ Mr Andrew L Shiels
PA Fish & Boat Commission
450 Robinson Lane
Bellefonte, PA 16823
814-359-5113

☐ Mr. Denver A. McDowell
PA Game Commission
2001 Elmerton Ave.
Harrisburg, PA 17110-9797
717-783-8743

☐ PNDI Interpretation Requested

Element Occurrence Code ____________

RECEIVED
MAR 25 1998
DEP - SOUTHCENTRAL REGION
WATER MANAGEMENT PROGRAM


MANCHESTER
INTERCHANGE 10
Lightners Sch
Filtration Plant
North York
Valley Forge
Prospect Hill Cem
Devers Sch
High Sch
Windsor Park
Mill
Willis Run
WEST MANCHESTER
Farquhar Park
Madison Sch
PHILADELPHIA
MARKET
KING
YORK
Lincoln Sch
COLLEGE
Penn Common
Jr College
PROSPECT
PRINCESS
Elmwood
P Davis Jr High Sch
WEST YORK
CODORUS
McKinley Sch
Jackson Sch
Grantley Sch
Spring Garden Memorial Park
County Police Home
Jr High Sch
Villa Green
SPRING
COUNTRY CLUB
Violet Hill
Wyndham Hills
Pumping Sta
YORK COUNTY
YORK PA USGS QUAD
SPRINGETTSBURY TWP
LEGEND
- EXTENT OF PROJECT

RESULTS OF PNDI BIOTA SEARCH DATED: 03/31/98

PLICATION NUMBER	SEARCH PARAMETERS / COMMON NAME / SCIENTIFIC NAME SS=STATE STATUS			FS=FEDERAL STATUS
67S476	397686 YORK	N= 16	W= 14	ACRES= 640
	N O E L E M E N T S E N C O U N T E R E D. SS=			FS=

COMMONWEALTH OF PENNSYLVANIA

PENNSYLVANIA GAME COMMISSION

2001 ELMERTON AVENUE
HARRISBURG, PA 17110-9797

ADMINISTRATIVE BUREAUS:	
ADMINISTRATION	717 787 5670
AUTOMOTIVE AND PROCUREMENT DIVISION	717 787 6594
LICENSE DIVISION	717 787 2084
PERSONNEL DIVISION	717 787 7836
WILDLIFE MANAGEMENT	717 787 5529
INFORMATION & EDUCATION	717 787 6286
LAW ENFORCEMENT	717 787 5740
LAND MANAGEMENT	717 787 6818
REAL ESTATE DIVISION	717 787 6568
MANAGEMENT INFORMATION SYSTEMS	717 787 4076

April 28, 1998

Mr C. Theodore Fridirici
Buchart Horn, Inc.
PO Box 15040
York, PA 17405-7040

In re· Regional Act 537
Springettsbury Township
York County, PA

Dear Mr. Fridirici·

This is in response to your letter of March 23, 1998, requesting our review for potential impacts to state endangered or threatened species of birds or mammals, and State Game Lands

Our office review shows that no state listed endangered or threatened species of birds or mammals are known to occur within the proposed project area. Also, No State Game Lands are expected to be impacted by the proposed project. Should project plans extend beyond the present study area, or if additional information becomes available on endangered or threatened species of birds or mammals or State Game Lands, this review may be reconsidered.

This reply relates only to endangered and threatened species of birds or mammals and State Game Lands, but does not address other concerns of the Pennsylvania Game Commission. If an on-site field investigation determines the project may impact critical and unique wildlife habitat such as wetlands, you may be requested to conduct additional surveys

If you have any questions, please contact Tony Ross of my staff at (717) 783-5957

Very truly yours,

Denver A. McDowell, Chief
Division of Environmental
Planning and Habitat Protection
Bureau of Land Management

TR/pfb

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

April 6, 1998

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

C. Theodore Fridirici, Environmental Scientist II
Buchart Horn, Inc.
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Re: File No. ER 98-1287-133-A
DEP 537 PROGRAM:
Regional Act 537 Plan Needs Assessment, York City Sewer Authority, Springettsbury
York County

Dear Mr. Fridirici:

The Bureau for Historic Preservation has reviewed the above named project under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988). This review includes comments on the project's potential effect on both historic and archaeological resources.

There is a high probability that prehistoric and historic archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources.

There may be historic structures eligible for the National Register of Historic Places located in the project area. However, due to the nature of the activity, it is our opinion that there will be no effect on these properties. Should the applicant become aware, from any source, that unidentified historic 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 be contacted immediately.

If you need further information in this matter please consult Mark Shaffer at (717) 772-0924.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology &
Protection

cc: DEP, Southcentral Regional Office

KC/tmw

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

April 15, 1998

Mr. C. Theodore Fridirici
Buchart Horn, Inc.
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Dear Mr. Fridirici:

This responds to your letter of March 23, 1998, requesting information about federally listed and proposed endangered and threatened species within the area affected by the proposed sewer line project located in Springettsbury Township, York County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

Except for occasional transient species, no federally listed or proposed threatened or endangered species under our jurisdiction are known to occur within the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act are required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of certain federal status species in Pennsylvania is enclosed for your information.

This response relates only to endangered or threatened species under our jurisdiction based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities.

Requests for information regarding State-listed endangered or threatened species should be directed to the Pennsylvania Game Commission (birds and mammals), the Pennsylvania Fish and Boat Commission (fish, reptiles, amphibians and aquatic invertebrates), and the Pennsylvania Department of Conservation and Natural Resources (plants).

Please contact Michael McCarthy of this office at 814-234-4090 if you have any questions or require further assistance.

Sincerely,

Edward Perry

Edward W. Perry
Acting Supervisor

Enclosure

FEDERALLY LISTED, PROPOSED AND CANDIDATE SPECIES (in Pennsylvania)

COMMON NAME	SCIENTIFIC NAME	STATUS*	DISTRIBUTION
FISHES			
Shortnose sturgeon**	*Acipenser brevirostrum*	E	Delaware River and other Atlantic coastal waters
REPTILES & AMPHIBIANS			
Bog turtle	*Clemmys muhlenbergii*	T	Current - Adams, Berks, Bucks, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton and York Counties. Historic - Butler, Crawford, Mercer and Philadelphia Counties
BIRDS			
Bald eagle	*Haliaeetus leucocephalus*	T	Entire state. Recent nesting in Butler, Crawford, Dauphin, Forest, Lancaster, Pike, Tioga, Warren and York Counties
Peregrine falcon (American)	*Falco peregrinus anatum*	E	Entire state. Recent nesting in and around Philadelphia and Pittsburgh (Allegheny, Delaware, Philadelphia and Bucks Counties)
Piping plover	*Charadrius melodus*	E	Presque Isle (Erie County). Migratory. No nesting in Pennsylvania since mid-1950s
MAMMALS			
Indiana bat	*Myotis sodalis*	E	Summer range: possibly state-wide in suitable habitat. Only one known winter hibernaculum (Blair County)
MOLLUSKS			
Clubshell mussel	*Pleurobema clava*	E	French Creek and Allegheny River watersheds; Clarion, Crawford, Erie, Forest, Mercer and Venango Counties
Northern riffleshell	*Epioblasma torulosa rangiana*	E	French Creek and Allegheny River watersheds; Crawford, Erie, Forest, Venango and Warren Counties
PLANTS			
Northeastern bulrush	*Scirpus ancistrochaetus*	E	Current - Bedford, Blair, Carbon, Centre, Clinton, Cumberland, Dauphin, Franklin, Huntingdon, Lackawanna, Lehigh, Mifflin, Monroe, Perry, Snyder and Union Counties. Historic - Northampton County
Small-whorled pogonia	*Isotria medeoloides*	T	Current - Centre and Venango Counties. Historic - Berks, Chester, Greene, Monroe, Montgomery, Philadelphia Counties

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* *E = Endangered, T = Threatened, PE = Proposed Endangered, PT = Proposed Threatened, C = Candidate* — *Revised 11/07/97*

** *Shortnose sturgeon is under the jurisdiction of the National Marine Fisheries Service*

U.S. FISH AND WILDLIFE SERVICE
315 SOUTH ALLEN STREET, SUITE 322, STATE COLLEGE, PA 16801

BUREAU OF FISHERIES

Delano R. Graff, Director
(814) 359-5154
FAX: (814) 359-5153

DIVISION OF FISHERIES MANAGEMENT

Richard A. Snyder, Chief
(814) 359-5110
FAX: (814) 359-5153

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH & BOAT COMMISSION
450 Robinson Lane
Bellefonte, PA 16823-9620

IN REPLY REFER TO
PNDI# 2489

May 6, 1998

BUCHART HORN INC.
Ted Fridirici
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Dear Mr. Fridirici:

RE: Environmental Assessment
Sewer Pipe Repair Replacement and Upgrade
Springettsbury Township, York County, Pennsylvania

I have examined the map accompanying your recent correspondence which shows the location for the proposed above referenced project.

Presently, none of the fishes, amphibians or reptiles we list as endangered or threatened are known to occur at or in the immediate vicinity of this study area.

To allow faster processing of PNDI reviews in the future, we are requesting that the attached form be completed and returned to this office together with other relevant project information. Please make copies of the attached form and use with all future environmental assessment requests. If you have received, and in fact are using the new form, disregard the above request. Please note that the PFBC conducts PNDI reviews **only for reptiles, amphibians, fishes, and aquatic invertebrates**. Reviews concerning other natural resources must be submitted to other appropriate agencies. Thank you in advance for your cooperation.

Sincerely,

Andrew L. Shiels

Andrew L. Shiels
Nongame and Endangered Species Unit

ALS/csk

Encl. (1)

3620-PM-WQ0002 Rev. 12/97

Commonwealth of Pennsylvania
Department of Environmental Protection

INSTRUCTIONS FOR COMPLETING ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

GENERAL INFORMATION

These instructions are designed to assist the applicant in completing the Act 537 Plan Content and Environmental Assessment Checklist.

APPLICANT IDENTIFIER

For purposes of identifying and tracking both planning and permit packages. Please be sure that the following information matches.

NAMES. Enter the municipality designated as the organization name required in Section B of the Permit Application - General Information form.

SUBMISSION IDENTIFIER

For the purpose of identifying the submission title, please enter the same document title in Section A of the Permit Application - General Information form and in the Title of Submission on the Act 537 Content and Environmental Assessment Checklist title page.

USING THE CHECKLIST

For specific details covering the Act 537 Planning Requirements, refer to Chapters 71 and 73 of the department's Regulations.

A copy of this completed checklist must be included with your Act 537 plan. The department will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the preplanning meeting with the municipality to identify planning elements which will not be required to be included in the plan. All the planning elements required by DEP must be addressed in your plan or the plan will be returned as incomplete. The page number or other reference must be listed in column 1 of the checklist prior to plan submittal. If the municipality determines that any items listed in this checklist do not apply, or conditions stated in a certain part of this checklist do not exist in an area, a comment must be included in column 1 which states that the particular checklist item will have no impact on the plan or that it does not exist in the planning area. When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page. Three copies of the completed plan with all attachments must be submitted to DEP.

The most recent version checklist is found in Appendix I of the current DEP publication "A Guide for Preparing Act 537 Update Revisions" 3620-BK-DEP1480 as published on the internet. Access the DEP website at http://www.dep.state.pa.us (Choose Information by Subject/Water Management/Sewage Planning)

3620-PM-WQ0002 Rev. 12/97

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Water Quality Protection

ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

For specific details covering Act 537 planning requirements, refer to Chapters 71 and 73 of the Department's Regulations.

Municipality:____________________ **County:** ____________________

Local Municipal Contact Official: ____________________

Telephone Number of Official: ____________________

Consultant:____________________

Consultant's Telephone Number:____________________

Consultant's Contact Person: ____________________

Title of Submission: ____________________

Date Submitted:____________________

About this checklist . . . . .

* DEP publication 3640-BK-DER1480 11/92, "A Guide For Preparing Act 537 Update Revisions -- November 1992", is obsolete. Do not use checklist pages from that publication.

* You must complete and attach this checklist when you submit the Plan to the Department for review and approval.

* This checklist is composed of two parts, one for Administrative Completeness and one for General Plan Content. A Plan must be "administratively complete" in order to be formally reviewed and approved by the Department. The General Plan Content checklist identifies each of the issues which must be addressed in your Act 537 Plan Update based on a pre-planning meeting between you and/or your consultant and the Department. The Administrative Completeness checklist is found on Pages I-16. The General Content checklist is found on Pages I-17 through I-27. PENNVEST funded or applicant plans must address planning requirements on Page I-28.

* You must use the right-hand column blanks in the checklist to identify the page in the Plan on which each planning issue is found or reference a previously approved update or special study (title and page number.)

* If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the Plan (or as a footnote) and indicate the page number where this documentation is found.

* After Municipal Adoption by Resolution, submit three (3) copies of the Plan, any attachments or addenda, and this checklist to the Department.

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 1 through 8 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, only.
______	______	1. Table of Contents
		2. Plan Summary
______	______	A. Identify the proposed service areas and major problems evaluated in the Plan. (Reference - Title 25, §71.21.a.7.i)
______	______	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)
______	______	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)
______	______	D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii)
______	______	E. Provide a schedule of implementation for the project which 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)
______	______	3. 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.
______	______	4. 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 areawide 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.
______	______	5. Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and uncontested conduct of a 30 day comment period. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
______	______	6. 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. 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 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.b)
______	______	8. 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.

GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
		I. Previous Wastewater Planning
		A. Identify and briefly analyze all existing wastewater planning that:
______	________	1. Has been previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1)
______	________	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
______	________	3. Is anticipated or planned by applicable sewer authorities. (Reference-Title 25, §71.21.a.5.i.A) Section V.D. of the Planning Guide.
______	________	4. Has been done through planning modules for new land development, planning "exemptions" and addenda. (Reference-Title 25, §71.21.a.5.i.A).
		B. Identify and briefly summarizes all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
______	________	1. All land use plans and zoning maps which identify residential, commercial, industrial, agricultural, recreational, and open space areas. (Reference-Title 25, §71.21.a.3.iv).
______	________	2. Zoning or subdivision regulations that establish lot sizes predicated on sewa disposal methods. (Reference-Title 25 §71.21.a.3.iv).
______	________	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.
		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).
______	________	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
______	________	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).
______	________	C. Soils - Analysis with description by soil type and soils mapping. Show areas suitable for in-ground on-lot 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).

DEP Use Only	Plan Page No.	Item Required
______	________	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).
______	________	E. Topography - Depict slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds; slopes that are unsuitable for on-lot systems. (Reference-Title 25, §71.21 a.1.ii).
______	________	F. Potable Water Supplies - Identification through mapping, description and analysis to include 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.
______	________	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 nonmunicipal, individual and community sewerage systems in the planning area including:
______	________	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)
______	________	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)
______	________	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 the Department. (Reference-Title 25, §71.21.a.2.i.B)
______	________	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. A detailed description of operation and maintenance requirements of the municipality for on-lot systems and 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)
______	________	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii)

DEP Use Only	Plan Page No.	Item Required

B. Using DEP's manual titled "Sewage Disposal Needs Identification Guidance," identify, map and describe areas that utilize individual and community on-lot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:

______ ________ 1. The types of systems in use. (Reference-Title 25, §71.21.a.2.ii.A).

______ ________ 2. A sanitary survey complete with a description 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).

______ ________ 3. A comparison of the types of on-lot 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).

______ ________ 4. An individual water supply survey to identify possible contamination by malfunctioning on-lot sewage disposal systems consistent with the DEP Sewage Disposal Needs Identification Guidance manual. (Reference-Title 25 §71.21.a.2.ii.B)

C. Identify wastewater sludge and septage generation, transport, and disposal methods. Include this information in the sewage facilities alternative analysis including:

______ ________ 1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71)

______ ________ 2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).

______ ________ 3. Present disposal methods, locations, capacities, and transportation methods. (Reference-Title 25 §71.71).

IV. Future Growth and Land Development

A. Delineate and describe the following through map, text and analysis:

______ ________ 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 EDUs remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).

______ ________ 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).

______ ________ 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).

______ ________ 4. Zoning, and/or subdivision regulations; local, county or regional omprehensive plans;

DEP Use Only	Plan Page No.	Item Required
		and existing plans of a Commonwealth 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
______	________	5. Sewage planning to provide adequate wastewater treatment for the municipality. This planning must be related to both the five and ten year future planning periods and be based on growth impacts on existing and proposed wastewater collection and treatment facilities. (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:
______	________	1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).
______	________	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)
______	________	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).
______	________	a. Repair. (Reference-Title 25, §71.21.a.4.ii.A)
______	________	b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B)
______	________	c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71)
______	________	d. Improved operation and maintenance. (Reference-Title 25, §71.21.a.4.ii.C)
______	________	e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).
______	________	4. 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. Repair or replacement of collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).
______	________	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).

DEP Use Only	Plan Page No.	Item Required
		B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:
______	________	1. Soil and slope suitability. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C)
______	________	3. The establishment of a sewage management program. (Reference-Title 25, §71.21.a.4.iv). See also Part "F" below.
______	________	4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for on-lot disposal considering: (Reference-Title 25, §71.21.a.4).
______	________	a. Existing technology and sizing requirements of Title 25 Chapter 73. (Reference-Title 25, §73.31-73.72).
______	________	b. Use of expanded absorption areas or alternating absorption areas. (Reference-Title 25, §73.16.
______	________	c. Use of water conservation devices. (Reference-Title 25, §71.73.b.2.iii).
		C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes based on: (Reference-Title 25, §71.64.d).
______	________	1. Treatment and discharge requirements. (Reference-Title 25, §71.64.d).
______	________	2. Soil suitability. (Reference-Title 25, §71.64.c.l).
______	________	3. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.64.c.2).
______	________	4. Agency or other controls over operation and maintenance requirements. (Reference-Title 25, §71.64.d). See Part "F" below.
		D. The use of community land disposal alternatives including:
______	________	1. Soil and site suitability. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	3. Controls over operation and maintenance requirements through a Sewage Management Program (Reference-Title 25, 71.21.a.2.ii.C). See Part "F" below.
______	________	4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part V, B, 4, a, b, c above). See also Part "F" below.

DEP Use Only	Plan Page No.	Item Required
		E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference- Title 25, §71.21.a.4).
______	________	1. Commercial, residential and industrial use. (Reference-Title 25, §71.63.e).
______	________	2 Designated conveyance facilities (pumper trucks). (Reference-Title 25, §71.63.b.2).
______	________	3. Designated treatment facilities or disposal site. (Reference-Title 25, 71.63.b.2).
______	________	4. Implementation of a retaining tank ordinance by the municipality. (Reference-Title 25, §71.63.b.2). See Part "F" below
______	________	5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure.(Reference-Title 25, §71.63.c.2).
		F. Sewage management programs to assure the future operation and maintenance of existing and proposed sewage facilities through:
______	________	1. Municipal ownership or control over the operation and maintenance of individual on-lot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference-Title 25, §71.21.a.4.iv)
______	________	2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference-Title 25, §71.73.b.1.)
______	________	3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference-Title 25, §71.73.b.2)
______	________	4. Repair, replacement or upgrading of malfunctioning on-lot sewage systems. (Reference-Title 25, §71.21.a.4.iv) through:
		a. Aggressive pro-active enforcement of ordinances which require operation and maintenance and prohibit malfunctioning systems. (Reference-Title 25, §71.73.b.5)
		b. Public education programs to encourage proper operation and maintenance and repair of sewage disposal systems.
______	________	5. Establishment of joint municipal sewage management programs. (Reference-Title 25, §71.73.b.8)
______	________	6. Requirements for bonding, escrow accounts, management agencies or associations to assure operation and maintenance for non-municipal facilities. (Reference-Title 25, §71.71)

DEP Use Only	Plan Page No.	Item Required
		G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference-Title 25, §71.21.a.4)
		1. Modification of existing comprehensive plans involving:
______	________	a. Land use designations. (Reference-Title 25, §71.21.a.4)
______	________	b. Densities. (Reference-Title 25, §71.21.a.4)
______	________	c. Municipal ordinances and regulations. (Reference-Title 25, §71.21.a.4)
______	________	d. Improved enforcement. (Reference-Title 25, §71.21.a.4)
______	________	e. Protection of drinking water sources. (Reference-Title 25, §71.21.a.4)
______	________	2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference-Title 25, §71.21.a.4)
______	________	3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal which consider lot sizes and protection of replacement areas. (Reference-Title 25, §71.21.a.4)
______	________	4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference-Title 25, §71.21.a.4)
		H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference-Title 25, §71.21.a.4).
______	________	1. Water Quality/Public Health. (Reference-Title 25, §71.21.a.4).
______	________	2. Growth potential (residential, commercial, industrial). (Reference-Title 25, 71.21.a.4).
______	________	3. Community economic conditions. (Reference-Title 25, 71.21.a.4)
______	________	4. Recreational opportunities. (Reference-Title 25, §71.21.a.4)
______	________	5. Drinking water sources. (Reference-Title 25, §71.21.a.4)
______	________	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.A)
______	________	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.

DEP Use Only	Plan Page No.	Item Required
______	______	2. Municipal wasteload management plans 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.
______	______	3. Plans developed under Title II of the Clean Water Act (33 U.S.C.A. 1281-1299) or Title II and 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.
______	______	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.
______	______	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. 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.
______	______	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.
______	______	8. County Stormwater Management Plans approved by the Department 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.
______	______	9. Using wetland mapping developed under Section II.A.7, 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. Appendix B, Section II.I of the Planning Guide.
______	______	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 the Department 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, II.J.

DEP Use Only	Plan Page No.	Item Required
______	________	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 to 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.
______	________	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.
______	________	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).
______	________	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 (5) years from the date of plan submission. (Reference-Title 25, §71 21.a.5.iv).
______	________	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 contingency financial plan to be used if the preferred method of financing cannot b 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).
		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).
______	________	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)
______	________	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)
______	________	G. Evaluate administrative organizations and legal authority necessary for Plan implementation. (Reference - Title 25, §71 21.a.5.vi D.)

DEP Use Only	Plan Page No.	Item Required
		VII. Institutional Evaluation
		A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
______	______	1. Financial and debt status. (Reference-Title 25, §71.61.d.2)
______	______	2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)
		3. Existing legal authority to:
______	______	a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61 d.2)
______	______	b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61 d.2)
______	______	c. Set user fees and take purchasing actions. (Referernce-Title 25, §71.61.d.2)
______	______	d. Take enforcement actions against ordinance violators. (Reference-Title 25, §71.61.d.2)
______	______	e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2)
______	______	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:
______	______	1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2)
______	______	2. Functions of existing and proposed organizations (sewer authorities, on-lot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.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:
______	______	1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2)
______	______	2. Development of all required ordinances, regulations, standards, and inter-municipal agreements. (Reference-Title 25, §71.61.d.2)
______	______	3. Description of activities to provide rights-of-way, easements, and land transfers. (Reference-Title 25, §71.61.d.2)
______	______	4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2)
______	______	5. Any other legal documents. (Reference-Title 25, §71.61.d.2)
______	______	6. Dates or timeframes for items 1-5 above on the project's implementation schedule.

DEP Use Only	Plan Page No.	Item Required
______	______	D. Identify the chosen 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. 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:
______	______	1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6)
______	______	2. Future wastewater disposal needs. (5 and 10 years growth areas). (Reference-Title 25, §71.21.a.6)
______	______	3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6)
______	______	4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6)
______	______	5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6)
______	______	6. Available financing methods. (Reference-Title 25, §71.21.a.6)
______	______	7. Environmental soundness and compliance with natural resource planning ar preservation programs. (Reference-Title 25, §71.21.a.6)
______	______	B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan.

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 Appendix N for greater detail, Contact the DEP regional office serving your county listed in Appendix J.

DEP Use Only	Plan Page No.	Item Required
______	______	1. Environmental Impact Assessment. (Planning Phase)

Items a, b, c, e and g of the Environmental Impact Assessment requirement are eligible for Act 537 grant participation to the extent of identification of a <u>potential</u> impact. Studies required to determine impact, to mitigate impact and to obtain permits are not eligible for Act 537 grant participation. Such studies may be eligible for PENNVEST funding. Items d, f, h, i, j, k and l are not required by Chapter 71, but may be eligible for Act 537 grant participation when required for DEP approval of sewage facilities plan update revision.

a. Historical and Archaeological Sites
b. Wetlands
c. Endangered and Protected Species
d. Air Quality
e. Floodplains
f. Fish and Wildlife
g. Agricultural Lands
h. Wild and Scenic Rivers
i. Coastal Zone Management
j. Socio-Economic Impacts
k. Water Supplies
l. Other Environmentally Sensitive Areas

DEP Use Only	Plan Page No.	Item Required
______	______	2. Cost Effectiveness. (Planning Phase)
______		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)

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ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA
Mayor Charles H. Robertson

February 26, 1997

DIVISION OF COMMUNITY AFFAIRS

Director's Office 849-2203

Business Development 849-2290

Health 849-2252

Housing Rehabilitation 849-2264

Planning/Engineering 849-2307

Zoning/Permits 849-2256

DIVISION OF PUBLIC SERVICES

Director's Office 849-2245

Building Maintenance 845-9351

Environmental Services 849-2245

Highway Maintenance 849-2320

Recreation & Parks 854-1587

York City Sewer Authority
Attn: Phil Briddell, Chairman
c/o Blakey, Yost, Bupp & Schaumann
17 E. Market St.
York, PA 17401

RE: City of York Act 537
Sewage Facilities Plan Update

Dear Authority Members:

The City of York hereby requests the York City Sewer Authority prepare and submit to PADEP an Act 537 Sewage Facility Plan Update on its behalf.

The purpose of the plan will be to evaluate the available capacity and condition of the collection system and to determine the system's ability to provide public sewerage service to the City of York and the six other connected municipalities for various growth scenarios.

Furthermore, the City of York authorizes the YCSA to seek sewage facilities planning assistance upon PADEP plan approval.

The City of York and York City Sewer Authority must both approve, by signature, the Task Activity Report submitted to PADEP at the onset of the project. The City of York intends to adopt the plan update prior to its submission to PADEP for review and approval. Additionally, any significant changes to the plan content requiring PADEP notification must also be approved by the City.

