

TABLE OF CONTENTS

0.0 EXECUTIVE SUMMARY

0.1 PLAN SUMMARY 0 - 1

 0.1.1 SERVICE AREAS EVALUATED 0 - 1

 0.1.2 SELECTED ALTERNATIVES 0 - 1

 0.1.2.1 Selected Alternative - Tier II Area - Bel Air Estates/Valley Road 0 - 1

 0.1.2.2 Sewage Management Program 0 - 1

 0.1.3 ESTIMATED COSTS 0 - 2

 0.1.4 MUNICIPAL COMMITMENTS 0 - 2

 0.1.5 IMPLEMENTATION SCHEDULE 0 - 2

 0.1.5.1 Expansion of Sewage Treatment Plant 0 - 2

 0.1.5.2 Chosen Alternative - Tier II Area - Bel Air Estates/Valley Road 0 - 2

 0.1.5.3 On-Lot Sewage Management Program 0 - 3

0.2 MUNICIPAL ADOPTION 0 - 3

0.3 PLANNING COMMISSION COMMENTS 0 - 3

0.4 PUBLICATION 0 - 3

0.5 PUBLIC COMMENTS AND RESPONSES 0 - 3

0.6 IMPLEMENTATION SCHEDULE 0 - 3

0.7 CONSISTENCY DOCUMENTATION 0 - 5

1.0 PREVIOUS WASTEWATER PLANNING 1 - 1

1.1 WASTEWATER PLANNING DOCUMENTS 1 - 1

 1.1.1 Previous Act 537 Planning 1 - 1

 1.1.3 Activities Anticipated or Planned by Sewer Authorities 1 - 1

 1.1.4 Planning Through Planning Modules, Land Development and Exemptions 1 - 2

1.2 SUMMARY OF MUNICIPAL AND COUNTY PLANNING DOCUMENTS . . 1 - 2

 1.2.1 Land Use Plans and Zoning 1 - 2

 1.2.2 Amity Township Zoning Ordinance, Subdivision and Land Development Ordinance (SALDO) 1 - 4

 1.2.3 Limitations and Plans Related to Floodplain and Stormwater Management and Special Protection. 1 - 5

 1.2.3.1 Floodplain Management 1 - 5

 1.2.3.2 Stormwater Management 1 - 5

 1.2.3.3 Special Protection 1 - 5

2.0 PHYSICAL ANALYSIS OF PLANNING AREA 2 - 1

2.1 IDENTIFICATION OF PLANNING AREA 2 - 1

2.2 IDENTIFICATION OF PHYSICAL CHARACTERISTICS 2 - 1

 2.2.1 2 - 1

2.2.2	Drainage Basin Analysis	2 - 2
2.2.3	Floodplain Control Analysis	2 - 2
2.3	SOILS ANALYSIS	2 - 2
2.3.1.1	Athol Series	2 - 2
2.3.1.2	Penn Series	2 - 3
2.3.1.3	Brecknock Series	2 - 3
2.3.1.4	Neshaminy Series	2 - 3
2.3.2	Soil Suitability Relative to Development	2 - 4
2.4	GEOLOGY	2 - 5
2.4.1	Geologic Features	2 - 5
2.4.1.1	Diabase	2 - 5
2.4.1.2	Brunswick Formation	2 - 5
2.4.1.3	Fanglomerates	2 - 6
2.4.1.4	Martinsburg Formation	2 - 6
2.4.1.5	Beekmantown Group	2 - 6
2.4.1.6	Conococheague Group	2 - 7
2.4.1.7	Allentown Formation	2 - 7
2.4.1.8	Leithsville Formation	2 - 7
2.4.1.9	Hardyston Formation	2 - 7
2.4.2	Carbonate Bedrock	2 - 7
2.5	TOPOGRAPHY	2 - 8
2.6	POTABLE WATER SUPPLIES	2 - 8
2.7	WETLANDS	2 - 9
2.7.1	Alluvial and High Water Table Soils	2 - 10
3.0	<u>EXISTING SEWAGE FACILITIES IN THE PLANNING AREA - IDENTIFYING THE EXISTING NEEDS</u>	3 - 1
3.1	IDENTIFICATION OF SEWAGE SYSTEMS IN PLANNING AREA	3 - 1
3.1.1	Existing Facilities	3 - 1
3.1.2	Amity Township Sewage Treatment Plant	3 - 1
3.1.2.1	General	3 - 1
3.1.2.2	Sewage Treatment Plant Performance	3 - 2
3.1.2.2.1	Design Basis	3 - 2
3.1.2.2.2	Removal Efficiencies	3 - 2
3.1.2.2.3	Plant Condition	3 - 3
3.1.2.2.4	Hydraulic Overloads	3 - 3
3.1.3	Sewage Collection/Conveyance System	3 - 3
3.1.3.1	System Background, Condition, and Expansion	3 - 3
3.1.3.2	Repair and Replacement	3 - 4
3.1.3.3	Sewage Pumping Stations	3 - 4
3.1.4	Problems with Existing Facilities	3 - 4
3.1.5	Scheduled or In-Progress Upgrading of Facility	3 - 5
3.1.5.1	Sewage Treatment Plant Upgrade and Modifications Project	3 - 5
3.1.6	Collection System Corrective Action Plan	3 - 5
3.1.7	Municipal Operation and Maintenance Requirements for OLDS	3 - 6
3.1.8	Disposal of Waste	3 - 6

