EXHIBIT P5

CONCORD TOWNSHIP ACT 537 PLAN



43 Thornton Road Glen Mills, PA 19342

ACT 537 PLAN UPDATE REVISION

March 2017

Prepared by:

Bradford Engineering Associates, Inc.

2710 Concord Road, Suite 3 Aston, PA 19014 610.497.6200 610.500.5677 fax info@bea-inc.com

Table of Contents

<u>Table c</u>	Table of Contents				
List of A	Appendices4				
1 Ex	ecutive Summary5				
1.1	Summary5				
1.2	Proposed Service Areas6				
1.3	Plan of Choice6				
1.4	Estimated Cost of Implementation7				
1.5	Municipal Commitments8				
1.6	Schedule of Implementation9				
2 PR	EVIOUS WASTEWATER PLANNING10				
2.1	Introduction10				
2.2	PREVIOUS ACT 537 PLANS10				
2.3	Planning Not Completed As Scheduled11				
2.4	Planning Modules For New Development11				
3 Ph	ysical and Demographic Analysis15				
3.1	Demographic Analysis15				
3.2	Identification of Planning Areas15				
3.3	Identification of Physical Characteristics15				
3.4	Soils Analysis16				
3.5	GEOLOGIC FEATURES17				
3.6	TOPOGRAPHY17				
3.7	POTABLE WATER SUPPLIES17				
3.8	WETLANDS IDENTIFICATION				

4 E>	tisting Sewage Facilities18
4.1	Treatment Facilities18
4.2	Types of On-lot Systems27
5 FL	JTURE GROWTH AND LAND DEVELOPMENT28
5.1	Land Use Plans And Zoning Maps28
5.2	Zoning and Subdivision Regulations29
5.3	Limitations Related to Floodplain And Stormwater29
5.4	Areas With Existing Development Or Plotted Subdivisions
5.5	Land Use Designations
5.6	Future Growth Areas
5.7	Five And Ten Year Future Planning
6 Al [:]	ternatives To Provide Wastewater Facilities
6.1	Potential For Regional Wastewater Treatment
6.2	Potential Extension Of Existing Facilities
6.3	Continued Use Of Existing Facilities, Including Repair Or Replacement38
6.1	Need For New Community Systems Or Use Of Innovative/Alternative Methods 42
6.2	Municipal Control Of Onlot Systems43
7 Ev	aluation Of Alternatives43
7.1	Consistency Evaluations43
7.2	Resolution Of Inconsistencies44
7.3	Evaluation vs. Water Quality Standards44
7.4	Cost Estimates44
7.5	Analysis Of Funding Methods45
7.6	Analysis Of Immediate Vs. Phased Implementation46

	7.7	Administrative Evaluation	.46
8	Inst	itutional Evaluation	.46
	8.1	Financial And Debt Status	.46
	8.2	Available Staff And Administrative Resources	.46
	8.3	Existing Legal Authority	.46
9	Imp	lementation And Plan Justification	.47
	9.1	Identification Of Selected Alternatives And Justification	.47
	9.2	Existing Wastewater Disposal Needs	.47
	9.3	Future Wastewater Disposal Needs	.47
	9.4	Operation And Maintenance	.48
	9.5	Cost Effectiveness	.48
	9.6	Management And Administration	.48
	9.7	Financing Methods	.48
	9.8	Environmental Soundness	.49
	9.9	Financial Plan For Implementation	.49
	9.10	Schedule of Implementation	.49

List of Appendices

Appendix Item Letter
Plan of Study ApprovalA
Proof of AdvertisementB
Concord Planning Commission ReviewC
Delaware County Planning Department ReviewD
Proposed Service Area MapE
County Location MapF
USGS MapsG
Soil Maps and AnalysisH
Topographical MapI
Wetlands and Flood ZonesJ
Water Supply MapK
2016 Chapter 94 ReportL
Small Flow Treatment Facility RequirementM
Small Flow Treatment Plant LocationsN
Zoning MapO
Comprehensive Plan MapP
Sewer District Cost EstimatesQ
Township Annual AuditR
Plan Comment and ResponseS
Resolution of AdoptionT
PaDEP Completeness ChecklistU

1 Executive Summary

1.1 Summary

The following is taken from PaDEP "ACT 537 – An Overview of the Sewage Facilities Program." More information can be found on the web at <u>www.dep.state.pa.us</u>.

Domestic sewage is treated and disposed of by various methods, ranging from large municipally-owned sewage treatment plants to community or individual onlot disposal systems (OLDS), also called "septic systems." Malfunctioning sewage disposal systems, regardless of type, pose a serious threat to public health and the environment. They can pollute public and private drinking water sources, often by discharging directly to the groundwater, and they can expose humans and animals to various bacteria, viruses and parasites. Repairs to these systems often can lead to financial hardships for affected municipalities or homeowners.

On January 24, 1966, the Pennsylvania Sewage Facilities Act (Act 537) was enacted to address existing sewage disposal problems and prevent future problems. To meet these objectives, the act requires proper planning of all types of sewage facilities, permitting of individual and community OLDS, as well as uniform standards for designing OLDS.

The sewage facilities program, often referred to as simply the "Act 537 program," is largely administered by individual municipalities, groups of municipalities, local agencies including county health departments and groups of local agencies (known as joint local agencies). These agencies receive technical and financial assistance and oversight from the Department of Environmental Protection (DEP).

The Department of Environmental Protection (DEP) received a Plan of Study and Task/Activity Report for preparation of an Act 537 Official Plan Update for Concord Township, Delaware County, submitted by Bradford Engineering Associates, Inc on May 1, 2014. Revisions to the Plan of Study and Task/Activity Report were made on July 10, 2014 from Bradford Engineering Associates, Inc.

On April 21, 2015 the DEP correspondence (See Appendix) approved the Plan of Study which proposed the development of an Act 537 Official Plan Update. The Plan will evaluate the feasibility of providing public sewer to various areas in Concord Township that currently utilize on-lot sewage disposal systems and will evaluate the capacity available in the existing conveyance and treatment facilities.

1.2 Proposed Service Areas

Concord Township has experienced significant growth over the past two decades. In response to the growth, implementation of new public sanitary sewer systems was needed to handle the wastewater disposal needs. The Township was able to effectively coordinate the installation of the sewer systems from new developments to maximize the number of existing properties that could be serviced.

Though much of the residential, retail and commercial districts are served by the public sewer system, there are still a number of areas that are not currently served. As indicated by the Soil Analysis, the Township is aware of areas with unsuitable soils to sustain continued use of on-site disposal system. Many of these areas will require connection to the public sewer system to protect the health and welfare of the citizens of the Township.

The proposed service areas covered under this Special Study are listed in Table 1 and are delineated on the District Map in the Appendix for visual reference.

1.3 Plan of Choice

The Concord Township Act 537 Plan "Plan" provides for the establishment of individual Sewer Planning Districts (District) to be used as a basis for evaluating sections of the Township for public sewer service projects or continued individual on-site disposal systems. On a regular basis, as determined by the Sewer Department's Township Council Committee, the Planning Districts will be evaluated to see if public sewers are feasible. The selection of such sections will be based on public health issues, the availability of public/private project partnerships, increased or abnormal failure of on-site systems in the District, or any other reasons deemed appropriate by the Committee. If future evaluation of a District requires a change or modification to the sewage disposal method, an Act 537 Special Study will be performed to further detail alternatives in the District. Project planning for the selected District shall include a preliminary engineering design and feasibility evaluation, review of available treatment plant capacity based on Chapter 94 reports, and the establishment of a financial plan tailored for the proposed project along with proposed tapping fees.

The actual means of providing sewer service shall be determined during preliminary design and feasibility review. These methods include conventional gravity sewers, pumping stations, low pressure sewer systems, or other possible alternatives determined to be feasible. A preferred method of sewage disposal for each District has been selected in the Current Plan to provide a basis of order of magnitude costs estimates and overall worth of a public sewer project.

Future public sewer projects will require that the Township provide additional treatment options at some point. Additional studies and planning efforts will be required to provide capacity in a timely manner. Plans for development and reserve treatment capacity shall trigger capacity expansion plans at least 5 years in advance of the projected needs. The Chapter 94 reporting process will be utilized to monitor the need for sewage disposal alternatives.

1.4 Estimated Cost of Implementation

The following is a summary of the Planning Districts along with estimated cost to provide public sewers to the District expressed in 2017 dollars.

District	2017 Project Costs
1	\$2,357,866
1.8	\$341,460
1C	\$638,568
2	\$0
4	\$1,703,604
5	\$297,108
6	\$721,098
7	\$1,507,968
7A	\$628,488
8	\$915,222
8A	\$911,148
9	\$410,074
10	\$775,782
11	\$2,027,200
11A	\$465,948
12	\$1,725,878
13	\$10,261,468
14	\$7,291,606
15	\$934,290
16	\$1,669,808
18	\$791,532
19	\$166,600
20	\$114,240
21	\$964,964
22	\$134,820
23	\$142,562
Total	\$37,899,302

Table 1 - Proposed Sewer Districts and Cost Estimates

1.5 Municipal Commitments

Municipal commitments necessary to implement the Plan include the formal adoption of this Act 537 Plan. Continuing review of proposed development documents and Chapter 94 Annual Wasteload Management Reports is an integral requirement for keeping the plan current and fully implemented.

The implementation of the Township's Comprehensive Plan will aid in future expansion of the public sewer system. Future development projects in the Township that require the use of public sewer as a means of disposal should be coordinated to extend the sewer system as much as possible to existing homes. This practice has been in place for a number of years and is expected to continue.

1.6 Schedule of Implementation

The following tasks for implementation are recommended with approximate dates for completion. Completion dates may vary depending upon the response time from the various agencies and bodies given the opportunity to review.

<u>March 2017</u>: Submit draft copies of the Special Study to the Concord Township Planning Commission, Delaware County Planning Department for review and comment. Advertise in the Delaware County Daily Times indicating the project is available for public comment. Copies for Public review will be made available at the Township building and on the Concord Township web site.

June 2017: Receive questions and comments from the above listed reviewers and include responses in the appendices of the study. Resolve any inconsistencies or questioned issues.

<u>July 2017</u>: Concord Township Council adopt a resolution approving the Act 537 Plan. Final Study document submitted to PADEP for approval.

December 2017: Receive approval from PaDEP of the Act 537 Plan Revision.

2 PREVIOUS WASTEWATER PLANNING

2.1 Introduction

Over the past decade and a half, since the last Concord Township full act 537 Plan Revision, there has been significant growth in the Township. In addition, and as a result of the growth, there has been a rapid expansion to the Concord Township public sewer system. So much so that the Township was required to expand the existing Central Sewage Treatment Plant (CSTP) from a hydraulic capacity of 1.2 million gallons per day (MGD) to 1.8 MGD in 2007.

The Concord sewer system has been built by a number of different developers of different parcels throughout the Township over the past several years. The 2002 Act 537 Plan was crafted with the notion that expansion of the public sewer system would continue along this same path. Unfortunately, the economic downturn in 2007 has all but put to a halt development in this region and in Concord Township. Although there has been some recovery in the Township in recent years, it is not as significant as was previously experienced. As a result, expansion of the public sewer system has slowed and funding of most expansions will come from the stakeholders of the various Sewer Districts.

During the writing of this Plan, Chadds Ford Township inquired about connecting a portion of their Township to the Concord system. The Plan of Study was modified to evaluate connection and possible treatment plant expansion to accommodate Chadds Ford Township. Preliminary cost estimates quickly revealed that the Chadds Ford connection would not be feasible. As such, the Chadds Ford request was withdrawn and no further investigation into the plant expansion was conducted.

2.2 PREVIOUS ACT 537 PLANS.

The following is a list of previous Act 537 Plans for the Township. Additional detail on these plans is available in the 2002 Act 537 Plan Revision and at Concord Township.

- 1. Water and Sewage Facilities for Concord Township (1967)
- 2. Feasibility Study for Concord Township (1973).
- 3. Joint Sewer System Feasibility Study for Concord and Birmingham Townships (1976)
- 4. Revision to Official Sewage Plan (Act 537) For Township of Concord (1988).
- 5. Concord Township's Interim Sewage Facilities Management Program (1998).
- 6. A Revision to the Official Sewage Plan Under Act 537, Township of Concord, (Northeast Phase II Study Area) (1995).
- 7. Act 537 Plan Update Amendment to Phase II Update (1999).
- 8. Act 537 Plan Special Study, Conestoga Farm Area Sewer Extension Project for Township of Concord (1999).
- 9. Act 537 Plan Special Study, Northwest Study Area for Concord Township (1999).
- 10. Act 537 Plan Special Study, Smithbridge Road Area for Concord Township (1999).
- 11. Official Act 537 Sewerage Facilities Plan Revision for Concord Township (2002).
- 12. Act 537 Plan Special Study, Concord Township Phase 1 Sewer Project (2006)
- 13. Act 537 Plan Special Study, Concord Township Phase 2 Sewer Project (2017)

2.3 Planning Not Completed As Scheduled

The majority of the milestones listed in the previous planning documents have been completed. As previously mentioned, the Concord sewer system has been built by a number of different developers of different parcels throughout the Township over the past several years. The 2002 Act 537 Plan was crafted with the notion that expansion of the public sewer system would continue along this same path. Unfortunately, the economic downturn in 2007 has all but put to a halt development in this region and in Concord Township. Although there has been some recovery in the Township in recent years, it is not as significant as was previously experienced. As a result, the expansion of the public sewer system has slowed and implementation of some of the milestones in the 2002 Plan have not been completed.

2.4 Planning Modules For New Development

The following list includes planning for developments that have been approved or submitted since the 2002 Act 537 Plan revision. Prior Planning Modules are listed in the 2002 Plan.

Project Name	Location	Project Flow	DEP Code	DEP Approval Date
Carousel Toyota	Baltimore Pike	847	1-23938-230-E	10/24/01
Milrow Subdivision	GM & Shavertown	12,950	1-23938-222-E	5/25/01
Joseph Gagliotti	243 Baltimore Pike	870	1-23938-232-E	12/10/01
Coppock Realty	Rt 202	264	1-23938-239-X	6/11/02
Wawa- Brinton Lake	970 Baltimore Pike	1,605	1-23938-229-E	9/24/01
Four Sons Enterprises LLC	223 Trimble Road	582	1-23938-244-E	9/9/02
CPI-202 Concord Place	Rt 202	2,746	1-23938-243-E	8/16/02
CPC Associates	Baltimore Pike	12,500	1-23938-251-E	10/21/02
Fox Valley Life Campus/Fox Valley Dev Corp		30,050	1-23938-183-3H	8/20/99
Robert Neff	770 Shavertown Road	291	1-23938-258-E	4/14/03
Reserve at Hunters Creek	866 & 876 Shavertown Road	3,201	1-23938-259-E	7/28/03
Thornton, Thomas	972 Smithbridge Road	1,050	1-23938-168-3H	4/9/97
Dalusio (Trimble Mills Estates)	Baltimore Pike	4,365	1-23938-275-E	12/23/04
Morrison	993 & 1001 Shavertown Road	291	1-23938-269-E	9/3/04
Blomgren	759 Shavertown Road	582	1-23938-268-E	9/8/04
Chetty (Martins Run)	Shavertown Road	4,365	1-23938-268-E	7/6/04
A. Thomas Stewart	130 Kirk Road	582	1-23938-276-E	12/28/04
Stump (Chester Springs)	232 Mattson Road	582 (Riviera Plant)	1-23938-274-E	12/23/04
Hionis	Rt 202/South Baltimore Pike	8,010	1-23938-267-E	7/20/04
Rinko/Visionary/Neff	770 Shavertown Road	291	1-23938-258-E	4/14/03
Coppock Realty	1000' South of Naamans Creek	n/a	1-23938-288-E	10/26/05

Riddle MRI	991 Baltimore Pike	n/a	1-23938-239-X	6/4/02
Fecondo	Woodchuck & Smithbridge	496	1-23938-289-E	10/26/05
M & M	Brinton Lake Road	1,600	1-23938-273-E	11/23/04
Maris Grove Campus/Concordville Town Center	Brinton Lake & SprngVly	250,324	1-23938-272-31J	9/30/05
Bodo Development	67 Station Road	11,952	1-23938-293-E	4/27/06
R &D (former Eastern Installations)	807 Shavertown Road	248	1-23938-290-E	3/23/06
Tyson	Cheyney Road	788	1-23938-297-E	6/16/06
Longwood Land Development	Baltimore Pike	17,250	1-23938-298-E	7/11/06
Concord Place Subdivision (Laurel Brooke)	Pyle Road	15,132	I-23938-254-3J	11/21/03
TMF	32 Kirk Road	496	1-23938-303-E	11/26/07
Abrams	18 Kirk Road	248	1-23938-312-E	1/28/08
Benson/Springlawn Road Development	Springlawn Road	9,170	1-23938-315-3J	4/17/08
Kwang Lee LLC	970 Baltimore Pike	2,525	1-23938-318-3J	1/28/08
Butler Subdivision	Cheyney Road	496	1-23938-320-3J	11/3/08
Heintz (Henry)	Conchester Road	744	1-23938-285-E	7/27/05
Summit Crossing/EDMM LP	Wilmington-West Chester Pike	4,960	1-23938-324-3J	4/7/09
State Line Ventures	99 Wilmington Pike	7,850	1-23938-322-3J	8/23/10
State Line Ventures	92 Wilmington Pike		1-23938-338-E	
Naamans Creek Crossing	Wilm WC & BV Rd	300	1-23938-323-X	9/2/08
Hines	Garnet Mine Road	248	1-23938-327-E	3/4/09
LMJ	207 Baltimore Pike	550	1-23938-315-X	10/25/07
Victoria Land Partners	1051 & 1071 Baltimore Pike	7,248	1-23938-328-E	12/3/08
Main Line Health	Baltimore Pike	26,550	1-23938-317-E	5/21/08

Spring Lake (comp 3)	Wilmington-West Chester Pike	21,330	1-23938-321-3J	11/23/09
3513 Garnet Mine Road Subdivision	same	248	1-23938-335-E	2/3/11
Brandywine East	Wilmington-West Chester Pike	17,560	1-23936-184-E	10/21/09
Sun East	831 Baltimore Pike	75	1-23938-340-X	3/30/11
Jurich	40 Kirk Road Subdivision	496	1-23938-341-E	4/21/11
Hrubovcak	711 Featherbed	496	1-23938-343-3J	2/15/12
Pulsations	SW Dougherty & Baltimore Pike	14,384	1-23938-353-E	8/17/12
Concord Spring Valley	Rt 322 & Spring Valley Road	62,426	1-23938-358-3J	7/26/13
Brandywine Mills	Rt 202 & Chadds Ford Twp	39,270	1-23936-189-3J (CF) 1- 23938-355-3J (CT)	9/8/14
СНОР	819 Baltimore Pike	8,387	1-23938-362-3J	10/28/14
157 Mattson Road (DeMarco)	Mattson Road	788	1-23938-372-E	8/4/15
Team Toyota	Baltimore Pike	2,500	1-23938-370-E	3/19/15
Preserve at Garnet Valley (Waterford)	Temple Road	3,696	1-23938-369-E	3/19/15
Salladini (Kirk Road)	Kirk Road	1,386	1-23938-382-E	2/13/17
Concordville Realty (Subaru)	Route 202	2,000	I-23938-381-E	7/12/16
223 Kirk Road (J&A Construction)	Kirk Road	691	1-23938-376-E	11/18/15
Springwater Plaza	Route 202	2,550	1-23938-367-3m	12/5/16
Main Line Health (also 2008 approval)	Baltimore Pike	15,667	1-23938-371-E	5/6/15
Residence Inn Hotel	Spring Valley Business Park	12,700	1-23938-366-E	12/10/14
Valley Point Church	Bethel Road	807	1-23938-377-3J	8/24/16
McErlean (39 Kirk Road)	Kirk Road	231	1-23938-375-E	11/5/15
The Shops at Ridge Road Smithbridge Estates	Wilm West Chester Pike	49,344	1-23938-284-IJ	8/15/07

3 Physical and Demographic Analysis

3.1 Demographic Analysis

Over the past 20 years, Concord Township has experienced significant growth. According to the US Census Bureau, the year 2000 population was 9,933. In 2010 the population increased to 17,663. On a percentage basis, this is a gain of 77.8%. According to the Delaware Valley Regional Planning Commission, the forecasted change in population from 2010 to 2040 is approximately 12.8%. The following chart outlines the top five municipalities in Delaware County population forecast as prepared by DVRPC.

County / Municipality	2000 Census	2010 Census	2015 Forecast	2020 Forecast	2025 Forecast	2030 Forecast	2035 Forecast	2040 Forecast	Absolute Change 2010- 2040	Percent Change 2010- 2040
			1.1							
Edgmont Township	3,915	3,987	4,020	4,112	4,330	4,547	4,640	4,672	685	17.2%
Chadds Ford Twp,	3,170	3,640	3,663	3,730	3,887	4,044	4,111	4,134	494	1.3.6%
Concord Township	11,235	17,231	17,336	17,635	18,338	19,041	19,340	19,445	2,214	12.8%
Rose Valley Borough	945	913	917	930	959	988	1,000	1,004	91	10.0%
Thornbury Township	5,787	8,028	8,066	8,173	8,427	8,680	8,787	8,825	797	9.9%

3.2 Identification of Planning Areas

This plan is focused on 21 individual service areas located throughout the Township. The limits and locations of these areas are delineated on the map included in the Appendix.

3.3 Identification of Physical Characteristics

The following description of the Township is taken from the 2002 Plan. Concord Township is located in western Delaware County. It borders Thornbury, Chadds Ford, Bethel and Aston Townships, Chester Heights Borough, and New Castle County, Delaware (Refer to Appendix for Location Map). Concord's 13.78 square miles (8,819 acres) makes it the second largest municipality in Delaware County, second only to Radnor Township. It is bisected by three main transportation arteries: U. S. Route 202-Wilmington Pike; U. S. Route 1-Baltimore Pike; and Route 322-Conchester Highway. The character of the Township along Route 202 is one of a commercialized corridor. Various commercial uses, offices, institutional uses, and open spaces relate to Route 1-

Baltimore Pike. Route 322 mainly serves as a link between Route 1 and Interstate 95. With the exception of the stretch from Baltimore Pike to Station Road, it is primarily residential in character. Lands away from these major transportation routes are used mostly for single-family residential development.

A small portion (some 10 percent) of the Township (the southwest section) drains by gravity to the Brandywine Creek. The balance of the Township drains by gravity to the east through the West Branch of the Chester Creek to the Chester Creek. (Refer to the Appendix for a copy of the U.S.G.S. map showing topography and watersheds in Concord Township.)

3.4 Soils Analysis

A soils analysis for the Study Area with respect to on-site sewage systems is included in the Appendix. This analysis was performed using a service provided by the United States Department of Agricultural Natural Resource Conservation Service. The entire report covering the Planning Area for Concord Township is included in the Appendix.

Two types of On-lot disposal systems were evaluated as part of this survey. The first was a conventional in ground system. This is a system of subsurface lines that distribute effluent from a septic tank into the natural soil. The distribution lines are at a minimum depth of 12 inches and are on slopes of 0 to 25 percent. Only the part of the soils between depths of 0 and 60 inches is considered when the soils are rated. The second was a sand mound with a pressure dosing system. This is a system of pressurized lines that distribute effluent from a septic tank into a mound with sand under aggregate. The mound is placed on top of the mineral soil surface. About 1 to 4 feet of sand could be placed on the mineral soil surface in a sand mound system. Only the part of the soils between depths of 0 and 20 inches is considered when the soils are rated.

The **Table 2** is a summary of the data listed for various types of on-lot disposal systems.

Table 2 – Soil Analysis for On-Lot Disposal Systems

Septic System In-Ground Trench (Conventional) (PA) Summary by Rating Value					
Rating	Acres in AOI	Percent of AOI			
Very limited	1,416.7	61.0%			
Moderately limited	885.4	38.1%			
Slightly limited	16.8	0.7%			
Null or Not Rated	4.5	0.2%			
Totals for Area of Interest	2,323.5	100.0%			

Septic System Sand Mound Bed or Trench (PA)— Summary by Rating Value					
Rating	Acres in AOI	Percent of AOI			
Moderately limited	964.2	41.5%			
Slightly limited	784.6	33.8%			
Very limited	570.2	24.5%			
Null or Not Rated	4.5	0.2%			
Totals for Area of Interest	2,323.5	100.0%			

The report indicates that, overall, the Township is marginally suited for subsurface disposal systems. It is necessary to understand that the report deals in generalities and site specific analysis may find conditions to the contrary. This is proven by the many existing systems in the Township, most of which are currently operating fine. What the report does indicate is that on-site systems should closely evaluated as an ultimate solution to the Township's sewage disposal questions. The report will aid the Township in the prioritization of the various Districts for the installation of public sewers.

3.5 GEOLOGIC FEATURES.

Geologic features are included in the mapping exhibits in the Appendix.

3.6 TOPOGRAPHY.

Topographic features are included in the mapping exhibits in the Appendix.

3.7 POTABLE WATER SUPPLIES.

The public water distribution system is administered by two regional Water Authority's; Suez Water and the Chester Water Authority. Suez Water services the southwestern corner of the Township. Water in this system originates from the Suez Stanton Water Treatment Plant in Delaware. Water at this plant is taken from the White and Red Clay Creeks. The Stanton Plant can produce 30 MGD of potable water.

The Chester Water Authority services the remainder of the Township. Water in this system originates from the Octoraro Water Treatment Plant. Water at this plant is taken from the Octoraro Reservoir and the Susquehanna River and can produce 60 MGD of potable water.

Potable water service areas are included in the mapping exhibits in the Appendix. There are no direct public water supplies within the Township.

3.8 WETLANDS IDENTIFICATION.

The US Fish and Wildlife Service (FWS) is the principal US Federal agency tasked with providing information to the public on the status and trends of our Nation's wetlands. Wetlands provide a multitude of ecological, economic and social benefits. They provide habitat for fish, wildlife and plants - many of which have a commercial or recreational value - recharge groundwater, reduce flooding, provide clean drinking water, regulate our climate, offer food and fiber, and support cultural and recreational activities.

Wetland mapping was taken from the National Wetlands Inventory Map. An overlay of the wetlands onto the project areas is provided on the map in the Appendix.

4 Existing Sewage Facilities

4.1 Treatment Facilities

Sewage treatment in the Township is provided by two Publicly Owned Treatment Works and six privately owned plants. Table 3 lists the plants with their permit capacity and NPDES numbers.

PLANT I.D.	OWNERSHIP	CAPACITY (GPD)	NPDES NO.		
CENTRAL STP	MUNICIPAL	1,800,000	55212		
RIVIERA STP	MUNICIPAL	63,500	54780		
FOX VALLEY	PRIVATE	56,000	30431		
AMERICAN WATER SERVI	CESPRIVATE	20,000	32301		
STATE FARM	PRIVATE	25,000	51756		
CONCORD COUNTRY CL	UB PRIVATE	12,500	31666		
CONCORDVILLE INN	PRIVATE	25,000	52744		
BRINTON MANOR	PRIVATE	13,000	44474		
*SPRINGHILL FARMS	PRIVATE	100,000	522230		
* Delucity Direction Objection Found Township that accounts from a properties in Concerned Township					

Table 3 - Existing Stream Discharge Plants

* Private Plant in Chadds Ford Township that accepts froms from properties in Concord Township

4.1.1 Central Sewage Treatment Plant - Process Narrative

The Central Sewage Treatment Plant began accepting flows in June of 1996 and began discharging flow in September 1996 under NPDES Permit No. PA0055212. The original hydraulic and organic design parameters were 1.2 million gallons per day (MGD) and 2502 lbs. per day respectively. The Concord Township Sewer Authority took dedication of the Central Sewage Treatment Plant and conveyance system in January 1998.

The plant was originally designed for average BOD/TSS influent loadings of 250 mg/L. As time passed, it was discovered that loadings increased to levels well above design loadings. A high percentage of commercial flows with higher than normal loadings mainly contributed to this problem. The existing plant was not yet at design flows so it was able to still meet discharge requirements consistently. However, it was recognized that an expansion of the facility was needed with higher influent loading parameters.

The Authority adopted a Non-residential User Monitoring program in 2004. The program essentially requires all non-residential users that are connected to the treatment facility to apply for a permit. The permit requires testing of the users' effluent. Surcharges and/or penalties are levied on the user for noncompliance. The surcharges are set at a rate that offsets the costs incurred by the Sewer Department to treat the higher strength sewage. The penalties are used as a deterrent to encourage the user to closely

monitor their waste stream. Since the programs implementation, and education of the non-residential users, the loadings at the plant seemed to have leveled off. Although the loadings are still higher than normal domestic strength sewage, they are at a manageable and at a consistent level.

As for the expansion of the CSTP, the activated sludge; extended air treatment process was selected after consideration of several options. The engineering consultants and plant operation staff looked at expanding the existing extended aeration process and also considered a sequencing biological reactor (SBR) type system. After evaluating a number of operational and cost factors involved and visiting a number of operating plants with similar systems, it was decided that the best fit for the Township was a two-stage process developed by Aero-Mod, Inc. This system is an extended aeration configuration of the activated sludge process that also provides for biological nutrient removal via their "SEQUOX" treatment process. The Sewer Department is required to meet Phosphorus removal requirements under the NPDES permit, however, there is no nutrient removal requirement. Even though nutrient removal is not a primary concern at this time, the treatment process provides a cost-effective solution that will allow for future nutrient removal if needed. It was felt that a total nitrogen limit is a distinct probability for Chester Creek at some point in the future. The proposed process is a continuous flow unit. It has a unique clarifier which is designed to handle up to a 4:1 sustained peak flow loading without adversely affecting the effluent quality. The current design limits for the Central Sewage Treatment Plant is 1.8 MGD and 5,404 lbs. per day TSS and BOD.

As previously described, the existing plant consisted of two circular steel above ground units rated for 0.6 MGD each. The expansion project modified and re-used Plant One for aerobic sludge digestion and thickened sludge holding. Plant two is maintained in an operational condition and is used as required for maintenance of the other units or as a holding facility for excess flow if needed.

Other treatment process additions or modifications included the addition of a grease/grit removal unit, a sludge thickening process, and a change from liquid chlorination/dechlorination for disinfection to ultraviolet light disinfection. The following Chart is taken from the 2016 Chapter 94 Report. The chart shows the monthly average flow. The monthly rainfall is also shown for reference. The permitted capacity of the CSTP is 1.8 MGD. The Plant is currently operating well within the permitted capacity.



4.1.2 Riviera Sewage Treatment Plant - Process Narrative

The Riviera Sewage Treatment Plant (RSTP) and collection system was dedicated to the Concord Township Sewer Authority in June 2009. The RSTP operates under NPDES permit PA0054780.

The RSTP and collection system was constructed in conjunction with the age-restricted community Riviera at Concord. This community consists of 205 single-family dwellings, 1 community facility and 2 neighboring residential homes. The system was extended to serve the Reserve at Garnet Valley Subdivision which consists of 30 single-family homes. There are no commercial establishments connected to this system.

The Riviera Sewage Treatment Plant is designed for hydraulic flows of 0.0635 MGD and influent loadings of 240 milligrams per liter (mg/L) 5-day Biochemical Oxygen Demand (CBOD) and 240 mg/L Total Suspended Solids (TSS). The biological treatment process is the extended aeration configuration of the activated sludge process. This process provides secondary level of sewage treatment.

The influent loading concentrations have always looked extremely high from the time the plant first started receiving flow. The Sewer Department has not been able to reliably document an exact cause for this condition but it appears that the use of water reducing fixtures common in new construction combined with users contributing the same amount of organic and solid material results in a higher strength wastewater.

The actual plant flows are running at only 30% of the plant design flows. This factor is what allows the plant to perform well within the permit discharge limitations even though the strength of the incoming waste is much higher than typical values.

The following Chart is taken from the 2016 Chapter 94 Report. A copy of the 2016 Chapter 94 Report is included in the Appendix. The chart shows the monthly average flow. The monthly rainfall is also shown for reference. The Plant is currently operating well within the permitted capacity.



4.1.3 Sewage Pump Stations

There are thirteen (13) CTSD owned pumping stations in the system. The following tables show the average and maximum daily flows for 2016 for each pump station. Also provided are the actual pump capacities and the 2-year projected flow for each pump station. The current daily maximum flows are compiled from actual measurements of flow activity. The projected 2-year maximum daily flows were determined from assessments of projected additional connections if applicable and/or a mathematical ratio of the current daily flows to the current daily maximum flows. Peak instantaneous flow data is not recorded at any of the pump stations. The available peak is calculated by dividing the single pump capacity by the average daily flow.

The Sewer Department owns a four inch Godwin pump that is available for emergency bypass conditions. It is capable of pumping 400 to 450 GPM, depending on the head pressure and can bypass pump any one of the pump stations. Written procedures are defined for each pump station so that responders to an emergency know exactly what size

Concord Township, Delaware County Act 537 Plan Revision First Revision Printed 06/12/17 and type connection is required. The Sewer Department also has 460 feet of bypass hose in the event bypass pumping of the collection system is needed. The Sewer Department also has a 3.5 MGD Godwin pump tied into the main lift station.

Each pump station has two (2) pumps with a diesel powered back-up generator. All Department owned pump stations have an available peaking factor of at least 4.1 with the exception of Cheyney Road Pump Station. The majority of the stations have double-digit available peaking factors.

CONCORD HUNT PUMP STATION	
PERMIT #	WQM 2396403
CURRENT AVERAGE DAILY FLOW (GPD)	46,761.00
CURRENT DAILY MAXIMUM FLOW	55,517.00
PUMP CAPACITY (each) 2 pumps at station	324,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	80,000.00
AVAILABLE PEAK FACTOR	6.93

CONCORD WOODS PUMP STATION	
PERMIT #	WQM 2397407
CURRENT AVERAGE DAILY FLOW (GPD)	12,990.77
CURRENT DAILY MAXIMUM FLOW	17,808.71
PUMP CAPACITY (each) 2 pumps at station	324,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	80,000.00
AVAILABLE PEAK FACTOR	24.94

CONCORD CHASE 1 PUMP STATION	
PERMIT #	WQM 2397408
CURRENT AVERAGE DAILY FLOW (GPD)	20,343.35
CURRENT DAILY MAXIMUM FLOW	28,990.00
PUMP CAPACITY (each) 2 pumps at station	115,200.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	10,000.00
AVAILABLE PEAK FACTOR	5.66

CONCORD CHASE 2 PUMP STATION	
PERMIT #	WQM 2397408
CURRENT AVERAGE DAILY FLOW (GPD)	5,539.06
CURRENT DAILY MAXIMUM FLOW	6,947.14
PUMP CAPACITY (each) 2 pumps at station	115,200.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	11,000.00
AVAILABLE PEAK FACTOR	20.80

MENDENHALL PUMP STATION	
PERMIT #	WQM 2397408
CURRENT AVERAGE DAILY FLOW (GPD)	12,977.85
CURRENT DAILY MAXIMUM FLOW	15,357.14
PUMP CAPACITY (each) 2 pumps at station	360,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	17,000.00
AVAILABLE PEAK FACTOR	27.74

CHEYNEY ROAD PUMP STATION	
PERMIT #	WQM 2397407
CURRENT AVERAGE DAILY FLOW (GPD)	311,671.29
CURRENT DAILY MAXIMUM FLOW	374,550.00
PUMP CAPACITY (each) 2 pumps at station	1,152,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	375,000.00
AVAILABLE PEAK FACTOR	3.70

BRINTON LAKE PUMP STATION	
PERMIT #	WQM 2397407
CURRENT AVERAGE DAILY FLOW (GPD)	55,476.85
CURRENT DAILY MAXIMUM FLOW	79,431.43
PUMP CAPACITY (each) 2 pumps at station	482,400.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	88,000.00
AVAILABLE PEAK FACTOR	8.70

NEW SEASONS PUMP STATION	
PERMIT #	WQM 2397407
CURRENT AVERAGE DAILY FLOW (GPD)	22,166.72
CURRENT DAILY MAXIMUM FLOW	28,225.00
PUMP CAPACITY (each) 2 pumps at station	120,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	29,000.00
AVAILABLE PEAK FACTOR	5.41

WINDMILL CREEK PUMP STATION	
PERMIT #	WQM 2301401
CURRENT AVERAGE DAILY FLOW (GPD)	4,851.00
CURRENT DAILY MAXIMUM FLOW	4,851.00
PUMP CAPACITY (each) 2 pumps at station	144,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	20,000.00
AVAILABLE PEAK FACTOR	29.68

BEAVER VALLEY ROAD PUMP STATION	
PERMIT #	WQM 2301404
CURRENT AVERAGE DAILY FLOW (GPD)	51,039.34
CURRENT DAILY MAXIMUM FLOW	68,883.33
PUMP CAPACITY (each) 2 pumps at station	446,400.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	20,000.00
AVAILABLE PEAK FACTOR	8.75

ROBINS WAY PUMP STATION	
PERMIT #	WQM 2399403
CURRENT AVERAGE DAILY FLOW (GPD)	15,708.00
CURRENT DAILY MAXIMUM FLOW	15,708.00
PUMP CAPACITY (each) 2 pumps at station	144,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	
AVAILABLE PEAK FACTOR	9.17

LAUREL BROOKE PUMP STATION	
PERMIT #	WQM 2304404
CURRENT AVERAGE DAILY FLOW (GPD)	8,276.12
CURRENT DAILY MAXIMUM FLOW	10,508.17
PUMP CAPACITY (each) 2 pumps at station	108,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	10,000.00
AVAILABLE PEAK FACTOR	13.05

HOLLOW AT FOX VALLEY PUMP STATION	
PERMIT #	WQM 2305401
CURRENT AVERAGE DAILY FLOW (GPD)	11,700.00
CURRENT DAILY MAXIMUM FLOW	11,700.00
PUMP CAPACITY (each) 2 pumps at station	108,000.00
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	4,410.00
AVAILABLE PEAK FACTOR	9.23

4.1.4 **Problems With Existing Facilities**

The majority of the system was installed in the late 1990's and early 2000's in accordance with Township specifications and under inspection and surveillance by the Township Sewer Department's engineer. The plant and collection system is operated and maintained by five (5) operators, all of whom, but two, have DEP Class A licenses. The Sewer Department maintains and encourages continuing education for all operators. The Sewer Department has implemented a scheduled preventive maintenance program for the plant, pump stations, and collection lines. The overall condition of the collection system is very good. The integrity of the collection system is maintained through constant surveillance and the fact that the system is relatively new is a major advantage to the Sewer Department. The Sewer Department also maintains a sufficient reserve fund in the event it needs to respond to an emergency type situation. All collection lines are more than adequate to handle any anticipated increases in flows. Before any new developments are approved, it is standard procedure to have the Sewer Department's consulting engineer do an evaluation of the collection lines' ability to handle the projected increased flows. An annual reserve fund has been established to provide for infrastructure maintenance and repair.