Very Truly Yours,

R. Eric Menzer
Director, Economic Development

pc: Larry Lutter, Buchart-Horn Inc.
April Showers, Director, Bureau of Planning/Engineering

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Appendix 14

537 Plan Final Draft Comments and Responses

The following presents a listing of all written comments received from a review of the Final Draft 537 Plan and the responses:

Connected Municipality Comments

The following are comments submitted by or on behalf of the connected municipalities:

Comments received from Manchester Township by letter dated November 18, 1998 (copy included at the end of this Appendix).

1. *While the title of the document is "York City Sewer Authority Regional Act 537 Plan" we note that Section 2 primarily contains demographic and physical characteristic data for the City of York. If the user municipalities are required to adopt the plan as amendments to their respective official sewage plans, we question whether demographic, physical characteristics, and land use data should be included for all municipalities?*

   Response: The scope of this Plan considers the demographics and physical characteristics of each connected municipality will be found in the individual municipality's Act 537 Plan. The information regarding demographics for each connected municipality in this Plan is limited to present and future flow projections at each connection point. These flow projections were provided by C.S. Davidson, Inc. on behalf of the connected municipalities and are found in Appendix 9.

2. *Section 4 (Future Growth and Development) appears to focus on the City of York. In order to present an accurate representation of the future growth on the Greater York Area as it will affect the York City Wastewater Treatment Facility and conveyance system, should a more detailed narrative description of each user municipalities future growth be included to support the future projected flows found in Table 4-4?*

   Response: The detailed information regarding each of the connected municipalities' future growth should be included in the individual municipality's Act 537 Plan.

3. *In reviewing Section 3 (Existing Sewage Facilities), particularly the subsection which addresses infiltration and inflow, we were unable to locate any reference to the continuing efforts between the City of York and Manchester Township to determine if during extreme heavy precipitation events a correlation exists between when Manchester Township Public Works Department is required to perform relief pumping at the North George Street/Skyview Drive sewer line confluence and when the intake flows at the*

wastewater treatment facility exceeds approximately 40 MGD. While Manchester Township continues to invest time and money in identifying and eliminating I/I from the areas tributary to the North George Street/Skyview Drive confluence, we suggest that the study include a statement representing that the city will continue its cooperative effort to determine if the North George Street/Skyview Drive confluence is susceptible to retarded flow if discharge from Manchester Township's main sewer interceptor connection to the city main Codorus Creek trunk line is retarded by high flow levels in the main trunk line.

Response: The City recognizes that Manchester Township has experienced an overload of the sewers at N. George St. and Skyview Dr. Although this problem is approximately one mile from the Codorus Creek Interceptor and appears to be a local problem, the City will continue to work with Manchester Township to determine if high flows in the Codorus Creek Interceptor retard flows in this specific sewer. A statement regarding this cooperative effort will be added to the plan.

4. *While the Infiltration/Inflow subsection of Section 3 presents the data to support the prioritization of areas for further I/I analysis, the narrative does not contain any reference to continuing efforts by the user municipalities to eliminate I/I from the identified priority areas.*

   Response: The Sewer Authority believes that all connected municipalities are actively working to reduce I/I, and the above noted section will be modified to note this activity.

5. *Because of public confusion between Manchester Township and Manchester Borough, perhaps the maps which are contained in Appendix I should refer to Manchester Township rather than just "Manchester".*

   Response: This change will be made.

Comments received from C. S. Davidson, Inc. on behalf of the connected municipalities by letter dated November 16, 1998 (copy included at the end of this Appendix).

1. **In Reference to Page 3-21, Table 3-5**: *The "Existing Problems" footnote refers to five manhole segments with negative slopes built in 1988. Why should the City or the outside Municipalities pay for this construction error. The party or parties responsible should be approached to correct the situation, if possible.*

   Response: There exists only 7.4 feet of available fall between manhole A46 and the influent to the wastewater treatment plant. The overall distance of this line segment is 12,637 linear feet making the average slope of the line 0.6% or 0.6 feet per 100 feet of line. The existing limitations in the available fall in this line segment dictated the very flat interceptor. The various negative slopes identified by survey are suspected to be due to minor differential settling. The warranty period of this sewer construction contract has been expired for almost ten years.

2. In Reference to **Page 3-23, Table 3-8:** *The "Existing Problems" footnote refers to several manholes with visible infiltration. Buchart-Horn, Inc. has also completed several studies which show interceptor facilities undersized or near capacity. The footnote should be expanded to identify flow restricted segments.*

   Response: The Roosevelt Avenue Interceptor Study Phase 3 dated June 1996 identifies the restricted segments of sewer. This study document is available and is referenced in the 537 Plan.

3. In Reference to **Page 3-26, Peaking Factors:** *The second sentence refers to "peaking factors are calculated on the maximum instantaneous flows determined by the dry weather base flow." On the subsequent page in Table 3-12, the peaking factor appears to be computed differently. Please explain the variation.*

   Response: Table 3-12 does not show the maximum instantaneous flows. This table shows the Average Flow, Base Flow and the calculated Peaking Factor. The peaking factors listed in the Table are calculated as stated in the text.

4. In Reference to **Page 3-28, Infiltration:** *In the first sentence refers to meter readings during "April 1997, January, February and March 1998". In the second sentence refers to ground water levels "during these 2 months". The two months should be more clearly identified.*

   Response: The text has been changed to read "during these four months."

5 In Reference to **Page 3-28, Infiltration:** *Under the Willis Run Interceptor section, the words "Fire Side" should be "Fireside".*

   Response: The correction has been made.

6. **In Reference to Page 3-33, Table 3-13 thru Table 3-15:** *A map should be added to the appendix to identify all flow meter locations.*

   Response: Drawing No. 3, sanitary sewer mains, in Appendix 1 has been updated to show the meter locations.

7. **In Reference to Appendix 1, Drawing No. 3:** *The exhibit shows only two sanitary sewer interconnections on the Poorhouse Run Interceptor. Is this correct?*

   Response: Although there are many interconnections to the Poorhouse Run Interceptor, Drawing No. 3 only shows those interceptors 12" in diameter or larger.

8. **In Reference to Appendix 4, Page 3, Table 1:** *The average flow for North York Borough is computed incorrectly. After adjustment, total average daily flow, 3 month maximum flow and ratios shall be checked and recomputed.*

   Response: The value of 1.021 MGD listed in Table 1 for North York Borough was a clerical error. The correct average flow of 0.204 MGD has been inserted and this correct value was previously used in subsequent calculations.

9. **In Reference to Appendix 5, Exhibit 4:** *Can additional maps be added to separate and prioritize infiltration versus inflow related problems?*

   Response: The intent of the Prioritized I/I Map is to simply indicate which regions of the of the collection system have I/I and to what degree the problem may be. It will be necessary to perform local metering in each of the noted areas to determine the actual extent of both inflow and infiltration before further prioritizing of areas can be determined.

10. **In Reference to Appendix 5, Exhibit 5:** *The correct name for "York New Salem" should be changed to "New Salem Borough". Dover Township, North Codorus Township and Springfield Township should also be labeled on the map.*

    Response: These changes will be made to this Exhibit.

11. **In Reference to Appendix 8, Table 4-5:** *"Allocated Flows" and "Allocated Excess or (Deficiencies)" should be revised when and if West Manchester and York Townships reach agreement on capacity transfers.*

    Response: This table will be changed once the pending agreements for the noted transfer of capacity are signed and Buchart-Horn receives a signed copy.

Comments received from Gannett Fleming Engineers and Planners on behalf of York Township

Gannett Fleming provided comments on the York Sewer Authority Regional Act 537 Plan on behalf of York Township by letter dated November 16, 1998. A copy of this letter is included at the end of this appendix.

Gannett Fleming has identified that the proposed wastewater management alternative transfers a portion of the Township's flow from the Tyler Run interceptor service area in the York system to the Mill Creek interceptor service area in Springettsbury Township system. The Tyler Run interceptor will receive a projected annual average flow of 2.2 MGD in the year 2020. This projected flow appears to eliminate the need to upgrade the Tyler Run Interceptor over the next 20 years.

A portion of the flow which York Township will divert to the Springettsbury Township system, will eventually return the York City system through the new Springettsbury pumping station. In order to account for the additional capacity requirements in the York system, York Township will need to purchase capacity from West Manchester Township. This purchase will require written agreements between the parties. The discussion on the need for the City of York to review and approve these agreements will be added to this Plan as suggested by Gannett Fleming or the actual transfer will be identified if the agreements are signed prior to the final adoption of this Plan.

City of York Comments

Wastewater Treatment Plant Management Comments

Comments submitted by Harvey Bortner, Plant Superintendent, by memorandum dated November 3, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *Have you looked at the feasibility of installing UV in the Storm Water Basin?*

   Response: The use of additional UV disinfection was considered for the emergency bypass line. The capital and operating costs of additional UV disinfection is significantly greater than the use of sodium hypochlorite (approximately 5 times higher). In addition, a UV system in the storm water basin would be used only a couple of times per year. Therefore, a UV disinfection option was not pursued further in the alternative evaluation.

2. *Another option might be to increase the pumping capacity of the Train 2 effluent pumps to cover any anticipated overflow. The UV facility is going to be made larger and could possible be sized to handle any Train 2 overflow.*

   Response: This option has been considered and its cost is included in Alternative Combinations E, F, G, N, O and P. The approximate additional present worth cost for the pumping and UV system included these alternative combinations above the cost of alternative combination W is $1.9 million.

3. *If any work is planned on the aerator VFDs, individual VFDs for each aerator would give us more flexibility in controlling D.O.*

   Response: Improvements to the aerators or their VFD's were not considered since the plant's capacity to supply oxygen for treatment for the planning period is adequate. Recent discussions with plant operators, however, have noted a potential equipment problem which may require the replacement of certain VFD's. If VFD replacement is found to be required, a request to include such replacement will be made to the Sewer Authority.

Comments Submitted by Rudy Zimmerman, Assistant Plant Superintendent, by memorandum dated October 30, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *I assume that all operations costs are computed just for the proposed time that the alternative runs during a peak flow event, though I did not notice that this was stated anywhere in the plan. For what period of time were these times figured?*

   Response: Operational costs were computed for a 12 to 24 hour period twice a year.

2 *Alt. 2B proposes a 1900 foot 24 inch force main. Alternative 2C installs a 1530 foot 30 inch force main. Why the difference in the lengths?*
NOTE: I like 2C best, but why the difference in price? Perhaps something in the project or operating costs that I'm not aware of?

Response: The difference in lengths is due to different points of connection to existing facilities. Alternative 2C suggests upgrading existing equipment and installing a new parallel force main from the tee connection in front of the Control Building to Train 3. Alternative 2B suggest installing new equipment and a parallel force main the total distance from the primary sludge pump station to train 3. Remember, these are budgetary conceptual costs not final construction cost estimates.

3. *Alt. 3G uses trailer mounted pumps. One comment I would make would be to locate the hose taps for these pumps on the higher level (at the top of the hill by the screw pump structure) to keep them out of the potential flood plain. I realize this would be contrary to the proper pumping scenario, but if the pumps get flooded they won't do any good either.*

Response: This suggestion may be possible, however, very few manufactures will confirm that their pumps can pull a 26 to 28 ft. suction lift. If this alternative is selected, your suggestion will be reviewed for possible use.

NOTE: Electric is critical to operate either the screw pumps or the submersible(s) in Alt. 3. Was any consideration given to having a plug in receptacle at Sub 1 to power these pumps from a portable generator in the event of power failure?

Response: This suggestion can be implemented in the final design if this alternative is chosen.

NOTE: I have heard that when a motor is run from a VFD, the motor can be run up to 200% of its rated motor speed. Would this be something to consider -- "super speeding" the pumps to increase their capacity, assuming the gears and guts could take the extra stress?

Response: "Super speeding" is generally not accepted by motor manufacturers. Often the motor warranty will be voided if VFD's are used to "super speed" pumps. Also, the increased flows resulting from "super speeding" a pump require the motor to operate at greater break horse power. "Super speeding" pumps in this application will not be recommended.

NOTE: I think all your #3 alternatives lift from the suction well to the top discharge well. Is this the best place to discharge? Can the pipe from the discharge well to the sand filters take the additional flow? Possibly a better place might be the sand filter inlet box or even the bypass pipe itself, since this would probably only be used during high flow *periods.*

Response: The pipe from the screw pump discharge well to the sand filters has sufficient capacity for the additional flow. A flow obstruction at the filter building does exist and must be addressed during the final design of any sand filter upgrade alternative.

NOTE: If the submersible pump(s) alternative is chosen, could these also be used to dewater the lower suction well for maintenance on the lower screw pump bearings?

Response: This dewatering is possible and would be address during final design.

4. *I do not like any of the #4 alternatives as presented. I would suggest that some UV system rather than sodium hypochlorite be used, such that when pumps come on so does the UV and the flow gets disinfected. When the pumps turn off, so does the UV. Installing a system in a pipe might even be possible, though I hate to think about bulb maintenance. Even to take the storm water discharge North along the levee and tie into the UV building and disinfect there, or somewhere in the pipe and dump into the cascade, in my opinion, would be more desirable than hypochlorite. Does hypochlorite in these quantities require being listed on the SARA or Spill plans?*

   Response: The handling of sodium hypochlorite would be added to the plant's emergency spill plan. SARA notification may be required depending on the quantity of chemical stored on site.

5. *I would assume that Alt. 5C is not the latest Davco proposal. Can the Davco numbers either be substituted directly for these or added as an additional alternative?*

   Response: The conceptual cost of Alternative 5C includes a retrofit of the existing sand filter underdrain system. Changes that may be proposed by potential installers of the retrofit will be considered in the final design if this alternative is implemented. The conceptual cost should not be modified at this time.

6. *I am not in favor of the deeper modules in Alt. 6A. I think the higher breakage costs from having the handle larger modules as well as the additional weight (I would assume) would not be advantageous to the ease of bulb maintenance. Additional channels utilizing the existing or similar size modules would be my choice. Also, where would the additional ballast cabinets be located? Cabinet cooling and filtration should definitely be a topic for discussion.*

   Response: The type of UV system and it's control system will be reviewed with operating staff prior to the final design of the upgraded UV Disinfection System.

7. *For what it's worth, my choice would be Option M with an alternative disinfection system as stated in #4 above with the Davco retrofit of the five sand filters as stated in #5 above.*

Response: Your comments will be reviewed with the Sewer Authority prior to final selection of the alternative.

Comments Submitted by Steve Douglas, Chief Operator, by memorandum dated November 5, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *York City WWTP plant operator input should be considered when an option for implementation is chosen.*

   Response: Any proposed improvement will be reviewed with the WWTP plant operators and management staff before final design is complete.

2. *Will the Train 2 secondary clarifiers handle the additional peak flows of 31 MGD?*

   Response: Hydraulic profile calculations for Train 2 indicated that the piping and clarifiers can handle 31 MGD hydraulically. It should be understood, however, that the aerators need to be shut down at approximately 20 MGD to prevent losing solids from the clarifiers.

3. *It is my opinion that Alternative 4 should be considered only as a last resort. I would not like to disinfect Train 2 overflow with either sodium hypochlorite or chlorine. I do not favor having another discharge point added to our NPDES permit.*

   Response: The difference in cost, both capital and operating costs, between discharging all flow to the existing 002 outfall and allowing an emergency bypass of peak flows to the former 001 outfall is significant. The present worth cost difference is approximately $2 million. For an improvement that may only be used once or twice a year, it is necessary to weight the financial, operational and safety concerns carefully.

   In addition, we have asked PADEP to identify the limits for an 001 discharge including total chlorine residual. We have not received this information to date.

4. *Every attempt should be made to pump as much primary effluent to Train 3 as possible. While the primary clarifiers may not be able to handle the additional solids loading associated with the higher peak flows, these tanks would allow for scum and oils to be collected off of the surface and thus not foul the dissolved oxygen probes at Train 3. Our experience has shown that any time large amounts of raw sewage are pumped to Train 3 via the Raw Sewage (Waste) Pumps, oils and greases adhere to the surface of the dissolved oxygen probes. This results in the probe sensing a lower than actual oxygen level in the tanks and the aerator speeds increase to 100% output.*

   Response: These are valid concerns that must be addressed during the design of any of the Alternative 2 scenarios.

5. *Any modifications made to either the Raw Sewage (Waste) Pumps or the Primary Effluent Pumps should include replacement of their corresponding variable frequency drives. These units (Westinghouse Accutrol 200 units) have proven to be unreliable under stressed conditions. Also, these VFDs are only 6 pulse units. Technological advances made over the past ten years have lead to 12 and 18 pulse units becoming available. I've been told that these newer units are more energy efficient.*

   Response: The VFD issues will be reviewed and addressed under the design of any of the Alternative 2 scenarios.

6. *The total combined flow should be sent to the Sand Filters. Once here the operator will determine how much flow will be allowed to go through the filter system and how much will be bypassed on to the UV system.*

   Response: Combination alternatives B through S require all flow to be pumped to the sand filters. The operator would determine how much flow to bypass around the sand filters based on actual conditions.

7. *The UV system should be modified to handle the peak flow. Instead of considering expanding our present system, the newer medium pressure/high intensity systems should be evaluated. This system may have a high energy demand, but it also has several advantages. These advantages include: (1) self-cleaning, (2) lower labor costs, and (3) fewer lamps [as low as 1/20 of our present system].*

   Response: The type of UV system to be used will be determined during the final design of the plant improvements Cost considerations based on more detailed equipment requirements and layout will be presented at that time for review and decision.

Sewer Collection System Management Comments

Jack Longstreet, Supervisor of the York City Collection System Maintenance Department, has indicated that the lengths of sewers by diameter size within the system are inflated. These lengths have been reviewed and corrected.

York County Planning Commission Comments

The York County Planning Commission had no comments requiring a written response. The Plan was approved at the Commission's November 14, 1998 meeting without comment. Please refer to the York County Planning Commission Project #98-89 letter which is included in this Appendix.

Public Review Comment Period Comments

The York City Sewer Authority Regional Act 537 Plan was advertised for review on February 8, 1999. The Plan was available for public review from February 8, to March 9, 1999 at the York City Clerks office. No comments were received from the public. Refer to the attached documents.

11/18/1998 10:24 7178542924 WY< PAGE 01
11-17-1998 6:33PM FROM BUCHART-HORN/BASCO 7178521401 P 1

facsimile
TRANSMITTAL

BUCHART HORN, INC.

To: Kathy Altland, West York Borough
Fax #: 854-2924
re: **York City Sewer Authority Act 537 Plan**
Date: 11/17/98
Pages: 1, including this cover sheet

This fax has been sent to remind you that we would like your comments by November 23, 1998 on the York City Sewer Authority's Act 537 Plan which was sent to you on September 23, 1998. If you did not receive your copy of the Act 537 Plan, or have questions or comments that need to be addressed immediately, please feel free to contact me.

11-18-98

MR. SHIRK:

THE BOROUGH WILL RELY ON THE COMMENTS AS SUBMITTED BY OUR ENGINEER, C.S. DAVIDSON, INC.

THANK YOU. Kaltland

From the desk of...

David Shirk
Senior Engineer
Buchart-Horn, Inc.
445 W. Philadelphia St.
PO Box 15040
York, PA 17405-7040
(717) 852-1412
Fax: (717) 852-1615

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The Township of Manchester

YORK COUNTY PENNSYLVANIA

DRAFT

3289 SUSQUEHANNA TRAIL
YORK, PENNSYLVANIA 17402
Telephone: 717-764-4646 / 764-8327

November 18, 1998 GC-98-0558

Mr Lawrence A Lutter, PE
Buchart-Horn, Inc
PO Box 15040
York, PA 17405-7040

RE York City Sewer Authority Regional Act 537 Plan BH #72526-00

Dear Mr Lutter

I am writing in response to your September 23, 1998 letter concerning the review of the final draft copy of the York City Sewer Authority Regional Act 537 Plan While we have not conducted a detailed review of the technical aspects of the plan, we offer the following general comments

1. While the title of the document is "York City Sewer Authority Regional Act 537 Plan" we note that Section 2 primarily contains demographic and physical characteristic data for the City of York If the user municipalities are required to adopt the plan as amendments to their respective official sewage plans, we question whether demographic, physical characteristics, and land use data should be included for all municipalities?

2 Section 4 (Future Growth and Development) appears to focus on the City of York In order to present an accurate representation of the future growth on the Greater York Area as it will affect the York City Wastewater Treatment Facility and conveyance system, should a more detailed narrative description of each user municipalities future growth be included to support the future projected flows found in Table 4-4?

3 In reviewing Section 3 (Existing Sewage Facilities), particularly the subsection which addresses infiltration and inflow, we were unable to locate any reference to the continuing efforts between the City of York and Manchester Township to determine if during extreme heavy precipitation events a correlation exists between when Manchester Township Public Works Department is required to perform relief pumping at the North George Street/Skyview Drive sewer line confluence and when the intake flows at the wastewater treatment facility exceeds approximately 40 mgd While Manchester Township continues to invest time and

money in identifying and eliminating I/I from the areas tributary to the North George Street/Skyview Drive confluence, we suggest that the study include a statement representing that the city will continue its cooperative effort to determine if the North George Street/Skyview Drive confluence is susceptible to retarded flow if discharge from Manchester Township's main sewer interceptor connection to the city main Codorus Creek trunk line is retarded by high flow levels in the main trunk line

4 While the Infiltration/Inflow subsection of Section 3 presents the data to support the prioritization of areas for further I/I analysis, the narrative does not contain any reference to continuing efforts by the user municipalities to eliminate I/I from the identified priority areas

5 Because of public confusion between Manchester Township and Manchester Borough, perhaps the maps which are contained in Appendix I should refer to Manchester Township rather than just "Manchester "

Thank you for the opportunity to provide comments for the York City Sewer Authority Regional Act 537 Plan

Please contact Zoning/Planning Officer Stewart S Olewiler, III or me if vou have any questions

Sincerely,

MANCHESTER TOWNSHIP

David A Raver
Township Manager

DAR/plp

cc Stewart S Olewiler, III, Zoning/Planning Officer
Richard Resh, C S Davidson, Inc
Larry E Gross, Public Works Superintendent

FAXED Time: 2:30 pm Date: 11-18-98

C.S.DAVIDSON INC.

EXCELLENCE IN CIVIL ENGINEERING

York Office
38 North Duke Street • York, PA 17401
(717) 846-4805 • FAX (717) 846-5811

Gettysburg Office
50 West Middle Street • Gettysburg, PA 17325
(717) 337-3021 • FAX (717) 337-0782

November 16, 1998

Larry A. Lutter, P. E.
Buchart-Horn, Inc.
445 West Philadelphia Street
PO Box 15040
York, PA 17405-7040

Re: York City Sewer Authority
Regional Act 537 Plan
B. H. #72526-00

Dear Mr. Lutter:

In response to your 9/23/98 letter to the outside user municipalities, we have reviewed a copy of the "York City Sewer Authority Regional Act 537 Plan - Final Draft" dated September 1998 and offer the following comments:

1. Page 3-21, Table 3-5: The "Existing Problems" footnote refers to five manhole segments with negative slopes built in 1988. Why should the City or the outside Municipalities pay for this construction error. The party or parties responsible should be approached to correct the situation, if possible.

2. Page 3-23, Table 3-8: The "Existing Problems" footnote refers to several manholes with visible infiltration. Buchart-Horn, Inc. has also completed several studies which show interceptor facilities undersized or near capacity. The footnote should be expanded to identify flow restricted segments.

3 Page 3-26, Peaking Factors: The second sentence refers to "peaking factors are calculated on the maximum instantious flows determined by the dry weather base flow." On the subsequent page in Table 3-12, the peaking factor appears to be computed differently. Please explain the variation.

4. Page 3-28, Infiltration: In the first sentence refers to meter readings during "April 1997, January, February and March 1998". In the second sentence refers to ground water levels "during these 2 months". The two months should be more clearly identified.

5. Page 3-28, Infiltration: Under the Willis Run Interceptor section, the words "Fire Side" should be "Fireside".

6. Page 3-33, Table 3-13 thru Table 3-15: A map should be added to the appendix to identify all flow meter locations.

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

7. Appendix 1, Drawing No. 3: The exhibit shows only two sanitary sewer interconnections on the Poorhouse Run Interceptor. Is this correct?

8. Appendix 4, Page 3, Table 1: The average flow for North York Borough is computed incorrectly. After adjustment, total average daily flow, 3 month maximum flow, and ratios shall be checked and recomputed.

9. Appendix 5, Exhibit 5: Can additional maps be added to separate and prioritize infiltration versus inflow related problems?

10. Appendix 5, Exhibit 5: The correct name for "York New Salem" should be changed to "New Salem Borough". Dover Township, North Codorus Township and Springfield Township should also be labeled on the map.

11. Appendix 8, Table 4-5: "Allocated Flows" and "Allocated Excess or (Deficiencies)" should be revised when and if West Manchester and York Townships reach agreement on capacity transfers.

To assist our clients to develop programs to investigate infiltration/inflow and prioritize sanitary sewer rehabilitation programs, we request that specific flow meter information be provided to our office to support "Prioritization of Subsequent I/I Analysis" shown on Exhibit 5, in Appendix 5.

If there are any questions, please contact our office.

Very truly yours,

C. S. DAVIDSON, INC.

Richard G Resh

Richard G. Resh

cc: William J. Conn, Manager, Spring Garden Township
Jan R. Dell, Manager, West Manchester Township
Mark Derr, Manager, York Township
David A. Raver, Manager, Manchester Township
Dora Ream, Secretary, North York Borough
Kathy Altland, Manager, West York Borough

RGR/dec4078

Gannett Fleming

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) 763-8150
www.gannettfleming.com

November 16, 1998

Mr. Mark Derr, Manger
York Township
25 Oak Street
York, PA 17402

Dear Mark:

RE: York City and Springettsbury Township/Draft Act 537 Reports

In accordance with the request of York Township, we have reviewed the draft Act 537 reports prepared for the York City Sewer Authority and Springettsbury Township by Buchart Horn, Inc.. A copy of our review comments for each report are attached for the Township's use.

Mr. Larry Lutter of Buchart Horn has requested that all comments on the York City draft report be provided to his attention by no later than November 23, 1998. Mr. Michael Schober of Buchart Horn has requested that all comments on the Springettsbury Township draft report be provided to his attention by no later than December 7, 1998.