3.2	NEEDS IDENTIFICATION	3 - 7
3.2.1	Types of Systems in Use	3 - 7
3.2.2	Sanitary Survey	3 - 8
3.2.3	Comparison of OLDS with Systems Appropriate for Soil, Geologic and Topographic Conditions	3 - 8
3.2.4	Water Supply Survey	3 - 9
3.2.5	Individual and Small Volume Community On-Lot Systems	3 - 9
3.3	WASTEWATER SLUDGE AND SEPTAGE GENERATION, TRANSPORT AND DISPOSAL METHODS	3 - 9
3.3.1	Location of Sources of Wastewater Sludge and Septage	3 - 9
3.3.2	Quantities of Sludges and Septages Generated	3 - 10
3.3.3	Present Disposal Methods, Locations, Capacities and Transportation Methods	3 - 10
4.0	<u>FUTURE GROWTH AND LAND DEVELOPMENT</u>	4 - 1
4.1	SUBDIVISIONS APPROVED AFTER 1983	4 - 1
4.2	LAND USE DESIGNATIONS ESTABLISHED UNDER THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE	4 - 1
4.2.1	Zoning Summary	4 - 1
4.3	POPULATION PROJECTIONS	4 - 3
4.3.1	Total Population	4 - 3
4.3.2	Population Projections	4 - 4
4.4	ZONING AND SUBDIVISION REGULATIONS RELATING TO DEVELOPMENT, USE, AND PROTECTION OF LAND AND WATER RESOURCES	4 - 6
4.5	FUTURE PLANNING	4 - 7
4.6	AMITY TOWNSHIP SEWAGE TREATMENT PLANT CAPACITY RE-RATE	4 - 8
5.0	<u>ALTERNATIVES TO PROVIDE NEW OR IMPROVED WASTEWATER DISPOSAL FACILITIES</u>	5 - 1
5.1	CONVENTIONAL COLLECTION, CONVEYANCE, TREATMENT, AND DISCHARGE ALTERNATIVES	5 - 1
5.1.1	5 - 1
5.1.2	Extension of existing municipal facilities.	5 - 1
5.1.3	Continued Use of Municipal Treatment Plant	5 - 2
5.2	USE OF INDIVIDUAL SEWAGE DISPOSAL SYSTEMS	5 - 2
5.3	USE OF SMALL FLOW OR PACKAGE TREATMENT FACILITIES	5 - 3
5.3.1	Requirements Under §71.64 - Tier II	5 - 3
5.4	USE OF COMMUNITY LAND DISPOSAL ALTERNATIVES	5 - 4
5.5	USE OF RETAINING TANKS	5 - 4