4.1.5 Requirements For Small Flow Treatment Facilities

The Township's requirements for the licensing and monitoring of small flow treatment facilities are included in the Appendix

4.2 Types of On-lot Systems

4.2.1 Types of On-Lot Systems in Use

On-lot systems in use in the Township include standard subsurface beds and trenches along with pressure dosing sand mound systems. There are also 13 Individual Stream Discharge Plants (ISDP) that were given permits and installed to correct failing onlot systems where subsurface disposal was not an option due to poor soils, high groundwater, etc. The locations of the ISDPs are included on the maps in the Appendix.

4.2.2 Comparison Of On Lot Systems Vs. Soil Types

Regulations for the siting of on lot systems result in compatibility of the proposed system with soil types and field conditions encountered. Proposed sites are subject to testing via deep hole observation pits, percolation testing, and review of soil mapping. Refer to Appendix for a description of each individual District and a soils analysis of conventional on-lot systems and pressure dosing sand mound systems.

5 FUTURE GROWTH AND LAND DEVELOPMENT.

5.1 Land Use Plans And Zoning Maps

To ensure proper development and alleviate growth pressures, municipalities are enabled to adopt planning documents pursuant to the Pennsylvania Municipalities Planning Code, Act 247 of 1968, as amended. These planning documents include comprehensive land use plans, zoning ordinances, and subdivision/land development regulations.

One of the main reasons for examining these documents as part of Act 537 planning is to establish the interrelationships between the need for sewers and the existing proposed land uses within the Township.

On a county planning approach, Act 247 requires that all counties prepare and adopt a comprehensive plan within 3 years of the effective date of the act, and that adopted municipal comprehensive plans be generally consistent with an adopted county plan. The existing County Comprehensive Plan 2035 consists of a central, Land Use Policy Framework Plan, and a number of related, interconnected, but more detailed component plans. The relative component plan that coincides with sanitary sewer planning is the Land Use Policy Framework Plan (2013), Open Space and Recreational Plan (2015).

The current county plan does reinstate the objectives, goals, and recommendations regarding the existing public sewer network and provides capacity extension to areas in need of connection in regards to its respective municipalities.

Concord Township's Comprehensive Plan was adopted in 2000, where the plan describes the existing sewage system and indicates which areas can expect public sewer service. The plan indicates the possibility of future extension of public sewer services to existing neighborhoods that are currently lacking such service. Future development is encouraged to occur in close proximity to existing utility lines.

Text and mapping identify residential, commercial, industrial, agricultural, recreational, and open space areas. Land use and zoning maps are included in the Appendix.

5.2 Zoning and Subdivision Regulations

Both the Township Zoning Ordinance and the Subdivision and Land Development Ordinance provide limitations based on lot size, density, and availability of public sewer service.

The Township's zoning ordinance allows for a wide range of zoning districts, including a variety of single-family, apartment, planned residential development, planned active adult community, and mobile home districts. Residential lot sizes range from 15,00 sq. ft. to 1 acre. Other districts recognized by zoning ordinances are planned business and commercial business park, light industrial, planned industrial park, special use (swimming club), and planned laboratory office.

The Township's Subdivision and Land Development Code requires that all lots be connected to public sewers where accessible and available. Where systems are not available yet, but planned in the future, the developer shall install a caped sewer lines and provide other facilities necessary for future connection. When no such options are available, community or private on-lot disposal systems (OLDS) are permitted. The developer is required to provide evidence of feasibility and satisfactory operation if the system to be utilized. OLDS are to be installed no closer than 200 feet from any adjacent property lines. Soil suitability and percolation tests are required.

5.3 Limitations Related to Floodplain And Stormwater

Flood Way and Flood Zones have been mapped for each District and is included in the Appendix. Concord Township's Subdivision and Land Development Ordinance requires an actual field determined delineation of Flood Zone boundaries prior to land development approval. Placement of sewage facilities in flood zones is required to be

avoided where possible recognizing that certain physical features may require encroachment.

5.4 Areas With Existing Development Or Plotted Subdivisions

Existing development and plotted subdivisions have been mapped and are included in the appendix.

5.5 Land Use Designations

Township land uses are included on the mapping exhibits in the Appendix. Land uses and sewage planning are compared elsewhere in this report under zoning and land use plan maps.

5.6 Future Growth Areas

Future growth areas are addressed later in this report under potential extension of existing facilities. Text discussion, tables, and maps are provided at that location.

5.7 Five And Ten Year Future Planning

Growth in Concord Township is expected to slow compared to the preceding decade. Any large tracts of land contemplating land development are required to investigate the possibility of connecting to the public sewer system.

The Township conducts regular reviews of the Act 537 Plan to look at potential sewage facility needs. The Township conducts the same planning as part of the Chapter 94 reporting process on a yearly basis.

6 Alternatives To Provide Wastewater Facilities

6.1 Potential For Regional Wastewater Treatment

Regional wastewater treatment is currently being provided by Concord's existing treatment plants. There is a potential for further regionalization by connecting all flows to the DELCORA plant in Chester, PA. however past studies have found that this alternative was not financially feasible. No further action was taken on this item.

6.2 Potential Extension Of Existing Facilities

Maintenance of existing OLDS with possible extension of existing facilities is the plan of choice for providing sewer service to the remaining unsewered sections of the Township. The purpose of this study is to establish individual sewer districts (District) with basic planning that can be implemented when required by questions of public health or when the opportunity for public/private projects presents financial advantages. If it is decided that the public sewer system should be extended to a District, an Act 537 Special Study will need to be prepared for the District. At this point, additional detail on the cost and feasibility along with resolution of outside agency conflicts will be addressed.

The following sections describe the individual planning districts and evaluation of future treatment capacity required. Tables listing committed plant capacity and potential development projects are included as part of this evaluation.

6.2.1 Special Study Districts

The 2017 Update/Revision of Concord Township's Act 537 plan includes the creation of special study areas to provide for specific planning for defined sections of the Township. The purpose for creating these smaller districts is to allow for the pre-planning of wastewater solutions on an individual basis and to allow for plan implementation when needed.

The Township is at a point where much of the population and commercial districts are served by the public sewer system. This leaves a number of areas that are not currently served but may need a public sewer solution in the future. These areas are spread throughout the Township, are of widely different ages, and of different designs and zoning ordinances. This all combines to make it difficult to establish a time table for implementing solutions for wide areas of the Township. The Township Council needed a method where they can establish a schedule for implementing solutions based on current need and on the opportunity to piggyback with developer projects to help manage costs to the residents. The establishment of the special study areas includes a preliminary method of providing sewer service and with a proposed treatment facility to receive the wastewater. Essentially two methods of providing public sewer are discussed.

The first and most preferred by the Township is conventional gravity sewers. This would allow homes to connect to the public sewer via gravity sewer when possible. Homes at low elevations may require an individual pump to pump up to the gravity line. These are details that would be investigated as part of the preliminary engineering work. Some conventional gravity sewer may require the installation of a Township owned sewage pump station.

The second is a low-pressure sewer system. A low-pressure sewer is a small diameter common force main usually installed in the public right-of-way or easement. Each home would connect via grinder pump located at each home. Concord Township tries to avoid the use of low-pressure sewers unless conventional gravity sewers are not cost effective or feasible.

The preliminary designations are subject to evaluation and possible revision when a District is selected for plan implementation based on engineering design and evaluation of cost factors.

There are 21 areas initially selected for special study area status. These areas are shown on the location map and are briefly described below. A table is provided to indicate the estimated number of connections for each area as of the date of this plan approval and designated treatment facility. An analysis of available treatment capacity is also included to allow for the tracking of future needs and possible expansion of the facility. A map showing the location of the different District is provided in the Appendix

6.2.2 Description Of Special Study Districts

6.2.2.1 District 1 - Brandywine Summit

The area is located in the southwest section of the Township. An estimated 107 EDUs would connect to the existing CSTP via an existing pump station located on Beaver

Valley Road. The new collection system would consist of a conventional gravity sewer collection system.

6.2.2.2 District 1B - Beaver Valley Road West

This district is located in the southwest section of the Township on Beaver Valley Road. Approximately 4 residential EDUs would connect to the existing sewer system for treatment at the CSTP. The new collection system would consist of a low-pressure sewer system.

6.2.2.3 District 1C - Smithbridge Road West

This district is located in the southwest section of the Township on Smithbridge Road. Approximately 24 residential EDUs would connect to the existing sewer system for treatment at the CSTP. The new collection system would consist of a low-pressure sewer system.

6.2.2.4 District 2 - Thronton Road North

This district is located in the north central section of the Township on Thornton Road and US Route 1. Approximately 33 residential EDUs would connect to the existing sewer system for treatment at the CSTP. The new collection system would consist of a conventional gravity sewer collection system. The area would drain to a sewage pump station located near Aldan Ave. Sewer service to this district would rely on Development of the adjacent Clinger Property. No cost estimates have been prepared since the extent of the Developer installed collection system is unknown. Additional act 537 planning will be handled as part of the planning module submission for the property.

6.2.2.5 District 4 – Running Brook

This district is located in the southwest section of the Township and consists of 54 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.6 District 5 - Temple Road.

This district is located in the central section of the Township and consists of 18 residential EDUs. The extended sewer system would consist of a conventional and or

low pressure sewers that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.7 District 6 - Mill Road

This district is located in the northern section of the Township and consists of 32 residential EDUs. The extended sewer system would consist of a low-pressure sewer system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.8 District 7 - Governor Markham

This district is located in the north central section of the Township between Thornton and Cheyney roads and consists of 76 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.9 District 7A – Baltimore Pike (Cheyney)

This district is located in the central section of the Township and consists of 12 residential and commercial EDUs. The extended sewer system would consist of conventional and low pressure sewer systems that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.10 District 8 - Concord Road North

This district is located in the central section of the Township on Concord Road and consists of 61 commercial and residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.11 District 8A - Upper Conchester

This district is located in the central section of the Township and consists of 75 commercial and residential EDUs. The Concordville Inn STP is located in this area and would be decommissioned as part of the project. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.
6.2.2.12 District 9 - Partridge

This district is located in the central section of the Township and consists of 16 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.13 District 10 - Mill Race

This district is located in the central section of the Township and consists of 60 residential EDUs. The extended sewer system would consist of a low-pressure sewer system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.14 District 11 - Penn's Grant

This district is located in the central section of the Township and consists of 102 residential EDUs. The extended sewer system would consist of conventional and low pressure sewer systems that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.15 District 11a – Ivy Mills Road

This district is located in the central section of the Township and consists of 43 residential EDUs. The extended sewer system would consist of low pressure sewer systems that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.16 District 12 - Penn's Grant II

This district is located in the central section of the Township and consists of 52 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system and municipal owned sewage pump station that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.17 District 13 - Willits

This district is located in the southeastern section of the Township and consists of 309 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system and municipal owned sewage pump station that will discharge to the existing collection system for treatment at the Riviera STP.

6.2.2.18 District 14 - Hall Tract and Extended Area

This district is located in the south-central section of the Township and consists of 217 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system and municipal owned sewage pump station that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.19 District 15 - Vernon Cross Keys Extended

This district is located in the southwest section of the Township and consists of 68 residential EDUs. The extended sewer system would consist of a low-pressure sewer system that will discharge to the existing collection system for treatment at the Riviera STP.

6.2.2.20 District 16 - Glenview/Hemlock.

This district is located in the northwest section of the Township and consists of 61 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.21 District 18 - Valleybrook

This district is located in the southeast section of the Township and consists of 51 residential EDUs. The extended sewer system would consist of a low-pressure sewer system that will discharge to the existing collection system for treatment at the Riviera STP.

6.2.2.22 District 19 - Trimble Road.

This district is located in the northern section of the Township and consists of 4 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.23 District 20 - Smithbridge Road.

This district is located in the central section of the Township and consists of 2 residential EDUs. The extended sewer system would consist of a conventional gravity sewer

collection system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.24 District 21 – Smithbridge Road (Conchester)

This district is located in the central section of the Township and consists of 31 residential EDUs. The extended sewer system would consist of a conventional and low pressure sewer system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.25 District 22 – Baltimore Pike East

This district is located in the northeastern section of the Township and consists of 5 commercial EDUs. The extended sewer system would consist of a low-pressure sewer system that will discharge to the existing collection system for treatment at the CSTP.

6.2.2.26 District 23 - Smithbridge Road (Temple)

This district is located in the central section of the Township and consists of 4 residential EDUs. The extended sewer system would consist of a conventional gravity sewer collection system that will discharge to the existing collection system for treatment at the CSTP.

District	Number of EDUs		
1	107		
18	4		
1C	24		
2	33		
4	54		
5	18		
6	32		
7	76		
7A	12		
8	61		
8A	75		
9	16		
10	60		
11	102		
11A	43		
12	52		
13	309		
14	217		
15	71		
16	61		
18	51		
19	4		
20	2		
21	31		
22	5		
23	4		
Total	1524		

Table 3 - Summary of Districts

6.3 Continued Use Of Existing Facilities, Including Repair Or Replacement

The Township's existing facilities are adequate to meet it's needs well into the future. It is the Plan of Choice to continue use of the existing facilities indefinitely. The Township provides excellent operation and maintenance of the system and any problems that may occur are addressed immediately. There are currently no areas requiring repair or upgrading. Future planning may determine that it is more feasible or desirable to revise the proposed treatment plants for the projects listed above. The Township will reserve the right to make any advisable adjustments to the designated treatment plant as necessary in the future

6.3.1 Available Capacity Review

The following review of available treatment capacity is based on the 2016 Chapter 94 reports for the two POTWs. Tables 5A, 5B and 5C are taken directly from the 2016 Chapter 94 Report. Table 5A lists current projects where capacity is reserved for the planned development. Table 5B lists projects that are currently under review with committed capacity. Table 5C lists potential projects that are not under active review and were beyond the 5 year time frame for the Chapter 94 report.

Table 5A							
Sewer Department's Committed Capacity	Capacity Reserved GPD	Planning Flow/Unit GPD	Number of Units	Total Units On-Line	Total Units Remaining	Remaining to be Connected GPD	
Abessinio - Rt. 202	462	237	1.9	-	1.9	462	
Brandywine Mills	36960	237	155.9	153	2.9	681	
Brandywine Turf Club	924	237	3.9	-	3.9	924	
Brinton Lake Corporate Center (Hawthorn)	65450	237	276.2	230.3	45.9	10,868	
CHOP Phase 2	4851	237	20.5	0	20.5	4,728	
Concord Philly LP (Rite Aid Rt 202)	462	237	3.0		3.0	711	
Concord Spring Valley II Carriages	20,790.0	237	90.0	36.0	54.0	12,798	
Concord Township Laterals	106,260.0	237	460.0	275.0	185.0	43,845	
Concordville Subaru	2079	237	8.8	0	8.8	2,079	
Decklund Dialysis, LLC/old Enterprise (2017)	6468	237	27,3		27,3	6,468	
Garnet Valley School District	25000	237	105.5	-	105.5	25,000	
Heints 3 Lot Sub. Rt 322	693.0	237	3.0	2.0	1.0	237	
Honold	237	237	1.0		1.0	237	
Kwang Lee LLC	5704	237	24.1	19.3	4.7	1,123	
LMJ Properties	693	237	2.9		2.9	693	
Mainline Hospital (Fibre Metal)	15445	237	65.2		65,2	15,445	
Maris Grove Phase 3	192.471.0	237	833.2	760.2	73.0	17,303	
Morrison (Shavertown Rd)	462	237	2.0	1.0	1.0	237	
PA Crime Lab	462	237	2.0		2.0	474	
Phase 2	20,559.0	237	89.0	<u>├</u>	89.0	21,093	
Ramada Subdivision-Hionis	5820	237	24.6	!	24,6	5,820	
Robert Neff (770 Shavertown Rd)	462	237	2.0	1.0	1.0	237	
Shops at Ridge Rd	30000	237	126.6	- '	126.6	30,000	
Shore Properties (756, 757 Naamans Crk)	462	237	2.0	-	2.0	474	
Spring Lake Shoppes	21328	237	90.0	· ·	90.0	21,328	
Springhill Farms	73000	237	308.0	-	308.0	73,000	
Thomasetti (Four Sons-TrimbleRd)	462	237	2.0	1.0	1.0	237	
Thornbury Township	119577.15	237	504.5	482.0	22.5	5,343	
Turf Club	924	237	3.9	<u> </u>	3.9	924	
Twardowski, Walter (Kirk Rd)	231.0	237	1.0	<u>-</u>	1.0	237	
Valley Point Church	828.0	237	3.5	<u> </u>	3.5	828	
Waterford at Garnet Valley	231	237	15.0		15.0	3,555	
Wolf - Spring Valley	45000	237	194.8	119.1	75.7	17,934	
Smithorldge Estates	18,486	237	78		78.0	18,486	
Total	823,243		3,531	2,080	1,451	343,809	

Table 5B						
	Capacity	Planning	Number		Remaining to be	
Projects in planning, capacity not reserved	To Be Reserved	Flow/Unit	of			Connected
	GPD	GPD	Units			GPD
Butler Subdivision	474	237	2.0			474
Existing Homes (Valley Point Church Ext)	12798	237	54.0			12,798
Mainline Hospital Phase II	86586	237	365.3			86,586
Orchard Creek	3555	237	15.0			3,565
TMF Land Development (Kirk Rd)	474	237	2.0			474
Concord Ventures	45507	237	192.0			45,507
Arbours Square Chester Heights Borough	15486	237	65.3			15,486
			┨───┤			· · ··
Total	164,880					164,880

Table 5C						
ites that may require future capacity.	Capacity	Planning	Rumber		Remaining to be	
No specific plans at this time.	o Be Reserved	low/Unit	of		Connected	
Included because potential exists after 5 yrs.	GPD	GPD	<u>Units</u>		GPD	
Colonial Village	18 960		1 80 1	·	18 960	
Exxon/Lehigh Gas	1,422	237	6		1,422	
				h		
			ļ			
Total	20,382				20,382	

6.3.2 Summary Of Required Capacity at the POTW

Central Sewage Treatment Plant

NEED COMPONENT	ESTIMATED FLOW (GPD)
* A second se	• • • • • • • • • • • •
EXISTING FLOWS 2016 Chapter 94 Adjusted	1,105,000
SUBDIVISIONS WITH RESERVE.	343,809
Projects in Planning	164,880
Sites that May Need Future Capacity	20,382
NEW PLANNING DISTRICTS.	352,044
Estimated Total	1,986,115
Reserve (20% of Permitted Capacity)	360,000
Total Buildout Capacity CSTP	2,346,115
Total Buildout with Riviera	2,478,676
Existing Permitted Capacity	1,800,000
Future Capacity Required	546,115
Future with Riviera Connection	678,676
NOTES: 1. EXISTING FLOW IS 3 MONTH MAX.AVG. 2. RESERVE BASED ON UNITS REMAINING 3. FUTURE CAPACITY REQUIRED IS AT 100	TO BE CONNECTED. % BUILDOUT OF LISTED S

Riviera Sewage Treatment Plant

NEED COMPONENT	ESTIMATED FLOW (GPD)
1. EXISTING FLOWS (2016 Chapter 94)	33,000
2. SUBDIVISIONS WITH RESERVE.	0
3. SUBDIVISIONS NO RESERVE.	
4. POTENTIAL SUBDIVISION NO RESERVE.	0
5. NEW PLANNING DISTRICTS.	99561
Estimated Tot	al 132,561
Reserve (10% of Permitted Capaci	ty) 6,350
Total Buildout Capacity Rivi	era 138,911
Existing Permitted Capac	ity 63,500
Future Capacity Require	ed 75,411
NOTES:	
1. EXISTING FLOW IS 3 MONTH MAX.AVG.	
2. RESERVE BASED ON UNITS REMAINING TO BE C	CONNECTED.
3. FUTURE CAPACITY REQUIRED IS AT 100 % BUIL	DOUT OF LISTED SUBDIVISIONS.

The above summaries show that both municipal plants will need additional capacity at some time in the future. As subdivisions are proposed for development, the available capacity needs to be reviewed. It is recommended that a three to five year time frame be used for scheduling of permits and construction. Capacity and flow are reviewed on a yearly basis as part of the Chapter 94 reporting process.

The Township will need to study its options as the time for expansion of treatment capacity approaches. Combining flows from both Riviera and CSTP with a single large expansion is one option. Expansion of both plants individually is a second option. The addition of a third plant, possibly to serve the northeast section of the Township is a third possibility. The economics and acceptance by both the public and regulatory agencies will have to be taken into consideration. Alternatives to provide additional sewage treatment capacity will be evaluated as part of future Act 537 Plan Revisions.

6.1 Need For New Community Systems Or Use Of Innovative/Alternative Methods

There are no active plans for construction of new community systems or the use of innovative or alternative methods of sewage disposal. The Township's Plan of Choice is to provide public sewer service where feasible. There may be future situations where innovative or alternative methods will be considered to address isolated needs for repair of older OLDS.

6.2 Municipal Control Of Onlot Systems

The Township does not take ownership or <u>direct</u> control of the operation and maintenance of individual OLDS, small flow treatment facilities or other traditionally non-municipal treatment facilities. Regulation of small flow treatment facilities is accomplished via the Standards, Rules and Regulations, and Permit Requirements of the Township. Chapter III of the Sewer Department's Rules and Regulations deals specifically with small flow treatment facilities as to design, construction, and operation. Please refer to the Appendix for a copy of this Chapter.

7 Evaluation Of Alternatives

7.1 Consistency Evaluations

Technically feasible alternatives have been evaluated for consistency with respect to each of the following laws or regulations:

- 1. Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act.
- 2. Municipal Wasteload Management Corrective Active Plans or annual Chapter 94 Reports.
- 3. Plans developed under Title II of the Clean Water Act or Titles II and IV of the Water Quality Act of 1987.
- 4. Comprehensive plans developed under the Pennsylvania Municipalities Planning Code.
- 5. Antidegradation requirements in PA Code, Title 25, chapters 93,95, and 102.
- 6. State Water Plans under Water Resources Planning Act.
- 7. Pennsylvania Prime Agricultural Land Policy.
- 8. County Stormwater Management Plans.
- 9. Wetland Protection.
- 10. Pennsylvania Natural diversity Inventory (PNDI).
- 11. Historical and Archaeological resource protection under P.C.S. Title 37.

If and when a project is implemented for each District, further evaluation of consistency with the above laws and regulations will be performed.

7.2 Resolution Of Inconsistencies

There are no inconsistencies identified to date that require resolution with other agencies.

7.3 Evaluation vs. Water Quality Standards

The alternatives all meet the water quality standards, effluent limitations, or other requirements. The alternates considered are a modification of the existing Plan of Choice (public sewer service) and do not result in any changes that would impact Plan implementation. As noted elsewhere in this document the alternatives simply provides logical divisions of the unsewered areas to provide the Township Council flexibility in implementing portions of the Plan when the need or opportunity arises.

7.4 Cost Estimates

Cost estimates for the various service areas listed in this document are included in the Appendix with summaries shown in Table 1 below. There are no plans to actively pursue implementation of any the service areas at the present time. The budget level estimates provided in this report are 2017 order of magnitude cost estimates to aid in project prioritization. The cost estimates will be refined at the time of detailed design when the actual project scope and level of private participation, if any, is committed.

District	2017 Project Costs			
1	\$2,357,866			
18	\$341,460			
1C	\$638,568			
2	\$0			
4	\$1,703,604			
5	\$297,108			
6	\$721,098			
7	\$1,507,968			
7A	\$628,488			
8	\$915,222			
8A	\$911,148			
9	\$410,074			
10	\$775,782			
11	\$2,027,200			
11A	\$465,948			
12	\$1,725,878			
13	\$10,261,468			
14	\$7,291,606			
15	\$934,290			
1.6	\$1,669,808			
18	\$791,532			
19	\$166,600			
20	\$114,240			
21	\$964,964			
22	\$134,820			
23	\$142,562			
Total	\$37,899,302			

Table 1 – Proposed Sewer Districts and Cost Estimates

7.5 Analysis Of Funding Methods

Funding for projects that are to be implemented in the future will be through either a private/public agreement or strictly public funding if no private partner is available. Public funding can be through a bond issue if the project is large enough, bank financing, and the use of tapping fee revenue to offset borrowing amounts. A financial analysis is conducted for each individual project at the time of implementation.

7.6 Analysis Of Immediate Vs. Phased Implementation

The main objective of this plan revision is to create smaller, more manageable service districts that can be implemented in a phased approach as required. None of the service areas requires immediate implementation.

7.7 Administrative Evaluation

All administrative functions for the sewer system are conducted by the Township under the Township Sewer Department. Operation and Maintenance tasks are completed by the Sewer Department staff. Major decisions regarding plan implementation, creation of sewer districts, Act 537 Planning, sewer rental rates, etc. are initiated and approved by the Township Council.

8 Institutional Evaluation

8.1 Financial And Debt Status

Concord Township is in a sound financial position at the present time. The continued growth in the Township has provided a customer base that has permitted the Sewer Department to complete a number of projects without substantially increasing the annual sewer rentals. The latest annual audit is shown in the Appendix.

8.2 Available Staff And Administrative Resources

Concord Township has been successfully operating their municipal sewage facilities since the commencement of public sewer service in the 1990's. Administrative duties were originally completed under the Concord Township Sewer Authority. The Authority was dissolved in 2011 and duties are now performed under the Concord Township Sewer Department. The Township also retains the services of qualified advisors and consultants for assistance in legal, financial, and engineering services.

8.3 Existing Legal Authority

Concord Township, Delaware County, is organized as a Home Rule Municipality under laws of the Commonwealth of Pennsylvania. The Township therefore has full legal authority to complete and implement sewage planning requirements, provide for the operation and maintenance of the system, set user fees, and enact and enforce all sewage regulations. The Township also has full authority to issue and guarantee payments of debt instruments as required for the municipal sewer system.

9 Implementation And Plan Justification

9.1 Identification Of Selected Alternatives And Justification

The selected alternative is to provide public sewer service at either of the POTWs as outlined in the Plan. Under this Plan the Township is divided into pre-approved Sewer Districts that will have their individual planning selections implemented as dictated by public health requirements, private/public partnerships, or other circumstances deemed appropriate by the Township Council.

9.2 Existing Wastewater Disposal Needs

The selected alternative meets the existing wastewater disposal needs of the Township by providing cost effective solutions included and approved in previous 537 Planning. The Chapter 94 Wasteload Management Report for both of Concords treatment plants indicate that adequate capacity is available for the processing of current loadings in accordance with the NPDES permit for each facility.

9.3 Future Wastewater Disposal Needs

The selected alternative meets future wastewater disposal needs by continuing to provide cost effective disposal solutions for the projected future capacity requirements for the next five-year period covered in the 2016 Chapter 94 reports. It appears that adequate capacity will be available for a ten-year planning period assuming that projected growth follows normal patterns and no accelerated period of development occurs. The Township will need to follow capacity requirements via review of the Chapter 94 Reports, Planning Module activity, and the submittal of concept plans for approval and comment by the Planning Commission and Council. Additionally, the Township will need to review the implementation of the Sewer District connections to the public sewer system to see if expansion of the POTWs is necessary.

9.4 Operation And Maintenance

The Township has the staff, equipment, outside advisors, and outside contractors to operate the existing system in a cost-effective manner. Adoption of the individual sewer districts as approved under this Special Study will not change the O & M capabilities of the Sewer Department.

9.5 Cost Effectiveness

Adopting the individual sewer districts as approved under this Plan will not alter the finances of the Township. It will be a tool at this point to evaluate future projects. Providing public sewers to all of the Districts is NOT cost effective at this time. Providing public sewer would severely impact the Township finances along with impose hardships on the stakeholders. The Township believes in providing cost effective sewage disposal for all the residents of Concord Township and plans to sewer some of the Districts on a smaller more manageable basis. Special Studies will more concisely evaluate the cost effectiveness of each District.

9.6 Management And Administration

The existing management and administrative structure of the Township Sewer Department will not require any changes due to adoption of the Plan. The planning modifications will not resultant in any increased expenditures other than the normal increases that would occur from growth of the customer base.

9.7 Financing Methods

The financing methods used for plan implementation of the individual sewer districts will vary depending upon circumstances at the time. Planning implementation for any individual district may result from public health requirements, opportunities for public/private projects, or other needs deemed appropriate by the Township. Methods for financing a project by the Township include tapping fees, annual rental adjustments, short term financing, or long term bond issues. Any combination of these financial tools can be used to provide a feasible project for implementation.

9.8 Environmental Soundness

The Plan of Choice outlined in this report will have no impact on the environmental soundness of the Township. The end results will be the same. Public sewer service will be provided when needed or when advantageous to partner up with the private sector to extend the Township's system.

9.9 Financial Plan For Implementation

There are no financial planning requirements for implementation of this Plan. The Act 537 Plan modifications proposed are mainly administrative and procedural adaptations of the existing plan. A financial plan will be developed when a sewer district is designated for service using the tools listed above and tailored to the specific project requirements.

9.10 Schedule of Implementation

The following tasks for implementation are recommended with approximate dates for completion. Completion dates may vary depending upon the response time from the various agencies and bodies given the opportunity review.

<u>March 2017</u>: Submit draft copies of the Special Study to the Concord Township Planning Commission, Delaware County Planning Department for review and comment. Advertise in the Delaware County Daily Times indicating the project is available for public comment. Copies for Public review will be made available at the Township building and on the Concord Township web site.

<u>June 2017</u>: Receive questions and comments from the above listed reviewers and include responses in the appendices of the study. Resolve any inconsistencies or questioned issues.

<u>July 2017</u>: Concord Township Council adopt a resolution approving the Act 537 Plan. Final Study document submitted to PADEP for approval.

December 2017: Receive approval from PaDEP of the Act 537 Plan Revision.

APPENDIX A

.



June 23, 2015

Ms. Brenda Lamanna Assistant Manager-Secretary Concord Township 43 Thornton Road Glen Mills, PA 19342

Re: Act 537 - Plan of Study Act 537 Plan Update Concord Township Act 537 Plan Revision Concord Township Delaware County

Dear Ms. Lamanna:

The Department of Environmental Protection (DEP) has received an amended Task/Activity Report for preparation of an Act 537 Official Plan Update, submitted by Bradford Engineering Associates, Inc., via a June 15, 2015 e-mail. The revision to the Task/Activity Report is for an amended cost associated with the Plan Update.

The previously approved Plan of Study proposed the development of an Act 537 Official Plan Update that would evaluate the feasibility of providing public sewer to various areas in Concord Township that currently utilize on-lot sewage disposal systems. The proposed plan would also evaluate the capacity available in the Concord Township Sewer Authority's existing conveyance and treatment facilities.

We have approved your amended Task/Activity Report for an estimated total cost of \$58,214.50. The resulting Act 537 Official Plan Update must be consistent with Act 537, Chapter-71, Sections-71.21 and 71.31 of DEP's regulations.

Your municipality's Act 537 Official Plan Update is to be formatted as suggested in the guidance document titled A Guide for Preparing Act 537 Update Revisions, including the necessary items listed in the "Act 537 Plan Content and Environmental Assessment Checklist" found in the guidance document. All necessary items must be included, and a copy of the completed checklist must be included with your Act 537 Plan. This form is available on our website at: http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-47649/362-0300-003.pdf.

This plan of study approval does not constitute a final action by the DEP. When a completed plan is submitted to us, we will act upon it consistent with PA Code Title 25, Chapter 71.

Act 13 of 2012 established the Marcellus Legacy Fund that allocates funds to the Commonwealth Financing Authority (CFA). You are encouraged to apply for a grant through CFA for your anticipated planning costs associated with Act 537, The Pennsylvania Sewage Facilities Act. Information regarding the CFA funding program and how to apply is available at: http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/sewage-facilities-program.

If you have any questions, please contact me at 484.250.5186.

Sincerely,

Stefanie Rittenhouse Sewage Planning Specialist 2 Clean Water

 cc: Delaware County Planning Department Concord Township Sewer Authority Mr. Fazler-Bradford Engineering Associates, Inc. RCSOB, 11th Floor, Sewage Facilities, Attn.: Janice Vollero Planning Section Re 30 (MIB15CLW)174-6

APPENDIX B

.

Notice

The Council of Concord Township, Delaware County is considering adopting an updated revision to the Township's Sewage Facilities (ACT 537) Plan. Prior to Council review, the Township is accepting comments on the Plan for a period of thirty (30) days beginning March 28, 2017.

The Concord Township's Act 537 Plan "Current Plan" provides for the establishment of individual Sewer Planning Districts (District) to be used as a basis for evaluating sections of the Township for public sewer service projects or continued individual on-site disposal systems. If future evaluation of a District requires a change or modification to the sewage disposal method, an Act 537 Special Study will be performed to further detail alternatives in the District.

The Act 537 Plan can be reviewed in its entirety at the Concord Township Municipal Building, 43 Thornton Road, Glen Mills, PA between the hours of 8:30 AM and 4:00 PM. Stakeholders are encouraged to make an appointment to view the document by contacting the Sewer Department at (610) 459-8911 x108. The Plan will also be available on the Concord Township website at www.twp.concord.pa.us. Comments will be accepted at the Township Building during the thirty (30) day public review period. The Township Council will consider adoption of this plan at the June 6, 2017 public meeting.

Brenda Lamanna, Township Manager



Proof of Publication of Notice in Delaware County Daily Times

. Under Newspaper Advertising Act. No. 587, Approved May 16, 1929

SS.

inated agent of 21st CENTURY MEDIA NEWSPAPER, LLC , being duly sworn, deposes and says that the DELAWARE COUNTY DAILY TIMES, a daily newspaper of general circulation as defined in the above-mentioned Act, published at Swarthmore, Delaware County, Penosylvania, was established September 7, 1876, and issued and published continuously thereafter for a period of 100 years and for a period of more than six months immediately prior hereto, (under the name Chester Times prior to November 2, 1959) in the City of Chester, County of Delaware and further says that the printed notice or publication attached hereto is an exact copy of a notice or publication printed and published in the regular edition and issues of the DELAWARE COUNTY DAILY TIMES on the following dates,

A.D. 20 17

20 17

Affiant further deposes that he is the proper person duly authorized by 21st CENTURY MEDIA NEWSPAPER, LLC. publisher of said DELAWARE COUNTY DAILY TIMES, a newspaper of general circulation, to verify the foregoing statement under oath and that affiant is not interested in the subject matter of the aforeseid notice or advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true.

COMMONWEALTH OF PENNSYLVANIA NOTARIAL SEAL Dianne McCormick, Notary Public Ridley Twp., Delaware County My Commission Expires April 20, 2020



MEMSER, PENNSYLVANIA ASSOCIATION OF NOTARIES

APPENDIX C



CONCORD TOWNSHIP PLANNING COMMISSION

GLEN MILLS, DELAWARE COUNTY, PENNSYLVANIA 19342 . Meeting Night, 3rd Monday

MEMORANDUM

TO: Concord Township Council

FROM: Steven D. Miller, Chairman, Planning Commission

RE: Concord Township Act 537 Revision

DATE: April 18, 2017

.

Please be advised the Concord Township Planning Commission has received the Act 537 Revision, to break up the unsewered portions of the township into districts.

At its public meeting on April 17, 2017, the Commission reviewed the subject Act 537 Revision and has no additional comments.