Our comments on the York City draft report are procedural and notify the City of the Township's selection of the wastewater management alternative that transfers a portion of its York City drainage basin to the Springettsbury drainage basin and the planned purchase of WWTP capacity from West Manchester Township. Our comments on the Springettsbury report notify Springettsbury Township of York Township's selected alternative but also deal with issues related to the need for up to $9,500,000 in system improvements and the use of the anticipated federal grant money.

We suggest a meeting be held between us, Township staff and interested Township Commissioners to review the attached comments and any comments the Township may have on its draft Act 537 report so that we can complete the draft report and initiate the public comment period. Please give me or Mark Malarich a call if you have any questions or to schedule this meeting.

Very truly yours,

GANNETT FLEMING, INC.

Robert E. Shaffer

ROBERT E. SHAFFER, Sr., P. E.
Project Manager

Enclosure
xc: Philip Briddell

November 1998

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS

1. Executive Summary, Page 5, Tyler Run Interceptor. The discussion on the Tyler Run interceptor notes that the need for upgrading the interceptor is dependent on the flow alternative selected by York Township and that input is needed from York Township to complete the section. The draft York Township Act 537 report has now been prepared and provided to Township staff and elected officials for review and comment. The selected wastewater management alternative in the draft report transfers flow from a portion of the Township's Tyler Run interceptor service area to its Mill Creek service area tributary to the Springettsbury sewer system. The Township's projected year 2020 average annual flows under the selected approach are:

Drainage Basin	Tributary Interceptor	Projected Year 2020 Annual Average Flows (mgd)
York City	Tyler Run	2.2
Springettsbury	Mill Creek	2.8
	Total	5.0

The sewer system modeling presented in Section 5 of the YCSA Act 537 Report indicates the existing Tyler Run interceptor can handle at least 2.4 mgd of annual average flow from York Township. Therefore, it appears that no upgrades to the portion of the Tyler Run interceptor within the City is needed based on the Township's selected wastewater management alternative.

2. Executive Summary, Page 6, Implementation. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. As noted above, the selected wastewater management alternative involves diverting a portion of the flows from the Township's York City Basin to its Springettsbury Basin. This diverted flow will ultimately be transferred to the York City WWTP via the proposed Springettsbury Township Codorus Creek pumping station. York

November, 1998

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

Township is currently negotiating with West Manchester Township for the purchase of its excess York City WWTP capacity. Three draft agreements have been prepared to date regarding the purchase of this capacity and the diversion of the flow to the York City WWTP via the Springettsbury pumping station. Two of the draft agreements, the WWTP capacity purchase agreement and the agreement increasing the flow diversion limits for the Springettsbury York City WWTP connection, will require the signature of appropriate York City officials. Copies of these draft agreements have been provided to the City for its review and comment. It may be appropriate to include a discussion in the YCSA's Act 537 plan regarding the need for the City of York to approve these agreements.

November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS

1. Page 1-1, Wastewater Treatment. The first paragraph of this section indicates a projected 20-year need within the Springettsbury WWTP service area of 6.5 mgd of additional wastewater treatment capacity. Based on the unnumbered table included at the end of Section 2 of the draft report, approximately 2.1 mgd of this 6.5 mgd of capacity is attributed to York Township. The second paragraph of this section states that additional capacity, over the 3.5 mgd already secured in the York City WWTP, is available from other municipalities holding York City WWTP capacity.

   The draft York Township Act 537 report has now been prepared and provided to Township staff and elected officials for review and comment. The selected wastewater management alterative in the draft report transfers flow from a portion of the Township's Tyler Run interceptor service area to its Mill Creek service area tributary to the Springettsbury sewer system. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. York Township hopes to have the negotiations with West Manchester Township over the purchase of this capacity completed in the near future. It may be appropriate to include a brief discussion regarding the capacity purchase in this section.

2. Page 3-2, Regional Wastewater Treatment. The last two paragraph of this section describe the potential to divert flow from York Township's York City basin to its Springettsbury Basin. As noted above, the selected wastewater management alternative in York Township's draft Act 537 plan proposes this flow diversion. The selected alternative calls for sending approximately 0.8 mgd of the 1.2 mgd of York City WWTP capacity purchased from West Manchester Township down the Mill Creek interceptor for diversion to the York City WWTP via the proposed Springettsbury Codorus Creek pumping station. A note that York Township's Act 537 update proposes this diversion may be appropriate in this section of the Springettsbury Act 537 report.

3. Page 4-4 through 4-5, Tables 4-1 and 4-2. Table 1-1, Page 1-3 of the draft report presents $8,813,000 in proposed Springettsbury sewerage system improvements (construction of the diversion pumping station and upgrading certain Springettsbury WWTP liquid and solids handling processes). Page 4-3 notes that Springettsbury Township's share of these costs are 25.25% for the pumping station and 48.75 % for the WWTP improvements, for a total of

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November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

$3,291,000. Tables 4-1 and 4-2 appear to project the impact of the proposed sewerage system projects on Springettsbury Township's sewerage system account cash flow and resulting additional cost per EDU. The Table 4-1 lists the 1998 beginning year balance at $3,200,000 and includes $2,500,000 in anticipated federal funding. Both Tables 4-1 and 4-2 subtract all $2,500,000 in anticipated federal grants from Springettsbury Township's share of the projected project costs. It is our understanding that any federal grants received to support the regionalization of the sewer system will be distributed proportionately among all parties. Tables 4-1 and 4-2 should be revised to reflect this grant sharing.

4. <u>Page 5-2 Institutional Evaluation</u>. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. As noted above, the selected wastewater management alternative involves diverting a portion of the flows from the Township's York City Basin to its Springettsbury Basin. This diverted flow will ultimately be transferred to the York City WWTP via the proposed Springettsbury Codorus Creek pumping station. York Township is currently negotiating with West Manchester Township for the purchase of its excess York City WWTP capacity. Three draft agreements have been prepared to date regarding the purchase of this capacity and the diversion of the flow to the York City WWTP via the Springettsbury pumping station. The two draft agreements dealing with the transfer of 0.8 mgd of wastewater to the Springettsbury Township system and the diversion of this flow to the York City WWTP via the proposed Springettsbury pumping station will require the signature of appropriate Springettsbury Township officials. Copies of these raft agreements have been provided to the Township for its review and comment. It may be appropriate to include a discussion in the Springettsbury Township Act 537 plan regarding the need for the Township to execute these agreements.

5. <u>Appendices A-1 and A-2</u>. Appendix A-2 presents the partial results of the interceptor flow metering program conducted during winter 1998. The report concludes that "no inflow, infiltration, or exfiltration is occurring in the interceptor between the metering sites". However, the report included as Appendix A-1 discounts this claim on the basis that the metering report "did not consider the hydraulic gradient of the Mill and Codorus Creeks in the flow analysis" and implies that I/I could not enter the line since it was already full. It is impossible for us to assess the validity of either claim since depth of flow measurements collected during the flow metering program or groundwater level elevations relative the to

interceptor elevation were not provided in the reports. Appendix A-1 recommends $8,500,000 in additional conveyance system improvements due to anticipated overload conditions in the interceptors, even after construction of the diversion pumping station. Mr. Kyle recommends in his memorandum on Page 1 of Appendix A-2 that follow-up inspections of the interceptors be completed to confirm if they are subject to excessive I/I. We concur with Mr. Kyle's recommendation and request these investigations be performed <u>before</u> initiating any improvements to the interceptors. We also request that all municipalities tributary to the interceptors be provided with the full results of these investigations and be given an opportunity to review the data before Springettsbury Township proceeds with any interceptor improvements.

6. <u>Appendix A-1</u>. The "value engineering" report included as Appendix A-1 conducts an evaluation of potential sites for construction of the diversion pumping station to transfer flow from the Springettsbury sewer system to the York City WWTP. A previous evaluation conducted by Buchart Horn, Inc. had recommend construction of the pumping station at a location further upstream on the Codurus Creek interceptor to eliminate the need for replacement of portions of the interceptor projected to be overloaded. Estimated costs for the diversion pumping station, force main and interceptor improvements was given as $3,350,000. The report included in Appendix A-1 recommends construction of the pumping station further downstream on the Codurus Creek interceptor and construction of parallel interceptor for a total estimated construction cost of $ 4,278,000.

   Appendix A-1 recommends construction of a 64-inch diameter pipeline to parallel the existing Codurus Creek interceptor from Manhole No. 53 to Manhole No. 60. The existing interceptor from Manhole No. 53 to Manhole No. 60 is approximately 2,200 linear feet of 48-inch diameter line. The estimated construction costs for the parallel interceptor is stated as $1,770,000, or approximately $ 800 per linear foot of sewer.

   We question the need for the parallel pipe for the following reasons:

   a. The recommendation for the parallel line is based on the premise that the existing line is subject to an excessive amount of I/I and location of the pumping station further upstream would allow more I/I to enter the line to replace the flow taken out by the pumping station. The flow metering report included in Appendix A-2 states that the line is not subject to excessive I/I. As noted in comment No.5, physical inspection of the line should be conducted during high groundwater conditions by temporarily blocking off upstream flow to determine the magnitude of I/I in a given

November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

pipe segment. This inspection work should be done before proceeding with an expensive replacement project.

b. As noted on page 25 of Appendix A-1, "rehabilitation methods generally cost less than conventional replacement, and most methods minimize open trench excavation, resulting in reduced impacts to the environment, disruption of traffic and public inconvenience". Besides reducing the potential for I/I entering the line, lining also reduces the friction in the line, thereby increasing the hydraulic capacity. Appendix B from the Phase I Springettsbury Township Act 537 Facilities Plan Update lists the limiting theoretical capacity of the interceptor from Manhole No.53 to Manhole No. 60. at 17.9 mgd. Lining the interceptor should increase its open channel flow capacity to approximately 23.2 mgd, a 30% increase. We therefore question why the significantly less costly line rehabilitation method was not considered as an alternative to installing a new 64-inch parallel interceptor. We request that the Township consider lining of the interceptor and provide all tributary municipalities with the results if the evaluation before preceding with the costly pipeline replacement project.

We understand Springettsbury Township is proceeding quickly with the pumping station diversion project to provide the necessary facilities so that all municipalities enjoy the full benefit of the 3.5 mgd capacity recently purchased in the York City WWTP. However, the above investigations and evaluations will not impede this process and may provide the benefit of reduced project costs to all participants.

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ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of YORK PENNSYLVANIA

Mayor Charles H. Robertson

DIVISION OF COMMUNITY AFFAIRS

Director's Office
849-2292

Business Development
849-2290

Health
849-2252

Housing Rehabilitation
849-2264

Planning/Engineering
849-2307

Zoning/Permits
849 2256

DIVISION OF PUBLIC SERVICES

Director's Office
849-2245

Building/Electrical Maintenance
845-9351

Environmental Services
849-2245

Highway Maintenance
849-2320

Recreation & Parks
854-1587

January 29, 1999

Larry Lutter
Buchart-Horn, Inc.
445 West Philadelphia Street
P O Box 15040
York, Pennsylvania 17405-7040

RE· YCSA Act 537 Plan Review Comments

Dear Larry

The City of York Bureau of Planning and Engineering and Office of Economic Development have no comment regarding the draft summary response comments received for the YCSA final draft Act 537 Plan, dated January 27, 1999.

Sincerely,

Veronica Whaley

Veronica Whaley
Environmental Planner

First Capital Of The United States

1 Marketway West • 3rd Floor • York, Pennsylvania 17401-1231 • FAX (717) 849-2329

The City of
YORK
PENNSYLVANIA

Mayor Charles H. Robertson

MEMORANDUM

November 3, 1998

TO: LARRY LUTTER
BUCHART HORN

FROM: HARVEY E. BORTNER, SUPERINTENDENT
YORK CITY WASTEWATER TREATMENT PLANT

SUBJECT: DRAFT 537 PLAN

I do not feel comfortable with resuming chlorination, particularly with the possibility of having to dechlorinate.

Have you looked at the feasibility of installing UV in the Storm Water Basin?

Another option might be to increase the pumping capacity of the Train 2 effluent pumps to cover any anticipated overflow. The UV facility is going to be made larger and could possibly be sized to handle any Train 2 overflow.

If any work is planned on the aerator VFDs, individual VFDs for each aerator would give us more flexibility in controlling D.O.

ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA
Mayor Charles H. Robertson

MEMORANDUM

November 3, 1998

TO: LARRY LUTTER
BUCHART HORN

FROM: HARVEY E. BORTNER, SUPERINTENDENT
YORK CITY WASTEWATER TREATMENT PLANT

SUBJECT: DRAFT 537 PLAN

I do not feel comfortable with resuming chlorination, particularly with the possibility of having to dechlorinate.

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Another option might be to increase the pumping capacity of the Train 2 effluent pumps to cover any anticipated overflow. The UV facility is going to be made larger and could possibly be sized to handle any Train 2 overflow.

If any work is planned on the aerator VFDs, individual VFDs for each aerator would give us more flexibility in controlling D.O.

First Capital Of The United States

City Hall • 50 West King Street • P.O. Box 509 • York, Pennsylvania 17405 • (717) 849-2301

Memorandum

November 5, 1998

TO: Harvey Bortner – Superintendent, W.W.T.P.

FROM: S. E. Douglas – Chief Operator, W.W.T.P.

SUBJECT: Review of Alternative text in Act 537 document

The following is a listing of concerns and comments I have with the final draft Act 537 document prepared by Buchart-Horn, Inc.

1. York City W.W.T.P. plant operator input should be considered when an option for implementation is chosen.

2. Will the Train 2 secondary clarifiers handle the additional peak flows of 31 MGD?

3. It is my opinion that Alternative 4 should be considered only as a last resort. I would not like to disinfect Tr. 2 overflow with either sodium hypochlorite or chlorine. I do not favor having another discharge point added to our NPDES permit.

4. Every attempt should be made to pump as much primary effluent to Train 3 as possible. While the primary clarifiers may not be able to handle the additional solids loading associated with the higher peak flows, these tanks would allow for scum and oils to be collected off of the surface and thus not foul the dissolved oxygen probes at Tr. 3. Our experience has shown that any time large amounts of raw sewage are pumped to Train 3 via the Raw Sewage(Waste) Pumps, oils and greases adhere to the surface of the dissolved oxygen probes. This results in the probe sensing a lower than actual oxygen level in the tanks and the aerator speeds increase to 100 % output.

5. Any modifications made to either the Raw Sewage(Waste) Pumps or the Primary Effluent Pumps should include replacement of their corresponding variable frequency drives. These units(Westinghouse Accutrol 200 units) have proven to be unreliable under stressed conditions. Also, these V.F.D.s are only 6 pulse units. Technological advances made over the past ten years have lead to 12 and 18 pulse units becoming available. I've been told that these newer units are more energy efficient.

6. The total combined flow should be sent the Sand Filters. Once here the operator will determine how much flow will be allowed to go through the filter system and how much will be bypassed on to the UV system.

7. The UV system should be modified to handle the peak flow. Instead of considering expanding or present system, the newer medium pressure/high intensity systems should be evaluated. This system may have a high energy demand, but it also has several advantages. These advantages include: (1) self-cleaning, (2) lower labor costs, and (3) fewer lamps[as low as 1/20 of our present system].

THE CITY OF YORK, PENNSYLVANIA

50 W. KING ST. YORK, PA. 17401-1420

CHARLES H. ROBERTSON
Mayor

MEMORANDUM

October 30, 1998

TO: Harvey Bortner, Superintendent, W.W.T.P.
Larry Lutter, Buchart-Horn Engineers

FROM R. J. Zimmerman, Asst. Superintendent, W.W.T.P.

SUBJECT **COMMENTS/IDEAS REGARDING 537 PLAN DRAFT**

All my comments pertain to Section 5, Alternatives The rest of the plan seems satisfactory to me.

1. I assume that all operations costs are computed just for the proposed time that the alternative runs during a peak flow event, though I did not notice that this was stated anywhere in the plan. For what period of time were these times figured ?

2. Alt 2B proposes a 1900 foot 24 inch force main. Alternative 2C. installs a 1530 foot 30 inch force main. Why the difference in the lengths ?

Note I like 2C best, but why the difference in price ? Perhaps something in the project or operating costs that I'm not aware of ?

3. Alt 3G uses trailer mounted pumps One comment I would make would be to locate the hose taps for these pumps on the higher level (at the top of the hill by the screw pump structure) to keep them out of the potential flood plain. I realize this would be contrary to the proper pumping scenario, but if the pumps get flooded they won't do any good either.

Note: Electric is critical to operate either the screw pumps or the submersible(s) in alt 3 Was any consideration given to having a plug in receptacle at Sub 1 to power these pumps from a portable generator in the event of power failure ?

Note. I have heard that when a motor is run from a VFD, the motor can be run up to 200% of its rated motor speed Would this be something to consider -- "super speeding" the pumps to increase their capacity, assuming the gears and guts could take the extra stress ?

Note I think all your #3 alternatives lift from the suction well to the top discharge well. Is this the best place to discharge ? Can the pipe from the discharge well to the sand filters take the additional flow ? Possibly a better place might be the sand filter inlet box or even the bypass pipe itself, since this would probably only be used during high flow periods

Note: If the submersible pump(s) alternative is chosen, could these also be used to dewater the lower suction well for maintenance on the lower screw pump bearings ?

4. I do not like any of the #4 alternatives as presented. I would suggest that some U.V. system rather than sodium hypochlorite be used, such that when pumps come on so does the U.V. and the flow gets disinfected When the pumps turn off, so does the U.V. Installing a system in a pipe might even be possible, though I hate to think about bulb maintenance. Even to take the storm water discharge north along the levee and tie into the U V building and disinfect there, or somewhere in the pipe and dump into the cascade, in my opinion, would be more desirable than hypochlorite. Does hypochlorite in these quantities require being listed on the SARA or Spill plans ?

5. I would assume that Alt 5C is not the latest Davco proposal Can the Davco numbers either be substituted directly for these or added as an additional alternative ?

6 I am not in favor of the deeper modules in Alt 6A I think the higher breakage costs from having to handle larger modules as well as the additional weight (I would assume) would not be advantageous to the ease of bulb maintenance. Additional channels utilizing the existing or similar size modules would be my choice Also, where would the additional ballast cabinets be located ? Cabinet cooling and filtration should definitely be a topic for discussion

7 For what it's worth, my choice would be Option M with an alternative disinfection system as stated in #4 above and the Davco retrofit of the five sand filters as stated in #5 above.

File

YORK COUNTY PLANNING COMMISSION

100 WEST MARKET STREET, YORK, PENNSYLVANIA 17401
TELEPHONE: (717) 771-9870 FAX: (717) 771-9511

November 6, 1998

Mr. Lawrence A. Lutter, P.E.
Buchart-Horn, Inc.
445 West Philadelphia St., P.O. Box 15040
York, PA 17405-7040

Re Regional Act 537
York City Sewer Authority
YCPC Project #98-89

Dear Mr. Lutter:

The above referenced matter was reviewed by the York County Planning Commission at its regular meeting held on Wednesday, November 4, 1998.

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 and Section 71 16(b)(2) of the Pennsylvania Sewage Facilities Act, Act 537.

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 within thirty (30) days following the date of adoption.

Very truly yours,

Reed J. Dunn, Jr.
Director of Planning

RJD/jb
Enc.
cc: York City Sewer Authority

REGIONAL ACT 537 PLAN
YORK CITY SEWER AUTHORITY
YCPC PROJECT #98-89

PROJECT DESCRIPTION

A proposed Regional Act 537 Plan for the York City Sewer Authority has been submitted to the York County Planning Commission for review and comment, as required by Section 304 of the Pennsylvania Municipalities Planning Code, and Section 71.16(b)(2) of the Pennsylvania Sewage Facilities Act, Act 537.

PROJECT DISCUSSION

The York City Sewer Authority (YCSA) owns all of the public sanitary sewage collection and conveyance facilities within the City of York, and the treatment facility located in Manchester Township. These facilities are then leased to the City of York for operation and maintenance.

The YCSA service area currently includes all or portions of the following municipalities:

*City of York
*Manchester Township
*North York Borough
*Spring Garden Township
*West Manchester Township
*West York Borough
*York Township

Each of the contributing municipalities owns and operates its own collection system which is connected to the YCSA system. In June, 1988, the City of York also entered into an agreement with Springettsbury Township to accept a portion of flow into the City of York plant. This connection is anticipated to be operational by the year 2000.

The purpose for the Regional Act 537 Plan was to identify the total system capacity and the ability to provide sufficient conveyance capacity for the connected municipalities. Although the available capacity of the wastewater treatment plant was known, the capacity of the total collection system was unknown, and the future sewage disposal needs of the entire service area had to be determined. Included in the Plan preparation was the development of a sanitary sewer computer model, and the expansion of the Geographic Information System database managed by the City of York.

Findings

The flow metering program in conjunction with the needs assessment of the service area identified the total average daily flow requirement as follows:

Current (1997)	11.0 MGD (million gallons per day)
5-year	18.9 MGD

identified by the other six contributing municipalities. The improvements will provide for the long term availability of sewage collection and treatment facilities for a large portion of the growth area, and as such are consistent with the goals and objectives of the York County Comprehensive Plan. The projected needs and future service areas as submitted by the surrounding municipalities are also consistent with the interim growth area identified in the County Plan for the York Urban Area. It is therefore recommended that the proposed York City Sewer Authority Regional Act 537 Plan be approved.

Proof of Publication

in the ________Court __________of York County

Copy of Advertisement Attached Here

PUBLIC NOTICE

Let it be known that the **City of York** intends to adopt an Act 537 sewage facilities plan to address the sewage collection and treatment needs of the City of York and surrounding municipalities The Plan calls for improvements to be made at the York City Wastewater Treatment Plant to provide better distribution of peak flows throughout the treatment plant, and increased flow monitoring of the major interceptors to determine when upgrades will be necessary.

The Act 537 document is available for public review and comment at the York City Clerk's Office, One Market Way West, 3rd. Floor, York, PA 17401, Office hours are Monday through Friday 8:00 AM to 4 30 PM Written comments must be received within 30 days of this advertisement and should be sent to the attention of the York City Sewer Authority, c/o David Wm Bupp, Esq, Blakey, Yost, Bupp and Schaumann, E Market St, York, PA 17401

Of ____________________ Term, 19

No. ____________________

THE YORK DISPATCH/YORK SUNDAY NEWS and YORK DAILY RECORD are the names of the daily newspapers of general circulation published continuously for more than the last six months by York Newspaper Company, at its primicpal place of business, which is at 1891 Loucks Road, York, PA 17404.

The printed copy of the advertisement hereto attached is a true copy, exactly as printed and published, of an advertisement printed in the regular issues of the said **The York Dispatch/York Sunday News and York Daily Record** published on the following dates, viz·

February 8, 1999

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF YORK SS

Before me, a Notary Public, personally came Kristel Fairchild who being duly sworn deposes and says that he/she is the legal clerk of York Newspaper Company, and has personal knowledge of the publication of the advertisement mentioned in the foregoing statement; that the facts set forth in said statement and all the allegations of said statement as to the time, place and character of publication are true, and that the affiant is not interested in the subject matter of the above mentioned advertisement

Sworn and subscribed to before me this

8th day of February 19 99

Jean Marie Porter

Notary Public

Kristel Fairchild

Notarial Seal
Jean Marie Porter, Notary Public
York Twp., York County
My Commission Expires March 20, 2001
Member, Pennsylvania Association of Notaries

Received of ____________________

____________________ Dollars
100

in payment of the charge for the publication of above mentioned advertisement and the expense of above affidavit

Advertisement $__________

Affidavit $__________

Flat Rate Fee $__________

$__________

In the ______________________________

of York County, PA.

No. __________ Term, 19 ______

____

____

____

Proof of Publication Notice In
THE YORK DISPATCH/YORK SUNDAY NEWS
AND YORK DAILY RECORD.

____
Attorney

LAW OFFICES
BLAKEY, YOST, BUPP & SCHAUMANN, LLP
17 EAST MARKET STREET
YORK, PENNSYLVANIA 17401

TELEPHONE (717) 845-3674
TELECOPIER (717) 854-7839
E-mail - BYBS@bybs.com

PLEASE CORRESPOND TO YORK OFFICE

RED LION OFFICE:
64 NORTH MAIN STREET
RED LION, PA 17356
(717) 244-3102

HELLAM OFFICE:
90 WEST MARKET STREET
HELLAM, PA 17406
(717) 840-9759

HANOVER OFFICE:
544 CARLISLE STREET
HANOVER, PA 17331
(717) 630-9668

March 29, 1999

Lawrence A. Lutter, P E.
Buchart-Horn, Inc./BASCO Associates
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority Regional Act 537 Plan Public Review

Dear Larry:

As per the Public Notice of February 8, 1999, all written comments were to be sent to the York City Sewer Authority, c/o David Wm. Bupp, Esquire, Blakey, Yost, Bupp & Schaumann, LLP, 17 East Market Street, York, PA 17401.

We wish to inform you that we received no comments during the public review of the Act 537 Plan.

If you have any questions, please call me.

Very truly yours,

David Wm. Bupp
BLAKEY, YOST, BUPP & SCHAUMANN, LLP

DWB/tme

cc: York City Sewer Authority Members
Steven E. Douglas, General Manager

Appendix 15
Plan Adoption

BUCHART HORN, INC.