5.6	SEWAGE MANAGEMENT PROGRAM	5 - 5
5.6.1	Municipal ownership or control over operation and maintenance of individual OLDS	5 - 5
5.6.2	Required inspection of OLDS	5 - 5
5.6.3	Required maintenance of OLDS	5 - 5
5.6.4	Repair, replacement and upgrading of malfunctioning OLDS	5 - 5
5.6.5	Establishment of joint municipal programs	5 - 6
5.6.6	Requirements for bonding, escrow accounts, management agencies	5 - 6
5.7	NON-STRUCTURAL COMPREHENSIVE PLANNING ALTERNATIVES	5 - 6
5.7.1	Modifications of existing comprehensive plans	5 - 6
5.7.2	Local comprehensive plan	5 - 6
5.7.3	Subdivision regulations	5 - 6
5.7.4	Evaluation of existing local agency programs and need for technical or administrative training	5 - 6
5.8	NO-ACTION ALTERNATIVE - SHORT-TERM AND LONG-TERM EFFECTS	5 - 6
5.8.1	Water Quality/Public Health	5 - 6
5.8.2	Growth Potential	5 - 7
5.8.3	Community economic conditions	5 - 7
5.8.4	Recreational opportunities	5 - 7
5.8.5	Drinking water sources	5 - 8
5.8.6	Other environmental concerns	5 - 8
6.0	<u>EVALUATION OF ALTERNATIVES</u>	6 - 1
6.1	TECHNICALLY FEASIBLE ALTERNATIVES - CONSISTENCY	6 - 1
6.1.1	Clean Streams Law and Clean Water Act	6 - 1
6.1.2	Municipal Wasteload Management Plans	6 - 1
6.1.3	Title II - Clean Water Act	6 - 1
6.1.4	Comprehensive Plan Consistency	6 - 2
6.1.5	Anti-degradation Requirements	6 - 2
6.1.6	State Water Plans - Water Resources Planning Act	6 - 2
6.1.7	Pennsylvania Prime Agricultural Land Policy	6 - 3
6.1.8	County Stormwater Management Plans	6 - 4
6.1.9	Wetland Encroachments	6 - 4
6.1.10	Protection of Rare, Endangered or Threatened Species - PNDI	6 - 4
6.1.11	Historical and Archaeological Resource Protection	6 - 4
6.2	RESOLUTION OF INCONSISTENCIES	6 - 4
6.3	EVALUATION OF ALTERNATIVES	6 - 4
6.3.1	Water Quality Standards	6 - 4
6.3.2	Effluent Limitations	6 - 5
6.3.3	Technical, Legislative and Legal Requirements	6 - 5
6.4	COST ESTIMATES	6 - 5
6.5	ANALYSIS OF FUNDING METHODS	6 - 6

6.6	IMPLEMENTATION - PHASED VERSUS IMMEDIATE	6 - 6
6.6.1	Activities Necessary to Abate Critical Public Health Hazards	6 - 6
6.6.2	Phasing	6 - 6
6.7	ADMINISTRATIVE ORGANIZATIONS AND LEGAL AUTHORITY	6 - 6
7.0	<u>INSTITUTIONAL EVALUATION</u>	7 - 1
7.1	EXISTING WASTEWATER TREATMENT AUTHORITY	7 - 1
7.1.1	Financial and Debt Status	7 - 1
7.1.2	Available Staff and Administrative Resources	7 - 1
7.1.3	Existing Legal Authority	7 - 1
7.2	NEED FOR NEW MUNICIPAL DEPARTMENTS AND AUTHORITIES	7 - 1
7.2.1	Need for New Municipal Departments and Authorities	7 - 1
7.2.2	Functions of Existing and Proposed Organizations	7 - 2
7.2.3	Cost of Administration, Implementability, and Capability of Board to React to Future Needs	7 - 2
7.3	ADMINISTRATIVE AND LEGAL ACTIVITIES	7 - 2
7.3.1	Incorporation of Authorities or Agencies	7 - 2
7.3.2	Development of All Required Ordinances, Regulations, Standards and Intermunicipal Agreements	7 - 2
7.3.3	Providing Rights-of-Way, Easements and Land Transfers	7 - 2
7.3.4	Adoption of Other Municipal Sewage Facilities Plans	7 - 2
7.3.5	Other Legal Documents	7 - 2
7.3.6	Project Implementation Schedule	7 - 2
7.3.6.1	Incorporation of Authorities or Agencies	7 - 3
7.3.6.2	Development of All Required Ordinances, Regulations, Standards and Intermunicipal Agreements	7 - 3
7.3.6.3	Providing Rights-of-Way, Easements and Land Transfers	7 - 3
7.3.6.4	Adoption of Other Municipal Sewage Facilities Plans	7 - 3
7.3.6.5	Other Legal Documents	7 - 3
7.4	CHOSEN INSTITUTIONAL ALTERNATIVE	7 - 3
8.0	<u>JUSTIFICATION FOR SELECTED TECHNICAL AND INSTITUTIONAL ALTERNATIVES</u>	8 - 1
8.1	SELECTED TECHNICAL ALTERNATIVE	8 - 1
8.1.1	Existing Wastewater Disposal Needs	8 - 1
8.1.2	Future Wastewater Disposal Needs	8 - 2
8.1.3	Operation and Maintenance Considerations	8 - 2
8.1.4	Cost-Effectiveness	8 - 2
8.1.5	Available Management and Administrative Systems	8 - 2
8.1.6	Available Financing Methods	8 - 2
8.1.7	Environmental Soundness and Compliance with Natural Resource Planning and Preservation Programs	8 - 3