/bgb[[Project Mgr review-Act 537 Rev 4-17-17] cc: Council

Hugh Donaghue, Solicitor Brenda L. Lamanna, Township Manager Terri Grant-Sewer Department Walt Fazler-Bradford Engineering

APPENDIX D



DELAWARE COUNTY PLANNING DEPARTMENT RECEIVED

COURT HOUSE/GOVERNMENT CENTER 201 W. Front St. Media, PA 19063

Office Location: Toal Building, 2nd & Orange Sts., Media, PA 19063 Phone: (610) 891-5200 FAX: (610) 891-5203 E-mail: planning_department@co.delaware.pa.us

April 25, 2017

LINDA F. HILL

TOWNSHIP OF CONCORD

APR 28 2017

INDA F. HILL DIRECTOR

COUNCIL MARIO J. CIVERA, JR. CHAIRMAN

COLLEEN P. MORRONE VICE CHAIRMAN

> JOHN P. McBLAIN DAVID J. WHITE MICHAEL F. CULP

Brenda L. Lamanna, Township Manager Concord Township 43 Thorton Road Glen-Mills, PA 19342

RE:

Act 537 Review
Act 537 Plan Update Revision
Concord Township

Dear Ms. Lamanna:

The Delaware County Planning Department (DCPD) has completed its review of the plan update revision document for Concord Township. The goal of the plan is to evaluate the feasibility of providing public sewage disposal systems as well as evaluate the capacity available in the existing conveyance treatment facilities. The Concord Township Act 537 Sewage Facilities Plan provides for the establishment of 21 individual districts to be used for evaluating sections of the Township for public sewer service. The Township Council will evaluate the districts on a regular basis to determine if public sewers are feasible. The purpose for creating these smaller districts is to allow for the planning of wastewater solutions on an individual and financial basis.

Continuing the practice of reviewing proposed development documentation and Annual Wasteload Management Reports will be important for keeping the plan correct and fully implemented. We trust that the actions taken by Concord Township and the Concord Township Sewer Department will remain in compliance with all local, state, and federal regulations and ordinances. DCPD has no objection to the proposed plan revision of Concord Township.

If you have any questions or require additional information, please do not hesitate to contact me at (610) 891-5218.

Sincerely,

Will Brugger Environmental Planner

Cc: PA Department of Environmental Protection Bradford Engineering Associates, Inc.

APPENDIX E



APPENDIX F



APPENDIX G



APPENDIX H





Septic System In-Ground Trench (Conventional) (PA)---Delaware County, Pennsylvania (Conventional Septic)



USDA

Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 2 of 77

Septic System In-Ground Trench (Conventional) (PA)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI				
BrD3 Brandywine Ioam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	11.8	0.5%					
	slopes.			Too steep (0.92)						
severely eroded			Potential bedrock near 60" (0.17)							
			Glenelg (5%)	Bedrock, above 60" (1.00)						
				Too steep (0.92)						
			Slow pe >12" Glenville (5%) Season water (1.00	Slow percolation >12" (0.89)						
				Seasonal high water table (1.00)						
				Slow percolation >12" (1.00)						
				Slope (0.46)						
Ch	Chewacla silt Very limited Ioam	Chewacia (85%)	Seasonal high water table (1.00)	0.0	0.0%					
			Flooding (1.00)							
				Fast percolation >12" (1.00)						
				Slope (0.01)						
	ŕ	Congaree (5%)	C			Congaree (5%)	Flooding (1.00)			
		Slope (0.0	Slope (0.01)							
	Wehadkee (5%	Wehadkee (5%)	Seasonal high water table (1.00)							
			Flooding (1.00)							
				Slow percolation >12" (0.89)						
				Slope (0.01)						
GeB	Glenelg channery	Moderately limited	erately Glenelg (75%) S nited S	Slow percolation >12" (0.93)	0.1	0.0%				
	percent slopes			Slope (0.12)						
GeC3	Glenelg channery silt loam 8 to 15	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	4.8	0.2%				
Septic Syste	em In-Ground Trend	h (Conventional) (PA)— Summary I (PA045)	by Map Unit — #1,	Delaware County,	Pennsylvania				
---------------------------------	--	-----------------------	------------------------------	--	------------------	----------------				
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI				
	percent slopes,			Slow percolation >12" (0.89)						
	eroded			Slope (0.46)	Į.					
			Glenville (5%)	Seasonal high water table (1.00)						
				Slow percolation >12" (1.00)						
				Slope (0.46)						
GnB2	Glenville silt Ioam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	0.7	0.0%				
slopes, moderately eroded		٤	Slow percolation >12" (1.00)		1					
•				Slope (0.12)						
		Wors	Worsham (7%)	Seasonal high water table (1.00)						
			Slow percolation >12" (1.00)							
			Slope (0.12)							
GnC2	Glenville silt loam, 8 to 15 percent	Very limited	Glenville (100%)	Seasonal high water table (1.00)	3.8	0.2%				
	slopes, moderately eroded			Slow percolation >12" (1.00)						
				Slope (0.46)						
Subtotals for #	1				21.2	0.9%				
Totals for Area	of Interest				2,323.5	100.0%				
Septic System	m In-Ground Trenc	h (Conventional)	(PA)— Summary b (PA045)	y Map Unit — #10,	Delaware County	, Pennsylvania				
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI				
CdB	Chester silt loam, 3 to 8	Moderately limited	Chester (80%)	Slow percolation >12" (0.93)	30.8	1.3%				
	percent slopes			Slope (0.12)						
GeB	Glenelg channery	Moderately limited	Gleneig (75%)	Slow percolation >12" (0.93)	9.2	0.4%				

 GeC
 Glenelg
 Very limited
 Glenelg (85%)
 Bedrock, above
 1.9
 0.1%

 Ioam, 3 to 8
 percent slopes
 Very limited
 Glenelg (85%)
 Bedrock, above
 1.9
 0.1%

USDA

Map unit	Map unit name	Rating	Component	Rating reasons	Acres In AOI	Percent of AOI	
symbol			name (percent)	(numeric values)			
				Slow percolation >12" (0.89)			
				Slope (0.46)			
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.12)			
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	7.2	0.3%	
	percent			Slope (0.46)			
slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)				
	eroded			Slope (0.46)			
GeC3	eC3 Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded	Glenelg Vi channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	12.7	0.5%
				Slow percolation >12" (0.89)			
				Slope (0.46)			
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.46)			
GeD2	Gleneig	Moderately	Glenelg (85%)	Too steep (0.92)	2.0	0.1%	
	channery silt limited loam, 15 to 25 percent		Slow percolation >12" (0.89)				
	slopes, moderately eroded		Chester (7%)	Slow percolation >12" (0.89)			
			 	Slope (0.46)			
			Neshaminy (3%)	Slow percolation >12" (0.94)			
				Stope (0.46)			
GnB	Glenville silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	4.7	0.2%	
				Slow percolation >12" (1.00)			
				Slope (0.12)			
			Baile (5%)	Seasonal high water table (1.00)			

Septic Syste	m In-Ground Trenc	h (Conventional)	(PA)— Summary b (PA045)	y Map Unit — #10,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
				Slow percolation >12" (1.00)		
				Slope (0.01)	!	
GnB2	Glenville silt Ioam, 3 to 8 percent	Very limited Glenville (85%) S	Seasonal high water table (1.00)	0.1	0.0%	
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
1		Worsham (7%)	Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
Subtotals for #10						2.9%
Totals for Area	of Interest	2,323.5	100,0%			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrB2 Brandywine loam, 3 to 8 percent slopes, moderately eroded	Brandywine Ioam, 3 to 8	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	1.3	0.1%
			Potential bedrock near 60" (0.17)			
				Slope (0.12)		
		C	Chester (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
		Glenel	Glenelg (5%)	Bedrock, above 60" (1.00)		
;				Slow percolation >12" (0.89)		
				Slope (0.12)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.12)	• •	
BrC3	Brandywine Ioam, 8 to 15	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	4.5	0.2%
	siopes,			Slope (0.46)		
	severely eroded			Potential bedrock near 60" (0.17)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.89)		
			1	Slope (0.46)		
	Gler	Glenville (5%)	Seasonal high water table (1.00)		į	
				Slope (0.46)		
BrD	D Brandywine Ioam, 15 to 25 percent slopes	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	1.6	0.1%
				Too steep (0.92)		
		G		Potential bedrock near 60" (0.17)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
	:			Slow percolation >12" (0.89)		
	Glenville (5	Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
······		· · · · · · · · · · · · · · · · · · ·		Slope (0.12)		
BrD2	Brandywine loam, 15 to 25	Very limited	Brandywine (85%)	Bedrock, above 60" (1.00)	1.7	0.1%
	slopes,			Too steep (0.92)		
	moderately eroded	rately d	Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
·				Slope (0.46)		<u> </u>
3rD3	Brandywine Ioam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	2.7	0.1%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	percent			Too steep (0.92)	<u>.</u>	· · · · · · · · ·
	siopes, severely eroded			Potential bedrock near 60" (0.17)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
rE	Brandywine	Very limited	Brandywine	Too steep (1.00)	2.3	0.1%
	percent slopes		(00%)	Fast percolation >12" (1.00)		
				Potential bedrock near 60" (0.17)		
			Glenelg (5%)	Too steep (1.00)		
				Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
sF	Brandywine very	Very limited	Brandywine	Too steep (1.00)	2.2	0.1%
	to 50 percent slopes		(65%)	Bedrock, above 60" (1.00)		
				Potential slow percolation >12" (0.01)		
			Glenville (10%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.05)		

		· · · ·	(FAU40)			<u>.</u>	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
GeC	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	0.6	0.0%	
	percent slopes			Slow percolation >12" (0.89)			
				Slope (0.46)			
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.12)			
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	3.4	0.1%	
	loam, 8 to 15 percent		1	Slope (0,46)			
	slopes, moderately eroded	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
	croaca			Slope (0.46)			
GeC3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	0.6	0.0%	
	loam, 8 to 15 percent slopes,	ent ss, rely ed		Slow percolation >12" (0.89)			
	severely eroded			Slope (0.46)	•		
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.46)			
GnB	Glenville silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	3.9	0.2%	
				Slow percolation >12" (1.00)			
				Slope (0.12)			
			Baile (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.01)			
GnC2	Glenville silt loam, 8 to 15 percent slopes,	Very limited	Glenville (100%)	Seasonal high water table (1.00)	0.0	0.0%	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.46)		
We	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	1.9	0.1%
	-			Flooding (1.00)	:	
				Slow percolation >12" (0.89)		
			Slope (0.01) Chewacla (7%) Seasonal high water table (1.00) Flooding (1.00) Fast percolation >12" (1.00)	Slope (0.01)		
				Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Glenville (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
Subtotals for #	11		•	· · · · · · · · · · · · · · · · · · ·	26.7	1.1%
Totals for Area of Interest						100.0%

Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #12, Delaware County, Pennsylvania (PA045)								
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI		
BrD3	Brandywine loam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	0.2	0.0%		
	percent slopes, severely eroded			Too steep (0.92)				
				Potential bedrock near 60'' (0.17)				
			Glenelg (5%)	Bedrock, above 60" (1.00)				
				Too steep (0.92)				
				Slow percolation >12" (0.89)				

			(PA045)			
Map unit symbol	Map unit name.	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
Ch	Chewacla silt loam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	1.6	0.1%
	1			Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		,
			Congaree (5%)	Flooding (1.00)		
				Slope (0.01)		
		Wehadk	Wehadkee (5%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
GeB	Gleneig channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	10.1	0.4%
	percent slopes			Slope (0.12)		
GeC3	Glenelg channery silt	Very limited	ited Glenelg (85%)	Bedrock, above 60" (1.00)	14.4	0.6%
	percent slopes,			Slow percolation >12" (0.89)		
	severely eroded			Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
	:			Slope (0.46)		
GeD3	Glenelg channery silt	Very limited	Gleneig (85%)	Bedrock, above 60" (1.00)	0.3	0.0%
	percent			Too steep (0.92)		
slopes, severely	slopes, severely eroded			Slow percolation >12" (0.89)		
	+ Groucu		<i>i</i>	1		

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	16.4	0.7%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
			Slow percolation >12" (1.00)			
				Slope (0.12)		
MgD	Manor loam, 15 to 25 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	3.6	0.2%
	slopes			Too steep (0.92)		
		Glenville (Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		
			Blocktown (5%)	Bedrock, above 60" (1.00)		
	1			Too steep (0.92)		
	Mt. A			Slight voided fragments (0.06)	1	
		Mt. Airy (5%)	Bedro c k, above 60" (1.00)			
				Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
v	Water	Not rated	Water (100%)		1.1	0.0%
Ve	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	0.9	0.0%
				Flooding (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacia (7%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Glenville (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1,00)		
			-	Slope (0.01)		
Subtotals for #12						2,1%
Totals for Area of Interest					2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB Gleneig channery	Gleneig channery	Moderately Glen limited	Glenelg (75%)	Slow percolation >12" (0.93)	1.2	0.1%
	percent slopes			Slope (0.12)		
GnB2 Glenville silt loam, 3 to 8 percent	Glenville silt toam, 3 to 8 percent	Very limited Glenville (85%) Worsham (7%)	Glenville (85%)	Seasonal high water table (1.00)	0.6	0.0%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
			Slow percolation >12" (1.00)			
				Slope (0.12)		
MgC	Manor loam, 8 to 15 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	0.8	0.0%
	siopes			Slope (0.46)		
			Blocktown (5%)	Bedrock, above 60" (1.00)		

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
				Slight voided fragments (0.65)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Slope (0.46)		
				Slight voided fragments (0.02)		
	-			Potential slow percolation >12" (0.01)		
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Seasonal high water table (1.00)	0.5	0.0%
				Slow percolation >12" (1.00)	:	
				Slope (0.01)		
			Glenville (10%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
			Watchung (5%)	Seasonal high water table (1.00)		
				Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.94)		
				Stope (0.01)		
ubtotals for #	13				3.2	0.1%
otals for Area	of Interest				2,323.5	100.0%



Septic System	Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #14, Delaware County, Pennsylvania (PA045)								
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI			
BrD	Brandywine Ioam, 15 to 25	Very limited Bra	Brandywine (85%)	Fast percolation >12" (1.00)	6.5	0.3%			
	percent slopes			Too steep (0.92)	-				
				Potential bedrock near 60" (0.17)					
			Glenelg (5%)	Bedrock, above 60" (1.00)					
				Too steep (0.92)					
				Slow percolation >12" (0.89)					
			Glenville (5%)	Seasonal high water table (1.00)					
				Slow percolation >12" (1.00)					
				Slope (0.12)					
Ch	Chewacla silt Ioam	wacła siłt Very limited am	Chewacla (85%)	Seasonal high water table (1.00)	1,8	, 0.1%			
				Flooding (1.00)					
				Fast percolation >12" (1.00)					
				Slope (0.01)					
			Congaree (5%)	Flooding (1.00)					
				Slope (0.01)					
			Wehadkee (5%)	Seasonal high water table (1.00)					
				Flooding (1.00)					
				Slow percolation >12" (0.89)					
				Slope (0.01)					
GeB	Gienelg channery	Moderately limited	Gleneig (75%)	Slow percolation >12" (0.93)	2.1	0.1%			
	percent slopes			Slope (0.12)					
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	30.7	1.3%			
	percent			Slope (0.46)					
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)					
ero	ervueu			Slope (0.46)					

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	7.8	0.3%
	slopes, moderately eroded		Slow percolation >12" (1.00)			
			Slope (0.12)			
		Worsham (7%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
			Slope (0.12)			
Иe	Made land, schist and gneiss	Very limited Udorthent schist a gneiss (Udorthents, schist and gneiss (95%)	Seasonal high water table (1.00)	6.7	0.3%
materials	materials			Slow percolation >12" (1.00)		
				Miscellaneous area (1.00)		
				Potential bedrock near 60" (0.48)		
				Slope (0.05)		
		Glenville (1%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Hatboro (1%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
MgD	Manor loam, 15 to 25 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	0.0	0.0%
	siopes			Too steep (0.92)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		

Septic Syste	m In-Ground Trenc	h (Conventional) ((PA)— Summary b (PA045)	y Map Unit — #14	, Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Blocktown (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)	-	
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Seasonal high water table (1.00)	1.9	0.1%
				Slow percolation >12" (1.00)		
				Slope (0.01)		
			Glenville (10%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
			Watchung (5%)	Seasonal high water table (1.00)		
		-		Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.94)		
- <i>.</i>				Slope (0.01)		
Subtotals for #	14				57.6	2,5%
Totals for Area	of Interest	2,323.5	100.0%			
Septic System	m In-Ground Trencl	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #15,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt	Moderately limited	Chester (80%)	Slow percolation >12" (0.93)	4.8	0.2%

percent slopes

Slope (0.12)

Septic Syste	m in-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #15	, Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	3.5	0.1%
				Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.01)		
			Wehadkee (5%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.89)		ſ
				Slope (0.01)		
GeB	3 Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	11,4	0.5%
loam, 3 to 8 percent slopes	-		Slope (0.12)			
GeC	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	4.8	0.2%
	percent slopes			Slow percolation >12" (0.89)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
GeC2	Gleneig channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	30.9	1.3%
	percent			Slope (0.46)		
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
				Slope (0.46)		
GeC3	Gleneig channery silt	Very limited	Very limited Glenelg (85%)	Bedrock, above 60" (1.00)	14.8	0.6%
	percent slopes,	5		Slow percolation >12" (0.89)		
	severely eroded		Slope (0.46)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
· _		·	Glenville (5%)	Seasonal high water table (1.00)	- <u> </u>	
		{		Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD2	Glenelg	Moderately limited	Glenelg (85%)	Too steep (0.92)	2.8	0.1%
	channery silt loam, 15 to 25 percent			Slow percolation >12" (0.89)		
	slopes, moderately		Chester (7%)	Slow percolation >12* (0.89)		
	erodeu			Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0.94)		
				Slope (0.46)		
Gn8	Glenville silt loam, 3 to 8 percent slopes	Slenville silt Very limited loam, 3 to 8 percent stopes	Glenville (90%)	Seasonal high water table (1.00)	2.5	0.1%
				Slow percolation >12" (1.00)		
			: 	Slope (0.12)		
			Baile (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	2.1	0.1%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
	i •			Slow percolation >12" (1.00)		
			 	Slope (0.12)		
GnC2	Glenville silt loam, 8 to 15 percent	Very limited	Glenville (100%)	Seasonal high water table (1.00)	3.6	0,2%
	slopes, moderately eroded	percent slopes, moderately		Slow percolation >12" (1.00)	ĺ	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.46)		<u>.</u>
Glenville very stony silt loam, 0 to 8 percent	Very limited	Glenville, extremely stony (100%)	Seasonal high water table (1.00)	6.1	0.3%	
	slopes			Slow percolation >12" (1.00)		
			-	Slope (0.08)		
NSD	Neshaminy very stony silt loam,	Very limited	Neshaminy, extremely	Slow percolation >12" (1.00)	0.6	0.0%
	8 to 25 percent slopes		bouldery (97%)	Slope (0.80)		
				Potential bedrock near 60" (0.48)		
			Towhee, extremely stony (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.05)		
We	Wehadkee silt Ioam	Wehadkee silt Very limited Wehadkee silt (90)	Wehadkee (90%)	Seasonal high water table (1.00)	33.1	1.4%
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacla (7%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)	1	
			Glenville (3%)	Seasonal high water table (1.00)	1	
				Slow percolation >12" (1.00)		
				Slope (0.01)		
Subtotals for #	15				120.9	5.2%
Fotals for Area	of Interest	2.323.5	100.0%			

Septic System	Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #16, Delaware County, Pennsylvania (PA045)								
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI			
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	1.2	0.1%			
	loam, 3 to 8 percent slopes			Slope (0.12)					
GeC	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	0,0	0.0%			
	loam, 8 to 15 percent slopes			Slow percolation >12" (0.89)					
				Slope (0.46)					
		Glenville (5%)	Seasonal high water table (1.00)						
				Slow percolation >12" (1.00)					
				Slope (0.12)					
GeC2 Gleneig channery silt	Moderately (limited	Glenelg (85%)	Slow percolation >12" (0.89)	5.5	0.2%				
	loam, 8 to 15 percent			Slope (0.46)					
slopes, moderately		Neshaminy (3%)	Slow percolation >12" (0.94)						
	eroded			Slope (0.46)					
GeD	Gleneig channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	0.8	0.0%			
	percent slopes			Too steep (0.92)					
				Slow percolation >12" (0.89)					
			Glenelg (5%)	Bedrock, above 60" (1.00)					
				Too steep (0.92)					
				Slow percolation >12" (0.89)					
			Mt. Airy (2%)	Bedrock, above 60" (1.00)					
				Too steep (0.92)					
				Slight voided fragments (0.02)					
GnB2	Glenville silt Ioam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	1.9	0.1%			
	slopes, moderately eroded			Slow percolation >12" (1.00)					
				Slope (0.12)					

:

Septic Syste	m In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #16,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Worsham (7%)	Seasonal high water table (1.00)		
		1 .		Slow percolation >12" (1.00)		
				Slope (0.12)		
Qu	Quarries	Not rated	Pits, quarries (90%)		0.1	0.0%
			Waste areas (10%)			
Subtotals for #	16	9.4	0.4%			
Totals for Area	of Interest	2,323.5	100.0%			

Septic Syste	m In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #17,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Gleneig channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	4.6	0.2%
loam, 3 to 8 percent slopes	loam, 3 to 8 percent slopes			Slope (0.12)		
GeC2	Glenelg channery silt	Moderately limited	Moderately Glenelg (85%) limited	Slow percolation >12" (0.89)	2.2	0.1%
	percent			Slope (0.46)		
sloj mo ero	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
	- Croaca			Slope (0.46)		
Subtotals for #17						0.3%
Totals for Area of Interest						100.0%

Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #18, Delaware County, Pennsylvania (PA045)								
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI		
GeB Glenelg channery loam, 3 to 8 percent stopes	Glenelg channery	Moderately limited	Gleneig (75%)	Slow percolation >12" (0.93)	30.2	1.3%		
	percent slopes			Slope (0.12)				
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	25.0	1.1%		
	percent		1	Siope (0.46)				
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)				

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres In AOI	Percent of AOI
				Slope (0.46)		
GeC3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	10.6	0.5%
	percent slopes,			Slow percolation >12" (0.89)		
	severely eroded			Slope (0.46)		
	eroueu	Glenville (5%)	Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD	Glenelg channery silt loam, 15 to 25 percent slopes	Glenelg Very limited channery silt	Glenelg (85%)	Bedrock, above 60" (1.00)	4.8	0.2%
		percent slopes		Too steep (0.92)		
				Slow percolation >12" (0.89)		
			Gleneig (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
			ļ	Slow percolation >12" (0.89)		
			Mt. Airy (2%)	Bedrock, above 60" (1.00)		
	-			Too steep (0.92)		
				Slight volded fragments (0.02)		
GeD2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.92)	2.2	0.1%
	channery silt loam, 15 to 25 percent	limited		Slow percolation >12" (0.89)		
	slopes, moderately eroded		Chester (7%)	Slow percolation >12" (0.89)		
	Eloueu			Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0,94)		
				Slope (0.46)		
GeD3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	0.8	0.0%
	percent			Too steep (0.92)		
	slopes, severely eroded			Slow percolation >12" (0.89)	ſ	
	eroueu	I	i	l. <u>.</u>	ļ	

Septic Systen	n In-Ground Trenc	h (Conventional) ((PA)— Summary b (PA045)	y Map Unit — #18,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeE	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.1	0.0%
	channery silt loam, 25 to 35 percent slopes			Bedrock, above 60" (1.00)		
			Slow percolation >12" (0.89)			
		Gle	Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited 8	Very limited Glenville (85%) Worsham (7%)	Seasonal high water table (1.00)	0.1	0.0%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
				Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
	• • •			Slope (0.12)		
GnC2	Glenville silt loam, 8 to 15 percent	Very limited	Glenville (100%)	Seasonal high water table (1.00)	0.4	0.0%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.46)		
Subtotals for #1	8				74.0	3.2%
Totals for Area o	of Interest		~		2,323.5	100.0%

Septic Syste	m m-oround Trenc	n (conventiona	(PA045) (PA045)	y wap ∪nit — #19	, Delaware County	, remsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewacia silt Ioam	Very limited	Chewa ci a (85%)	Seasonal high water table (1.00)	4.2	0.2%
				Flooding (1.00)		
			Fast percolation >12" (1,00)			
				Slope (0.01)		
			Congaree (5%)	Flooding (1,00)		
				Slope (0.01)		
			Wehadkee (5%)	Seasonal high water table (1.00)		
		Flooding Slow perc >12" (0		Flooding (1.00)		
			Slow percolation >12" (0.89)			
				Slope (0.01)		
GeB	Glenelg channery	Glenelg Moderately channery limited	Gleneig (75%)	Slow percolation >12" (0.93)	5.9	0.3%
loam, 3 to 8 percent slopes			Slope (0.12)			
GeC2	Glenelg channery silt	Moderately GI limited	Glenelg (85%)	Slow percolation >12" (0.89)	38.5	1.7%
	loam, 8 to 15 percent			Slope (0.46)		
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
_	Crosco			Slope (0.46)		
GeD2	Gleneig	Moderately	Gleneig (85%)	Too steep (0.92)	8.2	0.4%
	channery silt limited loam, 15 to 25 percent	limitea		Slow percolation >12" (0.89)		
	slopes, moderately eroded		Chester (7%)	Slow percolation >12" (0.89)		
	1			Slope (0.46)		
			Neshamlny (3%)	Slow percolation >12" (0.94)		
				Slope (0.46)		
GeD3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	9.8	0.4%
	percent			Too steep (0.92)		
	slopes, severely eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (1.00)		· · · · · · · · · · · · · · · · · · ·
	-			Slope (0.46)		
GeE	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.8	0.0%
	channery silt loam, 25 to 35 percent slopes			Bedrock, above 60* (1.00)		
		Sk	Slow percolation >12" (0.89)			
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
GeE3	eE3 Glenetg channery silt loam, 25 to 35 percent slopes, severely eroded	Very limited	Glenelg (85%)	Too steep (1.00)	1.9	0.1%
				Bedrock, above 60" (1.00)		
			Slow percolation >12" (0.89)	Í		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB2	Glenville silt loam, 3 to 8 percent	Glenville silt Very limited Glenville (85% loam, 3 to 8 percent	Glenville (85%)	Seasonal high water table (1.00)	4.6	0.2%
	stopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
vlgC	Manor loam, 8 to 15 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	0.1	0.0%
	slopes			Slope (0.46)		
			Blocktown (5%)	Bedrock, above		

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AO
symbol			namè (percent).	(numeric values)		
				Slight voided fragments (0.65)		
			1	Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Slope (0.46)		
				Slight voided fragments (0.02)		
				Potential slow percolation >12" (0.01)		
βD	Manor loam, 15 to 25 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	4.3	0.2
	siopes			Too steep (0.92)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		
			Blocktown (5%)	Bedrock, above 60* (1.00)		
				Too steep (0.92)		
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
ηE	Manor loam and	Very limited	Manor (98%)	Too steep (1.00)	0.1	0.0
	channery loam, 25 to 35 percent slopes			Potential slow percolation >12" (0.01)		

Septic Syste	m In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #19	, Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenville (2%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
NaC2	Neshaminy V gravelly siit loam, 8 to 15 percent slopes, moderately eroded	Very limited	Neshaminy (85%)	Bedrock, above 60" (1.00)	0.1	0.0%
				Potential seasonal high water table (0.47)		
				Slope (0.46)		
			Berks (5%)	Bedrock, above 60" (1.00)		
				Slope (0.46)		
			Mount Lucas (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
We	Wehadkee silt Ioam	ee silt Very limited Wehadkee (90%)	Wehadkee (90%)	Seasonal high water table (1.00)	2.9	0.1%
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacla (7%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Fast percolation >12* (1.00)		
				Slope (0.01)		
			Glenville (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
Subtotals for #	19				81.3	3.5%
Totals for Area	of Interest				2,323.5	1 00.0%

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	22.5	1.0%
	percent slopes			Slope (0.12)		
GeC2	Glenelg channery silt	Moderately limited	Gleneig (85%)	Slow percolation >12" (0.89)	9.2	0.4%
	percent			Slope (0.46)		
	slopes, moderately eroded	slopes, moderately	Neshaminy (3%)	Slow percolation >12" (0.94)	ī	
	croaca			Slope (0.46)		
GeC3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	1.5	0.1%
	loam, 8 to 15 percent slopes,	loam, 8 to 15 percent slopes,		Slow percolation >12" (0.89)		
	severely			Slope (0.46)		
	Glenville (59	Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD3	Glenelg channery silt	v silt to 25	limited Glenelg (85%)	Bedrock, above 60" (1.00)	3.8	0.2%
	percent			Too steep (0.92)		
	slopes, severely eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	10.2	0.4%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		

Septic Syste	em In-Ground Trenc	h (Conventional)	(PA)— Summary (PA045)	by Map Unit — #2,	Delaware County,	Pennsylvania	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
We	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	2.7	0.1%	
		[Flooding (1.00)			
			Slow percolation >12" (0.89)				
				Slope (0.01)			
		-	Chewacla (7%)) Seasonal high water table (1.00)			
		1		Flooding (1.00)			
				Fast percolation >12" (1.00)			
				Slope (0.01)	gh e ation		
			Glenville (3%)	Seasonal high water table (1.00)			
			4	Slow percolation >12" (1.00)			
<u> </u>				Siope (0.01)			
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	ry limited Worsham (85%)	Seasonal high water table (1.00)	2.9	0.1%	
				Slow percolation >12" (1.00)			
				Slope (0.01)			
			Glenville (10%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Siope (0.01)			
			Watchung (5%)	Seasonal high water table (1.00)			
				Bedrock, above 60" (1.00)			
				Slow percolation >12" (0.94)			
·····			<u> </u>	Slope (0.01)	,		
Subtotals for #	2				52.8	2.3%	
Totals for Area	of Interest				2,323.5	100.0%	

CdB Chester silt loam, 3 to 8 percent slopes Moderately limited Chester (80%) Slow percolation >12" (0.93) GeB Glenelg channery loam, 3 to 8 percent slopes Moderately limited Glenelg (75%) Slow percolation >12" (0.93) GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Slope (0.12) Slope (0.12) Slow percolation >12" (0.89) Slope (0.12) GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) Slope (0.46) Slope (0.46) GeC Gtenelg channery silt Very limited Glenelg (85%) Bedrock, above 60" (1.00)	1.7 53.8 0.0	0.1%
percent slopesModerately limitedGlenelg (75%)Slope (0.12)GeBGlenelg channery loam, 3 to 8 percent slopesModerately limitedGlenelg (75%)Slow percolation >12" (0.93)GeB3Glenelg channery silt loam, 3 to 8 percent slopes, severely erodedVery limitedGlenelg (85%)Bedrock, above 60" (1.00)Glenelg (85%) slopes, severely erodedVery limitedGlenelg (85%)Bedrock, above 60" (1.00)Glenville (5%) Slope (0.12)Slope (0.12)Glenville (5%) Slope (0.12)Seasonal high water table (1.00)GeCGlenelg channery silt channery siltVery limitedGlenelg (85%)GeCGlenelg channery siltVery limitedGlenelg (85%)	53.8	0.0%
GeB Glenelg channery loam, 3 to 8 percent slopes Moderately limited Glenelg (75%) Slow percolation >12" (0.93) GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Slow percolation >12" (0.93) Slope (0.12) GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Slope (0.12) Slope (0.12) Slope (0.12) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) Slow percolation >12" (1.00) Slope (0.46) GeC Glenelg channery silt Very limited Glenelg (85%) Bedrock, above 60" (1.00)	0.0	2.3%
GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Slope (0.12) Slow percolation >12" (0.89) Slope (0.12) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (0.89) Slope (0.12) Slope (0.46) Slope (0.46	0.0	0.0%
GeB3 Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded Very limited Glenelg (85%) Bedrock, above 60" (1.00) Slow percolation >12" (0.89) Slope (0.12) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) Slope (0.12) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) Slow percolation >12" (1.00) Slope (0.46) GeC Glenelg channery silt Very limited Glenelg (85%) Bedrock, above 60" (1.00)	0.0	0.0%
Ioam, 3 to 8 percent Slow percolation slopes, severely Slope (0.12) eroded Glenville (5%) Seasonal high water table (1.00) Slow percolation Slope (0.46) GeC Glenelg channery silt Very limited		
Severely eroded Slope (0.12) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) GeC Glenelg channery silt Very limited Glenelg (85%) Bedrock, above 60" (1.00)		
Glenville (5%) Glenville (5%) Seasonal high water table (1.00) Slow percolation >12" (1.00) Slope (0.46) GeC Gtenelg channery silt Channery silt Glenelg (85%) Glenelg (85%) Glenelg (85%) Channery silt		
GeC Glenelg very limited Glenelg (85%) Bedrock, above 60" (1.00)		
GeC Glenelg Very limited Glenelg (85%) Bedrock, above 60" (1.00)		
GeC Glenelg Very limited Glenelg (85%) Bedrock, above 60" (1.00)		
	1.8	0.1%
Slow percent slopes >12" (0.89)		
Slope (0.46)		
Glenville (5%) Seasonal high water table (1.00)		
Slow percolation >12" (1.00)		
Slope (0.12)		
GeC2 Glenelg Moderately Glenelg (85%) Slow percolation channery silt limited >12" (0.89)	4.3	0.2%
percent Slope (0.46)		
stopes, moderately eroded		
Slope (0.46)		_
GeC3 Glenelg Very limited Glenelg (85%) Bedrock, above 60" (1.00)	28.4	1.2%
slopes, Slow percolation >12" (0.89)		
severely Slope (0.46)		
Glenville (5%) Seasonal high water table (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.92)	2.4	0.1%
	loam, 15 to 25 percent	i limited		Slow percolation >12" (0.89)		
	slopes, moderately eroded	slopes, moderately	Chester (7%)	Slow percolation >12" (0.89)		
				Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0.94)	i	
			1	Slope (0.46)		
3eD3	D3 Glenelg channery silt	Very limited	Gienelg (85%)	Bedrock, above 60" (1.00)	2.6	0.1%
loam, 15 to percent	percent			Too steep (0.92)		
	slopes, severely			Slow percolation >12" (0.89)		
	ervied		Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	7.0	0.3%
	siopes, moderately eroded			Slow percolation >12" (1.00)		
		4		Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
/le	Made land, schist and gneiss	Very limited	Udorthents, schist and gneiss (95%)	Seasonal high water table (1.00)	1.0	0.0%
	materials			Slow percolation >12" (1,00)		
				Miscellaneous area (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Potential bedrock near 60" (0.48)	<u></u>	
				Slope (0.05)		
	: :		Glenville (1%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
		1	Hatboro (1%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
		-		Slope (0.01)		
Subtotals for #2	20				103.0	4.4%
Totals for Area	of Interest	_			2,323.5	100.0%
Septic System	m In-Ground Trenc	h (Conventional)	(PA)— Summary h	w Man Unit — #21	Delaware County	Pennsylvania
Septic System Map unit symbol	m In-Ground Trenc	h (Conventional) Rating	(PA)— Summary b (PA045) Component name (percent)	y Map Unit — #21, Rating reasons (numeric values)	Delaware County Acres in AOI	, Pennsylvania Percent of AOI
Septic System Map unit symbol Ge8	Map unit name Glenelg channery	h (Conventional) Rating Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93)	Delaware County Acres in AOI 4.5	, Pennsylvania Percent of AOI 0.2%
Septic System Map unit symbol Ge8	Map unit name Glenelg channery loam, 3 to 8 percent slopes	h (Conventional) Rating Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12)	Delaware County Acres in AOI 4,5	Percent of AOI
Soptic System Map unit symbol GeB GeC2	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89)	Delaware County Acres in AOI 4.5	Percent of AOI 0.2%
Septic System Map unit symbol Ge8 GeC2	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46)	Delaware County Acres in AOI 4.5 1.7	Percent of AOI 0.2%
Septic System Map unit symbol GeB GeC2	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slow percolation >12" (0.94)	Defaware County Acres in AOI 4.5	, Pennsylvania Percent of AOI 0.2% 0.1%
Soptic System Map unit symbol GeB	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slow percolation >12" (0.94) Slope (0.46)	Delaware County Acres in AOI 4.5 1.7	Percent of AOI 0.2% 0.1%
Soptic System Map unit symbol GeB GeC2	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded Glenelg channery silt loam, 9 to 15	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slow percolation >12" (0.94) Slope (0.46) Bedrock, above 60" (1.00)	Delaware County Acres in AOI 4.5 1.7 0.9	Percent of AOI 0.2% 0.1%
Septic System Map unit symbol GeB GeC2	Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded Glenelg channery silt loam, 8 to 15 percent slopes,	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slow percolation >12" (0.94) Slope (0.46) Bedrock, above 60" (1.00) Slow percolation >12" (0.89)	Delaware County Acres in AOI 4.5 1.7 0.9	Percent of AOI 0.2% 0.1%
Septic System Map unit symbol GeB GeC2	Map unit name Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded Glenelg channery silt loam, 8 to 15 percent slopes, sopes, severely eroded	h (Conventional) Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slope (0.46) Bedrock, above 60" (1.00) Slow percolation >12" (0.89) Slope (0.46)	Delaware County Acres in AOI 4.5 1.7 0.9	Percent of AOI 0.2% 0.1%
Septic System Map unit symbol GeB GeC2	Map unit name Map unit name Glenelg channery loam, 3 to 8 percent slopes Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded	Rating Rating Moderately limited Moderately limited	(PA)— Summary b (PA045) Component name (percent) Glenelg (75%) Glenelg (85%) Neshaminy (3%) Glenelg (85%) Glenelg (85%)	y Map Unit — #21, Rating reasons (numeric values) Slow percolation >12" (0.93) Slope (0.12) Slow percolation >12" (0.89) Slope (0.46) Slope (0.46) Slope (0.46) Bedrock, above 60" (1.00) Slow percolation >12" (0.89) Slope (0.46) Seasonal high water table (1.00)	Delaware County Acres in AOI 4.5 1.7 0.9	Percent of AOI 0.2% 0.1%