October 28, 1999

Consulting Engineers
and Planners

The Industrial Plaza of York
445 West Philadelphia Street
PO Box 15040
York PA 17405 7040
717 852 1400
800 274 2224
FAX 717 852 1401
email corpinfo@bh ba com

Ankara Turkey
Baltimore MD
Birmingham AL
Charleston WV
Eschborn Germany
Kenner LA
Leesburg VA
Marlton NJ
Memphis TN
Pittsburgh PA
Raleigh NC
Scranton PA
State College PA
Williamsburg VA
York PA

Mr. Philip W. Briddell
KRB Klearkast
301 Kings Mill Rd.
York, PA 17403

Mr. Michael Johnson
147 Merion Rd.
York, PA 17403

Mr. Stephen Bland
47 N. Penn St.
York, PA 17401

Mr. Peter Schmidt
Fairfax Environ
2000 Hollywood Pkwy.
York, PA 17403

Mr. Bob Shaffer
Gannett Fleming, Inc.
P O Box 67100
Harrisburg, PA 17106

Mr. Steve Douglas
York City WWTP
1701 Blackbridge Rd.
York, PA 17402

Mr Jack Longstreet
San. Sewer Main Bldg.
1625 Toronita St.
York, PA 17402

Ms. Veronica Whaley
City of York
1 Marketway West
York, PA 17401

Mr Paul Amic
Springettsbury Township
1501 Mt. Zion Rd.
York, PA 17402

Ms. Kathy Altland
West York Borough
1700 W. Philadelphia St.
York, PA 17404

Mr. Bill Conn
Spring Garden Township
558 Ogontz St.
York, PA 17403

Mr. Jan Dell
West Manchester Twp
2501 Catherine St.
York, PA 17404

Mr. Mark Derr
York Township
25 Oak St
York, PA 17402

Mr Dave Raver
Manchester Township
3289 Susquehanna Tr
York, PA 17404

Mr Steven Stahlman
North York Borough
350 E. 6th Ave.
York, PA 17404

Mr Joe Heffner
York County Planning Commission
100 West Market Street
York, PA 17401

Mr. Richard Resh
C S Davidson, Inc.
38 N Duke St
York, PA 17401

Att David Wm. Bupp
17 E. Market St.
York, PA 17401

Reference: **York City Sewer Authority
Regional Act 537 Plan
BH#72526-00**

Dear Ladies and Gentlemen:

The YCSA Act 537 Plan has been reviewed and approved by the Pennsylvania Department of Environmental Resources (PADEP). Therefore, we are providing you with this final update for your copy of the March, 1999 *York City Sewer Authority Regional Act 537 Plan* This update includes the PADEP approval letter along with municipal letters of concurrence that we have received to date. The enclosed pages, those attached to the orange cover sheet, should be used to replace the existing contents of *Appendix 15, Plan Approvals*

J \PROJ\72526\DOCS\REPORT\Final\Finalupdate WPD

UPDATE INSTRUCTIONS
Remove the total contents of Appendix 15. Insert the enclosed packet into Appendix 15 of your *York City Sewer Authority Region Act 537 Plan*. The orange cover sheet should be discarded.

Should you have any questions or concerns please contact me at (717) 852-1483 or Dave Shirk at (717) 852-1412.

Very truly yours,

BUCHART-HORN, INC.

Lawrence A. Lutter, P.E.
Project Manager

Enclosure

cc: file

J \PROJ\72526\DOCS\REPORT\Final\Finalupdate WPD

Final Update

York City Sewer Authority
Regional Act 537 Plan

March 1999

Appendix 15

Pennsylvania Department of Environmental Protection

909 Elmerton Avenue
Harrisburg, PA 17110-8200

May 24, 1999

Southcentral Regional Office

717-705-4707
FAX - 717-705-4760

City of York
50 West King Street
PO Box 509
York, PA 17401

Re: Act 537 Planning
APS ID No. 40160
DEP Code No. A1-67001-ACT
York City, York County

Ladies and Gentlemen:

The Department of Environmental Protection (Department) has reviewed your March 1999 Act 537 Plan, submitted April 14, 1999. The submission is consistent with the planning requirements given in Chapter 71, of the rules and regulations of the Department. The plan provides for internal modification to the sewage treatment facility and installation of surcharge detectors in the interceptor system.

The plan is approved with the following conditions:

1. The approved project will require a Water Management Part II Permit for the construction and operation of the proposed sewage facilities (Alternatives 2C, 5C, and 6B). The permit application must be submitted in the name of the municipality/authority. 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. In the future, additional planning will be required when your surcharge monitor results indicate that it is necessary to improve capacity restrictions. This additional planning may take the form of "special studies" to identify and select the best alternative to improve capacity and additionally, select the method of funding the choice.

3. Ensure the results of data collected by your surcharge indicators are included in future Chapter 94 reports.

4. Installation of surcharge detectors may be addressed via a letter approval from our Permits Section. Please call Ms. Lisa Sweigert at 717-705-4814 in our permitting staff for further instructions.

It is now York City's responsibility to implement the 537 Plan in accordance with the schedules contained within the Plan.

Since your Plan has been approved by the Department, you are now eligible to receive a 50 percent planning cost reimbursement as provided under Section 6 of the Sewage Facilities Act (Act 537). A copy of the reimbursement application is enclosed. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

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, P.O. 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 have any questions, please call Mr. James Novinger at 717-705-4766.

Sincerely,

Leon M. Oberdick

Leon M. Oberdick
Program Manager
Water Management Program

Enclosure

cc: Buchart-Horn, Inc.
York City Sewer Authority
York County Planning Commission
York County Health Department

Council of the City of York, PA
Session 1999
Resolution No. 64

Introduced By: [signature] Date: 3/16/99
Toni Smith 3/16/99

WHEREAS, Section 5 of the Act of January 24, 1966, PL. No. 537, known as the "Pennsylvania Sewage Facilities Act," as Amended, and the Rules and Regulation of the Pennsylvania Department of Environmental Protection adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require the municipality 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 have a comprehensive program of pollution control and water quality management; and

WHEREAS, the York City Sewer Authority has contracted with Buchart-Horn, Inc. to perform a study for the preparation of the York City Sewer Authority Regional Act 537 Plan; and

WHEREAS, Buchart-Horn, Inc. has completed such a study with the recommendations for implementation of an infiltration and inflow reduction program, and York City Wastewater Treatment Plant improvements; and

WHEREAS, the recommendations meet the wastewater treatment and sewerage needs of the study area encompassing the City of York, North York Borough and West York Borough and portions of Manchester Township, Spring Garden Township, Springettsbury Township, West Manchester Township and York Township; and

WHEREAS, the draft of the York City Sewer Authority Regional Act 537 Plan was advertised on February 8, 1999 for a 30 day public comment period, and no comments were received from the public; and

WHEREAS, the staff of the York City Bureau of Planning and Zoning, the York City Wastewater Treatment Facility and the York City Sanitary Sewer Maintenance, and the interconnected municipalities have reviewed said study and their comments have been addressed or incorporated in the plan; and

WHEREAS, the plan conforms with the City of York's zoning, subdivision and other municipal ordinances and the Strategic Comprehensive Plan, and is a comprehensive program of pollution control and water quality management; and

WHERAS, the York City Planning Commission recommended approval of the York City Sewer Authority Regional Act 537 Plan at its regularly scheduled meeting on December 14, 1998; and

NOW, THEREFORE, BE IT RESOLVED, by the Council of the City of York that the final York City Sewer Authority Regional Act 537 Plan is adopted and revises the City of York Regional Wastewater Management Facilities Plan dated July 1984, and in conjunction with the York City Sewer Authority submits the York City Sewer Authority Regional Act 537 Plan to the Pennsylvania Department of Environmental Protection for it's approval.

PASSED FINALLY: **March 16, 1999** BY THE FOLLOWING VOTE:

YEAS: **Brady**, **Kelley**, **Crenshaw**, **Smith**, **Smallwood** - 5

NAYS: **None**.

Wm. Lee Smallwood, President of City Council

ATTEST:

Dianna L. Thompson, City Clerk

I hereby certify that the foregoing is full, true and correct as duly enacted and approved as set forth at the regular meeting of City Council held on March 16, 1999.

Dianna L. Thompson, City Clerk
March 17, 1999

West Manchester Township
(717) 792-3505

2501 Catherine Street
York, Pa. 17404-4798
Fax: (717) 792-4374

Celebrating 200 Years
1799 - 1999

April 15, 1999

Lawrence A. Lutter, P.E.
Buchart Horn, Inc.
445 W. Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority
Act 537 Plan
BH#72526-00

Dear Mr. Lutter:

Please accept this as notification that West Manchester Township has received, reviewed and concurs with the recently submitted York City Sewer Authority Act 537 Plan.

Sincerely,

Jan R. Dell,
Township Manager

YORK TOWNSHIP

25 Oak Street, York, Pennsylvania 17402-4972 • Phone (717) 741-3861 • Fax (717) 741-5009

April 13, 1999

Larry Lutter, PE
Buchart Horn, Inc.
PO Box 15040
York, PA 17405

Dear Larry

York Township concurs with the Act 537 Plan prepared for the City of York. If you have any questions please don't hesitate to contact me.

Sincerely,

Mark E. Derr

Mark E. Derr
Township Manager

SPRING GARDEN TOWNSHIP

ADMINISTRATION

558 S. OGONTZ STREET
YORK, PA 17403-5709

PHONE (717) 848-2858
FAX (717) 854-8257

April 19, 1999

Lawrence A. Lutter, P.E.
Project Manager
Buchart Horn, Inc.
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority Act 537 Plan
BH #72526-00

In reply to your letter of March 31. 1999 and the updated package of the York City Sewer Authority Act 537 Plan, be advised this information was reviewed by Spring Garden Township.

The Spring Garden Township Board of Commissioners, at their regularly scheduled meeting on April 14, 1999, has given their concurrence with the York City Sewer Authority Act 537 Plan, as updated.

Would you kindly pass this information on to the City Sewer Authority.

Sincerely,

William J Conn

William J. Conn, Township Manager
SPRING GARDEN TOWNSHIP

CC: C.S. Davidson, Inc

The Township of Manchester
YORK COUNTY PENNSYLVANIA
3289 SUSQUEHANNA TRAIL
YORK, PENNSYLVANIA 17402
Telephone: 717-764-4646 / 764-8327

May 14, 1999 GC-99-0155

Lawrence A. Lutter, P. E.
Buchart-Horn, Inc.
P. O. Box 15040
York, PA 17405-7040

RE: York City Act 537 Plan (BH #72526-00)

Dear Mr. Lutter:

The Manchester Township Board of Supervisors, at its May 11, 1999 meeting, voted unanimously to accept and endorse the York City Sewer Authority Act 537 Official Sewage Plan, the update for which was transmitted with your March 31, 1999 letter.

The board accepted the plan with the understanding that sufficient treatment capacity is available for Manchester Township for the twenty (20) year planning period based on the future flow projection which we supplied to you in April 1998.

Thank you for the opportunity to participate in planning for the future wastewater treatment weeds for the municipalities which we served by the York City Wastewater Pretreatment Facility.

Please contact Zoning/Planning Officer Stewart Olewiler or me if you have any questions.

Sincerely,

MANCHESTER TOWNSHIP

David A. Raver
Township Manager

DAR/jmb

cc: Stewart S. Olewiler, III, Zoning/Planning Officer
Richard Resh, C. S. Davidson, Inc.

MAY 19 1999

SPRING GARDEN TOWNSHIP

ADMINISTRATION

558 S. OGONTZ STREET
YORK, PA 17403-5709

PHONE (717) 848-2858
FAX (717) 854-8257

April 19, 1999

Lawrence A. Lutter, P.E.
Project Manager
Buchart Horn, Inc.
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority Act 537 Plan
BH #72526-00

In reply to your letter of March 31. 1999 and the updated package of the York City Sewer Authority Act 537 Plan. be advised this information was reviewed by Spring Garden Township.

The Spring Garden Township Board of Commissioners, at their regularly scheduled meeting on April 14. 1999, has given their concurrence with the York City Sewer Authority Act 537 Plan, as updated.

Would you kindly pass this information on to the City Sewer Authority.

Sincerely,

William J. Conn

William J. Conn. Township Manager
SPRING GARDEN TOWNSHIP

CC: C.S. Davidson, Inc

"A First Class Township - A First Class Community"

YORK TOWNSHIP

25 Oak Street, York, Pennsylvania 17402-4972 • Phone (717) 741-3861 • Fax (717) 741-5009

April 13, 1999

Larry Lutter, PE
Buchart Horn, Inc.
PO Box 15040
York, PA 17405

Dear Larry

York Township concurs with the Act 537 Plan prepared for the City of York. If you have any questions please don't hesitate to contact me.

Sincerely,

Mark E. Derr

Mark E. Derr
Township Manager

Appendix A-22-b

West Manchester Township
(717) 792-3505

2501 Catherine Street
York, Pa. 17404-4798
Fax: (717) 792-4374

Celebrating 200 Years
1799 - 1999

April 15, 1999

Lawrence A. Lutter, P.E.
Buchart Horn, Inc.
445 W. Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority
Act 537 Plan
BH#72526-00

Dear Mr. Lutter:

Please accept this as notification that West Manchester Township has received, reviewed and concurs with the recently submitted York City Sewer Authority Act 537 Plan.

Sincerely,

Jan R. Dell

Jan R. Dell,
Township Manager

NOW, THEREFORE, BE IT RESOLVED, by the Council of the City of York that the final York City Sewer Authority Regional Act 537 Plan is adopted and revises the City of York Regional Wastewater Management Facilities Plan dated July 1984, and in conjunction with the York City Sewer Authority submits the York City Sewer Authority Regional Act 537 Plan to the Pennsylvania Department of Environmental Protection for it's approval.

PASSED FINALLY: **March 16, 1999** BY THE FOLLOWING VOTE:

YEAS: **Brady**, **Kelley**, **Crenshaw**, **Smith**, **Smallwood** - 5

NAYS: **None**.

Wm. Lee Smallwood, President of City Council

ATTEST:

Dianna L. Thompson, City Clerk

I hereby certify that the foregoing is full, true and correct as duly enacted and approved as set forth at the regular meeting of City Council held on March 16, 1999.

Dianna L. Thompson, City Clerk
March 17, 1999

Council of the City of York, PA
Session 1999
Resolution No. 6[illegible]

Introduced By: ~~signature~~ **Date:** 3/16/99

Toni Smith **3/16/99**

WHEREAS, Section 5 of the Act of January 24, 1966, PL. No. 537, known as the "Pennsylvania Sewage Facilities Act," as Amended, and the Rules and Regulation of the Pennsylvania Department of Environmental Protection adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require the municipality 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 have a comprehensive program of pollution control and water quality management; and

WHEREAS, the York City Sewer Authority has contracted with Buchart-Horn, Inc. to perform a study for the preparation of the York City Sewer Authority Regional Act 537 Plan; and

WHEREAS, Buchart-Horn, Inc. has completed such a study with the recommendations for implementation of an infiltration and inflow reduction program, and York City Wastewater Treatment Plant improvements; and

WHEREAS, the recommendations meet the wastewater treatment and sewerage needs of the study area encompassing the City of York, North York Borough and West York Borough and portions of Manchester Township, Spring Garden Township, Springettsbury Township, West Manchester Township and York Township; and

WHEREAS, the draft of the York City Sewer Authority Regional Act 537 Plan was advertised on February 8, 1999 for a 30 day public comment period, and no comments were received from the public; and

WHEREAS, the staff of the York City Bureau of Planning and Zoning, the York City Wastewater Treatment Facility and the York City Sanitary Sewer Maintenance, and the interconnected municipalities have reviewed said study and their comments have been addressed or incorporated in the plan; and

WHEREAS, the plan conforms with the City of York's zoning, subdivision and other municipal ordinances and the Strategic Comprehensive Plan, and is a comprehensive program of pollution control and water quality management; and

WHERAS, the York City Planning Commission recommended approval of the York City Sewer Authority Regional Act 537 Plan at its regularly scheduled meeting on December 14, 1998; and

It is now York City's responsibility to implement the 537 Plan in accordance with the schedules contained within the Plan.

Since your Plan has been approved by the Department, you are now eligible to receive a 50 percent planning cost reimbursement as provided under Section 6 of the Sewage Facilities Act (Act 537). A copy of the reimbursement application is enclosed. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

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, P.O. 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 have any questions, please call Mr. James Novinger at 717-705-4766.

Sincerely,

Leon M. Oberdick

Leon M. Oberdick
Program Manager
Water Management Program

Enclosure

cc: Buchart-Horn, Inc.
York City Sewer Authority
York County Planning Commission
York County Health Department

Pennsylvania Department of Environmental Protection

909 Elmerton Avenue
Harrisburg, PA 17110-8200
May 24, 1999

Southcentral Regional Office 717-705-4707
FAX - 717-705-4760

City of York
50 West King Street
PO Box 509
York, PA 17401

Re: Act 537 Planning
APS ID No. 40160
DEP Code No. A1-67001-ACT
York City, York County

Ladies and Gentlemen:

The Department of Environmental Protection (Department) has reviewed your March 1999 Act 537 Plan, submitted April 14, 1999. The submission is consistent with the planning requirements given in Chapter 71, of the rules and regulations of the Department. The plan provides for internal modification to the sewage treatment facility and installation of surcharge detectors in the interceptor system.

The plan is approved with the following conditions:

1. The approved project will require a Water Management Part II Permit for the construction and operation of the proposed sewage facilities (Alternatives 2C, 5C, and 6B). The permit application must be submitted in the name of the municipality/authority. 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. In the future, additional planning will be required when your surcharge monitor results indicate that it is necessary to improve capacity restrictions. This additional planning may take the form of "special studies" to identify and select the best alternative to improve capacity and additionally, select the method of funding the choice.

3. Ensure the results of data collected by your surcharge indicators are included in future Chapter 94 reports.

4. Installation of surcharge detectors may be addressed via a letter approval from our Permits Section. Please call Ms. Lisa Sweigert at 717-705-4814 in our permitting staff for further instructions.

Final Update

York City Sewer Authority
Regional Act 537 Plan

March 1999

Appendix 15

UPDATE INSTRUCTIONS
Remove the total contents of Appendix 15. Insert the enclosed packet into Appendix 15 of your *York City Sewer Authority Region Act 537 Plan*. The orange cover sheet should be discarded.

Should you have any questions or concerns please contact me at (717) 852-1483 or Dave Shirk at (717) 852-1412.

Very truly yours,

BUCHART-HORN, INC.

Lawrence A. Lutter, P.E.
Project Manager

Enclosure

cc: file

J \PROJ\72526\DOCS\REPORT\Final\Finalupdate WPD

BUCHART HORN, INC.

October 28, 1999

Mr. Philip W. Briddell
KRB Klearkast
301 Kings Mill Rd.
York, PA 17403

Mr. Michael Johnson
147 Merion Rd.
York, PA 17403

Mr. Stephen Bland
47 N. Penn St.
York, PA 17401

Mr. Peter Schmidt
Fairfax Environ
2000 Hollywood Pkwy.
York, PA 17403

Mr. Bob Shaffer
Gannett Fleming, Inc.
P O Box 67100
Harrisburg, PA 17106

Mr. Steve Douglas
York City WWTP
1701 Blackbridge Rd.
York, PA 17402

Mr Jack Longstreet
San. Sewer Main Bldg.
1625 Toronita St.
York, PA 17402

Ms. Veronica Whaley
City of York
1 Marketway West
York, PA 17401

Mr Paul Amic
Springettsbury Township
1501 Mt. Zion Rd.
York, PA 17402

Ms. Kathy Altland
West York Borough
1700 W. Philadelphia St.
York, PA 17404

Mr. Bill Conn
Spring Garden Township
558 Ogontz St.
York, PA 17403

Mr. Jan Dell
West Manchester Twp
2501 Catherine St.
York, PA 17404

Mr. Mark Derr
York Township
25 Oak St
York, PA 17402

Mr Dave Raver
Manchester Township
3289 Susquehanna Tr
York, PA 17404

Mr Steven Stahlman
North York Borough
350 E. 6th Ave.
York, PA 17404

Mr Joe Heffner
York County Planning Commission
100 West Market Street
York, PA 17401

Mr. Richard Resh
C S Davidson, Inc.
38 N Duke St
York, PA 17401

Att David Wm. Bupp
17 E. Market St.
York, PA 17401

Consulting Engineers
and Planners

The Industrial Plaza of York
445 West Philadelphia Street
PO Box 15040
York PA 17405 7040
717 852 1100
800 274 2224
FAX 717 852 1401
email corpinfo@bh ba com

Ankara Turkey
Baltimore MD
Birmingham AL
Charleston WV
Eschborn Germany
Kenner LA
Leesburg VA
Marlton NJ
Memphis TN
Pittsburgh PA
Raleigh NC
Scranton PA
State College PA
Williamsburg VA
York PA

Reference: **York City Sewer Authority**
Regional Act 537 Plan
BH#72526-00

Dear Ladies and Gentlemen:

The YCSA Act 537 Plan has been reviewed and approved by the Pennsylvania Department of Environmental Resources (PADEP). Therefore, we are providing you with this final update for your copy of the March, 1999 *York City Sewer Authority Regional Act 537 Plan* This update includes the PADEP approval letter along with municipal letters of concurrence that we have received to date. The enclosed pages, those attached to the orange cover sheet, should be used to replace the existing contents of *Appendix 15, Plan Approvals*

J \PROJ\72526\DOCS\REPORT\Final\Finalupdate WPD

Appendix 15
Plan Adoption

LAW OFFICES
BLAKEY, YOST, BUPP & SCHAUMANN, LLP
17 EAST MARKET STREET
YORK, PENNSYLVANIA 17401

ALBERT G. BLAKEY
DONALD B. YOST
DAVID WM. BUPP
DONALD B. HOTT
DAVID E. SCHAUMANN
RONALD L. HERSHNER
BRADLEY J. LEBER
CHARLES A. RAUSCH
ARTHUR J. BECKER, JR.
STACEY E. MACNEAL
ROBERT O. BEERS+
SAMUEL F. MEISENHELDER+
+OF COUNSEL

TELEPHONE (717) 845-3674
TELECOPIER (717) 854-7839
E-mail - BYBS@bybs.com

PLEASE CORRESPOND TO YORK OFFICE

RED LION OFFICE:
44 NORTH MAIN STREET
RED LION, PA 17356
(717) 244-3102

HELLAM OFFICE:
40 WEST MARKET STREET
HELLAM, PA 17406
(717) 840-8759

HANOVER OFFICE:
544 CARLISLE STREET
HANOVER, PA 17331
(717) 630-9688

March 29, 1999

Lawrence A. Lutter, P.E.
Buchart-Horn, Inc./BASCO Associates
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

RE: York City Sewer Authority Regional Act 537 Plan Public Review

Dear Larry:

As per the Public Notice of February 8, 1999, all written comments were to be sent to the York City Sewer Authority, c/o David Wm. Bupp, Esquire, Blakey, Yost, Bupp & Schaumann, LLP, 17 East Market Street, York, PA 17401.

We wish to inform you that we received no comments during the public review of the Act 537 Plan.

If you have any questions, please call me.

Very truly yours,

David Wm. Bupp
BLAKEY, YOST, BUPP & SCHAUMANN, LLP

DWB/tme

cc: York City Sewer Authority Members
Steven E. Douglas, General Manager

In the ____________________

of York County, PA.

No. ________ Term, 19 _____

____

____

____

Proof of Publication Notice In
THE YORK DISPATCH/YORK SUNDAY NEWS
AND YORK DAILY RECORD.

____
Attorney

Appendix A-22-b
1063285

Proof of Publication

in the ________ Court ________ of York County

Copy of Advertisement Attached Here

PUBLIC NOTICE

Let it be known that the City of York intends to adopt an Act 537 sewage facilities plan to address the sewage collection and treatment needs of the City of York and surrounding municipalities. The Plan calls for improvements to be made at the York City Wastewater Treatment Plant to provide better distribution of peak flows throughout the treatment plant, and increased flow monitoring of the major interceptors to determine when upgrades will be necessary.

The Act 537 document is available for public review and comment at the York City Clerk's Office, One Market Way West, 3rd. Floor, York, PA 17401, Office hours are Monday through Friday 8:00 AM to 4 30 PM. Written comments must be received within 30 days of this advertisement and should be sent to the attention of the York City Sewer Authority, c/o David Wm Bupp, Esq, Blakey, Yost, Bupp and Schaumann, E Market St, York, PA 17401

Of ________________ Term, 19

No. ________________

THE YORK DISPATCH/YORK SUNDAY NEWS and YORK DAILY RECORD are the names of the daily newspapers of general circulation published continuously for more than the last six months by York Newspaper Company, at its prinicpal place of business, which is at 1891 Loucks Road, York, PA 17404.

The printed copy of the advertisement hereto attached is a true copy, exactly as printed and published, of an advertisement printed in the regular issues of the said **The York Dispatch/York Sunday News and York Daily Record** published on the following dates, viz·

February 8, 1999

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF YORK SS

Before me, a Notary Public, personally came Kristel Fairchild who being duly sworn deposes and says that he/she is the legal clerk of York Newspaper Company, and has personal knowledge of the publication of the advertisement mentioned in the foregoing statement; that the facts set forth in said statement and all the allegations of said statement as to the time, place and character of publication are true, and that the affiant is not interested in the subject matter of the above mentioned advertisement

Sworn and subscribed to before me this

8th day of February 19 99

Jean Marie Porter

Notary Public

Kristel Fairchild

Notarial Seal
Jean Marie Porter, Notary Public
York Twp., York County
My Commission Expires March 20, 2001
Member, Pennsylvania Association of Notaries

Received of ________________________________

________________________________ Dollars
100

in payment of the charge for the publication of above mentioned advertisement and the expense of above affidavit

Advertisement $____________

Affidavit $____________

Flat Rate Fee $____________

$____________

identified by the other six contributing municipalities. The improvements will provide for the long term availability of sewage collection and treatment facilities for a large portion of the growth area, and as such are consistent with the goals and objectives of the York County Comprehensive Plan. The projected needs and future service areas as submitted by the surrounding municipalities are also consistent with the interim growth area identified in the County Plan for the York Urban Area. It is therefore recommended that the proposed York City Sewer Authority Regional Act 537 Plan be approved.

REGIONAL ACT 537 PLAN
YORK CITY SEWER AUTHORITY
YCPC PROJECT #98-89

PROJECT DESCRIPTION

A proposed Regional Act 537 Plan for the York City Sewer Authority has been submitted to the York County Planning Commission for review and comment, as required by Section 304 of the Pennsylvania Municipalities Planning Code, and Section 71.16(b)(2) of the Pennsylvania Sewage Facilities Act, Act 537.

PROJECT DISCUSSION

The York City Sewer Authority (YCSA) owns all of the public sanitary sewage collection and conveyance facilities within the City of York, and the treatment facility located in Manchester Township. These facilities are then leased to the City of York for operation and maintenance.

The YCSA service area currently includes all or portions of the following municipalities:

*City of York
*Manchester Township
*North York Borough
*Spring Garden Township
*West Manchester Township
*West York Borough
*York Township

Each of the contributing municipalities owns and operates its own collection system which is connected to the YCSA system. In June, 1988, the City of York also entered into an agreement with Springettsbury Township to accept a portion of flow into the City of York plant. This connection is anticipated to be operational by the year 2000.

The purpose for the Regional Act 537 Plan was to identify the total system capacity and the ability to provide sufficient conveyance capacity for the connected municipalities. Although the available capacity of the wastewater treatment plant was known, the capacity of the total collection system was unknown, and the future sewage disposal needs of the entire service area had to be determined. Included in the Plan preparation was the development of a sanitary sewer computer model, and the expansion of the Geographic Information System database managed by the City of York.