8.2	CAPITAL FINANCING	8 - 3
8.3	IMPLEMENTATION SCHEDULE	8 - 3

FIGURES

- 2-1 Floodplains
- 2-2 Soils
- 2-3 Limitations to Development Due to Soil Capability
- 2-4 Prime Agricultural Soils
- 2-5 Geologic Formations
- 2-6 Sinkholes and Karst-Related Features
- 2-7 Slope Characteristics
- 2-8 Water System - Pennsylvania American Water Co. (in pocket)

- 3-1 Effluent Limitations and Monitoring Requirements
- 3-2 Sewered Area (in pocket)
- 3-2a Proposed Sewer Service Area
- 3-3 Schematic - Amity Wastewater Treatment Plant
- 3-4a Tier I and Tier II Malfunctions
- 3-4b Tier I Only Malfunctions
- 3-4c Tier II Only Malfunctions
- 3-5 Drinking Water Test Results
- 3-6 Sanitary Survey - Malfunctioning OLDS
- 3-7 Drinking Water Test Results - Coliform
- 3-8 Drinking Water Test Results - Nitrates

- 4-1 Subdivisions
- 4-2 Zoning Map
- 4-3 Future Land Use - Amity Township
- 4-4 Union Township Sewer Service Area Served by Amity Township

- 5-1 Sewer Alternatives - Tier II

TABLES

1-1	Sewage-Related Ordinances
2-1	Hydric Soils
2-2	Alluvial and High Water Table Soils
3-1	NPDES Permit
3-2	Reported Malfunctions - 2002
3-3	Identification of Sewage Associated Malfunctions and Environmental Contamination
3-4	Sanitary Survey Results
4-1	Subdivision and Land Development Activity - Developments with Reserve Capacity - Residential Only (Not including Union, Douglass or Earl Townships)
4-1A	Subdivision and Land Development Activity - Developments with Reserve Capacity (Includes non-residential, Union, Douglass and Earl Townships)
4-2	Total Population - Amity Township and Berks County
4-3	Total Population - Amity Township and Adjacent Municipalities
4-4	Population Density
4-5	Equivalent Dwelling Units
4-6	Population Projection to 2013
4-7	Estimated Future Demand - 5-Year and 10-Year Projections
5-1	Tier II Sewer Extension - Cost Comparison
6-1	Plant Hydraulic and Organic Loading

APPENDICES

- 0-1 Resolution of Adoption
- 0-2 Berks County Planning Commission Review
- 0-3 Amity Township Planning Commission Review
- 0-4 Proof of Public Notice
- 0-5 Written Comments and Responses
- 0-6 Department of Environmental Protection Correspondence and Planning Documents

- 1-1 Sewage-Related Ordinances

- 3-1 Survey Methodology
- 3-2 Survey
- 3-3 Field Survey - Summary
- 3-4 Field Survey - Tabulated Results

- 5-1 Sewage Management Program - Ordinance

- 6-1 PNDI (letters and responses)
- 6-2 Pennsylvania Historical and Archaeological Resource Protection (letters and responses)
- 6-3
- 6-4 Preliminary Discharge Criteria - DEP
- 6-5 Cost Estimates and Funding Scenarios

- 7-1 2003 Budget - Amity Township Sewage Treatment Plant