Septic System	In-Ground Trenci	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #21,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.46)		
Subtotals for #21		7.0	0.3%			
Totals for Area o	f Interest		2,323.5	100.0%		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	11.8	0.5%
	percent slopes			Slope (0.12)		
GeC2	Glenelg channery silt	Moderately C limited	Glenelg (85%)	Slow percolation >12" (0.89)	6.5	0.3%
	percent			Slope (0.46)		
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
				Slope (0.46)		
GeC3	Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded	Very limited	Very limited Glenelg (85%)	Bedrock, above 60" (1.00)	0.1	0.0%
		im, 8 to 15 rcent pes, verely oded		Slow percolation >12" (0.89)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD3	Gleneig channery silt loam, 15 to 25 percent stopes, severely eroded	elg Very limited annery silt	Glenelg (85%)	Bedrock, above 60" (1.00)	2.1	0.1%
		percent		Too steep (0.92)		
		slopes, severely eroded Glenville (5%)		Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
			Slope (0.46)			
GnB2	Glenville silt Ioam, 3 to 8 percent slopes	Very limited	Glenville (85%)	Seasonal high water table (1.00)	0.7	0.0%

Septic Syste	Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #22, Delaware County, Pennsylvania (PA045)							
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOL	Percent of AOI		
	moderately eroded			Slow percolation >12" (1.00)				
			1	Slope (0.12)	1			
			Worsham (7%)	Seasonal high water table (1.00)				
		 		Slow percolation >12" (1.00)	i			
			1	Slope (0.12)				
NaB2	Neshaminy gravelly silt	Very limited	Neshaminy (85%)	Bedrock, above 60" (1.00)	13.0	0.6%		
	loam, 3 to 8 percent slopes, moderately eroded			Potential seasonal high water table (0.47)				
				Slope (0.12)				
			Berks (5%)	Bedrock, above 60" (1.00)				
				Slope (0.12)				
			Mount Lucas (5%)	Seasonal high water table (1.00)	i			
				Slow percolation >12" (1.00)				
				Slope (0.12)				
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Seasonal high water table (1.00)	0.5	0.0%		
				Slow percolation >12" (1.00)				
				Slope (0.01)				
			Glenville (10%)	Seasonal high water table (1.00)				
				Slow percolation >12" (1.00)				
				Slope (0.01)				
			Watchung (5%)	Seasonal high water table (1.00)				
		 		Bedrock, above 60" (1.00)				
				Slow percolation >12" (0.94)				
		:		Slope (0.01)				

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Subtotals for #2	2	34.6	1.5%			
Totals for Area o	f Interest	2,323.5	100.0%			
Septic System	In-Ground Trenc	h (Conventional) ((PA)— Summary k (PA045)	y Map Unit — #23,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	42.2	1.8%
	percent slopes			Slope (0.12)		
GeB3	Glenelg channery silt	Very limited	ed Glenelg (85%)	Bedrock, above 60" (1.00)	20.0	0.9%
	loam, 3 to 8 percent slopes, severely eroded			Slow percolation >12" (0.89)		
				Slope (0.12)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeÇ2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	enelg Moderately channery silt limited loam, 8 to 15 percent slopes, moderately eroded	Glenelg (85%)	Slow percolation >12" (0.89)	1.4	0.1%
			·····	Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0.94)		
			 	Slope (0.46)		······
GeC3	Glenelg channery silt loam, 8 to 15 percent slopes, severely eroded	Glenelg Very limited channery silt loam 8 to 15	Glenelg (85%)	Bedrock, above 60" (1.00)	21.5	0.9%
		percent slopes, severely eroded		Slow percolation >12" (0.89)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD	Glenelg channery silt	Glenelg Very limited channery silt	Glenelg (85%)	Bedrock, above 60" (1.00)	4.5	0.2%
		percent slopes			Too steep (0.92)	

Septic Syster	m In-Ground Trenc	h (Conventional)	(PA)— Summary b (PA045)	y Map Unit — #23,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (0.89)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slow percolation >12" (0.89)		
			Mt. Airy (2%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slight voided fragments (0.02)		
GeD2	Gleneig	Moderately It limited 25	Glenelg (85%)	Too steep (0.92)	0.7	0.0%
	channery silt Ioam, 15 to 25 percent slopes, moderately eroded			Slow percolation >12" (0.89)		
			Chester (7%) Neshaminy (3%)	Slow percolation >12" (0.89)		
				Slope (0.46)		
				Slow percolation >12" (0.94)		
				Slope (0.46)		
GnB2	Glenville silt Ioam, 3 to 8 percent slopes, moderately eroded	Very limited	Glenville (85%)	Seasonal high water table (1.00)	10.3	0.4%
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
G\$B	Glenville very stony silt loam, 0 to 8 percent slopes	Very limited n, t	imited Glenville, extremely stony (100%)	Seasonal high water table (1.00)	15.2	0.7%
				Slow percolation >12" (1.00)		
				Slope (0.08)		
MgB2	Manor loam, 3 to	oam, 3 to Slightly limited	Manor (95%)	Slope (0,12)	11.8	0,5%
	8 percent slopes, moderately eroded	8 percent slopes, moderately eroded		Potential slow percolation >12" (0.01)		

Map unit symbol	Map unit name	Rating		Component name (percent)	Rating reasons (numeric	Acres in AOI	Percent of AOI
MgC	Manor Ioam, 8 to	Very limited	r limited 1	Manor (85%)	values) Slow percolation	19.9	0.9%
	15 percent slopes				>12" (1.00)		
				Blocktown (5%)	Bedrock, above 60" (1.00)		
					Slight voided fragments (0.65)		
					Slope (0.46)		
				Glenville (5%)	Seasonal high water table (1.00)		
					Slow percolation >12" (1.00)		
					Slope (0.46)		
				Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Slope (0.46)			
				Slight voided fragments (0.02)			
					Potential slow percolation >12" (0.01)		
MgD	Manor loam, 15 to 25 percent	Very limited		Manor (85%)	Slow percolation >12" (1.00)	10.7	0.5%
	siopes				Too steep (0.92)		
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Too steep (0.92)			
			Blocktown (5%)	Bedrock, a bove 60" (1.00)			
					Too steep (0.92)		
					Slight volded fragments (0.06)		
				Mt. Airy (5%)	Bedrock, above 60" (1.00)		
					Too steep (0.92)		
					Potential slow percolation >12" (0.01)		

<u>USDA</u>

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
MhE3	Manor loam and channery loam, 25 to 35 percent	Very limited	Manor (90%)	Too steep (1.00)	5.4	0.2%	
				Bedrock, above 60" (1.00)			
	slopes		Glenelg (5%)	Too steep (1.00)			
	eroded			Slow percolation >12" (0.89)			
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.46)			
MmD	Manor very	Moderately	Manor, very	Slope (0.80)	2.5	0.1%	
	to 25 percent slopes	to 25 percent slopes	Innited	stony (100%)	Potential slow percolation >12" (0.01)		
Mn	Melvin silt Ioam Very limited Melvi Penta	am Very limited	Melvin (85%)	Seasonal high water table (1.00)	4.8	0.2%	
				Flooding (1.00)			
				Slow percolation >12" (0.89)			
				Slope (0,00)			
			Penlaw (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
			Bedrock, above 60" (1.00)				
			Potential karst (0.30)				
			1	Slope (0.01)			
			Tyler (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.01)			
		Lin	Lindside (5%)	Seasonal high water table (1.00)			
				Flooding (1.00)			
Septic System	In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #23,	Delaware County	, Pennsylvania	
--------------------	-----------------	--------------------	-----------------------------	---------------------------------------	-----------------	----------------	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
				Slow percolation >12" (0.94)			
		ŕ	}	Slope (0.01)			
Subtotals for #23	3	171.1	7.4%				
Totals for Area o	f Interest				2,323.5	100.0%	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrC	Brandywine loam, 8 to 15	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	2.5	0.1%
	percent slopes			Slope (0.46)		
				Potential bedrock near 60" (0.17)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
			Slow percolation >12" (0.89)			
				Slope (0.46)	i	
		G	Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
CdB	Chester silt loam, 3 to 8	ter silt Moderately m, 3 to 8 limited	Chester (80%)	Slow percolation >12" (0.93)	32.9	1.4%
. <u> </u>	percent stopes			Slope (0.12)		
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	6.3	0.3%
			1	Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Congaree (5%)	Flooding (1,00)		
		We		Slope (0.01)	1	
			Wehadkee (5%)	Seasonal high water table (1.00)		
				Flooding (1.00)		



1/11/2017 Page 40 of 77

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (0.89)	<u> </u>	<u> </u>
				Slope (0.01)		
GeA	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	1.7	0.1%
	percent slopes			Slope (0.01)		
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	177.9	7.7%
	loam, 3 to 8 percent slopes			Slope (0.12)		
GeB3	3 Glenetg channery silt loam, 3 to 8 percent slopes, severely eroded	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	25.3	1.1%
		percent slopes,		Slow percolation >12" (0.89)		\$
				Slope (0.12)		
eibidd		Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeC	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	32.3	1.4%
	percent slopes			Slow percolation >12" (0.89)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
		k N		Slow percolation >12" (1.00)		
				Slope (0.12)		
GeC2	Gienelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	42.6	1.8%
	percent			Siope (0.46)		
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)		
		<u> </u>	; 	Stope (0.46)		
GeC3	Gleneig channery silt loam, 8 to 15	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	105.9	4.6%
	loam, 8 to 15 percent slopes, severely eroded			Slow percolation >12" (0.89)		
				Slope (0.46)		
	1		· · · · · · · · · · · · · · · · · · ·	L	1	

USDA

			(PA045)	<u></u>		
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenville (5%)	Seasonal high water table (1.00)	······	
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeD	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	16.9	0.7%
	percent slopes			Too steep (0.92)		
				Slow percolation >12" (0.89)		
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slow percolation >12" (0.89)		
			Mt. Airy (2%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
			Slight voided fragments (0.02)			
GeD2	Glenelg	Moderately ry silt limited 5 to 25	Glenelg (85%)	Too steep (0.92)	4.8	0.2%
	channery silt loam, 15 to 25 percent			Slow percolation >12" (0.89)		
	slopes, moderately eroded		Chester (7%)	Slow percolation >12" (0.89)		
	erodeu			Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0.94)		
<u> </u>				Slope (0.46)		
GeD3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	9.2	0.4%
	percent			Too steep (0.92)		
	slopes, severely eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1,00)		
				Slope (0.46)		
GeE3	Glenelg channery silt	Very limited	Glenelg (85%)	Too steep (1.00)	1.0	0.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	loam, 25 to 35 percent			Bedrock, above 60" (1.00)		
	severely eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB	Glenville silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	11.5	0.5%
				Slow percolation >12" (1.00)		
				Slope (0.12)		
		Baile (5%)	Baile (5%)	Seasonal high water table (1.00)		1
				Slow percolation >12" (1.00)		
				Slope (0.01)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited Glenville (85%)	Seasonal high water table (1.00)	48.5	2.1%	
	slopes, moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
le	Made land, schist and gneiss	Very limited	Udorthents, schist and gneiss (95%)	Seasonal high water table (1.00)	0.4	0.0%
	materials			Slow percolation >12" (1.00)		
				Miscellaneous area (1.00)		
				Potential bedrock near 60" (0.48)		
				Slope (0.05)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenville (1%)	Seasonal high water table (1.00)		<u> </u>
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Hatboro (1%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
		ł		Slow percolation >12" (0.89)		
	_			Slope (0.01)		
MgB2	Manor loam, 3 to	Slightly limited	Manor (95%)	Slope (0.12)	1.5	0.1%
	slopes, moderately eroded			Potential slow percolation >12" (0.01)		
MgC	gC Manor Ioam, 8 to 15 percent slopes	> Very limited I	Manor (85%)	Slow percolation >12" (1.00)	3.3	0.1%
				Slope (0.46)		
			Blocktown (5%)	Bedrock, above 60" (1.00)		
				Slight voided fragments (0.65)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
		ļ		Slope (0.46)		
				Slight voided fragments (0.02)		
				Potential slow percolation >12" (0.01)		
MgD	Manor Ioam, 15 Very lii to 25 percent slopes	Very limited	Manor (85%)	Slow percolation >12" (1.00)	50.1	2.2%
		slopes			Too steep (0.92)	

1/11/2017 Page 44 of 77

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
			- name (percent)	values)		
· · · · · · · · · · · · · · · · · · ·			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		
		1	Blocktown (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slight voided fragments (0.06)		!
			Mt. Airy (5%)	Bedro ck , above 60" (1.00)		
				Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
/hE	Manor loam and channery loam, 25 to 35 percent slopes	Very limited	Manor (98%)	Too steep (1.00)	8.3	0.4%
		loam, 25 to 35 percent slopes		Potential slow percolation >12" (0.01)		
			Glenville (2%)	Seasonal high water table (1.00)		
				Slow percolation >12* (1.00)		
				Slope (0.12)		
ihe3	Manor loam and	Very limited	Manor (90%)	Too steep (1.00)	2.4	0.1%
	loam, 25 to 35 pe rcent			Bedrock, above 60" (1.00)		
	slopes, severelv		Gleneig (5%)	Too steep (1.00)		
	eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)	sonal high ater table .00) y percolation 2" (1.00)	
				Slow percolation >12" (1.00)		
				Slope (0.46)		
ſn	Melvin silt loam	Very limited	Melvin (85%)	Seasonal high water table (1.00)	0.0	0.0%
				Flooding (1.00)		

Septic Syste	m In-Ground Trenc	h (Conventional) (PA)— Summary t (PA045)	y Map Unit — #24,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
		<u>, </u>		Slow percolation >12" (0.89)		• · · · · · · · · · · · · · · · · · · ·
		ł		Slope (0.00)		
		,	Penlaw (5%)	Seasonal high water table (1.00)		
		;		Slow percolation >12" (1.00)		
				Bedrock, above 60" (1.00)		
				Potential karst (0.30)		
			l	Slope (0.01)		
			Tyler (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
			e e	Slope (0.01)		
			Lindside (5%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.94)		
····				Slope (0.01)		
/ 	Water	Not rated	Water (100%)		2.6	0.1%
le	Wehadkee silt loam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	8.3	0.4%
				Flooding (1.00)	1	
		ļ	- 	Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacla (7%)	Seasonal high water table (1.00)	Í	
		1		Flooding (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Glenville (3%)	Seasonal high water table (1.00)	ļ	

1/11/2017 Page 46 of 77

···· —

....

· ·---

Septic Syste	m In-Ground Trenc	h (Conventional)	(PA)— Summary b (PA045)	y Map Unit — #24	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (1.00)		
	ļ			Slope (0.01)		
WoA	Worsham silt Ioam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Seasonal high water table (1.00)	31.0	1.3%
			Slow percolation >12" (1.00)			
				Slope (0.01)		
			Glenville (10%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
			Watchung (5%)	Seasonal high water table (1.00)		
	1	j		Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.94)		
				Slope (0.01)		
Subtotals for #	24		<u></u>		627,2	27.0%
Totals for Area	of Interest	2,323.5	100.0%			

Septic Syste	m In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #25,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt Ioam, 3 to 8	Moderately limited	Chester (80%)	Slow percolation >12" (0.93)	2.1	0.1%
percent slopes	4		Slope (0.12)			
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	3.0	0.1%
	j			Flooding (1.00)		
			Fast percolation >12" (1.00)			
				Slope (0.01)		
		ł	Congaree (5%)	Flooding (1.00)		
				Slope (0.01)		

÷

ī

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI			
	1		Wehadkee (5%)	Seasonal high water table (1.00)					
				Flooding (1.00)					
							Slow percolation >12" (0.89)		
				Slope (0.01)					
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	29.7	1.3%			
	loam, 3 to 8 percent slopes		"	Slope (0,12)					
GeB3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	26.4	1.1%			
	loam, 3 to 8 percent slopes, severely			Slow percolation >12" (0.89)					
				Slope (0.12)					
eroded	}	Glenville (5%)	Seasonal high water table (1.00)						
				Slow percolation >12" (1.00)					
		1		Slope (0.46)					
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	1.8	0.1%			
	loam, 8 to 15				Slope (0.46)				
	slopes, moderately		Neshaminy (3%)	Slow percolation >12" (0,94)					
				Slope (0.46)					
GeC3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	91.7	3.9%			
	percent slopes,			Slow percolation >12" (0.89)					
	severely	ĺ		Slope (0.46)					
			Glenville (5%)	Seasonal high water table (1.00)	, , ,				
				Slow percolation >12" (1.00)					
				Slope (0.46)		_			
GeD	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	3.2	0.1%			
	loam, 15 to 25 percent slopes	n, 15 to 25 cent slopes		Too steep (0.92)					
				Slow percolation >12" (0.89)					
	1	1	1						



Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slow percolation >12" (0,89)		
			Mt. Airy (2%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Slight voided fragments (0.02)		
GeD2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.92)	2.1	0.1%
	channery silt limited loam, 15 to 25 percent slopes, moderately eroded	limited		Slow percolation >12" (0.89)	1	
			Chester (7%)	Slow percolation >12" (0.89)		
			ļ	Slope (0.46)		
			Neshaminy (3%)	Slow percolation >12" (0.94)		
				Slope (0.46)		
GeD3	Glenelg channery silt	Very limited	/ery limited Glenelg (85%)	Bedrock, above 60* (1.00)	4.5	0.2%
	percent			Too steep (0.92)		
	slopes, severely eroded			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GeE	Glenelg	Very limited	Gleneig (85%)	Too steep (1.00)	6.7	0.3%
	loam, 25 to 35 percent slopes			Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
	1			Slow percolation >12" (1.00)	;	
			Slope (0.12)			

<u>USDA</u>

i

	_		(PA045)				
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
GnB	Glenville silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	10.4	0.4%	
				Slow percolation >12" (1.00)			
				Slope (0.12)			
			Baile (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
				Slope (0.01)			
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	23.0	1.0%	
	slopes, moderately eroded	moderately eroded			Slow percolation >12" (1.00)		
				Slope (0.12)			
		Worsham (7%)	Seasonal high water table (1.00)				
				Slow percolation >12" (1.00)			
	_			Slope (0.12)			
GsB	Glenville very stony silt loam, 0 to 8 percent	iville very Very limited ony sîlt loam, to 8 percent opes	Glenville, extremely stony (100%)	Seasonal high water table (1.00)	33.3	1.4%	
	stopes			Slow percolation >12" (1.00)			
·				Slope (0.08)			
Me	Made land, schist and gneiss	Very limited	Udorthents, schist and gneiss (95%)	Seasonal high water table (1,00)	0.3	0.0%	
	materials			Slow percolation >12" (1.00)			
				Miscellaneous area (1.00)			
				Potential bedrock near 60" (0.48)			
		Glenville (1%)		Slope (0.05)			
			Glenville (1%)	Seasonal high water table (1.00)		-	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation >12" (1.00)	···· <u>·</u>	
				Slope (0.12)		
			Hatboro (1%)	Seasonal high water table (1.00)		1
				Flooding (1.00)		
		[Slow percolation >12" (0.89)		
				Slope (0.01)		
MgD	Manor loam, 15 to 25 percent	Very limited	Manor (85%)	Slow percolation >12" (1.00)	9.9	0.4%
	slopes			Too steep (0.92)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		
			Blocktown (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		•
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
MhE	Manor loam and	Very limited	Manor (98%)	Too steep (1.00)	1.4	0.1%
	channery loam, 25 to 35 percent slopes			Potential slow percolation >12" (0.01)		
			Glenville (2%)	Seaso nal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		<u> </u>
√aB2	Neshaminy gravelly silt loam, 3 to 8	Very limited	Neshaminy (85%)	Bedrock, above 60" (1.00)	62.7	2.7%
	percent	Ì				

ł

Septic Syste	m In-Ground Trenc	h (Conventional) ((PA)— Summary b (PA045)	y Map Unit #25	, Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	slopes, moderately eroded			Potential seasonal high water table (0.47)		
		,		Slope (0.12)		
		i i	Berks (5%)	Bedrock, above 60" (1.00)		
	1		1	Slope (0.12)		j
			Mount Lucas (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
VaC2	Neshaminy gravelly silt loam, 8 to 15 percent slopes, moderately eroded	Very limited	Neshaminy (85%)	Bedrock, above 60'' (1.00)	12.3	0.5%
		percent slopes, moderately eroded	í	Potential seasonal high water table (0.47)	1 	
			1	Slope (0.46)		
	k I		Berks (5%)	Bedrock, above 60" (1.00)		:
	ĺ			Slope (0.46)		
			Mount Lucas (5%)	Seasonal high water table (1.00)		
	-	1		Slow percolation >12" (1.00)		I
	 		l 	Slope (0.12)		
NsD	Neshaminy very stony silt loam,	Very limited	Neshaminy, extremely	Slow percolation >12" (1.00)	30.5	1.3%
	percent slopes		(97%)	Slope (0.80)		
			1	Potential bedrock near 60" (0.48)		
			Towhee, extremely stony (3%)	Seasonal high water table (1.00)	1	
				Slow percolation >12" (1.00)	i	
				Slope (0.05)		
N	Water	Not rated	Water (100%)		0.7	0.0%

		1	J	······		
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ne	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	20.7	0.9%
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacla (7%)	Seasonal high water table (1.00)		
		Flooding (1.0	Flooding (1.00)			
				Fast percolation >12" (1.00)		
	•			Slope (0.01)		
		Glenville (3%)	Seasonal high water table (1.00)		i	
				Slow percolation >12" (1.00)		
				Slope (0.01)		
NoB	Worsham silt loam, 3 to 8 percent slopes	sham silt Very limited am, 3 to 8 ercent slopes	Worsham (85%)	Seasonal high water table (1.00)	1.8	0.1%
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Glenville (10%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Watchung (5%)	Seasonal high water table (1.00)		
				Bedrock, above 60" (1.00)		: 1
				Slow percolation >12" (0.94)		
			L	Slope (0.05)		
	-				6 - 6 -	4.0.004

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	17.7	0.8%
	loam, 3 to 8 percent stopes			Slope (0.12)		
GeB3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	4.4	0.2%
loam, 3 to 8 percent slopes,			Slow percolation >12" (0.89)			
	severely eroded			Slope (0,12)		
		Glenville (5	Glenville (5%)	Seasonal high water table (1.00)		
			Slow percolation >12" (1.00)			
				Slope (0.46)		
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	13.7	0.6%
loam	percent			Slope (0.46)	ļ	
	slopes, moderately eroded	5	Neshaminy (3%)	Slow percolation >12" (0.94)		
_	erouca			Slope (0,46)		
GnB2	Glenville silt Ioam, 3 to 8 percent	enville silt Very limited loam, 3 to 8 percent slopes, moderately eroded	Glenvilte (85%)	Seasonal high water table (1.00)	6.9	0.3%
	moderately eroded			Slow percolation >12" (1.00)		
	1			Slope (0,12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0,12)		
Ma	Made land, gravelly materials	Very limited	Udorthents, shale and sandstone	Seasonal high water table (1.00)	0.2	0.0%
			(85%)	Miscellaneous area (1.00)		
				Potential bedrock near 60" (0.17)		
	1		F	Slope (0.05)		
		Penn (5%)	Penn (5%)	Bedrock, above 60" (1.00)		
				Slope (0.12)		

USDA

Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 54 of 77

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
		<u> </u>		Potential slow percolation >12" (0.01)		<u> </u>
			Readington (2%)	Seasonal high water table (1.00)		
1				Slow percolation >12" (1.00)		
				Bedrock, above 60" (1.00)		
				Slope (0.12)		
			Reaville (2%)	Seasonal high water table (1.00)		
				Bedrock, above 60" (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Bowmansville (2%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.94)		
	1			Slope (0.01)		
			Abbottstown (2%)	Seasonal high water table (1.00)		
	1			Bedrock, above 60" (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Berks (1%)	Bedrock, above 60" (1.00)		
				Slope (0.05)		
			Croton (1%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		1
	· ·]	Slope (0.12)		

T T

!

Septic System	In-Ground Trenc	h (Conventional) (PA)— Summary b (PA045)	y Map Unit — #26,	Delaware County	, Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
)tA	Othello silt loams, 0 to 2 percent	Very limited	Othello, drained (50%)	Seasonal high water table (1.00)	3.3	0.1%
	slopes, Northern Coastal Plain			Fast percolation >12" (1.00)		
			Othello, undrained (30%)	Seasonal high water table (1.00)		
		Fallsington, undrained (8%)		Fast percolation >12" (1.00)		
			Fallsington, undrained (8%)	Seasonal high water table (1.00)		
		,		Fast percolation >12" (1.00)		1
				Slow percolation >12" (0.90)		
		Kentud unda (7%) Mattap	Kentuck, undrained (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Fast percolation >12" (1.00)		
			Mattapex (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
			Fast percolation >12" (1.00)			
	 		/ 	Slope (0.00)		<u> </u>
A	Sassafras toam, 0 to 2 percent	Very limited	Sassafras (80%)	Fast percolation >12" (1.00)	6.2	0.3%
	siopes			Slow percolation >12" (0.94)	ļ	
		}		Slope (0.01)		
		Woodstown (4%)	Seasonal high water table (1.00)			
				Fast percolation >12" (1.00)		
			Slope (0.00)			
			Downer (4%)	Fast percolation >12" (1.00)	l	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Potential slow percolation >12" (0.01)		
		1		Slope (0.00)		
			Ingleside (4%)	Seasonal high water table (1.00)		
				Fast percolation >12" (1.00)		
	 			Slow percolation >12" (1.00)		
		1	 	Slope (0.01)	f F	
		}	Fallsington, drained (4%)	Seasonal high water table (1.00)		
		;		Fast percolation >12" (1.00)		
				Slow percolation >12" (0.90)		
aB2	Sassafras Ioam, V 2 to 5 percent	n, Very limited Sassafras (80%) It	Fast percolation >12" (1.00)	18. 6	0.8%	
	siopes			Slow percolation >12" (0.94)		
				Slope (0.05)		
			Woodstown (4%)	Seasonal high water table (1.00)		
				Fast percolation >12" (1.00)	-	
				Slope (0.05)		
			Downer (4%)	Fast percolation >12" (1.00)		
				Slope (0.05)		
				Potential slow percolation >12" (0.01)		
			Ingleside (4%)	Seasonal high water table (1.00)		
		2		Fast percolation >12" (1.00)		
				Slow percolation , >12" (1.00)		
			{	Slope (0.05)	İ	

Ceptic System			(PA045)	y map om — #20,		
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Fallsington, drained (4%)	Seasonal high water table (1.00)		
				Fast percolation >12" (1.00)		
				Slow percolation >12" (0.90)		
WnA	Woodstown loam, 0 to 2 percent	2 Very limited Woodstow (81%)	Woodstown (81%)	Seasonal high water table (1.00)	9.1	0.4%
	slopes, Northern Coastal Plain			Fast percolation >12" (1.00)		
		1		Slope (0.00)		
			Fallsington (7%)	Seasonal high water table (1.00)		
			Fast percolation >12" (1.00)			
		1		Slow percolation >12" (0.90)		
	j		Hammonton (7%)	Seasonal high water table (1.00)		
		t		Fast percolation >12" (1.00)		
				Stope (0.00)		
			Hambrook (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Fast percolation >12" (1.00)		
				Slope (0.00)		
Subtotals for #2	6			·	80.1	3.4%
Totals for Area o	of Interest				2,323.5	100.0%
Septic System	n In-Ground Trenc	h (Conventional) (PA) — Summary b (PA045)	y Map Unit — #27,	Delaware County	, Pennsylvania
Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
3rD3	Brandywine	Very limited	Brandywine (85%)	Fast percolation	1.3	0.1%

<u>USDA</u>

Natural Resources Conservation Service

percent

slopes,

aanaaaaa

Too steep (0.92)

ettera a

स्वय का स्वयंत्र के स्वयंत

สไสธารและอาการกระบะส

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	severely eroded			Potential bedrock near 60" (0.17)		
			Gleneig (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)	-	
				Slow percolation >12" (0.89)		
		6	Glenville (5%)	Seasonal high water table (1.00)		
		1	1	Slow percolation >12" (1.00)		
			1	Slope (0.46)		
GeA	Glenelg channery	Moderately limited	Gleneig (75%)	Slow percolation >12" (0.93)	3.2	0.1%
	percent slopes	ļ	-	Slope (0.01)		
GeB	Glenelg channery	Moderately Gle limited	Glenelg (75%)	Slow percolation >12" (0.93)	4.7	0.2%
	loam, 3 to 8 percent slopes	percent slopes		Slope (0.12)		
GeC2	Glenelg channery silt	Blenelg Moderately G channery silt limited	Glenelg (85%)	Slow percolation >12" (0.89)	1.7	0.1%
	loam, 8 to 15	ſ	1	Slope (0.46)		
	slopes, moderately		Neshaminy (3%) Slow percolation >12" (0.94)	l.		
	cioaco			Slope (0.46)		
GnB2	Glenville silt Ioam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	0.5	0,0%
	slopes, moderately eroded	ç		Slow percolation >12" (1.00)		
		ſ	ļ	Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
			<u> </u>	Slope (0.12)		
Subtotals for #2	27				11.4	0.5%
Totals for Area	of Interest				2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	1.1	0.0%
				Flooding (1.00)		
	ļ			Fast percolation >12" (1.00)		
				Slope (0.01)	1	
	C	Congaree (5%)	Flooding (1.00)			
	l			Slope (0.01)		
	- - - - -		Wehadkee (5%)	Seasonal high water table (1.00)		
			l	Flooding (1.00)		
				Slow percolation >12" (0.89)		
		1		Slope (0.01)		
GeB	eB Glenelg channery loam, 3 to 8 percent slopes	Moderately limited	Gienelg (75%)	Slow percolation >12" (0.93)	0.8	0.0%
			Į	Slope (0.12)	,	
GnB2	Glenville silt Ioam, 3 to 8 percent	e silt Very limited 3 to 8 ent s, grately ed	Glenville (85%)	Seasonal high water table (1.00)	6.7	0.3%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
	ł			Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
]			Slow percolation >12" (1.00)		
			ļ	Slope (0.12)		
MgB2	Manor loam, 3 to	Slightly limited	Manor (95%)	Slope (0.12)	3.6	0.2%
	slopes, moderately eroded			Potential slow percolation >12" (0.01)		
MgC	Manor loam, 8 to 15 percent	Very limited	Manor (85%)	Slow percolation > 12" (1.00)	17.9	0.8%
	1	lopes	 	Slope (0.46)		
			Blocktown (5%)	Bedrock, above 60" (1.00)		
		1		Slight voided fragments (0.65)		

i.

L

Ţ

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
· · · · · · · · · · · · · · · · · · ·				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
	1			Slow percolation >12" (1.00)		
]	Slope (0.46)		
			Mł. Airy (5%)	Bedrock, above 60" (1.00)		,
	1		1	Slope (0.46)		
				Slight volded fragments (0.02)		1
				Potential slow percolation >12" (0.01)		
MgD	D Manor loam, 15 to 25 percent stopes	Very limited	Manor (85%)	Slow percolation >12" (1.00)	18.3	0.8%
		1		Too steep (0.92)		
		 	Gienville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Too steep (0.92)		
		Blocktown (5%)	Bedrock, above 60" (1.00)			
				Too steep (0.92)		
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Bedrock, above 60" (1.00)		
	1			Too steep (0.92)		
				Potential slow percolation >12" (0.01)		
/hE3	Manor loam and	Manor loam and Very limited channery loam, 25 to 35 percent	Manor (90%)	Too steep (1.00)	3.5	0.2%
	channery loam, 25 to 35			Bedrock, above 60" (1.00)	ļ	
	slopes,	1	Gleneig (5%)	Too steep (1.00)		
	eroded			Slow percolation		

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
			Glenville (5%)	Seasonal high water table (1.00)	· · · · · · · · · · · · · · · · · · ·	
		4	()	Slow percolation >12" (1.00)		
			1	Slope (0.46)		
	Melvin silt loam	Very limited	Melvin (85%)	Seasonal high water table (1.00)	1.7	0.19
		ı	1	Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.00)		
			Penlaw (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Bedrock, above 60" (1.00)		
			1	Potential karst (0.30)		
		Į		Slope (0.01)		
			Tyler (5%)	Seasonal high water table (1.00)	· · ·	
				Slow percolation >12" (1.00)		
			1	Slope (0.01)		
			Lindside (5%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.94)		
				Slope (0.01)		
Ve	Wehadkee silt loam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	10.4	0.49
	! 			Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)	ļ	
			·	·		

i

Man unié	Man unit name	Doting	Component	Dating measure /	Anna in AOI	Deregat of AOI
symbol	Map unit name	Kaung	name (percent)	(numeric values)	Acres in Avi	Percent of AU
			Chewacia (7%)	Seasonal high water table (1.00)		
	}			Flooding (1.00)	ľ	
				Fast percolation >12" (1.00)		
				Slope (0.01)		
			Glenville (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
	ĺ			Slope (0.01)		
btotals for #3					64.0	2.8%
als for Area of Interest					2,323.5	100.0%

Septic System	n in-Ground Trend	n (conventional)	(PA)— Summary I (PA045)	оу мар ∪nit — #4,	Delawaré County,	Pennsylvania	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
BrD3	Brandywine Ioam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	12.1	0,5%	
	slopes,			Too steep (0.92)			
	severely eroded	Glenelg (5%)			Potential bedrock near 60'' (0.17)		
			Bedrock, above 60" (1.00)				
:]	Glenville (5%)	Too steep (0.92)			
1				Slow percolation >12" (0.89)			
				Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
]	Slope (0.46)			
BrE	Brandywine	Very limited	Brandywine	Too steep (1.00)	3.1	0.1%	
	percent slopes		(85%)	Fast percolation >12" (1.00)			
				Potential bedrock near 60" (0.17)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
<u></u>			Glenelg (5%)	Too steep (1.00)		·
				Bedrock, above 60" (1.00)		
	í			Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	7.8	0.3%
	ļ.			Flooding (1.00)		
				Fast percolation >12" (1.00)	1	
		}	ļ	Slope (0.01)		
			Congaree (5%)	Flooding (1.00)		
		Wehadkee (5%)		Slope (0.01)		
			Seasonal high water table (1.00)			
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
			ĺ	Slope (0.01)		
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	3.7	0.2%
	percent slopes			Slope (0.12)		
GeD	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	1.1	0.0%
	percent slopes			Too steep (0.92)		
	- -		l l	Slow percolation >12" (0.89)		
]		Gleneig (5%)	Bedrock, above 60" (1.00)		
			ļ	Too steep (0.92)		
			[Slow percolation >12" (0.89)		
	1		Mt. Airy (2%)	Bedrock, above 60" (1.00)		
	:			Too steep (0.92)		



Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 64 of 77

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres In AOI	Percent of AOI
				Slight voided fragments (0.02)		
NaC2	Neshaminy gravelly silt	Very limited	Neshaminy (85%)	Bedrock, above 60" (1.00)	1.0	0.0%
percent slopes, moderately eroded			Potential seasonal high water table (0.47)			
		Í		Slope (0.46)		
			Berks (5%)	Bedrock, above 60* (1.00)		
			Slope (0.46)			
	Mount Lucas (5%)	Seasonal high water table (1.00)				
			}	Slow percolation >12" (1.00)		
		-		Slope (0.12)		
Subtotals for #4				!	28.8	1.2%
Totals for Area c	of Interest				2.323.5	400.0%
				······		
Septic Syster	n In-Ground Trenc	h (Conventional)	(PA)— Summary I (PA045)	oy Map Unit — #5,	Delaware County,	Pennsylvania
Septic Syster Map unit symbol	n In-Ground Trenc Map unit name	h (Conventional) Rating	(PA)— Summary I (PA045) Component name (percent)	oy Map Unit — #5, Rating reasons (numeric values)	Delaware County, Acres in AOI	Pennsylvania Percent of AOI
Septic Syster Map unit symbol BrD	Map unit name Brandywine loam, 15 to 25	h (Conventional) Rating Very limited	(PA) Summary I (PA045) Component name (percent) Brandywine (85%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%
Septic Syster Map unit symbol BrD	Map unit name Brandywine Ioam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI
Septic Syster Map unit symbol BrD	Map unit name Brandywine Ioam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%
Septic Syster Map unit symbol BrD	Map unit name Brandywine loam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA) Summary I (PA045) Component name (percent) Brandywine (85%) Glenelg (5%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17) Bedrock, above 60" (1.00)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%
Septic Syster Map unit symbol BrD	Map unit name Brandywine Ioam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%) Glenelg (5%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17) Bedrock, above 60" (1.00) Too steep (0.92)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%
Septic Syster Map unit symbol BrD	Map unit name Brandywine loam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%) Glenelg (5%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17) Bedrock, above 60" (1.00) Too steep (0.92) Slow percolation >12" (0.89)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI
Septic Syster Map unit symbol BrD	Map unit name Brandywine Ioam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%) Glenelg (5%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17) Bedrock, above 60" (1.00) Too steep (0.92) Slow percolation >12" (0.89) Seasonal high water table (1.00)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%
Septic Syster Map unit symbol BrD	Map unit name Brandywine Ioam, 15 to 25 percent slopes	h (Conventional) Rating Very limited	(PA)— Summary I (PA045) Component name (percent) Brandywine (85%) Glenelg (5%) Glenville (5%)	by Map Unit — #5, Rating reasons (numeric values) Fast percolation >12" (1.00) Too steep (0.92) Potential bedrock near 60" (0.17) Bedrock, above 60" (1.00) Too steep (0.92) Slow percolation >12" (0.89) Seasonal high water table (1.00) Slow percolation >12" (1.00)	Delaware County, Acres in AOI 14.0	Pennsylvania Percent of AOI 0.6%

			(FAU40)			
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrE	Brandywine	Very limited	Brandywine	Too steep (1.00)	3.8	0.2%
	loam, 25 to 40 percent slopes		(85%)	Fast percolation >12" (1.00)		
				Potential bedrock near 60" (0.17)	- - -	
	l 		Gleneig (5%)	Too steep (1.00)		
				Bedrock, above 60" (1.00)		
				Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
		4	1	Slope (0.12)		
Ch	Chewacla silt Ioam	Very limited	Chewacia (85%)	Seasonal high water table (1.00)	5.1	0.2%
				Flooding (1.00)		
			Fast percolation >12" (1.00)Slope (0.01)Congaree (5%)Flooding (1.00)Slope (0.01)	Fast percolation >12" (1.00)		
				Slope (0.01)		
		ļ				
		ļ		Slope (0.01)		
			Wehadkee (5%)	Seasonal high water table (1.00)		
	1		l	Flooding (1.00)		
				Slow percolation >12" (0.89)		
	<u> </u>]	Slope (0.01)		_
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	9.8	0.4%
	percent slopes			Slope (0.12)		
GeC2	Glenelg Moderately channery silt limited	Moderately limited	Glenelg (85%)	Slow percolation >12" (0.89)	11.8	0.5%
	percent		·	Slope (0.46)		
	slopes, moderately eroded	bes, Neshar derately ded	Neshaminy (3%)	Slow percolation >12" (0.94)		i I
		{	Slope (0.46)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeC3	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	4.8	0.2%
	loam, 8 to 15 percent slopes.			Slow percolation >12" (0.89)		1
	severely			Slope (0.46)		
	eroueu		Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		i
			Slope (0.46)			
GeD	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	1.7	0.1%
	loam, 15 to 25 percent slopes			Too steep (0.92)		
				Slow percolation >12" (0.89)		
		Glenelg (5%)	Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		•
			 	Slow percolation >12" (0.89)		
			Bedrock, above 60" (1.00)			
				Too steep (0.92)		
	-			Slight voided fragments (0.02)		
GnB	Glenvilte silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	1.4	0.1%
				Slow percolation >12" (1.00)		
				Slope (0.12)		l l
			Baile (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
			<u> </u>	Slope (0.01)		
Subtotals for #	5				52.5	2.3%
Totals for Area	of Interest	2,323.5	100.0%			

					and the second	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrD3	Brandywine Ioam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	24.9	1.1%
	percent slopes,	1		Too steep (0.92)		
	severely eroded	•		Potential bedrock near 60" (0.17)		
		ć	Glenelg (5%)	Bedrock, above 60" (1.00)		
				Too steep (0.92)		
			1	Slow percolation >12" (0.89)		
	Glenv	Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)		
				Slope (0.46)		
BrE	E Brandywine loam, 25 to 40 percent slopes	Very limited	Brandywine	Too steep (1.00)	2,8	0.1%
		Glenelg (5%)		Fast percolation >12" (1.00)		
				Potential bedrock near 60" (0.17)		
	ļ		Glenelg (5%)	Too steep (1.00)		
			 	Bedrock, above 60" (1.00)		
			Slow percolation >12" (0.89)			
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
		1		Slope (0.12)		
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Seasonal high water table (1.00)	3.1	0.1%
			1	Flooding (1.00)		
				Fast percolation >12" (1.00)) 1
				Slope (0.01)		
			Congaree (5%)	Flooding (1.00)]	
			ļ	Slope (0.01)		

Septic Syste	em In-Ground Trend	ch (Conventional)	(PA) — Summary (PA045)	by Map Unit — #6,	Delaware County,	Pennsylvania			
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI			
			Wehadkee (5%)	Seasonal high water table (1.00)					
				Flooding (1.00)					
		1			Slow percolation >12" (0.89)		Slow percolation >12" (0.89)		
			<u> </u>	Slope (0.01)					
GeB	Glenelg channery loam 3 to 8	Moderately limited	Gleneig (75%)	Slow percolation >12" (0.93)	39.9	1.7%			
	percent slopes		5	Slope (0.12)					
GeC	Glenelg channery silt	Very limited	Glenelg (85%)	Bedrock, above 60" (1.00)	6.7	0.3%			
	loam, 8 to 15 percent slopes	loam, 8 to 15 percent slopes		Slow percolation >12" (0.89)					
				Slope (0.46)					
		Glenville (5%)	Seasonal high water table (1.00)						
			Slow percolation >12" (1.00)		1				
	: !			Slope (0.12)					
GeC2	Gienelg channery silt	Moderately Glenelg (85 limited	Gleneig (85%)	Slow percolation >12" (0.89)	24.3	1.0%			
	percent			Slope (0.46)					
	slopes, moderately eroded		Neshaminy (3%)	Slow percolation >12" (0.94)					
·	- <u> </u>	 	¢	Slope (0.46)					
GeD	Gleneig channery silt loam, 15 to 25	Very limited	Glenelg (85%)	Bedrock, above 60* (1.00)	17.0	0.7%			
	percent slopes			Too steep (0.92)					
				Slow percolation >12" (0.89)					
			Glenelg (5%)	Bedrock, above 60" (1.00)					
				Too steep (0.92)					
				Slow percolation >12" (0.89)					
		1	Mt. Airy (2%)	Bedrock, above 60" (1.00)					
			ļ	Too steep (0.92)					
				Slight voided fragments (0.02)					

Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 69 of 77

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeE	Gleneig	Very limited	Glenelg (85%)	Too steep (1.00)	0.4	0.0%
	channery silt loam, 25 to 35 percent slopes			Bedrock, above 60* (1.00)		
				Siow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)	1 1 	
		r	1	Slow percolation >12" (1.00)		
			Ì	Slope (0.12)		
GnB2	Glenville silt loam, 3 to 8 percent	Very limited	Glenville (85%)	Seasonal high water table (1.00)	0.8	0.0%
	slopes, moderately eroded			Slow percolation >12" (1.00)		
			ł	Slope (0.12)	i .	
!			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
GsB	Glenville very stony silt loam, 0 to 8 percent	very Very limited ilt loam, percent	y limited Glenville, extremely stony (100%)	Seasonal high water table (1.00)	0.1	0.0%
	slopes			Slow percolation >12" (1.00)		
		1	j	Slope (0.08)		
NaC2	Neshaminy gravelly silt	Very limited	Neshaminy (85%)	Bedrock, above 60" (1.00)	0.3	0.0%
	percent slopes, moderately eroded			Potential seasonal high water table (0.47)		:
	i	l.	{	Slope (0.46)		1
			Berks (5%)	Bedrock, above 60" (1.00)		i
				Slope (0.46)	ļ	
			Mount Lucas (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)	i I	
		1	}	Siope (0.12)		

<u>USDA</u>

Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 70 of 77

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Seasonal high water table (1.00)	0.2	0.0%	
				Slow percolation >12" (1.00)			
	k 		Į	Slope (0.01)			
		Glenville (10%) S	Seasonal high water table (1.00)				
				Slow percolation >12" (1.00)		i	
				Slope (0.01)			
			Watchung (5%)	Seasonal high water table (1.00)			
				Bedrock, above 60" (1.00)			
		•		Slow percolation >12" (0.94)			
	 			Slope (0.01)	1		
Subtotals for #6		120.5	5.2%				
Totals for Area of	f Interest	Totals for Area of Interest					

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrD	Brandywine Ioam, 15 to 25	Very limited	Brandywine (85%)	Fast percolation >12" (1.00)	31.5	1.4%
	percent slopes		F	Too steep (0.92)		
				Potential bedrock near 60'' (0.17)		
	 		Glenelg (5%)	Bedrock, above 60" (1.00)		
		{		Too steep (0.92)		
		 	[Slow percolation >12" (0.89)		
			Glenville (5%)	Seasonal high water table (1.00)		
	• 			Slow percolation >12" (1.00)	~~	
				Slope (0.12)		

<u>USDA</u>

Web Soll Survey National Cooperative Soil Survey 1/11/2017 Page 71 of 77

Map unit Map unit name Rating Component Rating reasons Acres in AOI Percent of AOI							
symbol		l	name (percent)	(numeric values)			
Ch	Chewacla silt Ioam	Very limited	Chewacia (85%)	Seasonal high water table (1.00)	0.2	0.0%	
				Flooding (1.00)			
			1	Fast percolation >12" (1.00)			
				Slope (0.01)			
			Congaree (5%)	Flooding (1.00)			
				Slope (0.01)			
			Wehadkee (5%)	Seasonal high water table (1.00)			
				Flooding (1.00)			
				Slow percolation >12" (0.89)			
			Slope (0.01)		_		
GeB	Glenelg channery	lenelg Moderately channery limited loam, 3 to 8 percent slopes	Glenelg (75%)	Slow percolation >12" (0.93)	13.1	0.6%	
	percent slopes			Slope (0.12)			
GeC2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	Moderately ery silt limited 8 to 15 t , ately	Glenelg (85%)	Slow percolation >12" (0.89)	5.7	0.2%	
				Siope (0.46)			
			Neshaminy (3%)	Slow percolation >12" (0.94)			
				Slope (0.46)			
GeC3 C	Glenelg channery silt	Glenelg Very limited channery silt loam, 8 to 15 percent stopes, severely eroded	Glenelg (85%)	Bedrock, above 60" (1.00)	14.3	0.6%	
	percent slopes, severely eroded			Slow percolation >12" (0.89)			
				Slope (0.46)			
			Glenville (5%)	Seasonal high water table (1.00)			
				Slow percolation >12" (1.00)			
_				Slope (0.46)	_		
GnB	Glenville silt loam, 3 to 8 percent slopes	Very limited	Glenville (90%)	Seasonal high water table (1.00)	0.3	0.0%	
				Stow percolation >12" (1.00)			
				Slope (0.12)			

<u>LSDA</u>

Man unit Man unit name Pating Commonant Dating ressone Association AOL Devect of AOL						
symbol	i Map unit name	Kating	name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AU
			Baile (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Stope (0.01)		
GnB2	Glenville silt Ioam, 3 to 8 percent slopes, moderately	Very limited	Glenville (85%)	Seasonal high water table (1.00) Slow percolation	0.0	0.0%
	eroded			Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
Лe	Made land, schist and gneiss	Ide land, Very limited schist and gneiss naterials	Udorthents, schist and gneiss (95%)	Seasonal high water table (1.00)	0.3	0.0%
	materials			Slow percolation >12" (1.00)		
				Miscellaneous area (1.00)		
				Potential bedrock near 60'' (0.48)		
				Slope (0.05)		
		Glenv	Glenville (1%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.12)		
			Hatboro (1%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
Ve	Wehadkee siłt Ioam	Very limited	Wehadkee (90%)	Seasonal high water table (1.00)	0.7	0.0%

Septic System	n In-Ground Trend	ch (Conventional)	(PA)— Summary I (PA045)	by Map Unit — #7,	Delaware County,	Pennsylvania
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Flooding (1.00)		
				Slow percolation >12" (0.89)		
				Slope (0.01)		
			Chewacia (7%)	Seasonal high water table (1.00)		
				Flooding (1.00)		
			ļ	Fast percolation >12" (1.00)		'
				Slope (0.01)		
		-	Glenville (3%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.01)		
Subtotals for #7	ubtotals for #7					2.8%
otals for Area of Interest					2,323.5	100.0%

Septic System In-Ground Trench (Conventional) (PA)— Summary by Map Unit — #8, Delaware County, Pennsylvania (PA045)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0.93)	1.8	0.1%
	percent slopes			Slope (0.12)		
GeC3 Glenel chan	Glenelg Very limited channery silt loam, 8 to 15 percent slopes, severely eroded	Glenelg (85%)	Bedrock, above 60" (1.00)	3.1	0.1%	
				Slow percolation >12" (0.89)		
				Slope (0.46)		
			Glenville (5%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Slope (0.46)		
GnB2	nB2 Glenville silt loam, 3 to 8 percent slopes, moderately eroded	rille silt Very limited m, 3 to 8 cent	Glenville (85%)	Seasonal high water table (1.00)	0.0	0.0%
		slopes, moderately eroded	Slow percolation >12" (1,00)			

<u>USDA</u>

Mon unti	Man unit name	Disting	Commentant	Dation seasons		Demont of AO
symbol	Map unit name	Raung	name (percent)	Rating reasons (numeric values)		Percent of AU
				Slope (0.12)		
			Worsham (7%)	Seasonal high water table (1.00)		
				Slow percolation >12" (1.00)		
				Stope (0.12)		
Subtotals for #8	· · · · · · · · · · · · · · · · · · ·		·	·	4.9	0.29
otals for Area of Interest					2,323.5	100.09

· · · —

			(PA045)	ay ince other way	bolunaro ocunty,	, onnoy traine
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AO	Percent of AOI
GeB	Glenelg channery	Moderately limited	Glenelg (75%)	Slow percolation >12" (0,93)	2.7	0.1%
	loam, 3 to 8 percent slopes			Slope (0.12)		
Subtotals for #9		2.7	0.1%			
Totals for Area o	f Interest	2,323.5	100.0%			

Septic System In-Ground Trench (Conventional) (PA)— Summary by Rating Value					
Rating	Acres in AOI	Percent of AOI			
Very limited	1,416.7	61.0%			
Moderately limited	885.4	38.1%			
Slightly limited	16.8	0.7%			
Null or Not Rated	4,5	0.2%			
Totals for Area of Interest	2,323.5	100.0%			


Description

This is a system of subsurface lines that distribute effluent from a septic tank into the natural soil. The distribution lines are at a minimum depth of 12 inches and are on slopes of 0 to 25 percent. Only the part of the soils between depths of 0 and 60 inches is considered when the soils are rated.

The soil properties and site features considered are those that affect absorption of the effluent and construction and maintenance of the system and those that may affect public health. These include depth to a water table, depth to bedrock, content of rock fragments, flooding, slope, and saturated hydraulic conductivity (Ksat). Flooding is a serious problem because it can result in improper treatment of the effluent and contamination of ground water or surface water. If Ksat is too fast or too slow, if the content of rock fragments is too high, or if the water table is too close to the surface, the effluent can contaminate the ground water. If this system is improperly installed on the steeper slopes, the effluent could flow along the surface of the soils. Additional grading may be needed in areas downslope from the system.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Slightly limited" indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. "Moderately limited" indicates that the soil has features that are somewhat favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the Selected Soil Interpretations report with this

<u>USDA</u>

interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher



Septic System Sand Mound Bed or Trench (PA)—Delaware County, Pennsylvania (Sand Mound)



USDA

Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 2 of 62

Septic System Sand Mound Bed or Trench (PA)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AÖI	Percent of AOI
BrD3	Brandywine	Very limited	Brandywine	Too steep (1.00)	11.8	0.5%
	loam, 15 to 25 percent slopes, severely		(85%)	Potential fast percolation 12-20" (0.26)		
	eroded		Glenelg (5%)	Too steep (1.00)		
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Potential seasonal high water table (1.00)	0.0	0.0%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	0.1	0.0%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
		2		Slope (0.40)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	4.8	0.2%
	channery silt	limited	Chester (7%)	Too steep (0.85)		
slopes, severely eroded	percent slopes, severely eroded	nt s. ely d	Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		

<u>USDA</u>

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately G limited	Glenville (85%) F	Potential seasonal high water table (0.98)	0.7	0.0%
moderatel eroded	eroded			Slow percolation 12-20" (0.79)	-	
				Slope (0.40)		
GnC2	nC2 Glenville silt Moderately loam, 8 to 15 limited percent slopes,	Moderately limited	Glenville (100%)	Potential seasonal high water table (0.98)	3.8	0.2%
	moderately eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
Subtotals for #1						0.9%
Totals for Area of Interest						100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt	Slightly limited Chester (80%) Glenville (10%)	Chester (80%)	Slope (0.40)	30.8	1.3%
percent slopes	percent slopes		Glenville (10%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
			Gladstone (5%)	Slope (0.40)		
			Mt. Airy (5%)	Slope (0.40)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	9.2	0.4%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
percent slopes	percent slopes		Blocktown (5%)	Slope (0.40)	-	1
			Slight voided fragments (0.02)			

Septic System	Sand Mound Bed	or Trench (PA)—	- Summary by Map	Unit — #10, Delaw	are County, Penns	sylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	1.9	0.1%
	loam, 8 to 15	limited	Edgemont (10%)	Too steep (0.85)		
	percent slopes	percent slopes Glenvi	Glenville (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	7.2	0.3%
	channery silt loam, 8 to 15 percent stopes, moderately	loam, 8 to 15 percent stopes, moderately	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
		Neshaminy (3%)	Slow percolation 12-20" (0.79)			
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	12.7	0.5%
	loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	2.0	0.1%

Septic System	Sand Mound Bed	or Trench (PA)—	Summary by Map	Unit — #10, Delaw	are County, Penns	ylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GnB	Glenville silt loam, 3 to 8 percent slopes	Moderately Glenville (90%) F limited	Glenville (90%) Potential 4 seasonal high water table (0.98)	4.7	0.2%	
		Slow percolation 12-20" (0.79)				
	<u>.</u>			Slope (0.40)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.1	0.0%
moderately eroded			Slow percolation 12-20" (0.79)			
			Slope (0.40)			
Subtotals for #10						2.9%
Totals for Area	of Interest	2,323.5	100.0%			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrB2	Brandywine	Slightly limited	Brandywine	Slope (0.40)	1.3	0.1%
	loam, 3 to 8 percent slopes, moderately		(85%)	Potential fast percolation 12-20" (0.26)		
	eroded		Glenelg (5%)	Slope (0.40)	!	
BrC3	Brandywine	Moderately	Brandywine	Too steep (0.85)	4.5	0.2%
loam, 8 to 15 percent slopes, severely eroded	limited	(00%)	Potential fast percolation 12-20" (0.26)			
	eroded		Chester (5%)	Too steep (0.85)		
			Glenelg (5%)	Too steep (0.85)		
			Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
BrD	Brandywine	Very limited	Brandywine	Too steep (1.00)	1.6	0.1%
	loam, 15 to 25 percent slopes	15 to 25 (85%) It slopes Glenelg (5%)	(85%)	Potential fast percolation 12-20" (0.26)		
			Glenelg (5%)	Too steep (1.00)		
BrD2	Brandywine loam, 15 to 25 percent slopes,	Very limited	Brandywine (85%)	Too steep (1.00)	1.7	0.1%

Septic System			Summary by Map	Unit #11, DelaW	are County, renns	syrvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric	Acres in AOI	Percent of AOI
				values)		
	moderately eroded			Potential fast percolation 12-20" (0.26)		
			Glenelg (5%)	Too steep (1.00)		
BrD3	Brandywine	Very limited	Brandywine	Too steep (1.00)	2.7	0.1%
	percent slopes, severely		(85%)	Potential fast percolation 12-20" (0.26)		
	eroded		Glenelg (5%)	Too steep (1.00)		
BrE	Brandywine	Very limited	Brandywine	Too steep (1.00)	2.3	0.1%
	loam, 25 to 40 percent slopes		(85%)	Potential fast percolation 12-20" (0.26)		
			Glenelg (5%)	Too steep (1.00)		
BsF	Brandywine very stony loam, 25 to 50 percent slopes	Very limited	Brandywine (85%)	Too steep (1.00)	2.2	D.1%
GeC	Glenelg channery silt loam, 8 to 15 percent slopes	Moderately	Gleneig (85%)	Too steep (0.85)	0.6	0.0%
		limited	Edgemont (10%)	Too steep (0.85)		
		Glenville	Glenville (5%)	Potential seasonal high water table (0.98)		
			L L	Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	3.4	0.1%
	channery silt loam, 8 to 15 percent slopes,	annieu	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	0.6	0.0%
	loam, 8 to 15	Imited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded	percent slopes, severely eroded	Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GnB	Glenville silt loam, 3 to 8 percent slopes	Moderately limited	Glenville (90%)	Potential seasonal high water table (0.98)	3.9	0.2%
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GnC2	Glenville silt loam, 8 to 15 percent slopes,	Moderately limited	Glenville (100%)	Potential seasonal high water table (0.98)	0.0	0.0%
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
We	Wehadkee silt Very limited loam	Very limited	y limited Wehadkee F (90%) F	Potential seasonal high water table (1.00)	1.9	0.1%
				Flooding (1.00)		
				Slope (0.18)		
			Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
Subtotals for #11	1				26.7	1.1%
Totals for Area o	f Interest				2,323.5	100.0%
Septic System	Sand Mound Bed	or Trench (PA)— \$	Summary by Map	Unit — #12, Delaw	are County, Penns	ylvania (PA045)
Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
BrD3	Brandywine	Very limited	Brandywine	Too steep (1.00)	0.2	0.0%
	loam, 15 to 25 percent slopes, severely		(85%)	Potential fast percolation 12-20" (0.26)		

USDA Natural Resources Conservation Service

eroded

Glenelg (5%)

Too steep (1.00)

Septic System	Sand Mound Bed	or Trench (PA)—	Summary by Map I	Unit — #12, Delaw	are County, Penns	ylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewada silt Ioam	Very limited	Chewacla (85%)	Potential seasonal high water table (1.00)	1.6	0.1%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
		We	Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Stope (0.18)		_
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	10.1	0.4%
	channery loam, 3 to 8 percent slopes		Gladstone (10%)	Slope (0.40)		
			Blocktown (5%)	Slope (0.40)		
			2	Slight voided fragments (0.02)	-	
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC3	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	14.4	0.6%
	loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.3	0.0%
	loam, 15 to 25		Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	16.4	0.7%
	eroded	s	Slow percolation 12-20" (0.79)			
				Slope (0.40)		
MgD	Manor Ioam, 15	Very limited	Manor (85%)	Too steep (1.00)	3.6	0.2%
	to 25 percent slopes	Slopes Glenville (59	Glenville (5%)	Potential seasonal high water table (1.00)		
				Too steep (1.00)		
		1	Blocktown (5%)	Bedrock, above 20" (1.00)		
				Too steep (1.00)		
		Mt. Airy (5%)	Slow percolation 12-20" (0.58)			
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Too steep (1.00)		
			Potential bedrock near 20" (0.20)			
W	Water	Not rated	Water (100%)	·	1.1	0.0%
We	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	0.9	0.0%
				Flooding (1.00)		
				Slope (0.18)		
			Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)	1	
	ł			Slope (0.18)		
Subtotals for #	12				48.6	2.1%
Totals for Area	of Interest				2,323.5	100.0%

ana an

ាកកម្មការចុះអាចក្រុមហិរទៀតជាតិជារប់ដែលដែលសំណាម សំណាម

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	1.2	0.1%	
	loam, 3 to 8		Gladstone (10%)	Stope (0.40)			
	percent slopes		Blocktown (5%)	Slope (0.40)			
				Slight voided fragments (0.02)			
			Glenville (5%)	Low potential seasonal high water table (0.50)			
				Slope (0.40)			
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.6	0.0%	
moderately eroded			Slow percolation 12-20" (0.79)				
				Slope (0.40)			
MgC Manor loam, 8 to 15 percent slopes	Manor loam, 8 to	Moderately	Manor (85%)	Too steep (0.85)	0.8	0.0%	
	15 percent slopes	limitéd	Glenville (5%)	Too steep (0.85)			
					Low potential seasonal high water table (0.50)		
			Mt. Airy (5%)	Too steep (0.85)			
				Potential bedrock near 20" (0.20)			
				Slight volded fragments (0.02)			
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Potential seasonal high water table (1.00)	0.5	0.0%	
				Slow percolation 12-20" (1.00)			
				Slope (0.18)			
		W	Watchung (5%)	Potential seasonal high water table (1.00)			
				Slow percolation 12-20" (1.00)			
				Slope (0.18)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Totals for Area	of Interest	d	- k , · · · · · · · · · · · · · · · · · ·		2,323.5	100.0%
Septic System	Sand Mound Bed	or Trench (PA)	Summary by Map	Unit — #14. Delawa	are County, Penns	vivania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrD Brandywine Ioam, 15 to 25 percent slopes	Very limited	Brandywine (85%)	Too steep (1.00) Potential fast percolation 12-20" (0.26)	6.5	0.3%	
			Glenelg (5%)	Too steep (1.00)		
Ch	Chewacia silt Ioam	Chewacla silt Very limited Chewacla (i loam	Chewacla (85%)	Potential seasonal high water table (1.00)	1.8	0.1%
			Flooding (1.00)			
				Slope (0.18)		
	;		Congaree (5%)	Flooding (1.00)		
	2 2			Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	2.1	0.1%
	channery		Gladstone (10%)	Slope (0.40)		0.170
	percent slopes		Blocktown (5%)	Slope (0.40)		
		•		Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	30,7	1.3%
	channery silt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%) Po	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		

USDA Natural Resources Conservation Service

I.

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation 12-20" (0.50)		
GnB2 Glenville silt loam, 3 to 8 percent slopes, moderately eroded	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	7.8	0.3%
	moderately eroded			Slow percolation 12-20'' (0.79)		
				Slope (0.40)		
Me	Made land, schist and	Very limited 1	Udorthents, schist and gneiss (95%)	Miscellaneous area (1.00)	6.7	0.3%
gneiss material	gneiss materials			Slow percolation 12-20" (1.00)		
		н		Slope (0.31)		
			Hatboro (1%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
MgD	Manor loam, 15	or loam, 15 Very limited	Manor (85%)	Too steep (1.00)	0.0	0.0%
	to 25 percent slopes		Glenville (5%)	Potential seasonal high water table (1.00)		
				Too steep (1.00)		
			Blocktown (5%)	Bedrock, above 20" (1.00)		
				Too steep (1.00)		
				Slow percolation 12-20" (0.58)		
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Too steep (1.00)		
j				Potential bedrock near 20" (0,20)		
WoA	Worsham silt Ioam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Potential seasonal high water table (1.00)	1.9	0,1%
				Slow percolation 12-20" (1.00)	ļ	
				Slope (0.18)	Ì	

USDA

121211122

"TOPOTO D

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Watchung (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (1.00)		
	:			Slope (0.18)		
Subtotals for #1	4	57.6	2.5%			
Totals for Area of Interest					2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt	Slightly limited	Chester (80%)	Slope (0.40)	4.8	0.2%
percent slopes		Glenville (10%)	Low potential seasonal high water table (0.50)			
	:			Slope (0.40)		
			Gladstone (5%)	Stope (0.40)		
			Mt. Airy (5%)	Slope (0.40)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
Ch	Chewacla silt Ioam	Very limited	nited Chewacla (85%)	Potential seasonal high water table (1.00)	3.5	0.1%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	11.4	0.5%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		



Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	4.8	0.2%
channery silt Ioam, 8 to 15 percent slopes	limited	Edgemont (10%)	Too steep (0.85)			
	percent slopes	percent slopes	Glenville (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0,79)	-	
				Slope (0.40)		
GeC2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately eroded	Moderately limited	Glenelg (85%)	Too steep (0.85)	30.9	1.3%
			Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)	1	
				Slow percolation 12-20* (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		l
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	14.8	0,6%
	loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		

Septic System	Sand Mound Bed	or Trench (PA)— S	Summary by Map	Unit — #15, Delawa	are County, Penns	sylvania (PA045)	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	2.8	0.1%	
GnB	nB Glenville silt loam, 3 to 8 percent slopes	Glenville silt Moderately loam, 3 to 8 limited percent slopes	Moderately limited	Glenville (90%)	Potential seasonal high water table (0.98)	2.5	0.1%
				Slow percolation 12-20" (0.79)			
				Slope (0.40)			
GnB2	Glenville silt loam, 3 to 8 percent stopes,	B2 Glenville silt loam, 3 to 8 percent stopes,	Glenville silt Moderately Gl loam, 3 to 8 limited percent stopes,	Glenville (85%)	Potential seasonal high water table (0.98)	2.1	0.1%
	eroded			Slow percolation 12-20" (0.79)			
				Slope (0.40)			
GnC2	Genville silt loam, 8 to 15 percent slopes,	Glenville silt Moderately loam, 8 to 15 limited percent slopes, moderately eroded	Glenville (100%)	Potential seasonal high water table (0.98)	3.6	0.2%	
	moderately eroded			Too steep (0.85)			
				Slow percolation 12-20" (0.79)			
G\$B	Glenville very stony silt loam, 0 to 8 percent stopes	Glenville very stony silt loam, 0 to 8 percent stopes	Glenville, extremely stony (100%)	Potential seasonal high water table (0.98)	6.1	0.3%	
				Slow percolation 12-20" (0.79)			
				Slope (0.35)			
NsD	Neshaminy very	Very limited	Neshaminy,	Too steep (1.00)	0.6	0.0%	
	8 to 25 percent slopes		extremely bouldery (97%)	Slow percolation 12-20" (0.50)			
			Towhee, extremely stony (3%)	Potential seasonal high water table (1.00)			
				Slope (0.31)			
We	We Wehadkee silt Ioam	ilt Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	33.1	1.4%	
			Flooding (1.00)				

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slope (0.18)	-	
			Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
ubtotals for #15					120.9	5.2%
otals for Area of Interest					2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	1.2	0.1%
	channery loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
	r r		Glenville (5%)	Low potential seasonal high water table (0.50)		
	1			Slope (0.40)		
GeC Glenelg chann Ioam, percei	Glenelg	enelg Moderately channery silt limited loam, 8 to 15 percent slopes	Glenelg (85%)	Too steep (0.85)	0.0	0.0%
	channery silt loam, 8 to 15		Edgemont (10%)	Too steep (0.85)		
	percent slopes		slopes Glenville (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	5.5	0.2%
	channery sitt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		

USDA Natural Resources Conservation Service

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI			
symbol			name (percent)	(numeric values)					
GeD	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.8	0.0%			
	channery silt loam, 15 to 25		Edgemont (5%)	Too steep (1.00)					
	percent slopes		Gleneig (5%)	Too steep (1.00)					
			Mt. Airy (2%)	Too steep (1.00)					
	•			Potential bedrock near 20" (0.27)					
				Slight voided fragments (0.02)					
GnB2	Glenville sift loarn, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	1.9	0.1%			
	moderately eroded			Slow percolation 12-20" (0.79)					
				Slope (0.40)					
Qu	Quarries	Not rated	Pits, quarri e s (90%)		0.1	0.0%			
			Waste areas (10%)						
Subtotals for #	16	9.4	0.4%						
Totals for Area	of Interest		Totals for Area of Interest						

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg channery loam, 3 to 8 percent slopes	Slightly limited	Glenelg (75%)	Slope (0.40)	4.6	0.2%
			Gladstone (10%)	Slope (0.40)		
			Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Stope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	2,2	0.1%
	loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		

Septic System	Septic System Sand Mound Bed or Trench (PA)— Summary by Map Unit — #17, Delaware County, Pennsylvania (PA045)							
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres In AOI	Percent of AOI		
				Slow percolation 12-20" (0.79)				
			Neshaminy (3%)	Too steep (0.85)				
				Slow percolation 12-20" (0.50)				
Subtotals for #1	7	6.8	0.3%					
Totals for Area o	of Interest	2,323.5	100.0%					

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	30.2	1.3%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)	:	
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC2	Glenelg channery silt loam, 8 to 15 percent slopes, moderately	Moderately	Glenetg (85%)	Too steep (0.85)	25.0	1.1%
		limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	10.6	0.5%
	channery silt loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
		1		Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
		•	1	I	1	

USDA Natural Resources Conservation Service

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation 12-20" (0.50)		
GeD	Gleneig	Very limited	Glenelg (85%)	Too steep (1.00)	4.8	0.2%
	channery silt loam, 15 to 25		Edgemont (5%)	Too steep (1.00)		
	percent slopes		Glenelg (5%)	Too steep (1.00)		1
			Mt. Airy (2%)	Too steep (1.00)		
				Potential bedrock near 20" (0.27)		
				Slight voided fragments (0.02)		
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	2.2	0.1%
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.8	0.0%
	channery silt ioam, 15 to 25	25	Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GeE	Glenelg	lenelg Very limited	Glenelg (85%)	Too steep (1.00)	0.1	0.0%
	channery silt loam, 25 to 35	Í	Neshaminy (3%)	Too steep (1.00)		
	percent slopes			Slow percolation 12-20" (0.50)		
GnB2	Glenville silt Ioam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.1	0.0%
	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GnC2	Glenville silt loam, 8 to 15 percent stopes,	Moderately limited	Glenville (100%)	Potential seasonal high water table (0.98)	0.4	0.0%
	eroded	Į	1	Too steep (0.85)		
			Slow percolation 12-20" (0.79)			
Subtotals for #18	3	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	74.0	3.2%
Totals for Area o	f Interest		······································	······································	2,323.5	100.0%

<u>USDA</u>

Septic System	Sand Mound Bed	or Trench (PA)— \$	Summary by Map	Unit — #19, Delawa	are County, Penns	ylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Potential seasonal high water table (1.00)	4.2	0.2%
				Flooding (1.00)		
	Slope (0.18)	Slope (0.18)				
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	5.9	0.3%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	38.5	1.7%
	channery silt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)	1	
				Slow percolation 12-20" (0.50)		
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	8.2	0.4%
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	9.8	0.4%
	channery silt loam, 15 to 25 percent		Neshaminy (3%)	Too steep (1.00)		
	· · · · · · · · · · · · · · · · · · ·		1	L		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	slopes, severely eroded			Slow percolation 12-20" (0.50)		
GeE	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.8	0.0%
	loam, 25 to 35	loam, 25 to 35	Neshaminy (3%)	Too steep (1.00)	1	
	percent slopes			Slow percolation 12-20" (0.50)		
GeE3	Glenelg	Glenelg Very limited Glenel	Glenelg (85%)	Too steep (1.00)	1.9	0.1%
	loam, 25 to 35	ļ	Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	4.6	0.2%
	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)	, 	
MgC	Manor Ioam, 8 to	Manor Ioam, 8 to Moderately 15 percent limited slopes	Manor (85%)	Too steep (0.85)	0.1	0.0%
	15 percent limited slopes		Glenville (5%)	Too steep (0.85)	1	
			Low potential seasonal high water table (0.50)			
]	Mt. Airy (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
MgD	Manor Ioam, 15	Very limited	Manor (85%)	Too steep (1.00)	4.3	0.2%
	to 25 percent slopes		Glenville (5%)	Potential seasonal high water table (1.00)		
				Too steep (1.00)		
		1	Blocktown (5%)	Bedrock, above 20'' (1.00)		
				Too steep (1.00)		
				Slow percolation	1	

ran in

Sand	Mound
------	-------

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
				Slight voided fragments (0.06)			
			Mt. Airy (5%)	Too steep (1.00)			
				Potential bedrock near 20" (0.20)			
MhE	Manor loam and channery loam, 25 to 35 percent slopes	Very limited	Manor (98%)	Too steep (1.00)	0.1	0.0%	
NaC2	Neshaminy	Moderately	Neshaminy	Too steep (0.85)	0.1	0.0%	
	gravelly silt limit loam, 8 to 15 percent slopes, moderately eroded	gravelty silt limited loam, 8 to 15 percent	(85%)	Slow percolation 12-20" (0.50)			
		slopes, moderately		Berks (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.27)			
		Chest	Chester (5%)	Too steep (0.85)			
		L 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Mount Lucas (5%)	Potential seasonal high water table (0.98)			
				Slow percolation 12-20" (0.79)			
				Slope (0.40)			
We	Wehadkee silt loam	Very límited	Wehadkee (90%)	Potential seasonal high water table (1.00)	2.9	0.1%	
				Flooding (1.00)			
	ł			Slope (0.18)			
			Chewacla (7%)	Potential seasonal high water table (1.00)			
				Flooding (1.00)			
				Slope (0.18)			
Subtotals for #	19				81.3	3.5%	
Totals for Area	of Interest				2,323.5	100.0%	