Findings

The flow metering program in conjunction with the needs assessment of the service area identified the total average daily flow requirement as follows:

Current (1997)	11.0 MGD (million gallons per day)
5-year	18.9 MGD

YORK COUNTY PLANNING COMMISSION

100 WEST MARKET STREET, YORK, PENNSYLVANIA 17401
TELEPHONE: (717) 771-9870 FAX: (717) 771-9511

-9 1998

November 6, 1998

Mr. Lawrence A. Lutter, P.E.
Buchart-Horn, Inc.
445 West Philadelphia St., P.O. Box 15040
York, PA 17405-7040

Re Regional Act 537
York City Sewer Authority
YCPC Project #98-89

Dear Mr. Lutter:

The above referenced matter was reviewed by the York County Planning Commission at its regular meeting held on Wednesday, November 4, 1998.

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 and Section 71 16(b)(2) of the Pennsylvania Sewage Facilities Act, Act 537.

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 within thirty (30) days following the date of adoption.

Very truly yours,

Reed J. Dunn, Jr.
Director of Planning

RJD/jb
Enc.
cc: York City Sewer Authority

Note I think all your #3 alternatives lift from the suction well to the top discharge well. Is this the best place to discharge ? Can the pipe from the discharge well to the sand filters take the additional flow ? Possibly a better place might be the sand filter inlet box or even the bypass pipe itself, since this would probably only be used during high flow periods

Note: If the submersible pump(s) alternative is chosen, could these also be used to dewater the lower suction well for maintenance on the lower screw pump bearings ?

4. I do not like any of the #4 alternatives as presented. I would suggest that some U.V. system rather than sodium hypochlorite be used, such that when pumps come on so does the U.V. and the flow gets disinfected When the pumps turn off, so does the U.V. Installing a system in a pipe might even be possible, though I hate to think about bulb maintenance. Even to take the storm water discharge north along the levee and tie into the U V building and disinfect there, or somewhere in the pipe and dump into the cascade, in my opinion, would be more desirable than hypochlorite. Does hypochlorite in these quantities require being listed on the SARA or Spill plans ?

5. I would assume that Alt 5C is not the latest Davco proposal Can the Davco numbers either be substituted directly for these or added as an additional alternative ?

6 I am not in favor of the deeper modules in Alt 6A I think the higher breakage costs from having to handle larger modules as well as the additional weight (I would assume) would not be advantageous to the ease of bulb maintenance. Additional channels utilizing the existing or similar size modules would be my choice Also, where would the additional ballast cabinets be located ? Cabinet cooling and filtration should definitely be a topic for discussion

7 For what it's worth, my choice would be Option M with an alternative disinfection system as stated in #4 above and the Davco retrofit of the five sand filters as stated in #5 above.

File

THE CITY OF YORK, PENNSYLVANIA

50 W. KING ST. YORK, PA. 17401-1420

CHARLES H. ROBERTSON
Mayor

MEMORANDUM

October 30, 1998

TO: Harvey Bortner, Superintendent, W.W.T.P.
Larry Lutter, Buchart-Horn Engineers

FROM R. J. Zimmerman, Asst. Superintendent, W.W.T.P.

SUBJECT **COMMENTS/IDEAS REGARDING 537 PLAN DRAFT**

All my comments pertain to Section 5, Alternatives The rest of the plan seems satisfactory to me.

1. I assume that all operations costs are computed just for the proposed time that the alternative runs during a peak flow event, though I did not notice that this was stated anywhere in the plan. For what period of time were these times figured ?

2. Alt 2B proposes a 1900 foot 24 inch force main. Alternative 2C. installs a 1530 foot 30 inch force main. Why the difference in the lengths ?

Note I like 2C best, but why the difference in price ? Perhaps something in the project or operating costs that I'm not aware of ?

3. Alt 3G uses trailer mounted pumps One comment I would make would be to locate the hose taps for these pumps on the higher level (at the top of the hill by the screw pump structure) to keep them out of the potential flood plain. I realize this would be contrary to the proper pumping scenario, but if the pumps get flooded they won't do any good either.

Note: Electric is critical to operate either the screw pumps or the submersible(s) in alt 3 Was any consideration given to having a plug in receptacle at Sub 1 to power these pumps from a portable generator in the event of power failure ?

Note. I have heard that when a motor is run from a VFD, the motor can be run up to 200% of its rated motor speed Would this be something to consider -- "super speeding" the pumps to increase their capacity, assuming the gears and guts could take the extra stress ?

5. Any modifications made to either the Raw Sewage(Waste) Pumps or the Primary Effluent Pumps should include replacement of their corresponding variable frequency drives. These units(Westinghouse Accutrol 200 units) have proven to be unreliable under stressed conditions. Also, these V.F.D.s are only 6 pulse units. Technological advances made over the past ten years have lead to 12 and 18 pulse units becoming available. I've been told that these newer units are more energy efficient.

6. The total combined flow should be sent the Sand Filters. Once here the operator will determine how much flow will be allowed to go through the filter system and how much will be bypassed on to the UV system.

7. The UV system should be modified to handle the peak flow. Instead of considering expanding or present system, the newer medium pressure/high intensity systems should be evaluated. This system may have a high energy demand, but it also has several advantages. These advantages include: (1) self-cleaning, (2) lower labor costs, and (3) fewer lamps[as low as 1/20 of our present system].

Memorandum

November 5, 1998

TO: Harvey Bortner – Superintendent, W.W.T.P.

FROM: S. E. Douglas – Chief Operator, W.W.T.P.

SUBJECT: Review of Alternative text in Act 537 document

The following is a listing of concerns and comments I have with the final draft Act 537 document prepared by Buchart-Horn, Inc.

1. York City W.W.T.P. plant operator input should be considered when an option for implementation is chosen.

2. Will the Train 2 secondary clarifiers handle the additional peak flows of 31 MGD?

3. It is my opinion that Alternative 4 should be considered only as a last resort. I would not like to disinfect Tr. 2 overflow with either sodium hypochlorite or chlorine. I do not favor having another discharge point added to our NPDES permit.

4. Every attempt should be made to pump as much primary effluent to Train 3 as possible. While the primary clarifiers may not be able to handle the additional solids loading associated with the higher peak flows, these tanks would allow for scum and oils to be collected off of the surface and thus not foul the dissolved oxygen probes at Tr. 3. Our experience has shown that any time large amounts of raw sewage are pumped to Train 3 via the Raw Sewage(Waste) Pumps, oils and greases adhere to the surface of the dissolved oxygen probes. This results in the probe sensing a lower than actual oxygen level in the tanks and the aerator speeds increase to 100 % output.

ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA
Mayor Charles H. Robertson

MEMORANDUM

November 3, 1998

TO: LARRY LUTTER
BUCHART HORN

FROM: HARVEY E. BORTNER, SUPERINTENDENT
YORK CITY WASTEWATER TREATMENT PLANT

SUBJECT: DRAFT 537 PLAN

I do not feel comfortable with resuming chlorination, particularly with the possibility of having to dechlorinate.

Have you looked at the feasibility of installing UV in the Storm Water Basin?

Another option might be to increase the pumping capacity of the Train 2 effluent pumps to cover any anticipated overflow. The UV facility is going to be made larger and could possibly be sized to handle any Train 2 overflow.

If any work is planned on the aerator VFDs, individual VFDs for each aerator would give us more flexibility in controlling D.O.

First Capital Of The United States

City Hall • 50 West King Street • P.O. Box 509 • York, Pennsylvania 17405 • (717) 849-2301

ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA

Mayor Charles H. Robertson

MEMORANDUM

November 3, 1998

TO: LARRY LUTTER
BUCHART HORN

FROM: HARVEY E. BORTNER, SUPERINTENDENT
YORK CITY WASTEWATER TREATMENT PLANT

SUBJECT: DRAFT 537 PLAN

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ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of YORK PENNSYLVANIA

Mayor Charles H. Robertson

DIVISION OF COMMUNITY AFFAIRS

Director's Office
849-2292

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849-2252

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849-2264

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849-2307

Zoning/Permits
849 2256

DIVISION OF PUBLIC SERVICES

Director's Office
849-2245

Building/Electrical Maintenance
845-9351

Environmental Services
849-2245

Highway Maintenance
849-2320

Recreation & Parks
854-1587

January 29, 1999

Larry Lutter
Buchart-Horn, Inc.
445 West Philadelphia Street
P O Box 15040
York, Pennsylvania 17405-7040

RE: YCSA Act 537 Plan Review Comments

Dear Larry

The City of York Bureau of Planning and Engineering and Office of Economic Development have no comment regarding the draft summary response comments received for the YCSA final draft Act 537 Plan, dated January 27, 1999.

Sincerely,

Veronica Whaley

Veronica Whaley
Environmental Planner

First Capital Of The United States

1 Marketway West • 3rd Floor • York, Pennsylvania 17401-1231 • FAX (717) 849-2329

November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

pipe segment. This inspection work should be done before proceeding with an expensive replacement project.

b. As noted on page 25 of Appendix A-1, "rehabilitation methods generally cost less than conventional replacement, and most methods minimize open trench excavation, resulting in reduced impacts to the environment, disruption of traffic and public inconvenience". Besides reducing the potential for I/I entering the line, lining also reduces the friction in the line, thereby increasing the hydraulic capacity. Appendix B from the Phase I Springettsbury Township Act 537 Facilities Plan Update lists the limiting theoretical capacity of the interceptor from Manhole No.53 to Manhole No. 60. at 17.9 mgd. Lining the interceptor should increase its open channel flow capacity to approximately 23.2 mgd, a 30% increase. We therefore question why the significantly less costly line rehabilitation method was not considered as an alternative to installing a new 64-inch parallel interceptor. We request that the Township consider lining of the interceptor and provide all tributary municipalities with the results if the evaluation before preceding with the costly pipeline replacement project.

We understand Springettsbury Township is proceeding quickly with the pumping station diversion project to provide the necessary facilities so that all municipalities enjoy the full benefit of the 3.5 mgd capacity recently purchased in the York City WWTP. However, the above investigations and evaluations will not impede this process and may provide the benefit of reduced project costs to all participants.

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November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

interceptor elevation were not provided in the reports. Appendix A-1 recommends $8,500,000 in additional conveyance system improvements due to anticipated overload conditions in the interceptors, even after construction of the diversion pumping station. Mr. Kyle recommends in his memorandum on Page 1 of Appendix A-2 that follow-up inspections of the interceptors be completed to confirm if they are subject to excessive I/I. We concur with Mr. Kyle's recommendation and request these investigations be performed before initiating any improvements to the interceptors. We also request that all municipalities tributary to the interceptors be provided with the full results of these investigations and be given an opportunity to review the data before Springettsbury Township proceeds with any interceptor improvements.

6. Appendix A-1. The "value engineering" report included as Appendix A-1 conducts an evaluation of potential sites for construction of the diversion pumping station to transfer flow from the Springettsbury sewer system to the York City WWTP. A previous evaluation conducted by Buchart Horn, Inc. had recommend construction of the pumping station at a location further upstream on the Codurus Creek interceptor to eliminate the need for replacement of portions of the interceptor projected to be overloaded. Estimated costs for the diversion pumping station, force main and interceptor improvements was given as $3,350,000. The report included in Appendix A-1 recommends construction of the pumping station further downstream on the Codurus Creek interceptor and construction of parallel interceptor for a total estimated construction cost of $ 4,278,000.

   Appendix A-1 recommends construction of a 64-inch diameter pipeline to parallel the existing Codurus Creek interceptor from Manhole No. 53 to Manhole No. 60. The existing interceptor from Manhole No. 53 to Manhole No. 60 is approximately 2,200 linear feet of 48-inch diameter line. The estimated construction costs for the parallel interceptor is stated as $1,770,000, or approximately $ 800 per linear foot of sewer.

   We question the need for the parallel pipe for the following reasons:

   a. The recommendation for the parallel line is based on the premise that the existing line is subject to an excessive amount of I/I and location of the pumping station further upstream would allow more I/I to enter the line to replace the flow taken out by the pumping station. The flow metering report included in Appendix A-2 states that the line is not subject to excessive I/I. As noted in comment No.5, physical inspection of the line should be conducted during high groundwater conditions by temporarily blocking off upstream flow to determine the magnitude of I/I in a given

November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

$3,291,000. Tables 4-1 and 4-2 appear to project the impact of the proposed sewerage system projects on Springettsbury Township's sewerage system account cash flow and resulting additional cost per EDU. The Table 4-1 lists the 1998 beginning year balance at $3,200,000 and includes $2,500,000 in anticipated federal funding. Both Tables 4-1 and 4-2 subtract all $2,500,000 in anticipated federal grants from Springettsbury Township's share of the projected project costs. It is our understanding that any federal grants received to support the regionalization of the sewer system will be distributed proportionately among all parties. Tables 4-1 and 4-2 should be revised to reflect this grant sharing.

4. Page 5-2 Institutional Evaluation. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. As noted above, the selected wastewater management alternative involves diverting a portion of the flows from the Township's York City Basin to its Springettsbury Basin. This diverted flow will ultimately be transferred to the York City WWTP via the proposed Springettsbury Codorus Creek pumping station. York Township is currently negotiating with West Manchester Township for the purchase of its excess York City WWTP capacity. Three draft agreements have been prepared to date regarding the purchase of this capacity and the diversion of the flow to the York City WWTP via the Springettsbury pumping station. The two draft agreements dealing with the transfer of 0.8 mgd of wastewater to the Springettsbury Township system and the diversion of this flow to the York City WWTP via the proposed Springettsbury pumping station will require the signature of appropriate Springettsbury Township officials. Copies of these raft agreements have been provided to the Township for its review and comment. It may be appropriate to include a discussion in the Springettsbury Township Act 537 plan regarding the need for the Township to execute these agreements.

5. Appendices A-1 and A-2. Appendix A-2 presents the partial results of the interceptor flow metering program conducted during winter 1998. The report concludes that "no inflow, infiltration, or exfiltration is occurring in the interceptor between the metering sites". However, the report included as Appendix A-1 discounts this claim on the basis that the metering report "did not consider the hydraulic gradient of the Mill and Codorus Creeks in the flow analysis" and implies that I/I could not enter the line since it was already full. It is impossible for us to assess the validity of either claim since depth of flow measurements collected during the flow metering program or groundwater level elevations relative the to

November 1998

SPRINGETTSBURY TOWNSHIP ACT 537 PLAN
PHASE II - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS

1. Page 1-1. Wastewater Treatment. The first paragraph of this section indicates a projected 20-year need within the Springettsbury WWTP service area of 6.5 mgd of additional wastewater treatment capacity. Based on the unnumbered table included at the end of Section 2 of the draft report, approximately 2.1 mgd of this 6.5 mgd of capacity is attributed to York Township. The second paragraph of this section states that additional capacity, over the 3.5 mgd already secured in the York City WWTP, is available from other municipalities holding York City WWTP capacity.

   The draft York Township Act 537 report has now been prepared and provided to Township staff and elected officials for review and comment. The selected wastewater management alterative in the draft report transfers flow from a portion of the Township's Tyler Run interceptor service area to its Mill Creek service area tributary to the Springettsbury sewer system. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. York Township hopes to have the negotiations with West Manchester Township over the purchase of this capacity completed in the near future. It may be appropriate to include a brief discussion regarding the capacity purchase in this section.

2. Page 3-2. Regional Wastewater Treatment. The last two paragraph of this section describe the potential to divert flow from York Township's York City basin to its Springettsbury Basin. As noted above, the selected wastewater management alternative in York Township's draft Act 537 plan proposes this flow diversion. The selected alternative calls for sending approximately 0.8 mgd of the 1.2 mgd of York City WWTP capacity purchased from West Manchester Township down the Mill Creek interceptor for diversion to the York City WWTP via the proposed Springettsbury Codorus Creek pumping station. A note that York Township's Act 537 update proposes this diversion may be appropriate in this section of the Springettsbury Act 537 report.

3. Page 4-4 through 4-5. Tables 4-1 and 4-2. Table 1-1, Page 1-3 of the draft report presents $8,813,000 in proposed Springettsbury sewerage system improvements (construction of the diversion pumping station and upgrading certain Springettsbury WWTP liquid and solids handling processes). Page 4-3 notes that Springettsbury Township's share of these costs are 25.25% for the pumping station and 48.75 % for the WWTP improvements, for a total of

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November, 1998

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS
(Continued):

Township is currently negotiating with West Manchester Township for the purchase of its excess York City WWTP capacity. Three draft agreements have been prepared to date regarding the purchase of this capacity and the diversion of the flow to the York City WWTP via the Springettsbury pumping station. Two of the draft agreements, the WWTP capacity purchase agreement and the agreement increasing the flow diversion limits for the Springettsbury York City WWTP connection, will require the signature of appropriate York City officials. Copies of these draft agreements have been provided to the City for its review and comment. It may be appropriate to include a discussion in the YCSA's Act 537 plan regarding the need for the City of York to approve these agreements.

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November 1998

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN - FINAL DRAFT
YORK TOWNSHIP REVIEW COMMENTS

1. Executive Summary, Page 5, Tyler Run Interceptor. The discussion on the Tyler Run interceptor notes that the need for upgrading the interceptor is dependent on the flow alternative selected by York Township and that input is needed from York Township to complete the section. The draft York Township Act 537 report has now been prepared and provided to Township staff and elected officials for review and comment. The selected wastewater management alternative in the draft report transfers flow from a portion of the Township's Tyler Run interceptor service area to its Mill Creek service area tributary to the Springettsbury sewer system. The Township's projected year 2020 average annual flows under the selected approach are:

Drainage Basin	Tributary Interceptor	Projected Year 2020 Annual Average Flows (mgd)
York City	Tyler Run	2.2
Springettsbury	Mill Creek	2.8
	Total	5.0

The sewer system modeling presented in Section 5 of the YCSA Act 537 Report indicates the existing Tyler Run interceptor can handle at least 2.4 mgd of annual average flow from York Township. Therefore, it appears that no upgrades to the portion of the Tyler Run interceptor within the City is needed based on the Township's selected wastewater management alternative.

2. Executive Summary, Page 6, Implementation. York Township's draft Act 537 plan projects a need for additional wastewater treatment capacity to handle anticipated year 2020 flows. A portion of this capacity will be provided by participation in the Springettsbury Township purchase of 3.5 mgd of York City WWTP capacity. York Township's remaining capacity needs will be satisfied by the purchase of 1.2 mgd of York City WWTP capacity from West Manchester Township. As noted above, the selected wastewater management alternative involves diverting a portion of the flows from the Township's York City Basin to its Springettsbury Basin. This diverted flow will ultimately be transferred to the York City WWTP via the proposed Springettsbury Township Codorus Creek pumping station. York

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Gannett Fleming

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) 763-8150
www.gannettfleming.com

November 16, 1998

Mr. Mark Derr, Manger
York Township
25 Oak Street
York, PA 17402

Dear Mark:

RE: York City and Springettsbury Township/Draft Act 537 Reports

In accordance with the request of York Township, we have reviewed the draft Act 537 reports prepared for the York City Sewer Authority and Springettsbury Township by Buchart Horn, Inc.. A copy of our review comments for each report are attached for the Township's use.

Mr. Larry Lutter of Buchart Horn has requested that all comments on the York City draft report be provided to his attention by no later than November 23, 1998. Mr. Michael Schober of Buchart Horn has requested that all comments on the Springettsbury Township draft report be provided to his attention by no later than December 7, 1998.

Our comments on the York City draft report are procedural and notify the City of the Township's selection of the wastewater management alternative that transfers a portion of its York City drainage basin to the Springettsbury drainage basin and the planned purchase of WWTP capacity from West Manchester Township. Our comments on the Springettsbury report notify Springettsbury Township of York Township's selected alternative but also deal with issues related to the need for up to $9,500,000 in system improvements and the use of the anticipated federal grant money.

We suggest a meeting be held between us, Township staff and interested Township Commissioners to review the attached comments and any comments the Township may have on its draft Act 537 report so that we can complete the draft report and initiate the public comment period. Please give me or Mark Malarich a call if you have any questions or to schedule this meeting.

Very truly yours,

GANNETT FLEMING, INC.

ROBERT E. SHAFFER, Sr., P. E.
Project Manager

Enclosure
xc: Philip Briddell

Engineering Excellence Since 1915

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

7. Appendix 1, Drawing No. 3: The exhibit shows only two sanitary sewer interconnections on the Poorhouse Run Interceptor. Is this correct?

8. Appendix 4, Page 3, Table 1: The average flow for North York Borough is computed incorrectly. After adjustment, total average daily flow, 3 month maximum flow, and ratios shall be checked and recomputed.

9. Appendix 5, Exhibit 5: Can additional maps be added to separate and prioritize infiltration versus inflow related problems?

10. Appendix 5, Exhibit 5: The correct name for "York New Salem" should be changed to "New Salem Borough". Dover Township, North Codorus Township and Springfield Township should also be labeled on the map.

11. Appendix 8, Table 4-5: "Allocated Flows" and "Allocated Excess or (Deficiencies)" should be revised when and if West Manchester and York Townships reach agreement on capacity transfers.

To assist our clients to develop programs to investigate infiltration/inflow and prioritize sanitary sewer rehabilitation programs, we request that specific flow meter information be provided to our office to support "Prioritization of Subsequent I/I Analysis" shown on Exhibit 5, in Appendix 5.

If there are any questions, please contact our office.

Very truly yours,

C. S. DAVIDSON, INC.

Richard G Resh

Richard G. Resh

cc: William J. Conn, Manager, Spring Garden Township
Jan R. Dell, Manager, West Manchester Township
Mark Derr, Manager, York Township
David A. Raver, Manager, Manchester Township
Dora Ream, Secretary, North York Borough
Kathy Altland, Manager, West York Borough

RGR/dec4078

C.S.DAVIDSON INC.
EXCELLENCE IN CIVIL ENGINEERING

York Office
38 North Duke Street • York, PA 17401
(717) 846-4805 • FAX (717) 846-5811

Gettysburg Office
50 West Middle Street • Gettysburg, PA 17325
(717) 337-3021 • FAX (717) 337-0782

November 16, 1998

Larry A. Lutter, P. E.
Buchart-Horn, Inc.
445 West Philadelphia Street
PO Box 15040
York, PA 17405-7040

Re: York City Sewer Authority
Regional Act 537 Plan
B. H. #72526-00

Dear Mr. Lutter:

In response to your 9/23/98 letter to the outside user municipalities, we have reviewed a copy of the "York City Sewer Authority Regional Act 537 Plan - Final Draft" dated September 1998 and offer the following comments:

1. Page 3-21, Table 3-5: The "Existing Problems" footnote refers to five manhole segments with negative slopes built in 1988. Why should the City or the outside Municipalities pay for this construction error. The party or parties responsible should be approached to correct the situation, if possible.

2. Page 3-23, Table 3-8: The "Existing Problems" footnote refers to several manholes with visible infiltration. Buchart-Horn, Inc. has also completed several studies which show interceptor facilities undersized or near capacity. The footnote should be expanded to identify flow restricted segments.

3 Page 3-26, Peaking Factors: The second sentence refers to "peaking factors are calculated on the maximum instantious flows determined by the dry weather base flow." On the subsequent page in Table 3-12, the peaking factor appears to be computed differently. Please explain the variation.

4. Page 3-28, Infiltration: In the first sentence refers to meter readings during "April 1997, January, February and March 1998". In the second sentence refers to ground water levels "during these 2 months". The two months should be more clearly identified.

5. Page 3-28, Infiltration: Under the Willis Run Interceptor section, the words "Fire Side" should be "Fireside".

6. Page 3-33, Table 3-13 thru Table 3-15: A map should be added to the appendix to identify all flow meter locations.

money in identifying and eliminating I/I from the areas tributary to the North George Street/Skyview Drive confluence, we suggest that the study include a statement representing that the city will continue its cooperative effort to determine if the North George Street/Skyview Drive confluence is susceptible to retarded flow if discharge from Manchester Township's main sewer interceptor connection to the city main Codorus Creek trunk line is retarded by high flow levels in the main trunk line

4 While the Infiltration/Inflow subsection of Section 3 presents the data to support the prioritization of areas for further I/I analysis, the narrative does not contain any reference to continuing efforts by the user municipalities to eliminate I/I from the identified priority areas

5 Because of public confusion between Manchester Township and Manchester Borough, perhaps the maps which are contained in Appendix I should refer to Manchester Township rather than just "Manchester "

Thank you for the opportunity to provide comments for the York City Sewer Authority Regional Act 537 Plan

Please contact Zoning/Planning Officer Stewart S Olewiler, III or me if you have any questions

Sincerely,

MANCHESTER TOWNSHIP

David A Raver
Township Manager

DAR/plp

cc Stewart S Olewiler, III, Zoning/Planning Officer
Richard Resh, C S Davidson, Inc
Larry E Gross, Public Works Superintendent

FAXED Time: 2:30 pm Date: 11-18-98

The Township of Manchester
YORK COUNTY PENNSYLVANIA
DRAFT
3289 SUSQUEHANNA TRAIL
YORK, PENNSYLVANIA 17402
Telephone: 717-764-4646 / 764-8327

November 18, 1998 GC-98-0558

Mr Lawrence A Lutter, PE
Buchart-Horn, Inc
PO Box 15040
York, PA 17405-7040

RE York City Sewer Authority Regional Act 537 Plan BH #72526-00

Dear Mr Lutter

I am writing in response to your September 23, 1998 letter concerning the review of the final draft copy of the York City Sewer Authority Regional Act 537 Plan While we have not conducted a detailed review of the technical aspects of the plan, we offer the following general comments

1. While the title of the document is "York City Sewer Authority Regional Act 537 Plan" we note that Section 2 primarily contains demographic and physical characteristic data for the City of York If the user municipalities are required to adopt the plan as amendments to their respective official sewage plans, we question whether demographic, physical characteristics, and land use data should be included for all municipalities?

2 Section 4 (Future Growth and Development) appears to focus on the City of York In order to present an accurate representation of the future growth on the Greater York Area as it will affect the York City Wastewater Treatment Facility and conveyance system, should a more detailed narrative description of each user municipalities future growth be included to support the future projected flows found in Table 4-4?

3 In reviewing Section 3 (Existing Sewage Facilities), particularly the subsection which addresses infiltration and inflow, we were unable to locate any reference to the continuing efforts between the City of York and Manchester Township to determine if during extreme heavy precipitation events a correlation exists between when Manchester Township Public Works Department is required to perform relief pumping at the North George Street/Skyview Drive sewer line confluence and when the intake flows at the wastewater treatment facility exceeds approximately 40 mgd While Manchester Township continues to invest time and

11/18/1998 10:24 7178542924 WY< PAGE 01
11-17-1998 6:33PM FROM BUCHART-HORN/BASCO 717852140I P 1

facsimile
TRANSMITTAL

BUCHART HORN, INC.

To: Kathy Altland, West York Borough
Fax #: 854-2924
re: **York City Sewer Authority Act 537 Plan**
Date: 11/17/98
Pages: 1, including this cover sheet

This fax has been sent to remind you that we would like your comments by November 23, 1998 on the York City Sewer Authority's Act 537 Plan which was sent to you on September 23, 1998. If you did not receive your copy of the Act 537 Plan, or have questions or comments that need to be addressed immediately, please feel free to contact me.

11-18-98

MR. SHIRK:

THE BOROUGH WILL RELY ON THE COMMENTS AS SUBMITTED BY OUR ENGINEER, C.S. DAVIDSON, INC.

THANK YOU.

KAltland

From the desk of...

David Shirk
Senior Engineer
Buchart-Horn, Inc.
445 W. Philadelphia St.
PO Box 15040
York, PA 17405-7040
(717) 852-1412
Fax: (717) 852-1615

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Sewer Collection System Management Comments

Jack Longstreet, Supervisor of the York City Collection System Maintenance Department, has indicated that the lengths of sewers by diameter size within the system are inflated. These lengths have been reviewed and corrected.

York County Planning Commission Comments

The York County Planning Commission had no comments requiring a written response. The Plan was approved at the Commission's November 14, 1998 meeting without comment. Please refer to the York County Planning Commission Project #98-89 letter which is included in this Appendix.

Public Review Comment Period Comments

The York City Sewer Authority Regional Act 537 Plan was advertised for review on February 8, 1999. The Plan was available for public review from February 8, to March 9, 1999 at the York City Clerks office. No comments were received from the public. Refer to the attached documents.

5. *Any modifications made to either the Raw Sewage (Waste) Pumps or the Primary Effluent Pumps should include replacement of their corresponding variable frequency drives. These units (Westinghouse Accutrol 200 units) have proven to be unreliable under stressed conditions. Also, these VFDs are only 6 pulse units. Technological advances made over the past ten years have lead to 12 and 18 pulse units becoming available. I've been told that these newer units are more energy efficient.*

   Response: The VFD issues will be reviewed and addressed under the design of any of the Alternative 2 scenarios.

6. *The total combined flow should be sent to the Sand Filters. Once here the operator will determine how much flow will be allowed to go through the filter system and how much will be bypassed on to the UV system.*

   Response: Combination alternatives B through S require all flow to be pumped to the sand filters. The operator would determine how much flow to bypass around the sand filters based on actual conditions.

7. *The UV system should be modified to handle the peak flow. Instead of considering expanding our present system, the newer medium pressure/high intensity systems should be evaluated. This system may have a high energy demand, but it also has several advantages. These advantages include: (1) self-cleaning, (2) lower labor costs, and (3) fewer lamps [as low as 1/20 of our present system].*

   Response: The type of UV system to be used will be determined during the final design of the plant improvements Cost considerations based on more detailed equipment requirements and layout will be presented at that time for review and decision.

Response: Your comments will be reviewed with the Sewer Authority prior to final selection of the alternative.

Comments Submitted by Steve Douglas, Chief Operator, by memorandum dated November 5, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *York City WWTP plant operator input should be considered when an option for implementation is chosen.*

   Response: Any proposed improvement will be reviewed with the WWTP plant operators and management staff before final design is complete.

2. *Will the Train 2 secondary clarifiers handle the additional peak flows of 31 MGD?*

   Response: Hydraulic profile calculations for Train 2 indicated that the piping and clarifiers can handle 31 MGD hydraulically. It should be understood, however, that the aerators need to be shut down at approximately 20 MGD to prevent losing solids from the clarifiers.

3. *It is my opinion that Alternative 4 should be considered only as a last resort. I would not like to disinfect Train 2 overflow with either sodium hypochlorite or chlorine. I do not favor having another discharge point added to our NPDES permit.*

   Response: The difference in cost, both capital and operating costs, between discharging all flow to the existing 002 outfall and allowing an emergency bypass of peak flows to the former 001 outfall is significant. The present worth cost difference is approximately $2 million. For an improvement that may only be used once or twice a year, it is necessary to weight the financial, operational and safety concerns carefully.

   In addition, we have asked PADEP to identify the limits for an 001 discharge including total chlorine residual. We have not received this information to date.

4. *Every attempt should be made to pump as much primary effluent to Train 3 as possible. While the primary clarifiers may not be able to handle the additional solids loading associated with the higher peak flows, these tanks would allow for scum and oils to be collected off of the surface and thus not foul the dissolved oxygen probes at Train 3. Our experience has shown that any time large amounts of raw sewage are pumped to Train 3 via the Raw Sewage (Waste) Pumps, oils and greases adhere to the surface of the dissolved oxygen probes. This results in the probe sensing a lower than actual oxygen level in the tanks and the aerator speeds increase to 100% output.*

   Response: These are valid concerns that must be addressed during the design of any of the Alternative 2 scenarios.

periods.

Response: The pipe from the screw pump discharge well to the sand filters has sufficient capacity for the additional flow. A flow obstruction at the filter building does exist and must be addressed during the final design of any sand filter upgrade alternative.

NOTE: If the submersible pump(s) alternative is chosen, could these also be used to dewater the lower suction well for maintenance on the lower screw pump bearings?

Response: This dewatering is possible and would be address during final design.

4. *I do not like any of the #4 alternatives as presented. I would suggest that some UV system rather than sodium hypochlorite be used, such that when pumps come on so does the UV and the flow gets disinfected. When the pumps turn off, so does the UV. Installing a system in a pipe might even be possible, though I hate to think about bulb maintenance. Even to take the storm water discharge North along the levee and tie into the UV building and disinfect there, or somewhere in the pipe and dump into the cascade, in my opinion, would be more desirable than hypochlorite. Does hypochlorite in these quantities require being listed on the SARA or Spill plans?*

   Response: The handling of sodium hypochlorite would be added to the plant's emergency spill plan. SARA notification may be required depending on the quantity of chemical stored on site.

5. *I would assume that Alt. 5C is not the latest Davco proposal. Can the Davco numbers either be substituted directly for these or added as an additional alternative?*

   Response: The conceptual cost of Alternative 5C includes a retrofit of the existing sand filter underdrain system. Changes that may be proposed by potential installers of the retrofit will be considered in the final design if this alternative is implemented. The conceptual cost should not be modified at this time.

6. *I am not in favor of the deeper modules in Alt. 6A. I think the higher breakage costs from having the handle larger modules as well as the additional weight (I would assume) would not be advantageous to the ease of bulb maintenance. Additional channels utilizing the existing or similar size modules would be my choice. Also, where would the additional ballast cabinets be located? Cabinet cooling and filtration should definitely be a topic for discussion.*

   Response: The type of UV system and it's control system will be reviewed with operating staff prior to the final design of the upgraded UV Disinfection System.

7. *For what it's worth, my choice would be Option M with an alternative disinfection system as stated in #4 above with the Davco retrofit of the five sand filters as stated in #5 above.*

2 *Alt. 2B proposes a 1900 foot 24 inch force main. Alternative 2C installs a 1530 foot 30 inch force main. Why the difference in the lengths?*
NOTE: I like 2C best, but why the difference in price? Perhaps something in the project or operating costs that I'm not aware of?

Response: The difference in lengths is due to different points of connection to existing facilities. Alternative 2C suggests upgrading existing equipment and installing a new parallel force main from the tee connection in front of the Control Building to Train 3. Alternative 2B suggest installing new equipment and a parallel force main the total distance from the primary sludge pump station to train 3. Remember, these are budgetary conceptual costs not final construction cost estimates.

3. *Alt. 3G uses trailer mounted pumps. One comment I would make would be to locate the hose taps for these pumps on the higher level (at the top of the hill by the screw pump structure) to keep them out of the potential flood plain. I realize this would be contrary to the proper pumping scenario, but if the pumps get flooded they won't do any good either.*

Response: This suggestion may be possible, however, very few manufactures will confirm that their pumps can pull a 26 to 28 ft. suction lift. If this alternative is selected, your suggestion will be reviewed for possible use.

NOTE: Electric is critical to operate either the screw pumps or the submersible(s) in Alt. 3. Was any consideration given to having a plug in receptacle at Sub 1 to power these pumps from a portable generator in the event of power failure?

Response: This suggestion can be implemented in the final design if this alternative is chosen.

NOTE: I have heard that when a motor is run from a VFD, the motor can be run up to 200% of its rated motor speed. Would this be something to consider -- "super speeding" the pumps to increase their capacity, assuming the gears and guts could take the extra stress?

Response: "Super speeding" is generally not accepted by motor manufacturers. Often the motor warranty will be voided if VFD's are used to "super speed" pumps. Also, the increased flows resulting from "super speeding" a pump require the motor to operate at greater break horse power. "Super speeding" pumps in this application will not be recommended.

NOTE: I think all your #3 alternatives lift from the suction well to the top discharge well. Is this the best place to discharge? Can the pipe from the discharge well to the sand filters take the additional flow? Possibly a better place might be the sand filter inlet box or even the bypass pipe itself, since this would probably only be used during high flow

City of York Comments

Wastewater Treatment Plant Management Comments

Comments submitted by Harvey Bortner, Plant Superintendent, by memorandum dated November 3, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *Have you looked at the feasibility of installing UV in the Storm Water Basin?*

   Response: The use of additional UV disinfection was considered for the emergency bypass line. The capital and operating costs of additional UV disinfection is significantly greater than the use of sodium hypochlorite (approximately 5 times higher). In addition, a UV system in the storm water basin would be used only a couple of times per year. Therefore, a UV disinfection option was not pursued further in the alternative evaluation.

2. *Another option might be to increase the pumping capacity of the Train 2 effluent pumps to cover any anticipated overflow. The UV facility is going to be made larger and could possible be sized to handle any Train 2 overflow.*

   Response: This option has been considered and its cost is included in Alternative Combinations E, F, G, N, O and P. The approximate additional present worth cost for the pumping and UV system included these alternative combinations above the cost of alternative combination W is $1.9 million.

3. *If any work is planned on the aerator VFDs, individual VFDs for each aerator would give us more flexibility in controlling D.O.*

   Response: Improvements to the aerators or their VFD's were not considered since the plant's capacity to supply oxygen for treatment for the planning period is adequate. Recent discussions with plant operators, however, have noted a potential equipment problem which may require the replacement of certain VFD's. If VFD replacement is found to be required, a request to include such replacement will be made to the Sewer Authority.

Comments Submitted by Rudy Zimmerman, Assistant Plant Superintendent, by memorandum dated October 30, 1998. A copy of this memorandum is included at the end of this Appendix.

1. *I assume that all operations costs are computed just for the proposed time that the alternative runs during a peak flow event, though I did not notice that this was stated anywhere in the plan. For what period of time were these times figured?*

   Response: Operational costs were computed for a 12 to 24 hour period twice a year.

Comments received from Gannett Fleming Engineers and Planners on behalf of York Township

Gannett Fleming provided comments on the York Sewer Authority Regional Act 537 Plan on behalf of York Township by letter dated November 16, 1998. A copy of this letter is included at the end of this appendix.

Gannett Fleming has identified that the proposed wastewater management alternative transfers a portion of the Township's flow from the Tyler Run interceptor service area in the York system to the Mill Creek interceptor service area in Springettsbury Township system. The Tyler Run interceptor will receive a projected annual average flow of 2.2 MGD in the year 2020. This projected flow appears to eliminate the need to upgrade the Tyler Run Interceptor over the next 20 years.

A portion of the flow which York Township will divert to the Springettsbury Township system, will eventually return the York City system through the new Springettsbury pumping station. In order to account for the additional capacity requirements in the York system, York Township will need to purchase capacity from West Manchester Township. This purchase will require written agreements between the parties. The discussion on the need for the City of York to review and approve these agreements will be added to this Plan as suggested by Gannett Fleming or the actual transfer will be identified if the agreements are signed prior to the final adoption of this Plan.

Drawing No. 3 only shows those interceptors 12" in diameter or larger.

8. **In Reference to Appendix 4, Page 3, Table 1:** *The average flow for North York Borough is computed incorrectly. After adjustment, total average daily flow, 3 month maximum flow and ratios shall be checked and recomputed.*

Response: The value of 1.021 MGD listed in Table 1 for North York Borough was a clerical error. The correct average flow of 0.204 MGD has been inserted and this correct value was previously used in subsequent calculations.

9. **In Reference to Appendix 5, Exhibit 4:** *Can additional maps be added to separate and prioritize infiltration versus inflow related problems?*

Response: The intent of the Prioritized I/I Map is to simply indicate which regions of the of the collection system have I/I and to what degree the problem may be. It will be necessary to perform local metering in each of the noted areas to determine the actual extent of both inflow and infiltration before further prioritizing of areas can be determined.

10. **In Reference to Appendix 5, Exhibit 5:** *The correct name for "York New Salem" should be changed to "New Salem Borough". Dover Township, North Codorus Township and Springfield Township should also be labeled on the map.*

Response: These changes will be made to this Exhibit.

11. **In Reference to Appendix 8, Table 4-5:** *"Allocated Flows" and "Allocated Excess or (Deficiencies)" should be revised when and if West Manchester and York Townships reach agreement on capacity transfers.*

Response: This table will be changed once the pending agreements for the noted transfer of capacity are signed and Buchart-Horn receives a signed copy.

to minor differential settling. The warranty period of this sewer construction contract has been expired for almost ten years.

2. In Reference to **Page 3-23, Table 3-8:** *The "Existing Problems" footnote refers to several manholes with visible infiltration. Buchart Horn, Inc. has also completed several studies which show interceptor facilities undersized or near capacity. The footnote should be expanded to identify flow restricted segments.*

   Response: The Roosevelt Avenue Interceptor Study Phase 3 dated June 1996 identifies the restricted segments of sewer. This study document is available and is referenced in the 537 Plan.

3. In Reference to **Page 3-26, Peaking Factors:** *The second sentence refers to "peaking factors are calculated on the maximum instantaneous flows determined by the dry weather base flow." On the subsequent page in Table 3-12, the peaking factor appears to be computed differently. Please explain the variation.*

   Response: Table 3-12 does not show the maximum instantaneous flows. This table shows the Average Flow, Base Flow and the calculated Peaking Factor. The peaking factors listed in the Table are calculated as stated in the text.

4. In Reference to **Page 3-28, Infiltration:** *In the first sentence refers to meter readings during "April 1997, January, February and March 1998". In the second sentence refers to ground water levels "during these 2 months". The two months should be more clearly identified.*

   Response: The text has been changed to read "during these four months."

5 In Reference to **Page 3-28, Infiltration:** *Under the Willis Run Interceptor section, the words "Fire Side" should be "Fireside".*

   Response: The correction has been made.

6. **In Reference to Page 3-33, Table 3-13 thru Table 3-15:** *A map should be added to the appendix to identify all flow meter locations.*

   Response: Drawing No. 3, sanitary sewer mains, in Appendix 1 has been updated to show the meter locations.

7. **In Reference to Appendix 1, Drawing No. 3:** *The exhibit shows only two sanitary sewer interconnections on the Poorhouse Run Interceptor. Is this correct?*

   Response: Although there are many interconnections to the Poorhouse Run Interceptor, *wastewater treatment facility exceeds approximately 40 MGD. While Manchester Township continues to invest time and money in identifying and eliminating I/I from the areas tributary to the North George Street/Skyview Drive confluence, we suggest that the study include a statement representing that the city will continue its cooperative effort to determine if the North George Street/Skyview Drive confluence is susceptible to retarded flow if discharge from Manchester Township's main sewer interceptor connection to the city main Codorus Creek trunk line is retarded by high flow levels in the main trunk line.*

Response: The City recognizes that Manchester Township has experienced an overload of the sewers at N. George St. and Skyview Dr. Although this problem is approximately one mile from the Codorus Creek Interceptor and appears to be a local problem, the City will continue to work with Manchester Township to determine if high flows in the Codorus Creek Interceptor retard flows in this specific sewer. A statement regarding this cooperative effort will be added to the plan.

4. *While the Infiltration/Inflow subsection of Section 3 presents the data to support the prioritization of areas for further I/I analysis, the narrative does not contain any reference to continuing efforts by the user municipalities to eliminate I/I from the identified priority areas.*

   Response: The Sewer Authority believes that all connected municipalities are actively working to reduce I/I, and the above noted section will be modified to note this activity.

5. *Because of public confusion between Manchester Township and Manchester Borough, perhaps the maps which are contained in Appendix I should refer to Manchester Township rather than just "Manchester".*

   Response: This change will be made.

Comments received from C. S. Davidson, Inc. on behalf of the connected municipalities by letter dated November 16, 1998 (copy included at the end of this Appendix).

1. **In Reference to Page 3-21, Table 3-5**: *The "Existing Problems" footnote refers to five manhole segments with negative slopes built in 1988. Why should the City or the outside Municipalities pay for this construction error. The party or parties responsible should be approached to correct the situation, if possible.*

   Response: There exists only 7.4 feet of available fall between manhole A46 and the influent to the wastewater treatment plant. The overall distance of this line segment is 12,637 linear feet making the average slope of the line 0.6% or 0.6 feet per 100 feet of line. The existing limitations in the available fall in this line segment dictated the very flat interceptor. The various negative slopes identified by survey are suspected to be due

Appendix 14

537 Plan Final Draft Comments and Responses

The following presents a listing of all written comments received from a review of the Final Draft 537 Plan and the responses:

Connected Municipality Comments

The following are comments submitted by or on behalf of the connected municipalities:

Comments received from Manchester Township by letter dated November 18, 1998 (copy included at the end of this Appendix).

1. *While the title of the document is "York City Sewer Authority Regional Act 537 Plan" we note that Section 2 primarily contains demographic and physical characteristic data for the City of York. If the user municipalities are required to adopt the plan as amendments to their respective official sewage plans, we question whether demographic, physical characteristics, and land use data should be included for all municipalities?*

   Response: The scope of this Plan considers the demographics and physical characteristics of each connected municipality will be found in the individual municipality's Act 537 Plan. The information regarding demographics for each connected municipality in this Plan is limited to present and future flow projections at each connection point. These flow projections were provided by C.S. Davidson, Inc. on behalf of the connected municipalities and are found in Appendix 9.

2. *Section 4 (Future Growth and Development) appears to focus on the City of York. In order to present an accurate representation of the future growth on the Greater York Area as it will affect the York City Wastewater Treatment Facility and conveyance system, should a more detailed narrative description of each user municipalities future growth be included to support the future projected flows found in Table 4-4?*

   Response: The detailed information regarding each of the connected municipalities' future growth should be included in the individual municipality's Act 537 Plan.

3. *In reviewing Section 3 (Existing Sewage Facilities), particularly the subsection which addresses infiltration and inflow, we were unable to locate any reference to the continuing efforts between the City of York and Manchester Township to determine if during extreme heavy precipitation events a correlation exists between when Manchester Township Public Works Department is required to perform relief pumping at the North George Street/Skyview Drive sewer line confluence and when the intake flows at the*

ECONOMIC DEVELOPMENT • POLICE • FIRE • BUSINESS ADMINISTRATION

The City of
YORK
PENNSYLVANIA
Mayor Charles H. Robertson

February 26, 1997

DIVISION OF COMMUNITY AFFAIRS

Director's Office 849-2203

Business Development 849-2290

Health 849-2252

Housing Rehabilitation 849-2264

Planning/Engineering 849-2307

Zoning/Permits 849-2256

DIVISION OF PUBLIC SERVICES

Director's Office 849-2245

Building Maintenance 845-9351

Environmental Services 849-2245

Highway Maintenance 849-2320

Recreation & Parks 854-1587

York City Sewer Authority
Attn: Phil Briddell, Chairman
c/o Blakey, Yost, Bupp & Schaumann
17 E. Market St.
York, PA 17401

RE: City of York Act 537
Sewage Facilities Plan Update

Dear Authority Members:

The City of York hereby requests the York City Sewer Authority prepare and submit to PADEP an Act 537 Sewage Facility Plan Update on its behalf.

The purpose of the plan will be to evaluate the available capacity and condition of the collection system and to determine the system's ability to provide public sewerage service to the City of York and the six other connected municipalities for various growth scenarios.

Furthermore, the City of York authorizes the YCSA to seek sewage facilities planning assistance upon PADEP plan approval.

The City of York and York City Sewer Authority must both approve, by signature, the Task Activity Report submitted to PADEP at the onset of the project. The City of York intends to adopt the plan update prior to its submission to PADEP for review and approval. Additionally, any significant changes to the plan content requiring PADEP notification must also be approved by the City.

Very Truly Yours,

R. Eric Menzer
Director, Economic Development

pc: Larry Lutter, Buchart-Horn Inc.
April Showers, Director, Bureau of Planning/Engineering

First Capital Of The United States

1 Marketway West • 3rd Floor • York, Pennsylvania 17401-1231 • FAX (717) 849-2329

3620-PM-WQ0002 Rev. 12/97 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 Appendix N for greater detail, Contact the DEP regional office serving your county listed in Appendix J.

DEP Use Only	Plan Page No.	Item Required
______	______	1. Environmental Impact Assessment. (Planning Phase)

Items a, b, c, e and g of the Environmental Impact Assessment requirement are eligible for Act 537 grant participation to the extent of identification of a potential impact. Studies required to determine impact, to mitigate impact and to obtain permits are not eligible for Act 537 grant participation. Such studies may be eligible for PENNVEST funding. Items d, f, h, i, j, k and l are not required by Chapter 71, but may be eligible for Act 537 grant participation when required for DEP approval of sewage facilities plan update revision.

a. Historical and Archaeological Sites
b. Wetlands
c. Endangered and Protected Species
d. Air Quality
e. Floodplains
f. Fish and Wildlife
g. Agricultural Lands
h. Wild and Scenic Rivers
i. Coastal Zone Management
j. Socio-Economic Impacts
k. Water Supplies
l. Other Environmentally Sensitive Areas

DEP Use Only	Plan Page No.	Item Required
______	______	2. Cost Effectiveness. (Planning Phase)
______		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)

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		a. Historical and Archaeological Sites b. Wetlands c. Endangered and Protected Species d. Air Quality e. Floodplains f. Fish and Wildlife g. Agricultural Lands h. Wild and Scenic Rivers i. Coastal Zone Management j. Socio-Economic Impacts k. Water Supplies l. Other Environmentally Sensitive Areas
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DEP Use Only	Plan Page No.	Item Required
______	______	D. Identify the chosen 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. 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:
______	______	1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6)
______	______	2. Future wastewater disposal needs. (5 and 10 years growth areas). (Reference-Title 25, §71.21.a.6)
______	______	3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6)
______	______	4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6)
______	______	5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6)
______	______	6. Available financing methods. (Reference-Title 25, §71.21.a.6)
______	______	7. Environmental soundness and compliance with natural resource planning ar preservation programs. (Reference-Title 25, §71.21.a.6)
______	______	B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan.

DEP Use Only	Plan Page No.	Item Required
		VII. Institutional Evaluation
		A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
______	______	1. Financial and debt status. (Reference-Title 25, §71.61.d.2)
______	______	2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)
		3. Existing legal authority to:
______	______	a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61 d.2)
______	______	b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61 d.2)
______	______	c. Set user fees and take purchasing actions. (Referernce-Title 25, §71.61.d.2)
______	______	d. Take enforcement actions against ordinance violators. (Reference-Title 25, §71.61.d.2)
______	______	e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2)
______	______	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:
______	______	1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2)
______	______	2. Functions of existing and proposed organizations (sewer authorities, on-lot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.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:
______	______	1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2)
______	______	2. Development of all required ordinances, regulations, standards, and inter-municipal agreements. (Reference-Title 25, §71.61.d.2)
______	______	3. Description of activities to provide rights-of-way, easements, and land transfers. (Reference-Title 25, §71.61.d.2)
______	______	4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2)
______	______	5. Any other legal documents. (Reference-Title 25, §71.61.d.2)
______	______	6. Dates or timeframes for items 1-5 above on the project's implementation schedule.

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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 to 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.

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.

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).

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 (5) years from the date of plan submission. (Reference-Title 25, §71 21.a.5.iv).

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 contingency financial plan to be used if the preferred method of financing cannot b 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).

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).

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)

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)

G. Evaluate administrative organizations and legal authority necessary for Plan implementation. (Reference - Title 25, §71 21.a.5.vi D.)

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______	______	2. Municipal wasteload management plans 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.
______	______	3. Plans developed under Title II of the Clean Water Act (33 U.S.C.A. 1281-1299) or Title II and 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.
______	______	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.
______	______	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. 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.
______	______	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.
______	______	8. County Stormwater Management Plans approved by the Department 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.
______	______	9. Using wetland mapping developed under Section II.A.7, 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. Appendix B, Section II.I of the Planning Guide.
______	______	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 the Department 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, II.J.

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G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference-Title 25, §71.21.a.4)

1. Modification of existing comprehensive plans involving:

   a. Land use designations. (Reference-Title 25, §71.21.a.4)

   b. Densities. (Reference-Title 25, §71.21.a.4)

   c. Municipal ordinances and regulations. (Reference-Title 25, §71.21.a.4)

   d. Improved enforcement. (Reference-Title 25, §71.21.a.4)

   e. Protection of drinking water sources. (Reference-Title 25, §71.21.a.4)

2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference-Title 25, §71.21.a.4)

3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal which consider lot sizes and protection of replacement areas. (Reference-Title 25, §71.21.a.4)

4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference-Title 25, §71.21.a.4)

H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference-Title 25, §71.21.a.4).

1. Water Quality/Public Health. (Reference-Title 25, §71.21.a.4).

2. Growth potential (residential, commercial, industrial). (Reference-Title 25, 71.21.a.4).

3. Community economic conditions. (Reference-Title 25, 71.21.a.4)

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

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

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.A)

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.