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol		hating	name (percent)	(numeric values)		
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	22.5	1.0%
	channery loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes	Blocktow	Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
		į	Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC2	Glenelg	Moderately	Gleneig (85%)	Too steep (0.85)	9.2	0.4%
	channery silt loam, 8 to 15 percent slopes, moderately	channery silt lim loam, 8 to 15 percent slopes,	limited Glenville (5%)	Potential seasonal high water table (0.98)	!	
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0,79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	1.5	0.1%
	channery silt loam, 8 to 15	channery silt limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded	percent slopes, severely eroded	Glenville (5%)	Potential seasonal high water table (0.98)		
		1		Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
			Į	Slow percolation 12-20" (0.50)		
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	3.8	0.2%
	loam, 15 to 25		Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	10.2	0.4%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres In AOI	Percent of AOI
				Slow percolation 12-20" (0,79)		
				Slope (0.40)		
We	Wehadkee silt loam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	2.7	0.1%
	1			Flooding (1.00)		
				Slope (0.18)		
			Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Siope (0.18)		
WoA	Worsham silt Ioam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Potential seasonal high water table (1.00)	2.9	0.1%
				Slow percolation 12-20" (1.00)		
				Slope (0.18)		
			Watchung (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (1.00)		
				Slope (0.18)		
Subtotals for #	2	· · · · · · · · · · · · · · · · · · ·			52.8	2.3%
Totals for Area	of Interest				2,323.5	100.0%
Septic System	Sand Mound Bed	or Trench (PA)	Summary by Map	Unit — #20, Delaw	are County, Penns	vivania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt	Slightly limited	Chester (80%)	Slope (0.40)	1.7	0.1%
	loam, 3 to 8 percent slopes	1	Glenville (10%)	Low potential		

<u>USDA</u>

Gladstone (5%)

Mt. Airy (5%)

seasonal high water table (0.50) Slope (0.40)

Slope (0.40)

Slope (0.40)

Sepuc System		Doffer		Dating	Acros in AO	Porcent of ACI	
symbol	Map unit name	Kaung	name (percent)	(numeric values)	Acres in AOI	Percent of AOI	
· · · · · · · · · · · · · · · · · · ·				Potential bedrock near 20" (0.20)			
				Slight voided fragments (0.02)			
GeB	Glenelg	Slightly limited	ited Glenelg (75%) Slope (0.40)	53.8	2.3%		
	channery loam, 3 to 8		Gladstone (10%)	Slope (0.40)			
	percent slopes		Blocktown (5%)	Slope (0.40)			
				Slight voided fragments (0.02)			
			Glenville (5%)	Low potential seasonal high water table (0.50)			
				Slope (0.40)			
}eB3	Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded	Slightly limited	Glenelg (85%)	Slope (0.40)	0.0	0.0%	
GeC	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	1.8	0.1%	
	channery silt loam, 8 to 15	limited	Edgemont (10%)	Too steep (0.85)			
	percent slopes		Glenville (5%)	Potential seasonal high water table (0.98)			
				Slow percolation 12-20" (0.79)			
				Slope (0.40)			
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	4.3	0.2%	
	channery silt loam, 8 to 15 percent slopes, moderately	. limited	Glenville (5%)	Potential seasonal high water table (0.98)			
	eroded	1		Too steep (0.85)			
				Slow percolation 12-20" (0.79)			
	Ì		Neshaminy (3%)	Too steep (0.85)			
			1	Clow percelation			

Slow percolation 12-20" (0.50) GeC3 Glenelg Moderately Glenelg (85%) Too steep (0.85) 28.4 1.2% channery silt limited Chester (7%) Too steep (0.85) loam, 8 to 15



Natural Resources **Conservation Service**

GeB

GeB3

GeC

GeC2

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	2.4	0.1%
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1,00)	2.6	0.1%
	loam, 15 to 25		Neshaminy (3%)	Too steep (1,00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Benville sitt Moderately loam, 3 to 8 limited percent slopes,	Glenville (85%)	Potential seasonal high water table (0,98)	7.0	0.3%
	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
Ме	Made land, schist and	Very limited	Udorthents, schist and	Miscellaneous area (1.00)	1.0	0.0%
	gneiss materials		gneiss (95%)	Slow percolation 12-20" (1.00)		
				Slope (0.31)		
			Hatboro (1%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		,
Subtotals for #20	D				103.0	4,4%
Totals for Area o	f Interest				2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AO	Percent of AOI
GeB	Glenelg	Slightly limited	Gleneig (75%)	Slope (0.40)	4.5	0.2%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0,40)		
		Glenville (5%) Slight voided fragments (0.02) Low potential seasonal hig water table (0.50)	Slight voided fragments (0.02)			
			Low potential seasonal high water table (0.50)			
				Slope (0.40)		
GeC2	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	1.7	0.1%
channery sill loam, 8 to 15 percent slopes, moderately	channery silt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	0.9	0.0%
	loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded	Glenville (5%)	Potential seasonal high water table (0.98)			
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
Subtotals for #2	:1				7.0	0,3%
Totals for Area of	of Interest				2,323.5	100.0%
Septic System	Sand Mound Bed	or Trench (PA)—	Summary by Map	Unit — #22, Delaw	are County, Penns	sylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Gienela	Slightly limited	Glopela (75%)	Slope (0.40)	11.9	0.5%

Septic System Sand Mound Bed or Trench (PA)— Summary by Map Unit — #21, Delaware County, Pennsylvania (PA045)

GeB limitea Glenelg (75%) Slope (0.40) 0.5% eneig 11,8 ıyı channery Gladstone (10%) Slope (0.40) loam, 3 to 8 percent slopes Slope (0.40) Blocktown (5%)

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slight volded fragments (0.02)		
			Glenvílle (5%)	Low potential seasonal high water table (0.50)		
				Stope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	6.5	0.3%
	channery silt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
		5		Slow percolation 12-20" (0.50)		
GeC3	Glenelg Moderately channery silt limited loam, 8 to 15 percent slopes, severely eroded	Moderately	Glenelg (85%)	Too steep (0.85)	0.1	0.0%
		limited	Chester (7%)	Too steep (0.85)		
		Glenville (5%)	Potential seasonal high water table (0.98)			
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
		}	Neshaminy (3%)	Too steep (0.85)		
			-	Slow percolation 12-20" (0.50)		
GeD3	Glenelg	Very limited	Gleneig (85%)	Too steep (1.00)	2.1	0.1%
	loam, 15 to 25		Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.7	0.0%
	eroded		:	Slow percolation 12-20" (0.79)		
			l	Slope (0.40)		
NaB2	Neshaminy gravelly silt	Slightly limited	Neshaminy (85%)	Slow percolation 12-20" (0.50)	13.0	0.6%

USDA

.

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	loam, 3 to 8			Slope (0.40)		
	slopes,		Berks (5%)	Slope (0.40)		
	moderately eroded			Potential bedrock near 20" (0.27)		
			Chester (5%)	Stope (0.40)		
WoA	Worsham silt loam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Potential seasonal high water table (1.00)	0.5	0.0%
			Slow percolation 12-20" (1.00)			
				Slope (0.18)		
			Watchung (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (1.00)		
				Slope (0.18)		
Subtotals for #2	2	· ····································			34.6	1.5%
Totals for Area o	f Interest				2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Glenelg	Stenelg Slightly limited channery loam, 3 to 8	Glenelg (75%)	Slope (0.40)	42.2	1.8%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeB3	Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded	Slightly limited	Glenelg (85%)	Slope (0.40)	20.0	0.9%
GeC2	Glenelg channery silt	Moderately limited	Glenelg (85%)	Too steep (0.85)	1.4	0.1%

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
	loam, 8 to 15 percent slopes, moderately eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
			Too steep (0.85)			
				Slow percolation 12-20" (0.79)		
		}	Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	21.5	0.9%
	loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeD	Glenelg channery silt loam, 15 to 25 percent slopes	Very limited y silt 5 to 25 slopes	Glenelg (85%)	Too steep (1.00)	4.5	0.2%
			Edgemont (5%)	Too steep (1.00)		
			Glenelg (5%)	Too sleep (1.00)		
			Mt, Airy (2%)	Too steep (1.00)		
				Potential bedrock near 20" (0.27)		
				Slight volded fragments (0.02)		
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	0.7	0.0%
GnB2	Glenville silt loam, 3 to 8 percent slopes, mederately	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	10.3	0.4%
	moderately eroded			Slow percolation 12-20" (0.79)		
	1	Į		Slope (0.40)		

USDA

and the second state of th

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GsB	Glenville very stony silt loam, 0 to 8 percent slopes	Moderately n, limited	Glenville, extremely stony (100%)	Potential seasonal high water table (0.98)	15.2	0.7%
				Slow percolation 12-20" (0.79)		
				Slope (0.35)		
MgB2	Manor loam, 3 to 8 percent slopes, moderately eroded	Slightly limited	Manor (95%)	Slope (0.40)	11.8	0.5%
MgC	Manor Ioam, 8 to	Moderately	Manor (85%)	Too steep (0.85)	19.9	0.9%
	slopes	limited	Glenville (5%)	Too steep (0.85)		
				Low potential seasonal high water table (0.50)		
			Mt. Airy (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
MgD	Manor Ioam, 15	15 Very limited	Manor (85%)	Too steep (1.00)	10.7	0.5%
	slopes		Glenville (5%)	Potential seasonal high water table (1.00)		
		Blocktown (5%		Too steep (1.00)		
			Blocktown (5%)	Bedrock, above 20" (1.00)		
				Too steep (1.00)		
				Slow percolation 12-20" (0.58)		
				Slight voided fragments (0.06)		
	1		Mt. Airy (5%)	Too steep (1.00)	:	
				Potential bedrock near 20" (0.20)		
MhE3	Manor loam and channery loam, 25 to 35 percent	Very limited	Manor (90%)	Too steep (1.00)	5.4	0.2%

<u>USDA</u>

i

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	severely eroded		Glenelg (5%)	Too steep (1.00)		
MmD	Manor very stony loam, 8 to 25 percent slopes	Very limited	Manor, very stony (100%)	Too steep (1.00)	2.5	0.1%
Mn	Melvin silt loam	Very limited	Melvin (85%)	Potential seasonal high water table (1.00)	4.8	0.2%
				Flooding (1.00)		
	-	-		Siope (0.09)		
			Penlaw (5%)	Potential seasonal high water table (1.00)		
				Potential karst (0.30)		
				Slope (0.18)		
			Tyler (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (0.50)		
				Slope (0.18)		
			Lindside (5%)	Flooding (1.00)		
				Low potential seasonal high water table (0.67)		
				Slope (0.18)		
Subtotals for #	23				171.1	7.4%
Totals for Area of Interest					2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrC E	Brandywine loam, 8 to 15 percent slopes	Moderately limited	Brandywine (85%)	Too steep (0.85)	2.5	0.1%
				Potential fast percolation 12-20" (0.26)		
			Chester (5%)	Too steep (0.85)		
			Glenelg (5%)	Too steep (0.85)		

A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNE

يليم أيد مناكر أساله من من ما تعاريه المن والمن

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glenvil le (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
 CdB	Chester silt	Slightly limited	Chester (80%)	Slope (0.40)	32.9	1.4%
	loam, 3 to 8 percent slopes		Glenville (10%)	Low potential seasonal high water table (0.50)		
			1	Slope (0.40)		
		: - -	Gladstone (5%)	Slope (0.40)		
			Mt. Airy (5%)	Slope (0.40)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
Ch	Chewacla silt Ioam	Very limited	Chewacla (85%)	Potential seasonal high water table (1.00)	6.3	0.3%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)	:	
				Flooding (1.00)		
				Slope (0.18)		
GeA	Glenelg channery ioam, 0 to 3 percent slopes	g Slightly limited nery , 0 to 3 ent slopes	Glenelg (75%)	Slope (0.18)	1.7	0.1%
			Glenville (10%)	Low potential seasonal high water table (0.50)		
				Slope (0.18)		
	:		Gladstone (10%)	Slope (0.18)		
GeB	Glenelg	Slightly limited y lo 8 slopes	Glenelg (75%)	Slope (0.40)	177.9	7.7%
	channery loam, 3 to 8 percent slopes		Gladstone (10%)	Slope (0.40)		
			Blocktown (5%)	Slope (0.40)		

USDA

1

Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 34 of 62

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeB3	Glenelg channery silt loarn, 3 to 8 percent slopes, severely eroded	Slightly limited	Gienelg (85%)	Slope (0.40)	25.3	1.1%
GeC	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	32.3	1.4%
	channery silt Ioam, 8 to 15	limited	Edgemont (10%)	Too steep (0.85)		
	percent slopes		Glenville (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GeC2	Glenelg channery sllt loam, 8 to 15 percent stopes, moderately eroded	Glenelg Moderately channery sllt limited loam, 8 to 15 percent slopes, moderately eroded	Glenelg (85%)	Too steep (0.85)	42.6	1.8%
			Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	105.9	4.6%
	channery slit loam, 8 to 15 percent slopes, severely eroded	limited	Chester (7%)	Too steep (0.85)		
			Glenville (5%) I	Potential seasonal high water table (0.98)		
				Too steep (0.85) Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
--------------------	--	---------------------------------------	---	---	--	----------------
				Slow percolation 12-20" (0.50)		
GeD	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	16.9	0.7%
	loam, 15 to 25		Edgemont (5%)	Too steep (1.00)	E CONTRACTOR E CONTRA	
	percent slopes		Glenelg (5%)	Too steep (1.00)		
			Mt. Airy (2%)	Too steep (1.00)		
				Potential bedrock near 20" (0.27)		
				Slight volded fragments (0.02)	;	
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	4.8	0.2%
eD3 Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	9.2	0,4%	
	loam, 15 to 25		Neshaminy (3%)	Too steep (1.00)	-	
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GeE3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	1.0	0.0%
	channery silt loam, 25 to 35	nery silt 25 to 35	Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GnB	Glenville silt loam, 3 to 8 percent slopes	Moderately limited	Glenville (90%)	Potential seasonal high water table (0.98)	11.5	0.5%
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GnB2	Glenville silt Ioam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	48.5	2.1%
	moderately eroded			Slow percolation 12-20" (0.79)	i	
				Slope (0.40)		
Me	Made land, schist and	Very limited	Udorthents, schist and gneiss (95%)	Miscellaneous area (1.00)	0.4	0.0%
	•	• • • • • • • • • • • • • • • • • • •		·	1	

.

*

a service service and s

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	gneiss materials			Slow percolation 12-20" (1.00)		
				Slope (0.31)		
			Hatboro (1%)	Potential seasonal high water table (1.00)		1
				Flooding (1.00)		
				Slope (0.18)		
MgB2	Manor loam, 3 to 8 percent slopes, moderately eroded	Slightly limited	Manor (95%)	Slope (0.40)	1.5	0.1%
MgC	Manor Ioam, 8 to	Moderately	Manor (85%)	Too steep (0.85)	3.3	0.1%
	15 percent slopes	limited	Glenville (5%)	Too steep (0.85)		
	0.0000		Low potential seasonal high water table (0.50)			
			Mt. Airy (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
MgD	Manor Ioam, 15	Very limited	Manor (85%)	Too steep (1.00)	50.1	2.2%
	slopes		Glenville (5%)	Potential seasonal high water table (1.00)		
				Too steep (1.00)		
			Blocklown (5%)	Bedrock, above 20" (1.00)		
			Too steep (1.00)			
				Slow percolation 12-20" (0.58)	ĺ	
				Slight volded fragments (0.06)		
	1		Mt. Airy (5%)	Too steep (1.00)		
				Potential bedrock near 20" (0.20)		

USDA Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 37 of 62

Manunit	Man unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol		Kauny	name (percent)	(numeric values)	Acres III AOI	
MhE	Manor loam and channery loam, 25 to 35 percent slopes	Very limited	Manor (98%)	Too steep (1.00)	8.3	0.4%
MhE3	Manor loam and	Very limited	Manor (90%)	Too steep (1.00)	2,4	0.1%
	channery loam, 25 to 35 percent slopes, severely eroded		Glenelg (5%)	Too steep (1.00)		
Mn	Melvin silt loam	Very limited	Melvin (85%)	Potential seasonal high water table (1.00)	0.0	0.0%
				Flooding (1.00)		
				Slope (0.09)		
		Penlaw (5%	Penlaw (5%)	Potential seasonal high water table (1.00)		
				Potential karst (0.30)		
				Slope (0.18)		l
			Tyler (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (0.50)		
				Slope (0.18)		
			Lindside (5%)	Flooding (1.00)		
				Low potential seasonal high water table (0.67)		
	[ĺ		Slope (0.18)		:
w	Water	Not rated	Water (100%)		2.6	0.1%
We	Weh a dkee silt Ioam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	8.3	0.4%
				Flooding (1.00)		
				Slope (0.18)		
			Chewacla (7%)	Potential seasonal high water table (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres In AOI	Percent of AOI
				Flooding (1.00)		
				Slope (0.18)		
WoA	Worsham silt Ioam, 0 to 3 percent slopes	Very limited	Worsham (85%)	Potential seasonal high water table (1.00)	31.0	1.3%
				Slow percolation 12-20" (1.00)		
				Slope (0.18)		
			Watchung (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (1.00)	:	
				Slope (0.18)		
Subtotals for #24	1	<u> </u>			627.2	27.0%
Totals for Area of Interest						100.0%

.

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
CdB	Chester silt	Slightly limited	Chester (80%)	Slope (0.40)	2.1	0.1%
Ioam, 3 to 8 percent slopes	percent slopes		Glenville (10%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
			Gladstone (5%) Slope (0.40)			
] [Mt. Airy (5%)	Slope (0.40)	3.0	
				Potential bedrock near 20'' (0.20)		
				Slight voided fragments (0.02)		
Ch	Chewacla silt Ioam	Very limited	Very limited Chewacla (85%)	Potential seasonal high water table (1.00)		0.1%
			Flooding (1.00)			
		C		Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		

USDA

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
			Flooding (1.00)			
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	29.7	1.3%
	channery loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
]		Slope (0.40)		
GeB3	Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded	Slightly limited	Gleneig (85%)	Slope (0.40)	26.4	1.1%
GeC2	Glenelg Mo	lenelg Moderately	Glenelg (85%)	Too steep (0.85)	1.8	0.1%
	channery silt loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
	 	i i		Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		4
		3		Slow percolation 12-20" (0.50)	i	
GeC3	Glenelg	Moderately	Gleneig (85%)	Too steep (0.85)	91.7	3.9%
	channery silt loam, 8 to 15	l limited	Chester (7%)	Too steep (0.85)	i	
	percent slopes severely eroded	percent slopes, severely eroded	Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)	ł	

Ņ

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation 12-20" (0.50)		
GeD	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	3.2	0.1%
	channery silt loam, 15 to 25		Edgemont (5%)	Too steep (1.00)		
	percent slopes		Glenelg (5%)	Too steep (1.00)		
			Mt. Airy (2%)	Too steep (1.00)		
				Potential bedrock near 20" (0.27)		
		-		Slight voided fragments (0.02)		1
GeD2	Glenelg channery silt loam, 15 to 25 percent slopes, moderately eroded	Very limited	Glenelg (85%)	Too steep (1.00)	2.1	0,1%
GeD3	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	4.5	0.2%
	channery silt loam, 15 to 25		Neshaminy (3%)	Too steep (1.00)		
	percent slopes, severely eroded			Slow percolation 12-20" (0.50)		
GeE	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	6.7	0.3%
	channery silt loam. 25 to 35	silt o 35	Neshaminy (3%)	Too steep (1.00)		
	percent slopes			Slow percolation 12-20" (0.50)		
GnB	Glenville silt Moderately loam, 3 to 8 limited percent slopes	Moderately limited	Glenville (90%)	Potential seasonal hìgh water table (0.98)	10.4	0.4%
			ļ	Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GnB2	Glenville silt loam, 3 to 8 percent stopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	23.0	1.0%
	moderately eroded	oderately oded		Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GsB	Glenville very stony silt loam, 0 to 8 percent slopes	Moderately limited	Glenville, extremely stony (100%)	Potential seasonal high water table (0.98)	33.3	1.4%

Map unit	Map unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol			name (percent)	(numeric values)		
				Slow percolation 12-20" (0.79)	,_ ,,,,	
				Slope (0.35)		
Me	Made land, schist and	Very limited	Udorthents, schist and	Miscellaneous area (1.00)	0.3	0.0%
	gneiss materials		gneiss (95%)	Slow percolation 12-20" (1.00)		
		ļ		Slope (0.31)		
			Hatboro (1%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
	1			Slope (0.18)		
MgD	Manor loam, 15	Very limited	Manor (85%)	Too steep (1.00)	9.9	0.4%
	to 25 percent slopes	Glenville (5%)	Potential seasonal high water table (1.00)			
				Too steep (1.00)		
)	Blocktown (5%)	Bedrock, above 20" (1.00)		
				Too steep (1.00)		
				Slow percolation 12-20" (0.58)		
				Slight voided fragments (0.06)		
			Mt. Airy (5%)	Too steep (1.00)		
				Potential bedrock near 20" (0.20)		
MhE	Manor loam and channery loam, 25 to 35 percent slopes	Very limited	Manor (98%)	Too steep (1.00)	1.4	0.1%
NaB2	Neshaminy gravelly silt	Slightly limited	Neshaminy (85%)	Slow percolation 12-20" (0.50)	62.7	2.7%
	loam, 3 to 8 percent			Slope (0.40)		
	slopes,		Berks (5%)	Slope (0.40)		
	moderately eroded			Potential bedrock near 20" (0.27)		
			Chester (5%)	Slope (0.40)		

USDA N

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
NaC2	Neshaminy	Moderately	Neshaminy	Too steep (0.85)	12.3	0.5%
	gravelly silt loam, 8 to 15 percent	limited	(85%)	Slow percolation 12-20" (0.50)		
	siopes, moderateiv		Berks (5%)	Too steep (0.85)		
eroded			1	Potential bedrock near 20" (0.27)		
			Chester (5%)	Too steep (0.85)		
		Mount Lucas (5%)	Potential seasonal high water table (0.98)			
			Slow percolation 12-20" (0.79)			
				Slope (0.40)	Ì	
NsD	IsD Neshaminy very stony silt loam. 8 to 25 percent slopes	Very limited	Neshaminy,	Too steep (1.00)	30.5	1.3%
		25 xent slopes	bouldery (97%)	Slow percolation 12-20" (0.50)		
			Towhee, extremely stony (3%)	Potential seasonal high water table (1.00)		
				Slope (0.31)		
W	Water	Not rated	Water (100%)		0.7	0.0%
We	Wehadkee silt Joam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	20.7	0.9%
	Ì	1		Flooding (1.00)		:
				Slope (0.18)		
		Che	Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
,			Slope (0.18)			
WoB	Worsham silt loam, 3 to 8 percent slopes	Very limited	Worsham (85%)	Potential seaso nal high water table (1.00)	1.8	0.1%
				Slow percolation 12-20" (1.00)		
				Slope (0.40)		

Åfan	Bran single	Barton Carlos		Detine starte	Aavaa in AOI	Boroant of AOL	
symbol	Map unit name	Kating	name (percent)	Rating reasons (numeric values)	Acres in AUI	Percent of AUI	
			Watchung (5%)	Potential seasonal high water table (1.00)			
		-		Slow percolation 12-20" (1.00)			
]		Slope (0.31)	<u>_</u>		
Subtotals for #2	5				378.3	16.3%	
Totals for Area o	f Interest				2,323.5	100.0%	
Septic System	Sand Mound Bed	or Trench (PA)— \$	Summary by Map	Unit — #26, Delaw	are County, Penns	sylvania (PA045)	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	17.7	0.8%	
	channery Ioam, 3 to 8	Des B	Gladstone (10%)	Slope (0.40)			
	percent slopes		Blocktown	Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)			
			Glenville (5%)	Low potential seasonal high water table (0.50)			
				Slope (0.40)	2		
GeB3	Glenelg channery silt loam, 3 to 8 percent slopes, severely eroded	Slightly limited	Glenelg (85%)	Slope (0.40)	4.4	0.2%	
GeC2	Glenelg	Moderately	Gleneig (85%)	Too steep (0.85)	13.7	0.6%	
	channery silt loam, 8 to 15 percent slopes, moderately	i limited	Glenville (5%)	Potential seasonal high water table (0.98)		:	
	eroded	1		Too steep (0.85)		1	
	 			Slow percolation 12-20" (0.79)		Ē	
			Neshaminy (3%)	Too steep (0.85)	1		
				Slow percolation 12-20" (0.50)		·····	
GnB2	Glenville silt Joam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	6.9	0.3%	
	siopes,	alobea ¹	÷				

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
<u>. ,</u> <u>.</u>	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)	1	
Ma	Made land, gravelly	Very limited	Udorthents, shale and	Miscellaneous area (1.00)	0.2	0.0%
	materials	materials sandstone (85%)	(85%)	Slope (0.31)		
	ĺ		Potential fast percolation 12-20" (0.17)			
			Reaville (2%)	Slow percolation 12-20" (1.00)		
				Potential seasonal high water table (0.98)		
		ļ		Slope (0.40)		
				Potential bedrock near 20'' (0.20)		
			Bowmansville (2%)	Potential seasonal high water table (1.00)		
	ļ			Flooding (1.00)		
	1			Slow percolation 12-20" (0.50)		
	1	[Slope (0.18)		
			Abbottstown (2%)	Potential seasonal high water table (1.00)		
		1	1	Slope (0.40)		
			Croton (1%)	Potential seasonal high water table (1,00)		
				Slow percolation 12-20" (1.00)	l	
				Slope (0.40)		
OtA	Othello silt Very limited loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Othello, drained (50%)	Potential seasonal high water table (1.00)	3.3	0.1%
		n	Slow percolation 12-20" (1.00)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Othello, undrained (30%)	Potential seasonal high water table (1.00)	<u></u>	
				Slow percolation 12-20" (1.00)		
			Fallsington, undrained (8%)	Potential seasonal high water table (1.00)	ł	
			Kentuck, undrained (7%)	Potential seasonal high water table (1.00)	:	
				Slow percolation 12-20" (0.58)		
			Mattapex (5%)	Slow percolation 12-20" (1.00)		
				Low potential seasonal high water table (0.86)		
				Slope (0.09)		
SaA	Sassafras loam,	ras loam, Slightly limited	Sassafras (80%)	Slope (0.18)	6.2	0.3%
	slopes		Aura (4%)	Slope (0.40)		
	4		Downer (4%)	Potential fast percolation 12-20" (0.50)		
				Slope (0.09)		
			Ingleside (4%)	Slope (0,18)		
				Low potential seasonal high water table (0.03)		
SaB2	Sassafras loam,	Slightly limited	Sassafras (80%)	Slope (0.31)	18.6	0.8%
	2 to 5 percent slopes		Aura (4%)	Slope (0.40)		
			Downer (4%)	Potential fast percolation 12-20" (0.50)		
				Slope (0.31)		
			Ingleside (4%)	Slope (0.31)		
				Low potential seasonal high water table (0.03)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
WnA	Woodstown Ioam, 0 to 2 percent slopes,	Moderately limited	Hy Woodstown (81%) Hammonton (7%)	Low potential seasonal high water table (0.86)	9.1	9.1	0.4%
	Northern Coastal Plain			Slope (0.09)			
				Low potential seasonal high water table (0.86)			
				Slope (0.09)			
Subtotals for #2	6	<u> </u>			80.1	3.4%	
Totals for Area o	of Interest				2,323.5	100.0%	

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrD3	Brandywine	Very limited	Brandywine	Too steep (1.00)	1.3	0.1%
	loam, 15 to 25 percent slopes, severely		(85%)	Potential fast percolation 12-20" (0.26)		
	eroded		Glenelg (5%)	Too steep (1.00)		
GeA	Gleneig	Slightly limited	Gleneig (75%)	Slope (0.18)	3.2	0.1%
	channery loam, 0 to 3 percent slopes	nery , 0 to 3 ent slopes	Glenville (10%)	Low potential seasonal high water table (0.50)		
			f	Slope (0.18)		
			Gladstone (10%)	Slope (0.18)		
GeB	Gleneig	nelg Slightly limited lannery am, 3 to 8	Glenelg (75%)	Slope (0.40)	4.7	0.2%
	loam, 3 to 8		Gladstone (10%)	Slope (0,40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
	ļ			Slight voided fragments (0.02)		
	- 		Glenville (5%)	Low potential seasonal high water table (0.50)		
			1	Slope (0.40)	1	
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	1.7	0.1%
	channery slit limited toam, 8 to 15 percent slopes, moderately eroded	Glenville (5%)	Potential seasonal high water table (0.98)			

,

Natural Resources Conservation Service

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
	l.		Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GnB2 Glenville silt loam, 3 to 8 percent siones	Glenville silt Ioam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.5	0.0%
	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
Subtotals for #2	· 7	·····	J	······	11.4	0.5%
Totals for Area o	f Interest				2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Ch	Chewacla silt Very lim Ioam	Very limited	Chewacla (85%)	Potential seasonal high water table (1.00)	1.1	0.0%
				Flooding (1.00)		
				Slope (0.18)	1	
			Congaree (5%)	Flooding (1.00)		
	ļ			Slope (0.18) Potential seasonal high water table (1.00)	(
			Wehadkee (5%)		hadkee (5%) Potential seasonal high water table (1.00)	i
				Flooding (1.00)	•	
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	0.8	0.0%
	channery loam, 3 to 8	i	Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		

Natural Resources Conservation Service

<u>USDA</u>

Septic System	n sand Mound Bed	or Trench (PA)-	Summary by Map	Unit — #3, Delawa	are County, Penns	yivania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GnB2	Glenville silt loam, 3 to 8 percent slopes,	Moderately limited	Glenville (85%)	Potential seasonal high water table (0.98)	6.7	0.3%
	eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
MgB2	Manor loam, 3 to 8 percent slopes, moderately eroded	Slightly limited	Manor (95%)	Slope (0.40)	3.6	0.2%
MgC	Manor loam, 8 to	Moderately	Manor (85%)	Too steep (0.85)	17.9	0.8%
	15 percent slopes	limited	Glenville (5%)	Too steep (0.85)		
				Low potential seasonal high water table (0.50)		
			Mt. Airy (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.20)		
				Slight voided fragments (0.02)		
MgD	Manor Ioam, 15	Very limited	Manor (85%)	Too steep (1.00)	18.3	0.8%
	to 25 percent slopes		Glenville (5%)	Potential seasonal high water table (1.00)		
		ļ		Too steep (1.00)		ļ
			Blocktown (5%)	Bedrock, above 20" (1.00)		
				Too steep (1.00)		
				Slow percolation 12-20" (0.58)		
				Slight voided fragments (0.06)		
	1		Mt. Airy (5%)	Too steep (1.00)		
		 		Potential bedrock near 20" (0.20)		
MhE3	Manor loam and channery loam, 25 to 35 percent slopes,	Very limited	Manor (90%)	Too steep (1.00)	3.5	0.2%

Natural Resources Conservation Service

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	severely eroded		Glenelg (5%)	Too steep (1.00)		
Mn	Melvin silt loam	Very limited	Melvin (85%)	Potential seasonal high water table (1.00)	1.7	0.1%
		ĺ		Flooding (1.00)		
				Slope (0.09)		
			Penlaw (5%)	Potential seasonal high water table (1.00)		
				Potential karst (0.30)		1
				Slope (0.18)		
	1	Tyler (5%)	Potential seasonal high water table (1.00)			
			Slow percolation 12-20" (0.50)			
				Slope (0.18)		
		Lindside (5%)	Flooding (1.00)			
		- - -		Low potential seasonal high water table (0.67)		
	l.			Slope (0.18)		
We	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	10.4	0.4%
	Ì			Flooding (1.00)		
				Slope (0.18)		
			Chewacia (7%)	Potential seasonal high water table (1.00)		
			}	Flooding (1.00)		
	<u> </u>		<u> </u>	Slope (0.18)		<u> </u>
Subtotals for #3		<u></u>			64.0	2.8%
Totals for Area o	f Interest				2,323.5	100.0%



Natural Resources Conservation Service

		Dation				Danaanti d A Ci
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AO	Percent of AOI
BrD3	Brandywine	Very limited	Brandywine	Too steep (1.00)	12.1	0.5%
	loam, 15 to 25 percent slopes, severely		(85%)	Potential fast percolation 12-20" (0.26)		
	eroded		Gleneig (5%)	Too steep (1.00)		
BrE	Brandywine	Very limited	Brandywine	Too steep (1.00)	3,1	0.1%
	percent slopes		(85%)	Potential fast percolation 12-20" (0.26)		I
		ļ.	Glenelg (5%)	Too steep (1.00)		
Ch	h Chewacla silt Ioam	silt Very limited	Chewacia (85%)	Potential seasonal high water table (1.00)	7.8	0.3%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
		l		Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Stope (0.40)	3.7	0.2%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight volded fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeD	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	1.1	0.0%
	channery silt loam, 15 to 25		Edgemont (5%)	Too steep (1.00)		
	percent slopes		Glenelg (5%)	Too steep (1.00)		
			Mt. Airy (2%)	Too steep (1.00)	ĺ	
				Potential bedrock near 20" (0.27)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	· · · · ·		 	Slight voided fragments (0.02)		
NaC2	Neshaminy	Moderately Neshaminy T	Too steep (0.85)	1.0	0.0%	
	gravelly silt loam, 8 to 15 percent	limited	nited (85%)	Slow percolation 12-20" (0.50)		
	slopes,	slopes,	Berks (5%)	Too steep (0.85)		
	eroded			Potential bedrock near 20" (0.27)		
			Chester (5%)	Too steep (0.85)		
			Mount Lucas (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
Subtotals for #4			·	· · · · · · · · · · · · · · · · · · ·	28.8	1.2%
Totals for Area o	of Interest				2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI	
BrD	Brandywine	Very limited	Brandywine	Too steep (1.00)	14.0	0.6%	
	loam, 15 to 25 percent slopes		(00%)	Potential fast percolation 12-20" (0.26)			
			Glenelg (5%)	Too steep (1.00)			
Brandywine	Very limited	Brandywine	Too steep (1.00)	3.8	0.2%		
	loam, 25 to 40 percent slopes	to 40 lopes	(85%)	(85%)	Potential fast percolation 12-20" (0.26)	L	
			Glenelg (5%)	Too steep (1.00)	-		
Ch	Chewacla silt Ioam	Very limited	nited Chewacla (85%)	Potential seasonal high water table (1.00)	5.1	0.2%	
				Flooding (1.00)			
				Slope (0.18)			
			Congaree (5%)	Flooding (1.00)			
	ļ			Slope (0.18)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Wehadkee (5%)	Potential seasonał high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	Glenelg	Slightly limited	Glenelg (75%)	Slope (0.40)	9.8	0.4%
	loam, 3 to 8 percent slopes		Gladstone (10%)	Slope (0.40)		
]	Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
		Ì		Slope (0.40)		
GeC2	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	11.8	0.5%
	channery slit loam, 8 to 15 percent slopes, moderately	limited	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
	1			Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
			-	Slow percolation 12-20" (0.50)		
GeC3	Gleneig	Moderately	Glenelg (85%)	Too steep (0.85)	4.8	0.2%
	loam, 8 to 15	Innited	Chester (7%)	Too steep (0.85)	i	
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
<u></u>				Slow percolation 12-20" (0.50)		
GeD	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	1.7	0.1%
	loam, 15 to 25	channery silt loam, 15 to 25	Edgemont (5%)	Too steep (1.00)		
	percent slopes	Glenelg (5%)	Too steep (1.00)			
			Mt. Airy (2%)	Too steep (1.00)		

USDA

Septic System		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	ounnary by map	$\varphi_{\text{IIII}} = \pi \varphi$, bold in	are ocumy, remis	
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Potential bedrock near 20" (0.27)		
				Slight voided fragments (0.02)		
GnB	nB Glenville silt Moderately loam, 3 to 8 limited percent stopes	Moderately limited	Glenville (90%)	Potential seasonal high water table (0.98)	1.4	0.1%
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
Subtotals for #5					52.5	2.3%
Totals for Area o	of Interest				2,323.5	1 00.0%
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons	Acres in AOI	Percent of AOI
BrD3	Brandywine Verv limited		values)			
	Brandywine	Very limited	Brandywine	values) Too steep (1.00)	24.9	1.1%
	Brandywine loam, 15 to 25 percent slopes, severely	Very limited	Brandywine (85%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26)	24.9	1.1%
	Brandywine loam, 15 to 25 percent slopes, severely eroded	Very limited	Brandywine (85%) Glenelg (5%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00)	24.9	1.1%
BrE	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine	Very limited	Brandywine (85%) Glenelg (5%) Brandywine	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Too steep (1.00)	24.9	0.1%
BrE	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Too steep (1.00) Potential fast percolation 12-20" (0.26)	24.9	0.1%
BrE	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%) Glenelg (5%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00)	24.9	0.1%
BrE Ch	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes Chewacla silt loam	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%) Glenelg (5%) Chewacla (85%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Potential seasonal high water table (1.00)	24.9	0.1%
BrE Ch	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes Chewacla silt loam	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%) Glenelg (5%) Chewacla (85%)	values) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Too steep (1.00) Potential fast percolation 12-20" (0.26) Too steep (1.00) Potential seasonal high water table (1.00) Flooding (1.00)	24.9	1.1% 0.1% 0.1%
BrE Ch	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes Chewacla silt loam	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%) Glenelg (5%) Chewacla (85%)	values)Too steep (1.00)Potential fast percolation 12-20" (0.26)Too steep (1.00)Too steep (1.00)Potential fast percolation 12-20" (0.26)Too steep (1.00)Potential seasonal high water table (1.00)Flooding (1.00)Slope (0.18)	24.9	0.1%
BrE Ch	Brandywine loam, 15 to 25 percent slopes, severely eroded Brandywine loam, 25 to 40 percent slopes Chewacla silt loam	Very limited	Brandywine (85%) Glenelg (5%) Brandywine (85%) Glenelg (5%) Chewacla (85%) Congaree (5%)	values)Too steep (1.00)Potential fast percolation 12-20" (0.26)Too steep (1.00)Too steep (1.00)Potential fast percolation 12-20" (0.26)Too steep (1.00)Potential seasonal high water table (1.00)Flooding (1.00)Slope (0.18)Flooding (1.00)	24.9	1.1% 0.1% 0.1%

Wehadkee (5%)

Potential

seasonal high water table (1.00)

Flooding (1.00) Slope (0.18)

Man unit	Man unit name	Rating	Component	Rating reasons	Acres in AOI	Percent of AOI
symbol		Rauny	name (percent)	(numeric values)		
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	39.9	1.7%
	channery Ioam, 3 to 8		Gladstone (10%)	Slope (0.40)		
	percent slopes		Blocktown (5%) S	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Slope (0.40)		
GeC	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	6.7	0.3%
	loam, 8 to 15	limited	Edgemont (10%)	Too steep (0.85)		
percent slopes	percent slopes		Glenville (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
			Slope (0.40)			
GeC2	Glenelg	Moderately limited	Glenelg (85%)	Too steep (0.85)	24.3	1.0%
	channery silt loam, 8 to 15 percent slopes, moderately eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GeD	Gleneig channen, silt	Very limited	Glenelg (85%)	Too steep (1.00)	17.0	0.7%
	loam, 15 to 25		Edgemont (5%)	Too steep (1.00)		
	percent slopes		Glenelg (5%)	Too steep (1.00)		
			Mt. Airy (2%)	Too steep (1.00)		
				Potential bedrock near 20" (0.27)		
				Slight voided fragments (0.02)		
ЪеЕ	Glenelg	Very limited	Glenelg (85%)	Too steep (1.00)	0.4	0.0%
	channery silt loam, 25 to 35 percent slopes		Neshaminy (3%)	Too steep (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AO
				Slow percolation 12-20" (0.50)		
GnB2	Glenville silt loam, 3 to 8 percent slopes,	lenville slit Moderately (loam, 3 to 8 limited percent slopes.	Glenville (85%)	Potential seasonal high water table (0.98)	0.8	0.0%
	moderately eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
GsB	Glenville very stony silt loam, 0 to 8 percent slopes	Moderately limited	Glenville, extremely stony (100%)	Potential seasonal high water table (0.98)	0.1	0.0%
				Slow percolation 12-20" (0.79)		
				Slope (0.35)		
NaC2	Neshaminy gravelly silt loam, 8 to 15 percent slopes, moderately eroded	eshaminy gravelly silt loam, 8 to 15 percent slopes, moderately eroded	Neshaminy (85%)	Too steep (0.85)	0.3	0.0%
				Slow percolation 12-20" (0.50)		
			Berks (5%)	Too steep (0.85)		
				Potential bedrock near 20" (0.27)		
			Chester (5%)	Too steep (0.85)		
			Mount Lucas (5%)	Potential seasonal high water table (0.98)		
				Slow percolation 12-20" (0.79)		
				Slope (0.40)		
WoA	Worsham silt loam, 0 to 3 percent slopes	Worsham silt loam, 0 to 3 percent slopes	Worsham (85%)	Potential seasonal high water table (1.00)	0.2	0.0%
				Slow percolation 12-20" (1.00)		
				Slope (0.18)		
			Watchung (5%)	Potential seasonal high water table (1.00)		
				Slow percolation 12-20" (1.00)		
			<u></u>	Slope (0.18)		
Subtotals for #	6				120.5	5.2%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Totals for Area o	f Interest	J			2,323.5	100.0%
Septic System	Sand Mound Bed	or Trench (PA)	Summary by Map	Unit #7, Delawa	re County, Penns	ylvania (PA045)
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BrD	Brandywine	Very limited	Brandywine	Too steep (1.00)	31.5	1.4%
	loam, 15 to 25 percent slopes		(85%)	Potential fast percolation 12-20" (0.26)		
	1 - 1		Glenelg (5%)	Too steep (1.00)		
Ch	Chewacla silt Ioam	Chewacla silt Very limited (loam	Chewacla (85%)	Potential seasonal high water table (1.00)	0.2	0.0%
				Flooding (1.00)		
				Slope (0.18)		
			Congaree (5%)	Flooding (1.00)		
				Slope (0.18)		
			Wehadkee (5%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
GeB	eB Glenetg channery loam, 3 to 8 percent slopes	ienelg Slightly limited channery Ioam, 3 to 8 percent slopes	Glenelg (75%)	Slope (0.40)	13.1	0.6%
			Gladstone (10%)	Slope (0.40)		
			Blocktown (5%)	ocktown (5%) Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Stope (0.40)		
GeC2	Glenelg	Moderately	Gleneig (85%)	Too steep (0.85)	5.7	0.2%
	channery silt loam, 8 to 15 percent slopes, moderately	nery silt limited , 8 to 15 ent is, erately	Glenville (5%)	Potential seasonal high water table (0.98)		
	eroded			Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Slow percolation 12-20" (0.50)		
GeC3	Glenelg	Moderately	Glenelg (85%)	Too steep (0.85)	14.3	0.6%
	channery silt loam, 8 to 15	limited	Chester (7%)	Too steep (0.85)		
	percent slopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
Glenville slit Ioam, 3 to 8 percent slopes	Glenville silt loam, 3 to 8 percent slopes	Glenville slit Moderately Glenville (90 loam, 3 to 8 limited percent slopes	Glenville (90%)	Potential seasonal high water table (0.98)	0.3	0.0%
				Slow percolation 12-20" (0.79)		
			Slope (0.40)			
GnB2 Glenvil Ioam perci slope mode erod	Glenville slit loam, 3 to 8 percent slopes,	Stenville slit Moderately loam, 3 to 8 limited percent slopes, moderately eroded	Glenville (85%)	Potential seasonal high water table (0.98)	0.0	0.0%
	eroded			Slow percolation 12-20" (0.79)		
				Slope (0.40)		
vle	Made land, schist and	ade land, Very limited schist and gneiss materials	Udorthents, schist and gneiss (95%)	Miscellaneous area (1.00)	0.3	0.0%
	materials			Slow percolation 12-20" (1.00)		
				Slope (0.31)		
			Hatboro (1%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
We	Wehadkee silt Ioam	Very limited	Wehadkee (90%)	Potential seasonal high water table (1.00)	0.7	0.0%
	1			Flooding (1.00)		
			5	Slope (0.18)		

Septic System Sand Mound Bed or Trench (PA)— Summary by Map Unit — #7, Delaware County, Pennsylvania (PA045)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Chewacla (7%)	Potential seasonal high water table (1.00)		
				Flooding (1.00)		
				Slope (0.18)		
Subtotals for #7					66.1	2.8%
Totals for Area of Interest					2,323.5	100.0%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
GeB	Gleneig	Slightly limited	Glenelg (75%)	Slope (0.40)	1.8	0.1%
	loam, 3 to 8		Gladstone (10%)	Slope (0.40)	- -	
	percent slopes		Blocktown (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
			Glenville (5%)	Low potential seasonal high water table (0.50)		
				Stope (0.40)		
GeC3	Gleneig	Moderately limited	Glenelg (85%)	Too steep (0.85)	3.1	0.1%
	channery silt loam, 8 to 15		Chester (7%)	Too steep (0.85)		
	percent stopes, severely eroded		Glenville (5%)	Potential seasonal high water table (0.98)		
				Too steep (0.85)		
				Slow percolation 12-20" (0.79)		
			Neshaminy (3%)	Too steep (0.85)		
				Slow percolation 12-20" (0.50)		
GnB2 Glenville silt loam, 3 to 8 percent slopes, moderately eroded	Glenville silt loam, 3 to 8 percent slopes,	silt Moderately Glenville (85%) to 8 limited	Glenville (85%)	Potential seasonal high water table (0.98)	0.0	0.0%
	moderately eroded			Slow percolation 12-20" (0.79)		
			Slope (0.40)	1		
Subtotals for #	8				4.9	0.2%
Totals for Area	of Interest				2,323.5	100.0%

<u>USDA</u>

Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey 1/11/2017 Page 59 of 62

Septic System Map unit symbol	n Sand Mound Bed Map unit name	or Trench (PA)— Rating	Summary by Map Component name (percent)	Unit #9, Delaws Rating reasons (numeric	are County, Penns	ylvania (PA045) Percent of AOI
GeB	Gleneig	Slightly limited	Glenela (75%)	Slope (0.40)	2.7	0.1%
	channery		Gladstone (10%)	Slope (0.40)	-	
	percent slopes		Blocktown (5%) Glenville (5%)	Slope (0.40)		
				Slight voided fragments (0.02)		
				Low potential seasonal high water table (0.50)		
				Slope (0.40)		
Subtotals for #9					2.7	0.1%
Totals for Area of Interest					2,323.5	100.0%

Septic System Sand Mound Bed or Trench (PA)— Summary by Rating Value						
Rating	Acres in AOI	Percent of AOI				
Moderately limited	964.2	41.5%				
Slightly limited	784.6	33.8%				
Very limited	570.2	24.5%				
Null or Not Rated	4.5	0.2%				
Totals for Area of Interest	2,323.5	100.0%				



Description

This is a system of pressurized lines that distribute effluent from a septic tank into a mound with sand under aggregate. The mound is placed on top of the mineral soil surface. About 1 to 4 feet of sand could be placed on the mineral soil surface in a sand mound system. Only the part of the soils between depths of 0 and 20 inches is considered when the soils are rated.

The soil properties and site features considered are those that affect absorption of the effluent and construction and maintenance of the system and those that may affect public health. These include depth to a water table, depth to bedrock, content of rock fragments, flooding, slope, and saturated hydraulic conductivity (Ksat). Flooding is a serious problem because it can result in improper treatment of the effluent and contamination of ground water or surface water. If Ksat is too fast or too slow, if the content of rock fragments is too high, or if the water table is too close to the surface, the effluent can contaminate the ground water. If this system is improperly installed on the steeper slopes, the effluent could flow along the surface of the soils. Additional grading may be needed in areas downslope from the system.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Slightly limited" indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. "Moderately limited" indicates that the soil has features that are somewhat favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be

viewed by generating the Selected Soil Interpretations report with this interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher



APPENDIX I



APPENDIX J



APPENDIX K



APPENDIX L

Concord Township, Delaware County

43 Thornton Road Glen Mills, PA 19342

ANNUAL WASTELOAD MANAGEMENT <u>REPORT</u>

"2016 Chapter 94 Report"

Central Sewage Treatment Plant NPDES PA0055212

March 2017

Prepared By:

Bradford Engineering Associates, Inc. Walter A. Fazler, PE 2710 Concord Road, Suite 3 Aston, Pa 19014 (610) 497-6200 (610) 500-5677 fax wfazler@bea-inc.com

Preparer:

Permittee:

Signature Walter Fazler, PE Signature Dominic A. Pileggi, Chairman

Section 1.0	Introduction	2
Section 2.0	Hydraulic and Organic Loadings	4
Section 3.0	Hydraulic and Organic Loadings Projections	10
Section 4.0	Sewer Extensions	14
Section 5.0	Condition of the Sewer System	15
Section 6.0	Sewage Pumping Stations	16

LIST OF APPENDICES	APPENDIX LETTER
Central Sewage Treatment Plant Influent Loadings	A
Central Sewage Treatment Plant Plan View	B
Map of Sewer System	C
Flow Meter Calibration Reports	D
PaDEP Chapter 94 Excel Spreadsheet	E
Thornbury Township Chapter 94 Report	F
Chadds Ford Township Chapter 94 Report	G
Section 1.0 Introduction

Concord Township owns and operates a sewage collection and treatment facility located in Concord Township Delaware County. The system is comprised of The Central Sewage Treatment Plant (CSTP), The Riviera at Concord Sewage Treatment Plant (RSTP), approximately 13 sewage pump stations and approximately 50 miles of sewage collection and conveyance piping.

Central Sewage Treatment Plant

The Central Sewage Treatment Plant began accepting flows in June of 1996 and began discharging flow in September 1996 under NPDES Permit No. PA0055212. The original hydraulic and organic design parameters were 1.2 million gallons per day (MGD) and 2502 lbs. per day respectively. The Concord Township Sewer Authority took dedication of the Central Sewage Treatment Plant and conveyance system in January 1998.

The plant was originally designed for average BOD/TSS influent loadings of 250 mg/L. As time passed, it was discovered that loadings increased to levels well above design loadings. A high percentage of commercial flows with higher than normal loadings mainly contributed to this problem. The existing plant was not yet at design flows so it was able to still meet discharge requirements consistently. However, it was recognized that an expansion of the facility was needed with higher influent loading parameters.

Additionally, the Authority adopted a Non-residential User Monitoring program in 2004. The program essentially requires all non-residential users that are connected to the treatment facility to apply for a permit. The permit requires testing of the users' effluent. Surcharges and/or penalties are levied on the user for noncompliance. The surcharges are set at a rate that offsets the costs incurred by the Sewer Department to treat the higher strength sewage. The penalties are used as a deterrent to encourage the user to closely monitor their waste stream. Since the programs implementation, and education of the non-residential users, the loadings at the plant seemed to have leveled off. Although the

loadings are still higher than normal domestic strength sewage, they are at a manageable and at a consistent level.

As for the expansion of the CSTP, the activated sludge; extended air treatment process was selected after consideration of several options. The engineering consultants and plant operation staff looked at expanding the existing extended aeration process and also considered a sequencing biological reactor (SBR) type system. After evaluating a number of operational and cost factors involved and visiting a number of operating plants with similar systems, it was decided that the best fit for the Authority was a two-stage process developed by Aero-Mod, Inc. This system is an extended aeration configuration of the activated sludge process that also provides for biological nutrient removal via their "SEQUOX" treatment process. The Sewer Department is required to meet Phosphorus removal requirements under the NPDES permit, however, there is no nutrient removal requirement. Even though nutrient removal is not a primary concern at this time, the treatment process provides a cost effective solution that will allow for future nutrient removal if needed. It was felt that a total nitrogen limit is a distinct probability for Chester Creek at some point in the future. The proposed process is a continuous flow unit. It has a unique clarifier which is designed to handle up to a 4:1 sustained peak flow loading without adversely affecting the effluent quality. The current design limits for the Central Sewage Treatment Plant is 1.8 MGD and 5,404 lbs. per day TSS and BOD

As previously described, the existing plant consisted of two circular steel above ground units rated for 0.6 MGD each. The expansion project modified and re-used Plant One for aerobic sludge digestion and thickened sludge holding. Plant two is maintained in an operational condition and is used as required for maintenance of the other units or as a holding facility for excess flow if needed.

Other treatment process additions or modifications included the addition of a grease/grit removal unit, a sludge thickening process, and a change from liquid chlorination/dechlorination for disinfection to Ultraviolet Light disinfection. A plan view of the CSTP is included in Appendix C.

Tributary contributor to the CSTP is Thornbury Township. The western section of their Township conveys flow through the Mill Road pump station and discharges to the Concord facilities near the intersection of Brinton Lake Road and Route 1. A copy of the Thornbury Chapter 94 report is included with this report as an attachment.

Chadds Ford Township is also a tributary contributor to the CSTP. A small strip store was installed as part of the Brandywine Mills Subdivision Project. The majority of the project is located in Concord Township. No extensions to the system are contemplated at this time.

Section 2.0 Hydraulic and Organic Loadings

The following section will be presented in the format suggested by PaDEP in a document titled "Chapter 94 Wasteload Management Report Template."

Central Sewage Treatment Plant

 A line graph depicting the monthly average monthly flows is shown in Chart 1. The monthly rainfall is also shown for reference. Rainfall is recorded daily at the main plant. The permitted capacity of the CSTP is 1.8 MGD:



- b. The data indicates that the average flows to the treatment plant were well within the permitted average annual flow capacity. There is an increase in flow during rain events, however, efforts to eliminate I&I continue. This item is discussed later in the report.
- c. A hydraulic overload does not exist at the CTSP. A corrective action plan is not necessary.
- d. As part of standard operating procedures, the operators try to anticipate excessive flow conditions by speeding up the process and lowering the level of the E.Q. tank to increase its holding capacity. The main lift station is equipped with a diesel driven back-up pump. This pump is set to automatically start and bypass the main lift station if a high level alarm is activated. Additionally if the operator decides to shut down the main lift pumps to avoid excessive wear and tear, the back-up pump can be manually activated. Flow can be sent directly to the process plant, bypassing the E.Q. tank if necessary. This back-up pump is alarmed so that a run notice is communicated to the operator on-call 24 hours a day.

Concord Township Sewer Department NPDES PA0055212 2016 Chapter 94 Report Printed 3/20/17 e. The plants historical hydraulic loading is depicted in Table 1. Chart 2 depicts the 5-year historical hydraulic loading in graphical format.

Table 1						
	Н	ydraulic Loac	ling (MGD)			Rain Fall (in)
Month	2012	2013	2014	201 5	2016	2016
January	0.932	0.956	_0.988	1.147	0.980	1.400
February	0.950	0.954	_1.009	<u>1.102</u>	0.980	8.200
March	0.956	0.948	1.017	1.159	1.064	2.500
April	0.946	0.957	1.007	1.120	1.053	3.150
Мау	0.991	0.963	1,059	1.123	1.069	7.700
June	0.969	1.025	0.998	1.155	1.031	2.700
July	0.990	0.970	0.955	1.124	1.012	5.900
August	0.940	0.944	0.948	1.109	1.025	1.250
September	0.996	0.938	0.977	1.030	1.063	4.550
October	0.987	0.982	1.004	0.978	1.085	1.700
November	0.942	0.967	1.101	0.981	1,101	1.700
December	0.987	0.980	1.075	0.979	1.127	4.850
Annual	-					
Average (AA)	0.966	0.965	_1.01.1	<u>1.084</u>	1.049	
3 Month Max						
Average	0.983	0.986	1.060	1.136	1.105	
Ratio (3 month						
Max to AA)	1.02	1.02	1.05	1.05	1.05	
5 Year						
Hydraulic Ratio					1.04	



Concord Township Sewer Department NPDES PA0055212 2016 Chapter 94 Report Printed 3/20/17

MAIN LIFT STATION

CURRENT AVERAGE MONTHLY FLOW	0.895 MGD
CURRENT AVERAGE MONTHLY MAX FLOW	1.142 MGD
PUMP CAPACITY 3 pumps at station	4.500 MGD
AVAILABLE PEAK	3.94

f. A line graph depicting the average monthly organic Loading is shown in Chart 3. The data indicates higher than normal domestic sewage which can be attributed to a large amount of commercial establishments in the service area. Removal efficiencies are extremely high and the plant has no problem processing the organic loading.



- g. An organic overload does not exist at the CTSP. A corrective action plan is not necessary.
- h. An organic overload does not exist at the CTSP. A corrective action plan is not necessary.
- Sampling frequency occurs twice per week and the results are evaluated by an accredited lab. All samples are documented by a chain of custody document and packed in ice.

j. 24-hour composite samples are taken of the influent and of the effluent to evaluate BOD, TSS, CBOD, NH₃/phos w/H₂SO₄, COD, Total phos. w/H₂SO₄, & Alkalinity. A fecal grab sample is also done twice per week. Every other week one of the composite samples is taken at the outfall. During July and August mid-stream grab samples are taken to measure pH, alkalinity, copper and hardness. Once per month, a composite sample of total nitrogen is taken to assess process performance. A monthly composite sample for copper is also taken as required by DEP.

An annual storm water run-off sample at outfall 2 is tested for CBOD, oil & grease, COD, TKN, TSS, dissolved iron, fecal coliform, phosphorus and pH. The results are reported to DEP & EPA along with the monthly DMR information via the eDMR system.

- k. The influent BODs sample is taken at the flow equalization tank prior to treatment at the main processing plant.
- 1. There is no hauled-in septage received at the CSTP.
- m. The influent loadings are calculated by using the influent BODs concentration (mg/l) and the speed or flow rate OUT of the equalization tank to the main processing plant. The results are displayed in Appendix A. The facility also uses the AllMax Operator10 Wastewater Data Software to do actual calculations and to prepare the monthly DMR reports.
- n. The plants historical organic loading is depicted in Table 2 and shown in graphical format in Chart 4.

	Table 2					
2016 Organic Loading (BOD lbs./day)						
Month	2012	2013	2014	2015	2016	
January	2521	2599	2150	2682	3485	
February	3007	2936	2411	2054	3831	
March	2572	2340	1718	2955	3586	
April	2135	2249	1707	3007	3972	
May	1903	3211	2814	2663	4411	
June	2492	2374	2651	3121	3550	
July	2822	1798	2547	31 9 4	2748	
August	2307	2316	3138	3606	3216	
September	2563	1629	2410	4538	3256	
October	2815	1548	2494	3326	2810	
November	2828	2515	2193	3492	2738	
December	2011	2109	2679	3218	3773	
Annual						
Average (AA)	2498	2302	2409	3155	3448	
Max Average	3007	3211	3138	4538	4411	
Ratio (3 month					-	
Max to AA)	1.20	1.40	1.30	1.44	1.28	
5 Year Organic						
Ratio					1.32	



Concord Township Sewer Department NPDES PA0055212 2016 Chapter 94 Report Printed 3/20/17

Section 3.0 Hydraulic and Organic Loadings Projections

Central Sewage Treatment Plant

a. Hydraulic Loading Projection

The following tables will outline the CSTP 5-year hydraulic loading projections. Table 5A shows the committed and approved EDUs that can or will be connected to the CSTP in the near future.

	Table 5	A	<u>. </u>			
Sewer Department's Committed Capacity	Capacity	Planning	Number	otal Units	Total	temaining to be
	Reserved	Flow/Unit	of	On-Line	Units	Connected
	GPD	GPD	Units	·	Remaining	GPD
Abessinio - Rt. 202	462	231	2.0	· -		462
Brandywine Mills	36960	231	_160.0	153	7.0	1,617
Brandywine Turf Club	924	231	4.0	ļ -	4.0	924
Srinton Lake Corporate Center (Hawthorn)	65450	231	283.3	230.3	53.0	12,250
CHOP Phase 1	3696	231	16.0	16		
CHOP Phase 2	4851	231	21.0	o	21.0	4,851
Concord Philly LP (Rite Aid Rt 202)	462	231	3.0	-	3.0	693
Concord Spring Valley II Carriages	20,790.0	231	90.0	36.0	54.0	12,474
Concord Township Laterals	106,260.0	231	460.0	275.0	185.0	42,735
Concordville Subaru	2079	231	9.0	1 0	9.0	2,079
Concordville Town Centre	2,310.0	231	10.0	10.0		<u></u>
CPBP VIII Assoc Lot 5 (Rothman Bidg)	3696	231	16.0	13,0		
Decklund Dialysis, LLC/old Enterprise (2017)	6468	231	<u> 28.0</u>		28.0	5,468
Dominos Pizza Baltimore Pike	462	231	2.0	2.0	-	<u>-</u>
Gamel Valley School District	25000	231	108.2	64.9	43.3	10,008
Heints 3 Lot Sub. Rt 322	693.0	231	3.0	2,0	1.0	231
Honold	231	231	1.0	<u> </u>	1.0	231
Kwang Lee LLC	5704	231	24.7	19,3	5.4	1,239
LMJ Properties	693		3.0		3.0	693
Mainline Hospital (Fibre Metal)	15445	231	66.9	•	66.9	15,445
Maris Grove Phase 3	192,471.0	231	833.2	760.2	73.0	16,865
Morrison (Shavertown Rd)	462	231	2.0	1.0	1.0	231
PA Crime Lab	462	231	2.0	-	2.0	462
Phase 2	20,559.0	231	89.0		89.0	20,559
Pine Valley	8085	231	35.0	35.0		
Ramada Subdivision-Hionis	5820	231	25.2	-	25.2	5,820
Robert Neff (770 Shavertown Rd)	462	231	2.0	1,0	1.0	231
Shops at Ridge Rd	30000	231	129.9		129.9	
Shore Properties (756, 757 Naamans Crk)	462	231	2.0	<u> </u>	2.0	462
Spring Lake Shoppes	21328	231	92.3	-	92.3	21,328
Springhill Farms	73000	231	316.0		316.0	73,000
Thomasetti (Four Sons-TrimbleRd)	462	231	2.0	1.0	1.0	231
Thombury Township	119577_15	231	517.7	482.0	35.7	8,235
Trimble Mill Estates (Fox Valley Estates)	3465	231	15.0	15.0	-	
Turf Club	924	231	4,0		4.0	924
Twardowski, Walter (Kirk Rd)	231.0	231	1.0		1.0	231
Valley Point Church	807.0	231	3.5	· ·	3.5	807
Waterford at Gamet Valley	231	231	15.0		15.0	3.465
Wolf - Spring Valley	45000	231	194.8	119.1	75.7	17,480
			<u> </u>			
Concord Township Laterals	106,260.0	231	460.0	275.0	185.0	42,735
			L		··-	
		+	┣───		┝──	
·			L			
			╆────			
Total	932,704	1	4,053	2,511	1,539	355,466
		-				

Concord Township Sewer Department NPDES PA0055212 2016 Chapter 94 Report Printed 3/20/17 Tables 6, 7 and 8 were developed using the PaDEP example for calculating the five-year adjusted annual average flow. The flow projections are based on connections of the total approved EDUs spread out over 5 years.

	TAE	BLE 6				
	Past 5-year Connections					
Year	# of EDUs Connected	gpd/EDU	New Flow (MGD)			
2012	57	231	0.013			
2013	17	231	0.004			
2014	39	231	0.009			
2015	165	231	0.038			
2016	187	231	0.043			

Table 7 outlines the calculation of the 5-year adjusted annual average flow. The adjusted annual average flow is calculated by adding the flow from all EDUs connected to the annual average (AA) flow for each calendar year. This provides an "Adjusted Annual Average Flow" for each year. The average of the AA flows determines the 5-year adjusted annual average flow.

··· ·· ··		Calculation	TABI of Adjusted Ann	E 7 ual Average Fl	ow	· · · · · ·	
Year	AA Flow in MGD		All	EDUs conne	cted		Adjusted AA Flow
		2012	2013	2014	2015	2016	·•· ••
2012	0,966		0.004	0.009	0.038	0.043	1.060
2013	0.965			0.009	0.038	0.043	1.056
2014	1.011				0.038	0.043	1.093
2015	1.084					0.043	1.127
2016	1.049			1		1	1.049
Total	5.075					Total	5.385
5 Year				1		5 Year	
Average	1.015					Average	1.077

Table 8 is the 5-year flow projections. The first year's projection starts with the 5-year adjusted annual average flow as shown in Table 7. Each year's projections are based on connections of the total approved EDUs spread out over 5 years. Each year's projected

AA flow is multiplied by the five-year average hydraulic ratio to determine the projected maximum monthly flow. Chart 9 is the 5-year projection shown in graphical format.

			TABLE 8			
Adjusted Projections						
Year	Previous Year's Annual Average Flow ₁	New EDUs	Increased	Projected Annual Average Flow₃ (MGD)	Projected Max Month Flow₄ (MGD)	
2017	1.077	310	0.072	1.149	1.192	
2018	1.149	306	0.071	1.219	1.265	
2019	1.219	306	0.071	1.290	1,338	
2020	1.290	303	0.070	1.360	1.411	
2021	1.360	314	0.072	1.432	1.486	
yr Avg. lotes	Hydraulic Ratio	1.04				

Increase Flow = New EDUs x CTSD gpd/EDU or 231 / 1,000,000. New EDUs is based on all

committed EDUs spread over 5 years.

3. Projected Annual Average Flow = Previous Years Annual Average Flow + Increased Flow

4. Projected Max Month = Projected Annual Av. Flow x 5-year average hydraulic ratio



b. Organic Loading Projections

The organic loading projection is shown in the following tables and graphs. The organic loadings are based on the table of new EDUs. The monthly average BOD5 for 2016 is used to determine the projected organic loading at the plant.

Table 9						
2016 Average Monthly Influent BOD5						
Month	Average BOD5 (mg/l)	Average BOD5 (lbs./day)				
January	387	3485				
February	411	3831				
March	388	3586				
April	424	3972				
May	462	4411				
June	389	3550				
July	304	2748				
August	352	3216				
September	340	3256				
October	300	2810				
November	295	2738				
December	408	3773				
Monthly Average	372	3448				

		Table 10				
2016 Projected Organic Loading						
	Projected Annual	Annual Average BOD5	Maximum Monthly BOD5			
Year	Average Loading from new EDUS	Loading Projectionsi (lbs./day)	Loading Projectionsz (lbs./day)			
2017	181	2944	3896			
2018	179	3122	4133			
2019	179	3301	4369			
2020	177	3478	4604			
2021	183	3661	4846			

Notes

..... 1. AA BOD5 projection = Average Annual BOD5 from Table 2 + New EDUs from Table 7 converted to BOD5 using 0.584 lbs/day/EDU

2. Max Monthly BOD5 Loading Projection = AA BOD5 Loading Projection x 5-year Organic Ratio from Table 2

The 5-year hydraulic and organic loadings are projected <u>not</u> to exceed the permitted hydraulic or organic design capacity.

Section 4.0 Sewer Extensions

- a. There were no Sewer Department sponsored sewer extensions constructed in the 2016 calendar year.
- b. The sewer system for the Concord Spring Valley II project was approved and construction was completed in 2016. The Main Line Health project was approved and construction completed in 2016. The Maris Grove Neighborhood 3 project was approved and construction began in 2015. Waterford at Garnet Valley was approved and construction began in 2016.
- c. A map showing all known proposed projects which require public sewers is attached to this report as an Appendix.
- d. Table 5A-5B summarizes all projects that require public sewers. The majority of these projects are sponsored by individuals or corporate entities. Economic conditions in the region will dictate the build out rate of these projects. Based upon the hydraulic and organic loading projection, the projects listed will not have a negative effect on the population served by the CSTP. Table 5C are projects that CTSD is aware of, however it is not used in any calculations in this report. Table 5C is used strictly for strategic long term planning. The Concord Township Board of Supervisors directed Bradford Engineering to update the Township's Act 537 Plan. Work on this revision is expected to be submitted to PaDEP in April 2017.

	Tab	le 5B		
	Capacity	Planning	Number	Remaining to be
Projects in planning, capacity not reserved	To Be Reserved	Flow/Unit	of	Connected
	GPD	GPD	Units	GPD
Duiley Out-thinksion		004		
Butter Subdivision	462	231	2.0	462
Existing Homes (Valley Point Church Ext)	124/4	231	54.0	12,474
Mainline Hospital Phase II	86586	231	3/4.8	86,586
Orchard Creex	3465	231	15.0	3,465
IMF Land Development (Kirk Rd)	462	231	2.0	462
Concord Ventures	45507	231	197.0	45,507
Arbours Square Chester Heights Borough	15486	231	67.0	15,486
Tota	164,442			164,442
	Tab	le 5C		
Sites that may require future capacity.				
	Capacity	Planning	Number	Remaining to be
No specific plans at this time.	Capacity To Be Reserved	Planning Flow/Unit	Number of	Remaining to be Connected
No specific plans at this time. Included because potential exists after 5 yrs.	Capacity To Be Reserved GPD	Planning Flow/Unit GPD	Number of Units	Remaining to be Connected GPD
No specific plans at this time. Included because potential exists after 5 yrs.	Capacity To Be Reserved GPD 18,480	Planning Flow/Unit GPD 231	Number of Units 80	Remaining to be Connected GPD 18,480
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas	Capacity To Be Reserved GPD 18,480 1,386	Planning Flow/Unit GPD 231 231	Number of Units 80 6	Remaining to be Connected GPD 18,480 1,386
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of Units	Remaining to be Connected GPD 18,480 1,386 18,018
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of of Units 80 6 78	Remaining to be Connected GPD 18,480 1,386 18,018
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of of 0 80 6 78 0	Remaining to be Connected GPD 18,480 1,386 18,018
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of of	Remaining to be Connected GPD 18,480 1,386 18,018
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of of Units 80 6 78	Remaining to be Connected GPD 18,480 1,386 18,018
No specific plans at this time. Included because potential exists after 5 yrs. Colonial Village Exxon/Lehigh Gas Smithbridge Estates	Capacity To Be Reserved GPD 18,480 1,386 18,018	Planning Flow/Unit GPD 231 231 231	Number of Units 80 6 78 	Remaining to be Connected GPD 18,480 1,386 18,018

Section 5.0 Condition of the Sewer System

The system was installed in 1994 and 1995, with an extension in 1998, in accordance with Authority specifications and under professional inspection and surveillance by the Authority's engineer. The plant and collection system is operated and maintained by five (5) operators, three have DEP Class A licenses. The Sewer Department maintains and encourages continuing education for all operators. The Sewer Department has implemented a scheduled preventive maintenance program for the plant, pump stations, and collection lines. The processing plant is new, having gone online October 22, 2007. The overall condition of the collection system is very good. The integrity of the collection system is maintained through constant surveillance and the fact that the system is relatively new is a major advantage to the Sewer Department. The Sewer Department also maintains a sufficient reserve fund in the event it needs to respond to an emergency type situation. All collection lines are more than adequate to handle any anticipated

increases in flows. Before any new developments are approved, it is standard procedure to have the Sewer Department's consulting engineer do an evaluation of the collection lines' ability to handle the projected increased flows. An annual reserve fund has been established to provide for infrastructure maintenance and repair.

The system experienced no SSOs during 2016.

Currently the Sewer Department is contracting with an outside flow monitoring company to measure flows in various portions of the collection and conveyance system. The main reason for this work is to try and isolate sections of the system where I&I abatement work should be concentrated. Observations at the main lift station show that the station pumping rate is the most restrictive portion of the system. Capacity in the main trunk lines of the sewer system far exceed capacity of the main lift station.

Concord Township modified its resale certification process to include a full inspection of private sewers. Essentially, any property sold within the Township, which is connected to the public sewer system, is inspected to insure the system is operating as designed. The CTSD staff performs all inspection work as part of this process. Any deficiencies are noted and required to be repaired prior to closing.

Section 6.0 Sewage Pumping Stations

There are thirteen (13) CTSD owned pumping stations in the system. The following tables show the average and maximum daily flows for 2016 for each pump station. Also provided are the actual pump capacities and the 2-year projected flow for each pump station. The current daily maximum flows are compiled from actual measurements of flow activity. The projected 2-year maximum daily flows were determined from assessments of projected additional connections if applicable and/or a mathematical ratio of the current daily flows to the current daily maximum flows. Peak instantaneous flow data is not recorded at any of the pump stations. The available peak is calculated by dividing the single pump capacity by the average daily flow.

The Sewer Department owns a four inch Godwin pump that is available for emergency bypass conditions. It is capable of pumping 400 to 450 GPM, depending on the head pressure and can bypass pump any one of the pump stations. Written procedures are defined for each pump station so that responders to an emergency know exactly what size and type connection is required. The Sewer Department also has 460 feet of bypass hose in the event bypass pumping of the collection system is needed. The Sewer Department also has a 3.5 MGD Godwin pump tied into the lift station.

Each pump station has two (2) pumps with a diesel powered back-up generator. All Department owned pump stations have an available peaking factor of at least 4.1. The majority of the stations have double-digit available peaking factors. Because of the large peaking factors available, the Sewer Department is asking that PaDEP remove the requirement of costly influent flow monitoring.

CONCORD HUNT PUMP STATION				
PERMIT #	WQM 2396403			
CURRENT AVERAGE DAILY FLOW (GPD)	46,761.00			
CURRENT DAILY MAXIMUM FLOW	55,517.00			
PUMP CAPACITY (each) 2 pumps at station	324,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	80,000.00			
AVAILABLE PEAK FACTOR	6.93			

The flow at Concord Hunt pump station is from residential homes. There is the potential for an additional 59 private residential homes to connect to the sewer collection system, however there are no plans at this time. It is estimated that the increased flow will be about another 15,000 gallons per day. The pump station has ample pumping capacity in each of its pumps to handle the eventual additional flows. The pumps operate on an alternating basis.