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		E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference- Title 25, §71.21.a.4).
______	______	1. Commercial, residential and industrial use. (Reference-Title 25, §71.63.e).
______	______	2 Designated conveyance facilities (pumper trucks). (Reference-Title 25, §71.63.b.2).
______	______	3. Designated treatment facilities or disposal site. (Reference-Title 25, 71.63.b.2).
______	______	4. Implementation of a retaining tank ordinance by the municipality. (Reference-Title 25, §71.63.b.2). See Part "F" below
______	______	5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure.(Reference-Title 25, §71.63.c.2).
		F. Sewage management programs to assure the future operation and maintenance of existing and proposed sewage facilities through:
______	______	1. Municipal ownership or control over the operation and maintenance of individual on-lot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference-Title 25, §71.21.a.4.iv)
______	______	2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference-Title 25, §71.73.b.1.)
______	______	3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference-Title 25, §71.73.b.2)
______	______	4. Repair, replacement or upgrading of malfunctioning on-lot sewage systems. (Reference-Title 25, §71.21.a.4.iv) through:
		a. Aggressive pro-active enforcement of ordinances which require operation and maintenance and prohibit malfunctioning systems. (Reference-Title 25, §71.73.b.5)
		b. Public education programs to encourage proper operation and maintenance and repair of sewage disposal systems.
______	______	5. Establishment of joint municipal sewage management programs. (Reference-Title 25, §71.73.b.8)
______	______	6. Requirements for bonding, escrow accounts, management agencies or associations to assure operation and maintenance for non-municipal facilities. (Reference-Title 25, §71.71)

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		B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:
______	________	1. Soil and slope suitability. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C)
______	________	3. The establishment of a sewage management program. (Reference-Title 25, §71.21.a.4.iv). See also Part "F" below.
______	________	4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for on-lot disposal considering: (Reference-Title 25, §71.21.a.4).
______	________	a. Existing technology and sizing requirements of Title 25 Chapter 73. (Reference-Title 25, §73.31-73.72).
______	________	b. Use of expanded absorption areas or alternating absorption areas. (Reference-Title 25, §73.16.
______	________	c. Use of water conservation devices. (Reference-Title 25, §71.73.b.2.iii).
		C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes based on: (Reference-Title 25, §71.64.d).
______	________	1. Treatment and discharge requirements. (Reference-Title 25, §71.64.d).
______	________	2. Soil suitability. (Reference-Title 25, §71.64.c.l).
______	________	3. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.64.c.2).
______	________	4. Agency or other controls over operation and maintenance requirements. (Reference-Title 25, §71.64.d). See Part "F" below.
		D. The use of community land disposal alternatives including:
______	________	1. Soil and site suitability. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, 71.21.a.2.ii.C)
______	________	3. Controls over operation and maintenance requirements through a Sewage Management Program (Reference-Title 25, 71.21.a.2.ii.C). See Part "F" below.
______	________	4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part V, B, 4, a, b, c above). See also Part "F" below.

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		and existing plans of a Commonwealth 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
______	______	5. Sewage planning to provide adequate wastewater treatment for the municipality. This planning must be related to both the <u>five and ten year</u> future planning periods and be based on growth impacts on 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:
______	______	1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).
______	______	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)
______	______	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).
______	______	a. Repair. (Reference-Title 25, §71.21.a.4.ii.A)
______	______	b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B)
______	______	c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71)
______	______	d. Improved operation and maintenance. (Reference-Title 25, §71.21.a.4.ii.C)
______	______	e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).
______	______	4. 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. Repair or replacement of collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).
______	______	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).

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		B. Using DEP's manual titled "Sewage Disposal Needs Identification Guidance," identify, map and describe areas that utilize individual and community on-lot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
______	________	1. The types of systems in use. (Reference-Title 25, §71.21.a.2.ii.A).
______	________	2. A sanitary survey complete with a description 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).
______	________	3. A comparison of the types of on-lot 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).
______	________	4. An individual water supply survey to identify possible contamination by malfunctioning on-lot sewage disposal systems consistent with the DEP Sewage Disposal Needs Identification Guidance manual. (Reference-Title 25 §71.21.a.2.ii.B)
		C. Identify wastewater sludge and septage generation, transport, and disposal methods. Include this information in the sewage facilities alternative analysis including:
______	________	1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71)
______	________	2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).
______	________	3. Present disposal methods, locations, capacities, and transportation methods. (Reference-Title 25 §71.71).
		IV. Future Growth and Land Development
		A. Delineate and describe the following through map, text and analysis:
______	________	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 EDUs remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).
______	________	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).
______	________	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).
______	________	4. Zoning, and/or subdivision regulations; local, county or regional omprehensive plans;

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______	______	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).
______	______	E. Topography - Depict slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds; slopes that are unsuitable for on-lot systems. (Reference-Title 25, §71.21 a.1.ii).
______	______	F. Potable Water Supplies - Identification through mapping, description and analysis to include 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.
______	______	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 nonmunicipal, individual and community sewerage systems in the planning area including:

______	______	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)
______	______	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)
______	______	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 the Department. (Reference-Title 25, §71.21.a.2.i.B)
______	______	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. A detailed description of operation and maintenance requirements of the municipality for on-lot systems and 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)
______	______	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii)

GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
		I. Previous Wastewater Planning
		A. Identify and briefly analyze all existing wastewater planning that:
______	________	1. Has been previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1)
______	________	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
______	________	3. Is anticipated or planned by applicable sewer authorities. (Reference-Title 25, §71.21.a.5.i.A) Section V.D. of the Planning Guide.
______	________	4. Has been done through planning modules for new land development, planning "exemptions" and addenda. (Reference-Title 25, §71.21.a.5.i.A).
		B. Identify and briefly summarizes all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
______	________	1. All land use plans and zoning maps which identify residential, commercial, industrial, agricultural, recreational, and open space areas. (Reference-Title 25, §71.21.a.3.iv).
______	________	2. Zoning or subdivision regulations that establish lot sizes predicated on sewa disposal methods. (Reference-Title 25 §71.21.a.3.iv).
______	________	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.
		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).
______	________	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
______	________	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).
______	________	C. Soils - Analysis with description by soil type and soils mapping. Show areas suitable for in-ground on-lot 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).

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 1 through 8 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, only.
______	______	1. Table of Contents
		2. Plan Summary
______	______	A. Identify the proposed service areas and major problems evaluated in the Plan. (Reference - Title 25, §71.21.a.7.i)
______	______	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)
______	______	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)
______	______	D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii)
______	______	E. Provide a schedule of implementation for the project which 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)
______	______	3. 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.
______	______	4. 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 areawide 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.
______	______	5. Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and uncontested conduct of a 30 day comment period. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
______	______	6. 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. 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 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.b)
______	______	8. 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.

3620-PM-WQ0002 Rev. 12/97

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Water Quality Protection

ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

For specific details covering Act 537 planning requirements, refer to Chapters 71 and 73 of the Department's Regulations.

Municipality: ______________________ **County:** ______________________

Local Municipal Contact Official: ______________________

Telephone Number of Official: ______________________

Consultant: ______________________

Consultant's Telephone Number: ______________________

Consultant's Contact Person: ______________________

Title of Submission: ______________________

Date Submitted: ______________________

About this checklist . . . . .

* DEP publication 3640-BK-DER1480 11/92, "A Guide For Preparing Act 537 Update Revisions -- November 1992", is obsolete. Do not use checklist pages from that publication.

* You must complete and attach this checklist when you submit the Plan to the Department for review and approval.

* This checklist is composed of two parts, one for Administrative Completeness and one for General Plan Content. A Plan must be "administratively complete" in order to be formally reviewed and approved by the Department. The General Plan Content checklist identifies each of the issues which must be addressed in your Act 537 Plan Update based on a pre-planning meeting between you and/or your consultant and the Department. The Administrative Completeness checklist is found on Pages I-16. The General Content checklist is found on Pages I-17 through I-27. PENNVEST funded or applicant plans must address planning requirements on Page I-28.

* You must use the right-hand column blanks in the checklist to identify the page in the Plan on which each planning issue is found or reference a previously approved update or special study (title and page number.)

* If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the Plan (or as a footnote) and indicate the page number where this documentation is found.

* After Municipal Adoption by Resolution, submit three (3) copies of the Plan, any attachments or addenda, and this checklist to the Department.

3620-PM-WQ0002 Rev. 12/97

Commonwealth of Pennsylvania
Department of Environmental Protection

INSTRUCTIONS FOR COMPLETING ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

GENERAL INFORMATION

These instructions are designed to assist the applicant in completing the Act 537 Plan Content and Environmental Assessment Checklist.

APPLICANT IDENTIFIER

For purposes of identifying and tracking both planning and permit packages. Please be sure that the following information matches.

NAMES. Enter the municipality designated as the organization name required in Section B of the Permit Application - General Information form.

SUBMISSION IDENTIFIER

For the purpose of identifying the submission title, please enter the same document title in Section A of the Permit Application - General Information form and in the Title of Submission on the Act 537 Content and Environmental Assessment Checklist title page.

USING THE CHECKLIST

For specific details covering the Act 537 Planning Requirements, refer to Chapters 71 and 73 of the department's Regulations.

A copy of this completed checklist must be included with your Act 537 plan. The department will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the preplanning meeting with the municipality to identify planning elements which will not be required to be included in the plan. All the planning elements required by DEP must be addressed in your plan or the plan will be returned as incomplete. The page number or other reference must be listed in column 1 of the checklist prior to plan submittal. If the municipality determines that any items listed in this checklist do not apply, or conditions stated in a certain part of this checklist do not exist in an area, a comment must be included in column 1 which states that the particular checklist item will have no impact on the plan or that it does not exist in the planning area. When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page. Three copies of the completed plan with all attachments must be submitted to DEP.

The most recent version checklist is found in Appendix I of the current DEP publication "A Guide for Preparing Act 537 Update Revisions" 3620-BK-DEP1480 as published on the internet. Access the DEP website at http://www.dep.state.pa.us (Choose Information by Subject/Water Management/Sewage Planning)

BUREAU OF FISHERIES

Delano R. Graff, Director
(814) 359-5154
FAX: (814) 359-5153

DIVISION OF FISHERIES MANAGEMENT

Richard A. Snyder, Chief
(814) 359-5110
FAX: (814) 359-5153

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH & BOAT COMMISSION
450 Robinson Lane
Bellefonte, PA 16823-9620

IN REPLY REFER TO
PNDI# 2489

May 6, 1998

BUCHART HORN INC.
Ted Fridirici
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Dear Mr. Fridirici:

RE: Environmental Assessment
Sewer Pipe Repair Replacement and Upgrade
Springettsbury Township, York County, Pennsylvania

I have examined the map accompanying your recent correspondence which shows the location for the proposed above referenced project.

Presently, none of the fishes, amphibians or reptiles we list as endangered or threatened are known to occur at or in the immediate vicinity of this study area.

To allow faster processing of PNDI reviews in the future, we are requesting that the attached form be completed and returned to this office together with other relevant project information. Please make copies of the attached form and use with all future environmental assessment requests. If you have received, and in fact are using the new form, disregard the above request. Please note that the PFBC conducts PNDI reviews only for reptiles, amphibians, fishes, and aquatic invertebrates. Reviews concerning other natural resources must be submitted to other appropriate agencies. Thank you in advance for your cooperation.

Sincerely,

Andrew L. Shiels

Andrew L. Shiels
Nongame and Endangered Species Unit

ALS/csk

Encl. (1)

FEDERALLY LISTED, PROPOSED AND CANDIDATE SPECIES (in Pennsylvania)

COMMON NAME	SCIENTIFIC NAME	STATUS*	DISTRIBUTION
FISHES			
Shortnose sturgeon**	*Acipenser brevirostrum*	E	Delaware River and other Atlantic coastal waters
REPTILES & AMPHIBIANS			
Bog turtle	*Clemmys muhlenbergii*	T	Current - Adams, Berks, Bucks, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton and York Counties. Historic - Butler, Crawford, Mercer and Philadelphia Counties
BIRDS			
Bald eagle	*Haliaeetus leucocephalus*	T	Entire state. Recent nesting in Butler, Crawford, Dauphin, Forest, Lancaster, Pike, Tioga, Warren and York Counties
Peregrine falcon (American)	*Falco peregrinus anatum*	E	Entire state. Recent nesting in and around Philadelphia and Pittsburgh (Allegheny, Delaware, Philadelphia and Bucks Counties)
Piping plover	*Charadrius melodus*	E	Presque Isle (Erie County). Migratory. No nesting in Pennsylvania since mid-1950s
MAMMALS			
Indiana bat	*Myotis sodalis*	E	Summer range: possibly state-wide in suitable habitat. Only one known winter hibernaculum (Blair County)
MOLLUSKS			
Clubshell mussel	*Pleurobema clava*	E	French Creek and Allegheny River watersheds; Clarion, Crawford, Erie, Forest, Mercer and Venango Counties
Northern riffleshell	*Epioblasma torulosa rangiana*	E	French Creek and Allegheny River watersheds; Crawford, Erie, Forest, Venango and Warren Counties
PLANTS			
Northeastern bulrush	*Scirpus ancistrochaetus*	E	Current - Bedford, Blair, Carbon, Centre, Clinton, Cumberland, Dauphin, Franklin, Huntingdon, Lackawanna, Lehigh, Mifflin, Monroe, Perry, Snyder and Union Counties. Historic - Northampton County
Small-whorled pogonia	*Isotria medeoloides*	T	Current - Centre and Venango Counties. Historic - Berks, Chester, Greene, Monroe, Montgomery, Philadelphia Counties

** E = Endangered, T = Threatened, PE = Proposed Endangered, PT = Proposed Threatened, C = Candidate* *Revised 11/07/97*

*** Shortnose sturgeon is under the jurisdiction of the National Marine Fisheries Service*

U S FISH AND WILDLIFE SERVICE
315 SOUTH ALLEN ST , SUITE 322, STATE COLLEGE, PA 16801

Please contact Michael McCarthy of this office at 814-234-4090 if you have any questions or require further assistance.

Sincerely,

Edward Perry

Edward W. Perry
Acting Supervisor

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

April 15, 1998

Mr. C. Theodore Fridirici
Buchart Horn, Inc.
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Dear Mr. Fridirici:

This responds to your letter of March 23, 1998, requesting information about federally listed and proposed endangered and threatened species within the area affected by the proposed sewer line project located in Springettsbury Township, York County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

Except for occasional transient species, no federally listed or proposed threatened or endangered species under our jurisdiction are known to occur within the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act are required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of certain federal status species in Pennsylvania is enclosed for your information.

This response relates only to endangered or threatened species under our jurisdiction based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities.

Requests for information regarding State-listed endangered or threatened species should be directed to the Pennsylvania Game Commission (birds and mammals), the Pennsylvania Fish and Boat Commission (fish, reptiles, amphibians and aquatic invertebrates), and the Pennsylvania Department of Conservation and Natural Resources (plants).

If you need further information in this matter please consult Mark Shaffer at (717) 772-0924.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology &
Protection

cc: DEP, Southcentral Regional Office

KC/tmw

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

April 6, 1998

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

C. Theodore Fridirici, Environmental Scientist II
Buchart Horn, Inc.
The Industrial Plaza of York
445 West Philadelphia Street
P.O. Box 15040
York, PA 17405-7040

Re: File No. ER 98-1287-133-A
DEP 537 PROGRAM:
Regional Act 537 Plan Needs Assessment, York City Sewer Authority, Springettsbury
York County

Dear Mr. Fridirici:

The Bureau for Historic Preservation has reviewed the above named project under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988). This review includes comments on the project's potential effect on both historic and archaeological resources.

There is a high probability that prehistoric and historic archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources.

There may be historic structures eligible for the National Register of Historic Places located in the project area. However, due to the nature of the activity, it is our opinion that there will be no effect on these properties. Should the applicant become aware, from any source, that unidentified historic 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 be contacted immediately.

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA
GAME COMMISSION
2001 ELMERTON AVENUE
HARRISBURG, PA 17110-9797

ADMINISTRATIVE BUREAUS:
ADMINISTRATION 717 787 5670
AUTOMOTIVE AND
PROCUREMENT DIVISION 717 787 6594
LICENSE DIVISION 717 787 2084
PERSONNEL DIVISION 717 787 7836
WILDLIFE MANAGEMENT 717 787 5529
INFORMATION & EDUCATION 717 787 6286
LAW ENFORCEMENT 717 787 5740
LAND MANAGEMENT 717 787 6818
REAL ESTATE DIVISION 717 787 6568
MANAGEMENT INFORMATION
SYSTEMS

April 28, 1998

Mr C. Theodore Fridirici
Buchart Horn, Inc.
PO Box 15040
York, PA 17405-7040

In re: Regional Act 537
Springettsbury Township
York County, PA

Dear Mr. Fridirici:

This is in response to your letter of March 23, 1998, requesting our review for potential impacts to state endangered or threatened species of birds or mammals, and State Game Lands

Our office review shows that no state listed endangered or threatened species of birds or mammals are known to occur within the proposed project area. Also, No State Game Lands are expected to be impacted by the proposed project. Should project plans extend beyond the present study area, or if additional information becomes available on endangered or threatened species of birds or mammals or State Game Lands, this review may be reconsidered.

This reply relates only to endangered and threatened species of birds or mammals and State Game Lands, but does not address other concerns of the Pennsylvania Game Commission. If an on-site field investigation determines the project may impact critical and unique wildlife habitat such as wetlands, you may be requested to conduct additional surveys

If you have any questions, please contact Tony Ross of my staff at (717) 783-5957

Very truly yours,

Denver A. McDowell, Chief
Division of Environmental
Planning and Habitat Protection
Bureau of Land Management

TR/pfb

RESULTS OF PNDI BIOTA SEARCH DATED: 03/31/98

PLICATION NUMBER	SEARCH PARAMETERS / COMMON NAME / SCIENTIFIC NAME SS=STATE STATUS FS=FEDERAL STATUS
67S476	397686 YORK N= 16 W= 14 ACRES= 640
	N O E L E M E N T S E N C O U N T E R E D. SS= FS=


MANCHESTER
INTERCHANGE 10
Filtration Plant
Lightners Sch
North York
Valley Forge
Prospect Hill Cem
Devers Sch
Mill
Windsor Park
Farquhar Park
Madison Sch
PHILADELPHIA
MARKET
KING
YORK
Lincoln Sch
COLLEGE
Penn Common
College
PRINCESS
PROSPECT
Elmwood
P Davis Jr High Sch
Jr High Sch
Spring Garden
Memorial Park
McKinley Sch
Jackson Sch
CODORUS
WEST MANCHESTER
Grantley Sch
SPRING
Wyndham Hills
GETTYSBURG 28 MI
SHILOH 2.8 MI
57'30"
YORK COUNTY
YORK PA USGS QUAD
SPRINGETTSBURY TWP
LEGEND
— EXTENT OF PROJECT

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY PROTECTION
BUREAU OF WATERWAYS ENGINEERING

For Department Use Only
Appendix A-22 b
Reviewer DOUGLASS
Date 3/31/98 Phone No
675476

SUPPLEMENT NO. 1
PENNSYLVANIA NATURAL DIVERSITY INVENTORY SEARCH FORM

A. This Supplement No 1 provides the site information necessary to perform a computer search for species of special concern listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Wildlife Code. Records regarding species of special concern are maintained in a computer data base called the "Pennsylvania Natural Diversity Inventory" (PNDI) The information in PNDI is routinely updated. Results of this PNDI search are valid for one year.

B. Please complete the information below and mail to the appropriate regional office or the delegated County Conservation District prior to completing a Chapter 105 environmental assessment or any other permit application. (SEE REVERSE SIDE FOR LIST OF OFFICES AND ADDRESSES)

C This Supplement No. 1 will be returned to you with information relevant to your project concerning species of special concern. Include it and any correspondence received from the agencies below, with your submission of any Permit Application.

NAME: TED FRIOIRICI

ADDRESS: C/O BUCHART HORN INC
445 WEST PHILADELPHIA ST
PO BOX 15040
YORK PA 17405-7040

PHONE: (717) 852-1419

PROJECT LOCATION: ALONG CODORUS CREEK & TYLER RUN IN YORK PA

COUNTY YORK

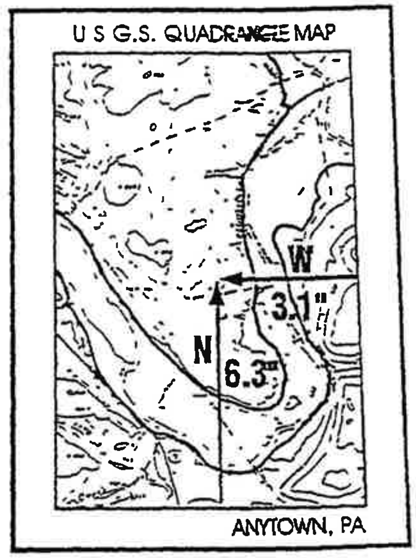
TWP./MUNICIPALITY: SPRINGETTSBURY

U.S.G.S. 7½ Minute Quadrangle

YORK

PROJECT SIZE (in acres) Include entire area relevant to your project.

≈ 10



North (Up) 12 TO 20 inches
West (to the left) 14 inches

INDICATE PROJECT LOCATION TO THE NEAREST ONE TENTH INCH MEASURING FROM THE EDGE OF THE MAP IMAGE FROM THE LOWER RIGHT CORNER.

Attach an 8½" x 11" photocopy (DO NOT REDUCE) of the section of the U.S.G.S. Quadrangle Map which identifies the project location and outlines the approximate boundaries of the project.

FOR DEPARTMENT USE ONLY

☒ TD No known record of habitats for species of special concern has been identified in the area designated above

☐ No impact to species of special concern. (PNDI staff person ____________ on ____________).
initials date

☐ Potential impact to species of special concern. Written recommendations on measures necessary to resolve this matter will be provided by

☐ Dept. of Conservation & Natural Resources
Bureau of Forestry/FAS
P O Box 8552
Harrisburg, PA 17105-8552
717-787-3444

☐ Mr Andrew L. Shiels
PA Fish & Boat Commission
450 Robinson Lane
Bellefonte, PA 16823
814-359-5113

☐ Mr. Denver A. McDowell
PA Game Commission
2001 Elmerton Ave.
Harrisburg, PA 17110-9797
717-783-8743

☐ PNDI Interpretation Requested

Element Occurrence Code ____________

RECEIVED
MAR 25 1998
DEP - SOUTHCENTRAL REGION
WATER MANAGEMENT PROGRAM

TABLE 2.
YORK TOWNSHIP ACT 537 UPDATE
POTENTIAL WASTEWATER CONVEYANCE AND TREATMENT ALTERNATIVES

SPRINGETTSBURY WWTP SERVICE BASIN

Alternative[1] No.	Estimated Annual Average Flow (mgd)	Description[2]
1	1.40	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin Reroute Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. New Residential EDUs @ 250 gpd/EDU.
2	1.80	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin Reroute Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. New Residential EDUs @ 350 gpd/EDU
3	2.00	Reroute Green Valley and Honey Valley pumping station flows from Springettsbury Basin to York City Basin. New Residential EDUs @ 250 gpd/EDU
4	2.50	Construct wastewater treatment facility in York Township to process some of the flows from the Township's Springettsbury Basin New Residential EDUs @ 250 gpd/EDU.
5	3.00	Construct WWTP in York Township to process some of the flows from the Township's Springettsbury Basin.
6	3.30	Reroute Green Valley pumping station flow from Springettsbury Basin to York City Basin.
7	3.50	No changes to existing format (New residential EDUs @ 350 gpd/EDU).
8	3.85	Reroute Oak Street and Spangler Meadows pumping station flows from York City Basin to Springettsbury Basin.

Notes:
(1) See December 29, 1997 letter from Robert Shaffer to Larry Lutter for further information on the alternatives.

(2) Proposed changes to existing facility format.

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TABLE 1.
YORK TOWNSHIP ACT 537 UPDATE
POTENTIAL WASTEWATER CONVEYANCE AND TREATMENT ALTERNATIVES

YORK CITY WWTP SERVICE BASIN

Alternative[1] No.	Estimated Annual Average Flow (mgd)	Description[2]
1	2.50	Redirect the Oak Street and Spangler Meadows pumping station flows from York City Basin to Springettsbury Basin.
2	2.75	No changes to existing format.
3	3.00	Redirect the Green Valley pumping station flow from the Springettsbury Basin to York City Basin.
4	3.90	Redirect the Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. (New residential EDUs @ 250 gpd/EDU).
5	4.10	Redirect the Green Valley and Honey Valley pumping station flows from the Springettsbury Basin to the York City Basin. (New residential EDUs @ 350 gpd/EDU).

Notes:

(1) See December 29, 1997 letter from Robert Shaffer to Larry Lutter for further information on the alternatives.

(2) Proposed changes to existing facility format.

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250 gpd/EDU. Therefore, there is some duplication of alternative descriptions in the attached tables depending on whether the 350 gpd/EDU figure or the 250 gpd/EDU figure was used to project future flows. Whenever the total flow from a 350 gpd/EDU option is the same as the total flow from a 250 gpd/EDU option, only one alternative description is given in the tables.

Please give us a call if you have any questions or need any other information.

Gannett Fleming
ENGINEERS AND PLANNERS

MEMORANDUM

TO: Phil Briddell, YCSA
Mark Derr, York Township
Larry Lutter, Buchart-Horn, Inc.
Jim Noel, Springettsbury Township
Richard Resh, C.S. Davidson
Mike Schober, Buchart-Horn, Inc.

FROM: Mark Malarich/Bob Shaffer, Gannett Fleming

DATE: January 12, 1998

SUBJECT: Description of York Township Preliminary Alternatives
York Township Act 537 Update

We distributed to the attendees of the December 30, 1997 Technical Meeting of the Springettsbury/York WWTP Planning Group a letter from our office dated December 29th presenting the estimated flows associated with the preliminary alternatives developed for the York Township Act 537 Plan update. As noted in the letter, we are relying on Buchart-Horn staff to provide us with planning level cost information for any necessary conveyance or treatment plant modifications within the Springettsbury and York systems for the flow alternatives presented in the letter.

As discussed at the meeting, York Township is divided into two wastewater treatment service basins; the York City Basin and the Springettsbury Basin. Pennsylvania Route 74 (South Queens Street) is generally the dividing line between the two basins with flows generated to the west of Route 74 conveyed to the York City WWTP and flow generated to the east of Route 74 conveyed to the Springettsbury WWTP for processing. There are currently eight pumping stations in the York Township sewer system. Several of these pumping stations are located close to the border between the Springettsbury basin and the York City basin. The majority of the alternatives developed for the Township's Act 537 Plan update involve redirecting pumping station flow from one of the service basins to the other service basin. We are also evaluating the construction of a wastewater treatment plant in York Township that would treat some of the flow generated in the Township's Springettsbury service basin. The facility would apply its treated effluent to area golf courses during the summer and practice stream discharge into Mill Creek during the winter.

The attached two tables generally described changes to the current facility format associated with each option. York City Basin Alternative No.2 and Springettsbury Basin Alternative No.7 keep the existing format, whereas all the other alternatives redirect some flow from one basin to the other basin or add a new treatment facility within York Township.

York Township staff is projecting approximately 9,100 new EDUs will connect to its sewer system during the planning period. The majority of these new EDUs will be from residential development. When establishing the flows associated with each alternative, we also looked at the impact of reducing the average flow per residential EDU from the current planning rate of 350 gpd/EDU to

31364
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C S DAVIDSON, INC

January 5, 1998
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	All Projected Connections in Gallons per Day (GPD) 1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No

(1) Tributary to Spry Pump Station
(2) Tributary to Marlborugh Pump Station
(3) Tributary to Joppa Road Pump Station
(4) Tributary to Leader Heights Pump Station
(5) Tributary to Spangler Meadows Pump Station
(6) Tributary to Leader Heights Crossings Pump Station
(7) Tributary to Imperial Drive Pump Station
(8) Tributary to Spring Garden Township Southwynd Pump Station

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Appendix A-22-b

January 5, 1998
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	All Projected Connections in Gallons per Day (GPD) 1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
135	James Ilyes Ebony Drive	HI&242	0	0	0	4,900	4,900	4,900	4,900	4,900	24,500	24,500				49,000	K27
136	Susquehanna Heights (7) residential/commercial	19	0	0	10,650	0	0	0	0	0	10,650					10,650	K27
137	Reynolds Mill Area (7) residential	5	0	0	0	0	0	0	0	37,100	37,100					37,100	K27
138	Lentzlyn/York Gospel Center (7)	33	0	0	0	0	0	0	0	15,000	15,000					15,000	K27
139	Roger Perry (7) Indian Rock Dam Road	HI&479	0	0	0	3,710	3,710	3,710	3,710	3,710	18,550	18,550				37,100	K27
140	Heil Markey (7) Indian Rock Dam Road	HI&469	0	0	0	2,240	2,240	2,240	2,240	2,240	11,200	11,200	11,200			33,600	K27
141	James Markey (7) Indian Rock Dam Road	HI&468B	700	3,500	3,500	3,500	3,500	3,500	2,800	0	21,000					21,000	K27
142	John Houck (7) Monument Drive	HI&460	0	0	0	0	0	0	0	0	0	9,275	9,275			18,550	K27
143	York Township emergency permits	varies	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	11,200	7,000	7,000	7,000	7,000	39,200	K27
144	Shipley Stores/Leader Heights (7) commercial	HI&151	3,000	3,000	0	0	0	0	0	0	6,000					6,000	K27
145	Exit 4 Inc /Leader Heights (2)(3) motel/80 rooms	HI&130D	4,000	4,000	0	0	0	0	0	0	8,000					8,000	K27
146	Dr. Stanton Leboutz/Powder Mill commercial	HI&155	1,050	1,050	0	0	0	0	0	0	2,100					2,100	K27
147	Dale Markey Farm/R. Jeffers (7) residential	HI&468	700	3,500	3,500	3,500	6,300	0	0	0	17,500					17,500	K27
148	Eckard/Leader Heights commercial	36&204 36&205	2,500	2,500	0	0	0	0	0	0	5,000					5,000	K27
149	Charles Vernon (1) commercial	HI&7	500	0	0	0	0	0	0	0	500					500	K27
150	Kinsley /Graham commercial - St Charles Way	HI&308D	0	30,000	0	0	0	0	0	0	30,000					30,000	K27
151	Miscellaneous New Development 10 EDUs/Year @ 350 GPD	varies	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	28,000	17,500	17,500	17,500	17,500	98 000	K27
	TOTALS		244,550	102,300	56,245	69,150	70,700	54,775	49,525	98,575	745,820	5,550	44,975	24,500	24,500	845,345	

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
				All Projected Connections in Gallons per Day (GPD)													
117	Garden Terrace/Pantano Dew Drop Road - residential	3&114A	2,100	2,450	0	0	0	0	0	0	4,550					4,550	K27
118	Bergdoll Dew Drop Road - residential	1+I&241B	350	0	0	0	0	0	0	0	350					350	K27
120	Rosenmiller IV/Condos residential	HI&459	1,400	1,400	1,400	1,400	1,400	1,400	700	0	9,100					9,100	K27
121	York Twp Water & Sewer (7) Leader Heights Project	varies	127,750	0	0	0	0	0	0	0	127,750					127,750	K27
122	Southwynd (8) residential	HI&513 to 517	350	350	700	700	350	0	0	0	2,450	0				2,450	K27
123	Spangler Meadows (phaseout) (5) residential	HI&9R	2,400	2,400	2,400	2,400	2,400	2,400	2,400	3,200	20,000	(42,100)				(22,100)	K27
124	York Manor (phaseout) (5) residential		1,050	1,050	700	700	1,050	0	0	0	4,550	(4,900)				(350)	K27
125	M & G Mobile Home Park (1) residential	HJ&258	1,750	0	0	0	0	0	0	0	1,750					1,750	K27
126	Spry Pump Station (Phaseout) (1) (400 EDUs @ 350 GPD)	HI&9N	0	0	0	0	0	0	0	0	0	(140,000)				(140,000)	K27
127	Cornerstone Development (phaseout) Leader Heights Road - residential(6)	HI&90	7,700	7,700	0	0	0	0	0	0	15,400	(18,200)				(2,800)	K27
128	Manor Care Pauline Drive - commercial	4&49C	0	0	0	0	0	0	0	0	0					0	K27
129	Ray Markey (7) residential	HI&385F	4,725	4,725	0	0	0	0	0	0	9,450					9,450	K27
130	Gulf Property/Leader Heights commercial	HI&151	1,500	0	0	0	0	0	0	0	1,500					1,500	K27
131	Balanced Care/Knob Hill commercial	HI&308A	8,250	0	0	0	0	0	0	0	8,250					8,250	K27
132	Emory Grove Property Dew Drop Road	HI&185	0	0	0	10,500	10,500	10,500	10,500	10,500	52,500	52,500				105,000	K27
133	David Godfrey Property Cherry Street	HI&184A HI&186	0	0	0	7,000	7,000	7,000	7,000	7,000	35,000	35,000				70,000	K27
134	Carl Daehnke Powder Mill Road	20&174	700	700	1,100	5,025	5,025	5,025	5,025	5,025	27,625	25,225				52,850	K27

Appendix A-22-b

January 5, 1998
EXHIBIT NO. YT-2

YORK TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK WASTEWATER TREATMENT PLANT

Project No	Name and Description	Map & Parcel	1998	All Projected Connections in Gallons per Day (GPD) 1999	2000	2001	2002	2003	2004	2005	'98-'05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	York City MH No
101	Copper Beech Tree 85 condos/Tyler Run	HI&308A	4,200	4,200	4,200	4,200	4,200	4,200	350	0	25,550					25,550	K27
102	Copper Beech Tree Tyler Run/residual	HI&308E	4,900	4,900	4,900	4,900	4,900	0	0	0	24,500					24,500	K27
103	Oak Village (1) condos/Oak Street	HI&291C	0	0	0	0	0	0	0	0	0					0	K27
104	Rosenmiller III single family homes	HI&549 to 560	700	700	350	0	0	0	0	0	1,750					1,750	K27
105	York Jewish Community Center expansion	II&32A	3,000	0	2,000	0	0	0	0	0	5,000					5,000	C27-10S
106	Apple Hill commercial	HI&458	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	40,000	10,000				50,000	K27
107	Glatfelters Insurance commercial	HI&154	750	750	750	900	0	0	0	0	3,150					3,150	K27
108	Temple Baptist Church (2)(3) Pine Grove Road - commercial	HI&143	3,500	3,500	0	0	0	0	0	0	7,000					7,000	K27
109	Copper Beech Tree South Queen Street - commercial	HI&308D	23,000	0	0	0	0	0	0	0	23,000					23,000	K27
109A	Copper Beech Tree St Charles Way - commercial	HI&308D	8,850	0	0	0	0	0	0	0	8,850					8,850	K27
110	Copper Beech Tree Dew Drop Road - residential	HI&308C	0	3,500	3,500	0	0	0	0	0	7,000					7,000	K27
111	Briggs Circle (1) Oak Street - residential	HJ&	350	350	0	0	0	0	0	0	700					700	K27
112	Southfork residential	24	700	700	700	700	350	0	0	0	3,150					3,150	K27
113	Queen's Crest South Queen Street - residential	9&25	5,600	0	0	0	0	0	0	0	5,600					5,600	C39N
114	Pine Grove Commons (2) commercial	19&145	1,150	0	0	0	0	0	0	0	1,150					1,150	K27
115	Richard Geever (2)(3) Leader Heights Road - commercial	HI&130E	2,500	2,500	2,820	0	0	0	0	0	7,820					7,820	K27
116	Country Meadows (2)(3) Leader Heights Road - commercial	HI&130M	2,975	2,975	2,975	2,975	2,975	0	0	0	14,875					14,875	K27

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 52 - Along Tyler Run north of Country Club Road

Peaking Factor: 2.02 (Actual)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: K27
City Flow Meter: YT01

Planning Period	Average Daily Flow GPD	Average Daily Flow EDUs	Peak Daily Flow GPD	Peak Daily Flow EDUs	Remarks
Existing	1,577,728	4,508	3,187,011	4,508	3/94 thru 10/97 Monthly Average Daily Flow (3)
1998-2005	735,220	2,101	1,485,144	2,101	
Year 2005	2,312,948	6,609	4,672,155	6,609	1997 Chapter 94 Report
2006-2010	5,550	16	11,211	16	
Year 2010	2,318,498	6,624	4,683,366	6,624	1997 Chapter 94 Report (4)
2011-2020	69,475	199	140,340	199	
Year 2020 (1)	2,387,973	6,823	4,823,706	6,823	1997 Chapter 94 Report
2021-Max	24,500	70	49,490	70	
Ultimate(2)	2,412,473	6,893	4,873,196	6,893	

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 127,272 GPD from Spring Garden Township users
(4): Allows for 205,200 GPD flow reduction due to phase-out of Spangler Meadows, Spry, and Leader Heights Crossing pump stations

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m:\kbhq15\yktpneed(File C)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 37 - Norway Street at Church Street
(flow meter at Courtland Street)

Peaking Factor: 3.68 (Actual)

Prepared By: Richard G. Resh, C. S Davidson, Inc.

City Manhole Number: C27-105
City Flow Meter: SG03

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	9,354	28	34,423	28	July, Aug., Sept., 1997 EDu count/water use
1998-2005	5,000	14	18,400	14	
Year 2005	14,354	42	52,823	42	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	14,354	42	52,823	42	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	14,354	42	52,823	42	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	14,354	42	52,823	42	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\yktpneed(File B)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: York Township

Date Prepared: January 31, 1998

Connection Point: 36A - East side Poorhouse Run south of Rockdale Avenue in Memorial Park

Peaking Factor: 2 57 (Actual)

Prepared By: Richard G. Resh, C. S Da idson, Inc.

City Manhole Number: C39N
City Flow Meter: SG02A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	18,607	53	47,820	53	July, Aug., Sept., 1997 EDu count/water use
1998-2005	5,600	16	14,392	16	
Year 2005	24,207	69	62,212	69	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	24,207	69	62,212	69	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	24,207	69	62,212	69	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	24,207	69	62,212	69	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \bhq15\yktpneed(File A)

C S DAVIDSON, INC

December 23, 1997
EXHIBIT NO WYB-6

WEST YORK BOROUGH
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Proposed Total Gallons	Map/ Parcel	1998	All Projected Connections in Gallons per Day (GPD) 1999	2000	2001	2002	2003	2004	2005	'98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No.
1 201 North Adams Street (20 Apts @ 350 GPD)	7000	16/35	0	7000	0	0	0	0	0	0	7,000	0	0	0	0	7,000	WY01	81
2 Advance Auto Parts 1824 West Market Street (1 commercial)	350	12/29A & 12/28	350	0	0	0	0	0	0	0	350	0	0	0	0	350	WY01	81
3 Unconnected Existing Properties (10 homes @ 350 GPD)	3,500	varies	700	700	700	700	700	0	0	0	3,500	0	0	0	0	3,500	WY01	81
4 Apartment Conversions (2 Units/Year @ 350 GPD)	19,400	varies	700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,500	19,600	WY01	81
5 Miscellaneous New Development (2 EDUs/year @ 350 GPD)	19,400	varies	700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,500	19,600	WY01	81
TOTALS	49,650		2,450	9,100	2,100	2,100	2,100	1,400	1,400	1,400	22,050	7,000	7,000	7,000	7,000	50,050		

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YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West York Borough

Date Prepared: January 31, 1998

Connection Point: 7 - West Poplar Street between Richland Avenue and Dewey Street

Peaking Factor: 2.09 (Actual)

Prepared By: Richard G. Resh

City Manhole Number: 81
City Flow Meter: WY01

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	812,240	2,109	1,697,582	2,109	12/94 thru 8/97 Monthly Average Flow (3)
1998-2005	22,050	63	46,085	63	
Year 2005	834,290	2,172	1,743,667	2,172	1997 Chapter 94 Report
2006-2010	7,000	20	14,630	20	
Year 2010	841,290	2,192	1,758,297	2,192	1997 Chapter 94 Report
2011-2020	14,000	40	29,260	40	
Year 2020 (1)	855,290	2,232	1,787,557	2,232	1997 Chapter 94 Report
2021-Max	7,000	20	14,630	20	
Ultimate(2)	862,290	2,252	1,802,187	2,252	1997 Chapter 94 Report

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 749,760 GPD or 48% from West Manchester Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15wybneed wb3(File A)

Appendix A-22-b

YORK CITY SEW AUTHORITY
REGIONAL AC 537 PLAN
NEEDS SURVEY

Municipality: West York Borough

Date Prepared: January 31, 1998

Connection Point: 2 - Richland Avenue 50' south of West College Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh

City Manhole Number: 72A
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	2,450	7	6,125	7	4th Quater 1997 - EDU count/water use
1998-2005	0	0	0	0	
Year 2005	2,450	7	6,125	7	No Growth
2006-2010	0	0	0	0	
Year 2010	2,450	7	6,125	7	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	2,450	7	6,125	7	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	2,450	7	6,125	7	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning
(3): Less 749,760 GPD or 48% from West Manchester Township users

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wybneed wb3(File A)

C S DAVIDSON, INC

January 3,
EXHIBIT NO WMT-8

WEST MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

All Projected Connections in Gallons per Day (GPD)

Name & Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
**27 W Y I P , Kinard, 3 Ac 1,000 GPD/Ac		0	1,000	0	0	0	0	0	0	1,000	1,000	1,000	0		3,000	WM01	B40A
***28 Myers Farm		0	0	3,000	3,000	3,000	3,000	3,000	3,000	18,000	6,000	6,000	9,000		39,000	WM01	B40A
**29 J E Baker, Rt. 30 West		0	0	3,000	3 000	3,000	3,000	3,000	3,000	18,000	3,000	3,000	3,000		27,000	WM01	B40A
30 Suttner Tract		3,000	1,000	1,000	3,000	1,000	0	0	0	9,000	0	0	0		9,000	WM01	B40A
31 Spahr, R3, 4 Ac 1,000 GPD/Ac		0	1,000	1,000	1,000	1,000	0	0	0	4,000	0	0	0		4,000	WM01	B40A
32 Kemp Sterner, Marion Street Ext 4 Ac 1,050 GPD/Ac		2,100	2,100	0	0	0	0	0	0	4,200	0	0	0		4,200	WM01	B40A
**33 Smyser Tract, 160 Ac 1,050 GPD/Ac		0	0	5,000	5,000	5,000	5,000	5,000	5,000	30,000	10,000	10,000	10,000		60,000	WM01	B40A
***34 Don-El Roosevelt Avenue		0	0	5,000	5,000	5,000	0	0	0	15,000	10,000	10,000	10,000		45,000	WM01	B40A
35 Haviland Road South, 2 EDUs 350 GPD		350	350	0	0	0	0	0	0	700	0	0	0		700	WM01	B40A
36 Haviland Road North, 10 EDUs 350 GPD		0	350	350	350	350	350	350	350	2,450	1,050	0	0		3,500	WM01	B40A
37 Spring Street, 10 EDUs 350 GPD		0	0	0	350	350	350	350	350	1,750	1,750	0	0		3,500	WM01	B40A
38 West Manchester Township Misc Development 5 EDUs per year 350 GPD		1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	14,000	8,750	8,750	8,750	8,75	49,000	WM01	B40A
SUBTOTAL MH B40A:		42,750	76,750	72,800	67,550	53,300	22,550	20,050	19,050	374,800	83,250	69,000	65,750	8,75	601,550		
39 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,75	9,800		B38
40 Stewart Tract/Weis Markets		2,500	4,000	2,000	1,000	0	0	0	0	9,500	0	0	0		9,500		B57
41 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,75	9,800		71A
***42 West Manchester Township Misc Development 1 EDU per year 350 GPD		350	350	350	350	350	350	350	350	2,800	1,750	1,750	1,750	1,75	9,800		76
*43 Fed Paper, Neiman, 5 Ac 1,000 GPD/Ac		0	1,000	1,000	1,000	0	0	0	0	3,000	1,000	1,000	0		5,000	WY01	81
*44 Orion West, 16 Lots 350 GPD		1,400	1,400	1,400	1,400	0	0	0	0	5,600	0	0	0		5,600	WY01	81
45 West Manchester Township Misc Development 2EDUs per year 350 GPD		700	700	700	700	700	700	700	700	5,600	3,500	3,500	3,500	3,50	19,600	WY01	81
SUBTOTAL MH 81:		2,100	3,100	3,100	3,100	700	700	700	700	14,200	4,500	4,500	3,500	3,50	30,200		
TOTALS:		47,000	82,500	76,550	70,300	65,050	24,300	21,800	20,800	398,300	92,000	77,750	74,500	17,50	660,050		
* Tributary to King Street Pump Station		1,400	3,900	3,900	3,900	1,500	0	0	0	14,600	1,000	1,000	0		16,600		
** Tributary to West Market Street Pump Station		7,000	21,000	28,000	23,000	19,000	9,000	9,000	9,000	125,000	37,000	32,000	31,000		225,000		
*** Tributary to South Adams Street Pump Station		0	0	3,000	3,000	3,000	3,000	3,000	3,000	18,000	6,000	6,000	9,000		39,000		
**** Tributary to Bull Road Pump Station		11,050	16,050	10,700	10,000	5,000	0	0	0	52,800	0	0	0		52,800		

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January 31, 1998
EXHIBIT NO WMT-8

C S DAVIDSON, INC.

WEST MANCHESTER TOWNSHIP
PROJECTED CONNECTIONS TO CITY OF YORK
WASTEWATER TREATMENT PLANT

Name & Description	Map & Parcel	1998	1999	2000	2001	2002	2003	2004	2005	'98 - '05 Subtotal	2006 2010	2011 2015	2016 2020	2021 Ultimate	Total Gallons	Flow Meter	York City MH No
		All Projected Connections in Gallons per Day (GPD)															
1 West Manchester Mall		2,000	1,500	1,000	1,000	1,000	1,000	1,000	1,000	9,500	5,000	5,000	5,000	0	24,500	WM01	B40A
**2 George & Joanne Ream		1,000	1,000	1,000	1,000	0	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
3 Stanley Works		0	0	0	0	0	0	0	0	0	1,000	1,000	1,000	0	3,000	WM01	B40A
4 Greens/Kemp Foods		0	0	0	0	1,000	1,000	1,000	0	3,000	1,000	1,000	1,000	0	6,000	WM01	B40A
5 Loucks Associates		1,000	1,000	1,000	1,000	0	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
****6 Chronister/Spangler PO (Adjacent Myers Farm)		700	700	700	0	0	0	0	0	2,100	0	0	0	0	2,100	WM01	B40A
7 Lehr PO Rodney Road		700	0	700	0	0	0	0	0	1,400	0	0	0	0	1,400	WM01	B40A
8 The Greens @ Westgate - Phase II		3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	28,800	7,200	4,250	0	0	40,250	WM01	B40A
****9 Normandie Ridge		5,000	10,000	5,000	5,000	0	0	0	0	25,000	0	0	0	0	25,000	WM01	B40A
****10 Barrington Place		5,000	5,000	5,000	5,000	5,000	0	0	0	25,000	0	0	0	0	25,000	WM01	B40A
11 Richard Poole		0	1,000	0	0	0	0	0	0	1,000	0	0	0	0	1,000	WM01	B40A
12 Rudy PO (Kenneth Trolley Point) 6 Ac 700GPD/Ac		0	1,000	1,000	1,000	1,000	0	0	0	4,000	0	0	0	0	4,000	WM01	B40A
13 Manchester Heights Sr Housing		5,000	5,000	5,000	5,000	2,750	0	0	0	22,750	0	0	0	0	22,750	WM01	B40A
14 Hillside/Richardson, 31 EDUs @ 350 GPD		0	10,850	0	0	0	0	0	0	10,850	0	0	0	0	10,850	WM01	B40A
*15 Tuscany Tract, 36 Apts 250 GPD		0	1,500	1,500	1,500	1,500	0	0	0	6,000	0	0	0	0	6,000	WM01	B40A
16 National Housing Corp 120 Apts @ 250 GPD		3,500	6,000	6,000	6,000	6,000	2,500	0	0	30,000	0	0	0	0	30,000	WM01	B40A
17 Lanecor Commerce Center Expansion		1,000	1,000	1,000	1,000	0	0	0	0	4,000	2,000	0	0	0	6,000	WM01	B40A
**18 Voith Hydro Ind Expansion		0	0	5,000	0	0	0	0	0	5,000	5,000	0	0	0	10,000	WM01	B40A
**19 Susquehanna Broadcasting		0	3,000	3,000	3,000	0	0	0	0	9,000	5,000	5,000	5,000	0	24,000	WM01	B40A
**20 Pfaltzgraff West		0	5,000	5,000	5,000	5,000	0	0	0	20,000	5,000	5,000	5,000	0	35,000	WM01	B40A
**21 West York Ind Park Expansions		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	8,000	3,000	3,000	3,000	0	17,000	WM01	B40A
**22 Baker Ind , Emigs Mill Road, 140 Ac 1,000 GPD		5,000	10,000	5,000	5,000	5,000	0	0	0	30,000	5,000	5,000	5,000	0	45,000	WM01	B40A
23 Delco Plaza Expansions		350	350	500	0	0	0	0	0	1,200	0	0	0	0	1,200	WM01	B40A
24 Cecil Grace, Marion Extended 3 EDUs/350 GPD		350	350	350	0	0	0	0	0	1,050	0	0	0	0	1,050	WM01	B40A
25 Taughinbaugh Walter Street 3 EDUs/350 GPD		350	350	350	0	0	0	0	0	1,050	0	0	0	0	1,050	WM01	B40A
26 W Sprenkle Carlisle Road, 5 Ac 700 GPD/Ac		0	0	0	0	0	0	0	0	0	2,500	1,000	0	0	3,500	WM01	B40A

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 19 - Along Richland Avenue from West College Avenue to Zinn's Quarry Road

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Da idson, Inc.

City Manhole Number: 72-B to 71
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,050	3	2,625	3	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	1,050	3	2,625	3	No Growth
2006-2010	0	0	0	0	
Year 2010	1,050	3	2,625	3	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	1,050	3	2,625	3	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	1,050	3	2,625	3	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \bhq15\wmanneed(File S)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 18 - Along North George Street from Willis Run to First Avenue

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B10 to 27-3
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	350	1	875	1	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	350	1	875	1	No Growth
2006-2010	0	0	0	0	
Year 2010	350	1	875	1	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	350	1	875	1	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	350	1	875	1	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File R)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 17 - Along Hamilton Avenue between Albright Avenue and North George Street

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Dav dson, Inc.

City Manhole Number: 26 to 27
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	700	2	1,750	2	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	700	2	1,750	2	No Growth
2006-2010	0	0	0	0	
Year 2010	700	2	1,750	2	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	700	2	1,750	2	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	700	2	1,750	2	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15wmanneed(File Q)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 16 - Albright Avenue 25' south of Willis Run

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C. S. Davidson, Inc.

City Manhole Number: B-8
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	14,350	41	35,875	41	4th Quarter 1997 EDU count
1998-2005	0	0	0	0	
Year 2005	14,350	41	35,875	41	No Growth
2006-2010	0	0	0	0	
Year 2010	14,350	41	35,875	41	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	14,350	41	35,875	41	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	14,350	41	35,875	41	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File P)

YORK CITY SEWER AUTHORITY
REGIONAL ACT 537 PLAN
NEEDS SURVEY

Municipality: West Manchester Township

Date Prepared: January 31, 1998

Connection Point: 15 - Along Roosevelt Avenue 300' north of US Route 30 Bypass

Peaking Factor: 2.50 (Assumed)

Prepared By: Richard G. Resh, C S. Da idson, Inc.

City Manhole Number: B57
City Flow Meter: N/A

Planning	Average Daily Flow		Peak Daily Flow		Remarks
Period	GPD	EDUs	GPD	EDUs	
Existing	1,400	4	3,500	4	4th Quarter 1997 EDU count/water use
1998-2005	9,500	27	23,750	27	
Year 2005	10,900	31	27,250	31	1997 Chapter 94 Report
2006-2010	0	0	0	0	
Year 2010	10,900	31	27,250	31	No Growth
2011-2020	0	0	0	0	
Year 2020 (1)	10,900	31	27,250	31	No Growth
2021-Max	0	0	0	0	
Ultimate(2)	10,900	31	27,250	31	No Growth

(1): Allocation for 20 year wastewater treatment planning
(2): Allocation for Ultimate conveyance system planning

Note: Provide separate data for each connection point. Identify manhole, street location, etc.

m \kbhq15\wmanneed(File O)