CONCORD WOODS PUMP STATION				
PERMIT #	WQM 2397407			
CURRENT AVERAGE DAILY FLOW (GPD)	12,990.77			
CURRENT DAILY MAXIMUM FLOW	17,808.71			
PUMP CAPACITY (each) 2 pumps at station	324,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	80,000.00			
AVAILABLE PEAK FACTOR	24.94			

The development served by Concord Woods pump station is completely built out so no significant additional flows are anticipated within the next 2 to 5 years. At some future time, 98 one acre home sites could eventually be tied into this pump station's collection system. That would be approximately 24,304 additional GPD. The individual pumps have sufficient capacity to handle current and any future flows. The pumps operate on an alternating basis.

CONCORD CHASE 1 PUMP STATION				
PERMIT #	WQM 2397408			
CURRENT AVERAGE DAILY FLOW (GPD)	20,343.35			
CURRENT DAILY MAXIMUM FLOW	28,990.00			
PUMP CAPACITY (each) 2 pumps at station	115,200.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	10,000.00			
AVAILABLE PEAK FACTOR	5.66			

The single-family developments served by Concord Chase pump station are completely built out. The Phase 2 Sewer Project will be sending approximately 41 EDUs to the Concord Chase 1 PS. The current individual pump capacities are more than enough to handle the flows. The pumps operate on an alternating basis. The pump station wastewater flows by gravity to the Cheyney Road pump station from a manhole on Schoolhouse Lane.

CONCORD CHASE 2 PUMP STATION				
PERMIT #	WQM 2397408			
CURRENT AVERAGE DAILY FLOW (GPD)	5,539.06			
CURRENT DAILY MAXIMUM FLOW	6,947.14			
PUMP CAPACITY (each) 2 pumps at station	115,200.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	11,000.00			
AVAILABLE PEAK FACTOR	20.80			

The Concord Chase 2 pump station pumps to the Concord Chase 1 pump station. The single-family development it serves is completely built out and no plans are in place to add additional volume. Each pump has the capability to handle the flows. The pumps operate on an alternating basis.

MENDENHALL PUMP STATION				
PERMIT #	WQM 2397408			
CURRENT AVERAGE DAILY FLOW (GPD)	12,977.85			
CURRENT DAILY MAXIMUM FLOW	15,357.14			
PUMP CAPACITY (each) 2 pumps at station	360,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	17,000.00			
AVAILABLE PEAK FACTOR	27.74			
The Mondanhall nume station handles flows from two single	family dave law anto the			

The Mendenhall pump station handles flows from two single-family developments that are built out. No future increase in flow is anticipated. Each pump, operating on an alternating basis, is more than capable of the estimated maximum daily flow. The wastewater flows by gravity from a manhole connection on Cheyney Road.

CHEYNEY ROAD PUMP STATION				
PERMIT #	WQM 2397407			
CURRENT AVERAGE DAILY FLOW (GPD)	311,671.29			
CURRENT DAILY MAXIMUM FLOW	374,550.00			
PUMP CAPACITY (each) 2 pumps at station	1,152,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	375,000.00			
AVAILABLE PEAK FACTOR	3.70			

The Cheyney Road pump station is the largest pump station online in terms of flow and pumping capability. Each pump is more than capable of processing the maximum flow. The pumps operate on an alternating basis. The major flow contributor is the Delaware County Prison. This pump station handles discharges from pump stations #3, #4, #5, #8, #9 and #13. It is anticipated that future sewer installations in the area north of Baltimore

Pike will eventually flow through this pump station which has ample capacity to handle any expansion of the collection system.

BRINTON LAKE PUMP STATION				
PERMIT #	WQM 2397407			
CURRENT AVERAGE DAILY FLOW (GPD)	55,476.85			
CURRENT DAILY MAXIMUM FLOW	79,431.43			
PUMP CAPACITY (each) 2 pumps at station	482,400.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	88,000.00			
AVAILABLE PEAK FACTOR	8.70			

The Brinton Lake pump station is totally related to commercial development. The development is not completely built out and it is expected that another 14,000 gallons per day of flow could be added. Each individual pump can adequately handle the anticipated maximum. The pumps operate on an alternating basis.

NEW SEASONS PUMP STATION				
PERMIT #	WQM 2397407			
CURRENT AVERAGE DAILY FLOW (GPD)	22,166.72			
CURRENT DAILY MAXIMUM FLOW	28,225.00			
PUMP CAPACITY (each) 2 pumps at station	120,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	29,000.00			
AVAILABLE PEAK FACTOR	5.41			

The Fox Valley Life Campus pump station handles the flows from several multioccupancy residential facilities and the flow from the Hollow at Fox Valley pump station. The Wawa located at Stoneybank Road also pumps to this station. Each individual pump has the capacity to handle the estimated maximum flows. The pumps operate on an alternating basis. The wastewater flows by gravity to the Cheyney Road pump station from the Schoolhouse Lane manhole.

WINDMILL CREEK PUMP STATION				
PERMIT #	WQM 2301401			
CURRENT AVERAGE DAILY FLOW (GPD)	4,851.00			
CURRENT DAILY MAXIMUM FLOW	4,851.00			
PUMP CAPACITY (each) 2 pumps at station	144,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	20,000.00			
AVAILABLE PEAK FACTOR	29.68			
The Will do not the static static	1 1			

The Windmill Creek II pump station pumps wastewater from a development consisting of

21 single-family dwellings to the Mendenhall pump station. The individual pumps have more than sufficient pumping capacity to handle the flows from the limited development. Flow is estimated using 231 gpd/EDU. The pumps operate on an alternating basis. There are no additional building sites anticipated in terms of flow increases.

BEAVER VALLEY ROAD PUMP STATION				
PERMIT #	WQM 2301404			
CURRENT AVERAGE DAILY FLOW (GPD)	51,039.34			
CURRENT DAILY MAXIMUM FLOW	68,883.33			
PUMP CAPACITY (each) 2 pumps at station	446,400.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	20,000.00			
AVAILABLE PEAK FACTOR	8.75			

The Beaver Valley Road pump station handles the flows from a multi-occupancy apartment facility and the flows from the Robins Way pump station as well as 15 gravity fed single-family homes. Each individual pump has ample pumping capacity to handle the estimated maximum daily flows. The pumps operate on an alternating basis.

ROBINS WAY PUMP STATION				
PERMIT #	WQM 2399403			
CURRENT AVERAGE DAILY FLOW (GPD)	15,708.00			
CURRENT DAILY MAXIMUM FLOW	15,708.00			
PUMP CAPACITY (each) 2 pumps at station	144,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	-			
AVAILABLE PEAK FACTOR	9.17			

The Robins Way pump station pumps to the Beaver Valley Road pump station and receives flow from 68 single-family dwellings. Flow is estimated using 231 gpd/EDU. There are no other units planned to flow to this pump station and the individual capacity of one pump is more than sufficient to move the wastewater. The pumps operate on an alternating basis.

LAUREL BROOKE PUMP STATION			
PERMIT #	WQM 2304404		
CURRENT A VERAGE DAILY FLOW (GPD)	8,276.12		
CURRENT DAILY MAXIMUM FLOW	10,508.17		
PUMP CAPACITY (each) 2 pumps at station	108,000.00		
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	10,000.00		
AVAILABLE PEAK FACTOR	13.05		

The Laurel Brooke pump station services a development of 52 cluster style single-family units. Currently there are 52 residential units & 2 commercial units connected to the system. The pumps operate on an alternating basis and are designed with a capacity of 90 gallons per minute. On average each pump runs one (1) hour per day. The average daily flow is calculated using the run times and the rated capacities. The current maximum flow and the 2-year maximum flow are estimated with sufficient built-in safe tolerances. The individual pump capacities are sized to accommodate the maximum flows.

HOLLOW AT FOX VALLEY PUMP STATION				
PERMIT #	WQM 2305401			
CURRENT AVERAGE DAILY FLOW (GPD)	11,700.00			
CURRENT DAILY MAXIMUM FLOW	11,700.00			
PUMP CAPACITY (each) 2 pumps at station	108,000.00			
PROJECTED 2-YEAR MAXIMUM DAILY FLOW (GPD)	4,410.00			
AVAILABLE PEAK FACTOR	9.23			

The Hollow at Fox Valley pump station handles flow from three multi-occupied condominium units and 23-single family units along Ivy Lane. The station pumps to the Fox Valley Life Campus pump station. The individual pump capacities are more than capable of moving the expected flows. The individual pumps operate on an alternating basis. The pumps are designed to pump at 75 gallons per minute or 108,000 gallons per day. Each pump runs approximately one (1) hour per day and the average flow is calculated on that basis.

Appendix A

Jan	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT						
		(MGD)						
	4							
121213-00-024-040-044	Manual California Cal	adit 2006 Sold States of Party 72	and an electron and the second second	Sastarsh reactored	ANY WARDON'S COMPANY MATHEM	similar and the second state of	THE CONTRACTOR OF A CONTRACTOR OF	characteristic sense subscription and sense inte
也被形式的影響		和最限期期推动到1113	和影響的通知機能的/257/					
Z	0.0	1.14	1.//	INFRACTORISTICS INFORMATION		121	A PERSONAL PROPERTY AND A PERSON A	NATIONAL CONTRACTOR
の実施を設置	4.2	24674254783年1012 1 1 C	16 26 25 26 26 26 27 A	101	4760 74	020	224	9467.07
4	4.3	1.10	1.7	102	1700.74	930	ZZ4	2107.07
<u>eresukan</u> e	3 /	104	7.95	Strand Brind Strand Brind		507	制的投资和利用公司的投资 的代表	STREWS STREET BERTERE
7.83	0.7					SUM SUB COT		
8	3.5	1.06	7.65	216	1909.53	712	628	5551.77
970 6		1106	67 10			200 595		
10	3.5	1.26	7.6	In the sector of	International south Cont	465	a felden selekter i finde for de felde ferste de sou de ten de selekter.	SUCCESSION OF THE OWNER
和思考的	1000000000		14 18 19 19 19 7/86	266	2662418	BIELEN 10783	330	330264
12	4.1	1.04	7.86			637		Land Solvers in Line 1999, 1999, 1999
13358			11 7.84			Sec. 1645		
14	4	1.04	7.92			804		
15200		1111	新設施設加加加 加加加/184	1. All 1. All 1466	其他。1041.90	1697, and a second second	調整的 165	1 1 1 1 1 1 3 1 6 5 8 6
16	3.4	1.1	7.82			.544		
個國際觀測			第136章 1 56章 1007(81)			1602		
18	4.1	1.06	7.97	212	1874.16	1015	421	3721.81
19242		Sala (1993) 106	1 1 1 1 2 2 1 1 2 7 1 8 6			659		
20	3.9	1.1	7.9	505545-00765-0-20-002-0076-00-00-0-576-00	NUMBER OF THE OWNER OF THE OWNER OF THE OWNER	743	INSTRUCTION STRUCTURE	2043-05-77575-02-06-02-07-05-706-02-0
			新設設開設設備的第 /886				發展電影響響調整調整	HERE STREET
22	3.4	1.05	////	204	1803.44	683	311	2/49.36
20202220		0.04	2000年1月1日日本 7.00					13-DERIGHT CERCER
24 35.波波線開始	0.4 2000 - 2.4	0.94	/.00	298284952991124'07	MARCHINE CONCOM	240	MARKAR STRATEGY OF	HORE HERE TO A DOMAIN
20月1日9月1日	1.3	1 02	79	HERE AND A COMPANY OF A	11990076000 020105	970	or in the state of the	61980589480020;92
20		1.02 References	South States and States			840.369 A 400 625		Provide States
28	4.6	1.06	7.73	HWINHAM CONTRACTOR	TENNESS CONTRACTOR STORE	616	NAMES AND ADDRESS OF TAXABLE	AGRODOKA HIDD BORCORD
2918		06	20120-00-7762	240	18 20 2 12 1876	11.200 10.00 1803	475	000032024199119
30	4.6	1.06	7.81	and when you have a supported to be a supported on the support of	an baran dahar da maran da ang sa	843	191	and a series of the second
31(3)	STAR GTS	1124	115 CH 12 17 69			580		
Ave	3.97	1.08	7.78	246.25	2225.03	688.87	387.00	3485.14
Max	5.40	1,26	7,97	466.00	4041,90	1015.00	628.00	5551.77
Min	3.00	0.94	7.50	182.00	1626.63	465.00	224.00	2167.07

Feb	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT		/	, ,			
		(MGD)						
		. ,						
								ъ.
	3 3 4 3 4	1111 111	3.5.6	196	1961157	EX 19	1 20 10 10 10 10 10 10 10 10 10 10 10 10 10	429343
2	5.1	1.14	7.88			699		
3.88	S 85		建設建設 7/9	構造なな		626		
4	5.9	1.1	7.63			630		
5期间经期	STATE 13/3	建立建筑 建筑的6	建建的现在 168	100 000 1001 27,6	26Z018	10	100	294102
6	3.7	1.16	7.68			554		
花科美麗	35		R 6 6 7 85			659		
8	3.3	1.06	7.79	222	1962.57	896	600	5304.24
937.244	35	建市営業業業 額加加	#10.1 #7.61			File 1656		
10	4.5	1.04	7.6			737		
	100	1061	建筑和10768	なななななななな		18 (643)		也是非常的问题。
12	3.9	1.1	7.79	356	3265.94	810	408	3742.99
		建國國國國國和加利	电机能增加32	建建造成建筑		610		
14	5.9	1.06	7.66			663		
15112918			Market 1778	出版 的1224	188 19216707	MERCENT	2112 1012 101 316	18 18 18 18 18 18 18 18 18 18 18 18 18 1
16	3.5	1.16	7.67			742		
17:20	19		1 972	数はない		560		
18	4.8	1,06	7.7			653		
19:22	66		1165	推翻 出版的相比2.[8	199993	605	16.100 (16.100) (16.100)	1009164
20	4.4	1.06	7.72			668	· .	
2112	5.0		HERE 7 .57			10.14		
22	3.1	1.16	7.59	200	1934.88	975	419	4053.57
23.66		的建筑建筑和	推进的 在261			1.001 (0.035		
24	4.3	1.1				593	· .	
25	1000 1000 1000							
26	3.7	1.06	7.7	110	972.44	624	458	4048.90
27	34		12 11111117.68			626		
28	3.4	1.2	7.77			597		
291.3	4,1		正理论和 7/9	1121日中国4324	目前1月12972288	088366880	46546600 (1997)	12 14 10 3944 82
to taxes the substant								Philippe approximation of the barrier barrier of the physics of the
Ave	4.21	1.13	7.70	236.22	2211.88	704.41	411.22	3830.86
Max	8.10	1.30	7.90	356.00	3265.94	1014.00	600.00	5304.24
Min	3.10	1.04	7.32	110.00	972.44	474.00	304.00	2941.02

Organic Loading Results

Mar	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	Р.Н.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/i)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT						
		(MGD)						
	12000年100		消息的 情况。82			118 18 18 16 42		
2	3.8	1.1	7,77	·		589		
31900	1222242		211111227,84	1000100010001100		629		
4	4	1.1	8.06	170	1559.58	859	406	3724.64
5 188	1200 Jan 1933		12 12 197/85			和自己的问题 。		
6	5,6	1,1	7.76			660		
74285	102103010376		2 1 1 1 1 1 1 1 1 1 1	204	出现常常的1870,50	18 805	365	3348,51
8	3.7	1.1	7.9			565	An and the second se	
94.00			1423年1427483			1997		
10	3.7	1.1	7.71	Automatication and a second state of the first state		602		Additional in Association of the second second
			1日14日2167	236	51221,65.06	1697	36 8 8 8 8 132	1210 .97
12	3	1.1	7.8			576		
13.6	如此到1951	建設計算 的 犯	特許認定的 #798	和國家和政治的條約		617		
14	4.2	1.16	7.96	234	2263.81	876	538	5204.83
15時時期		300000000000000000000000000000000000000	6888617479			28		
16	3.6	1.1	7.71	THE PLANE PLANE PLANE AND ADDRESS OF THE PLANE PLANE		626		A of Marco and the second second second second
174131	相關國際第3次		建国际的 和77729			11652		
18	5,3	1.1	7.84	114	1045.84	691	508	4660.39
1938年2月	增加的10000312		ATTEN # 1/288			57/0		通信局部通信 的影
20	3.5	1.2	7.8	NAM GOOD AND AND AND AND AND AND AND AND AND AN		602	CHARTER STOLEN BOOM STOLEN STOLEN	Service and the second s
201310318	和新闻的 林 433		新聞新聞時間786	104 (BROWNED 22)	100000000000000000000000000000000000000	F12 50 1074	ACTINE 1974-19400	101110103869976
22	3.6	1.1	7.78	NAMES OF TAXABLE PARTY OF TAXABLE PARTY.		566		Cauto do ambiente constance a constante e constante e constante e constante e constante e constante e constante
23.857	和中国的新闻的195	建的复数的复数				2010 10 10 10 35		
24	3.5	1,06	7.76	202	1785.76	818	610	5392.64
25. 新設設置	新聞 新聞 新聞 新聞 代 二 第 四 代 二 の 一 の の の の の の の の の の の の の	AND A REAL POINT OF	26426629/181	教理学学校 》23月24日		至4月4日至182567		
20	3.9	1.06	/./4	WEITHING BOARD AND THE STREET	COLOREST OF ADD DESCRIPTION ADDRESS.	/18	STREET, STREET	CONCISCION OF A DESCRIPTION OF
264 10 10	100000000000000000000000000000000000000		1133			4111年1月1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日		
28	3.1		1./5	202	2316,18	914	144	1273.02
29,319,36		2000年1月16日			改进设设计组织运行转换			
30 Selic selation	3.5	1,16	/.96	And the second second living	Martinets Performant Land minimum	586	STREET, STREET	Charles and the state of the second
	如何的短期的	11-11-11-11-11-11-11-11-11-11-11-11-11-	BARREES (83			5 4 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6		
Ave	3.90	1,11	7.81	199.25	1833.97	663.71	387.88	3585.60
Max	5.60	1.20	8.06	262.00	2316.18	914.00	610.00	5392.64
Min .	3.00	1.06	7.63	114.00	1045.84	535.00	1.32.00	1210.97

-17

Apr	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	Р.Н.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/i)	(Ibs/day)
	LEVEL (ft)	SETPOINT						
		(MGD)						
	建筑的建筑 和		國際國際回知8	建四国际140246	#10101233818Z	703	212 213 214 20 816	300440
2	4.5	1,1	7.72			571		Elikinga munaikina silimainyria in na araata
SI Sector	100 0000000000000000000000000000000000		和認識是能够7.8			380 10 10 1560		
4	3.5	1.3	7.78	266	2883.97	802	406	4401.85
5000			1 1 1 1 1 1 1 1 1 1		透射机器 网络	(1997) (CONTRACTOR (CONTRACT)		
6	3.7	1.06	7.89	. THE CAPILITY SCHOOL STATE OF THE PARTY STATE	PLANARY PROPERTY AND A DESCRIPTION OF THE	595	The second state of the second	CARACTERISTIC CONTRACTOR COMPLEXING
花器	國的國際國際31	31400 HANSET106			BACK BARRIER	WARE STREET 620		
8	3.6	1.06	7.76	316	2793.57	866	348	30/6.46
	物理解释	3311 BERN 1206	權利將462/196			113003303001 032		
10	3.6	1.26	7.91	STREET,	11. R. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	540		
	900 3000 472		Real Ballings	的建筑和清晰化226	13月時日1212024月	500 Bar 100 2003	2011 - 10 Contract - 10 Contra	ALC: 1335-07.
12 3652-56 81909	4.2 2000/00/00/00/00/00/00/00/00/00/00/00/00	1.06	1.14	CARANCER IN THE STORY	North Contractor and Party	551	Stopenson actions and	· 新发展的2011年3月1日日1月1日日1月1日日1月1日日1月1日日1月1日日1日日1日日1日日1日
13FURIT			精制的新闻的 2011				建設計算法的保持 的關鍵計算的	新科学新教育的新学校 (1997-1997)
14	3.8	1,1	/ 8. / State State State	ENRISH THE HERDON'S	TRUSTER	549		2010日の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本
155/12/12				國胡爾拉爾拉爾拉爾拉爾拉爾	2308 MWZ 335 874	000		Sec. 99.80 (49:30
10	3.0		00.7	STATUTE STATES	SETTING CONTRACTOR	023		
北部計算	CENTRAL CONTRACTOR		2014日1月11-04:	の変要ななどのなどの	1400.00	914		1497.94
10	4.0		7.54	104	1100.93	014		4137.31
10536200	5 C	1 06	7.0	EBERRARY CONTRACTOR	非在我们这些情况仍然能把你的	667		SCHWERSPREIS DO DUCHA
20		1.00			·新田市では18世代の第三次の第二			
公司管理を認知	3.8		7 8	120	1651 32	742	945	8660 43
0331100000			(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		SAME THE REAL PROPERTY OF THE	SECTOR 1685		
24	3.5	1.1	7.67	INDIA CONTRACTOR STOR	2010/19/22 developing the second second	670	Service of the servic	ALL DESCRIPTION OF THE OWNER OF T
259.5			101210-0710	REAL STRING	FRE 1838-14	101000000000000000000000000000000000000	310 10 10 10 10 10 10 10 10 10 10 10 10 1	4837/20
26	3.1	1.06	7.58	and the second	The second s	639		
2731832	1.1.1	106	109690727			MINE 316 58 659		
28	3.5	1.04	7.43	and the state of the second	and the second se	615		
29/11/20	312		A 10 10 7/5	268	2458 63	1201	1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 6	3541416
30	3.4	1.12	7.38			579		
								Res de la company
Ave	3.72	1.11	7.74	232.00	2183.52	701.33	424.22	. 3972.47
Max	5.60	1.30	7.96	316.00	2883.97	1184.00	945,00	8669.43
Min	3.10	1.04	7.38	132.00	1166.93	540.00	138.00	1335.07

May	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	P.H.	T.S.S. (mg/l)	(ibs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT] ·	
		(MGD)				· · .		
							1	1
1.0.2		自己的 的复数形式	非常能够的。4			532		
2	1.6	1.2	7.39	86	860.69	853	638	6385.10
3.4	199		7(65			6666		
4	3,2	1.2	7.78	The second s	and a second second second second second	618	The Local Plant water and the State of the State	
578	部計劃建設性3位	112 10 10 10 10 10 10 10 10 10 10 10 10 10	107.8			1011111111111111111		
6	3.8	1.06	7.75	178	1573.59	620	422	3730.65
TEREST	出现的1000032	BEAM BILLING	3146816888		10023030010000	1997.05		
8 Sectors and the	3.6	1.26	7.64			544		al in string on any second strength and all a 27
9世纪18世纪	81020000433		2018 10 10 10 10 10	262	2534169	Sec. 19702	100 B	221122224111162
10	3.2	1.16	7./5	COMPANY CONTRACTOR OF THE OWNER O	CORPORT OF THE OWNER	604	ALANDOLIN STATISACION STATISACIONES	
13251808	12000200339		11111111111111111111111111111111111111			2625		
12	3./	1.1	/.8	The submitted states of the submitted		612		
1000-00000			2020	2467466681258	和15年1月2366-89	新日期 期期期間700		408243
14	3.3	1.1	7.86	AND INCOMES AND IN COMPANY AND INCOMES	In the second second second second	631		and set of the set of the set of the set of the
15 89.84	\$\$\$\$00\$\$\$510		31888 311/194			1676		
36 19	3.8	1.16	/8./	270	2612.09	891	495	4/88.83
ALC: NO.	80000000000000000000000000000000000000		新時期時期時/火52			2223月1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日1日		
18	3.0 	1.06	/.38	ALAN STREET, AND	and the second second second	836		CONTRACTOR OF A CONTRACTOR OF A CONTRACT
NO N		RECEIPTION OF T	7.00			596H # 1040		1052.00
20	3.8		7.29	204	2421.94	107	040	4933.90
2015月年後後日日	SHUERING SOL		7 72			5.01129.01.2901/40	网络花花桃花花香香香香香香 香	
22 2388998	0.1	C.I.	7.73	SHP STORING STOR	MENTER TO FOUR	019 1000000	的建筑的建筑和新闻的建设	Manager and the second s
2012212200			7.04	NUMBER OF STREET	NEX CONTRACTOR	PARENT 12	NY AFRANK AND A COL	BRARKAR STOCKU
24	4.0	Bades Cold Black 17772	7.54		APRIL PROVIDENCE	050		
202010000	1.6	1 1 つ	77/	AND MICH. IN CONTRACTOR OF THE REAL	AND STOCKED STOCKE	622	A THE PARTY AND A	
072032P\$84	730553533300072		131303000000000000000000000000000000000	CONTRACTOR OF	2011030000000000	032	HTMP SHILL SHE SHE SHE SHE STOP	
28	5.4	HIERONAL COLOR	7.85	THE MORNEY AND A DO	AND A DESCRIPTION	617		2000-00-00-00-00-00-00-00-00-00-00-00-00
20	20122000000		7.00			582 0 8 8 1 5 1 5 1 5 7 1		
30	7.9	<u> </u>	7 74	NUMBER OF CONTRACTOR OF CONTRA	CONTRACTOR CONTRACTOR OF THE OWNER	487	ALCOND. SUCCESSION OF SUCCESSION	
o fue of the			1	REAL PROPERTY OF	ACTORNA 613820	101		100000076
Ave	3.85	115	7.72	272 44	2121.25	655.23	461.56	4410.84
Max	7.90	1 50	8 30	270.00	2612.09	891.00	638.00	6385 10
Min	1.60	0.96	7.29	86.00	860.69	487.00	213.00	2202.76

Jun	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
]	LEVEL (ft)	SETPOINT	ļ)]			
		(MGD)					1 ,	(
1						10.1 10.1 17.03		
2	4.6	1.1	7.79	A CARDON AND A CARD AND A CARD AND A CARD	And	698		
38.374	1100001243		8.87 (1997) (1997)	2008	E 1862 36	和國家總統17.62	名出版:1253	2321-02
4	3.6	1.1	7.78	ADDRESS OF THE OWNER WATCHING THE	AN CONTRACTOR OF A DESCRIPTION OF A DESCRIPANTA DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTI	681	10-11 mm to the west to share the second	Name and Descent of the South of Brits and the
55550255	31518 924 ⁴ 3		1000			電視電視線第2624		
6 2220000000000000000000000000000000000	3,4	1.2	7,89	170	1701.36	851	378	3783.02
						用的是用金融数923		
8 Sectores and the sectores of the	3.4	1.1	/.83	THE REPORT OF LEVEL	STRUCTS STREET CONTRACTOR	/03	TOTO PERSONAL PROPERTY AND INCOME.	
	MERINA	800 800 800 1200	613 12 10 10 1/382			BARRIER CONVOS		
10	3.4	1.1	88./	190	1/43.06	818	510	46/8./4
印刷新聞	18-18-19-19-19-19-19-19-19-19-19-19-19-19-19-	1322202323020806			SHOP IN CONTRACTOR	3000339393951/2		
12	4.9].]	28.7	STREET, STREET	2012-07-21-11-04-21-02-04-12-07-04-22-0-0	014	AND THE REPORT OF A DESCRIPTION OF A DESCRIPANTO OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DES	
	22.20.20	制作的规则的现在分词				3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においていた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月21日においた。 3月311日においた。 3月311日におりた。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日におりまま。 3月311日にろう 3月311日におりまま。 3月311日にのまま。 3月311日にのまま。 3月311日にのままま。 3月311日にのままま。 3月311日にのままままままままままままままままままままままままままままままままままま		
14 又自時2558編編	3.2		/./9	274	2513.68	/40	432	3963.17
1015134531989	200000000000000000000000000000000000000		7.04	推进的消息 增加的增加的	30000100100000000000000000000000000000	36000000000000000000000000000000000000		
10	3,9 1999/1997/06/17/07		7.84 2000-00-00-00-00-00-00-00-00-00-00-00-00	SECONDECTION OF	KURSE STOTAL	0/0	Settor and the set of the	NAMES OF SOLEY
北京法律院開始	「「日本語」の「日本」の「日本語」の「日本語」の「日本」の」の「日本語」の「日本語」の「日本語」の「日本語」の「日本語」の「日本語」の「日本語」の「日本語」の「日本語」の」の」の本語」の本語」の本」の本語」の本」の本」の本」の本」の本」の本」の本」の本」の本」の本」の本」の本」の本」		7.02	BERGER BERGE ZOA	编制地设计的之外之间15分	570	ACCURATE AND A COLOR	7.000.000.000/050/050/0
10	4.3	1,10	1.03	CHERRY CONSIGNATION	ALL DESCRIPTION OF THE OWNER OF T	579 578	Service and the service of the servi	
11-230(1975318 20	CIC286288888888		7 70	244	2044.40	131001841828EBO754	110	2624 56
072750000	「「「「「「」」」」		7.75	244 20200000000000000000000000000000000	3041.10	055 121022000076		3024.00
220-0320-000	3.4	1 1	7 20	CONTRACTOR PROPERTY IN	ARTESTICE	713		International Content of Contents
21 23 沿岸集建			2.00	Shield States		13000000000000000000000000000000000000		化包装包接合数用型使出现类
24	4.7	1.06	7 84	216	10/0 53	913	165	4110.79
25 30 30	Service and the service of the servi	THE OWNER AND A DECK				100000000000000000000000000000000000000		
26	3.5	1.2	7 82	PERSONAL PROPERTY AND INCOME.	STATISTICS IN CONTRACTOR OF THE OWNER OF THE	581	APPENDING CONTRACTOR OF THE OWNER	AND DESCRIPTION OF STREET, STRE
57-2-31	Distant States		100107483	BERLENADA 24Z	\$35 \$2157/06	101000000000000	C32000000000000000000000000000000000000	2007 10 10 10 10 10 10 10 10 10 10 10 10 10
28	5.6	1.1	7.95	CONTRACTOR COMPLEXIBLE IN THE	ACCOUNT OF A DESCRIPTION OF A DESCRIPTIO	575	CHOOL DESCRIPTION CONTRACTOR	**************************************
297.24	44	1912	1/187			686		
30	3.7	1.1	7.82		Contraction of the local division of the loc	611	A CONTRACTOR OF	
	出来的保存的					SERVICE IN COLOR		
Ave	3.90	1.10	7.83	224.50	2043.76	698.97	388.50	3550.30
Max	5.60	1.20	7.96	344.00	3041.10	923.00	510.00	4678.74
Min	3.00	1.06	7.71	94.00	862.36	446.00	253.00	2321.02

Jul	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	Р.Н.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT						
		(MGD)						
的影响。	10 mm ant 316		100 000 000 000 000 000 000 000 000 000	新生活 的 222	2036-63	1998-1999-1978-8	11-11-120 (1483)	44931.04
2	4.4	1.06	7.87			596		
	Minister Market 44	MINERED 96	17481			364 866 10 10 10 10 10		
4	4.2	0.98	7.91	And the strength of the later of the second strength of the second s	Contract of march and the owner of the state of the	506	CAPACITY IN CONTRACTOR OF A DESCRIPTION	
5200	0 3 10 10 49		12485	1911	195410	100000000000000000000000000000000000000	11.11.2.3	1000000002880(64)
6	4.3	1.05	7.78	NUTRING CONTRACTOR	AND LUCCESCO DE LECTURA	590	In case in the line state and the second	
			相關總統將推送 <u>63</u>			070	ASSIGNATION OF	
8	4./	0.98	7.84	200	2092.34	8/3	293	2411.09
9850000	市営業権の 通知の注意	A 1	7.01			CC0		CONTRACTOR STREET
TU SIGARA	0.2 00000000000000000000000000000000000	1.1	7.91	THE REAL	100000000000000000000000000000000000000	000 ##################################	39200-01422207C	10000000000000000000000000000000000000
加速に沿る時期間間	1.0	1 1	7.96	ACTION AND A COL	ALC: 10200	5/0		
12			1.00		资款(A)为2012 法 制 输			
14	4	1.1	7.85	LEADING LEADING AND A	A REAL PROPERTY AND A REAL	563	ALC: NO. OF TAXABLE PARTY OF TAXABLE PARTY.	Construction of Construction o
3512150			1000000000	秋米和約 日第34747	1848 1848 900 90 FR	2013	1122	100 100 100 100 100 100 100 100 100 100
16	3.7	1.1	7.86	Company and a second	A CONTRACTOR OF THE OWNER	540		
1733230	5/2		distantia 7/85			100000000000000000000000000000000000000		
18	3.1	1.06	7.78	254	2245.46	747	269	2378.07
1913300	1221	外的资源 和资源的6	11/18 10/288			新闻的 的问题。 1990年1月1日		
20	3.9	1.1	7.82			629		
2個總國國	國家開始。192		182	推進的形态和運		10		
22	5	1.1	7.87	266	2440.28	758	374	3431.08
23时,19	出版版版和1376	建筑的 和 化 和 化	Barra 197,88	推進設施設		312 10 10 10 10 10 10 10 10 10 10 10 10 10		
24	4.4	1.1	7.83	a construction of the second		452	and the second	
25 4 2 3	的复数的 第45	推進的影響的		用 11 11 11 12 68	2458 63	123361140814	28月1日月末第267	2449746
26	4.8	1.1	7.9	Construction of the second		617	NAME AND ADDRESS OF TAXABLE PARTY AND ADDRESS OF TAXABLE PARTY.	Part and in facility of the sub-conservation of the
27課題書		36341362131313	1.18			1000000000000000000000000000000000000		
28	3.7	1.1	7.84	and a state of the second state of the	NHUN-PRINTER OF THE	642	AND	CHARGE CHARGE AND
29.消消改量		ANE PARTY IN COLOR		generative 204	新聞新聞記念さえてん	2月1日日 2月1日第1月10日	HARDING MARKEN 202	ANN 993522310318
30	3.7	1.2	7.86		ANI PROPERTY AND INCOME.	604	CARL BROWNER STREET	
			7.04	00 PCC	31E0 52	607 74	NUMBER AND SOLD FOR	
AVE	4.17	1.09	7,84	258.00	2100.03	027./1	00-50 00 c91	4/21 0/
Min	3.00	1.20	7.77	104.00	954.10	452.00	192.00	1761.41

Aug	E,Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT	ļ					
		(MGD)					· . ·	
Children (and Watership				The second s				
125 A	100000339	51356600012	31 30 37 / 85	362	1912100 3622390		117 11 11 11 11 11 11 11 11 11 11 11 11 	3869295
2	4	1,16	7.92	Landsteining fried to be a state of the second	CONTRACTOR DEPARTMENT	PROPERTY AND DESCRIPTION OF THE PROPERTY OF	The CONTRACT OF A DESCRIPTION OF A DESCR	Anternative Art States I and Advance
3,63,89,80	2010/00/00/0	2052510200112						
4	3.6	1.06	/.86	Structure the state	CONTRACTOR DE CONTRACTOR	20000000000000000000000000000000000000	ATTACK PROPERTY AND A DESCRIPTION OF A D	SHOULD BE S
0.000			2 00	2000 Mar 1324	11002023		3060072000000000000000000000000000000000	2011 10 10 10 10 10 10 10 10 10 10 10 10
日本語の教育部の	4.2	1.00	1.94		NEW CONSTRUCTION	CONTRACTOR OF THE OWNER OF THE	CALCULATION OF DESCRIPTION	ananura Storit Associat
916230928 28 8	2.0	1061	200000000000000000000000000000000000000	2000 A 10 10 10 10 10 10 10 10 10 10 10 10 10	4002 12		216	2706.20
O REAL PROPERTY OF	5.2 100203102907160	T.UOT	1.07		1902.12	NAME OF CONTRACTOR	310	2190.20
10	37	1.06	7 77	STREET,	SPECIAL CONTRACTOR OF THE PARTY OF	HARDING WALLSHIP DONGSLIVE	SUSTAINING THE REPORT OF	AND INCOMENTATION OF STREET
SCHOOL STATE	1502202055		100 C	BAR SHE FALLS		BOOM STATES		NORTH AND AND
12	3.2	11	7.8	346	3174 20	20000000000000000000000000000000000000	232	2128.37
131848 8			1200					
14	5,4	1.1	7.83			Contraction of the state of the		
151 200	376			18 Aug 19 18 12 18	Feb. 1999193	PHILE COLUMN	A 19 19 19 19 19 19 19 19 19 19 19 19 19	1972.41
16	3.6	1.1	7.73					
17月2日日	推动和 第44纪		戦調準制度 16					STATES OF STATES
18	4.9	1.1	7.78					
1961	编制数据 6列	建設建設的設定		电影 的 2266	2440,28		法期的法规制 220	1011101 2018328
20	4	1.06	7.76					· · · · · · · · · · · · · · · · · · ·
211	出现的15/2	自己的 问题的106			供設定機構整整			
22	3.6	1.06	7.68	274	2422.27		503	4446.72
23 4 2 2	3990 10 13 13		##### 2/27/					
24	4.5	1.06	7.77	university of the second s	AN INCOME AND A DESCRIPTION OF A DESCRIPTION	AND DESCRIPTION OF A DESCRIPTION OF		and the second
25 消费 建建								
26	3.2].]	7.73	226	2073.32		424	3889.78
204038088			7 70		APATERNAM PRODUCTION APA		21421 (Hotel Castron Hotel Castron	PHINE COMPANY AND IN THE OWNER.
20	4.7		7.79 2348888555555	STORE STORE	12122120770200	THE REAL PROPERTY OF	PSC INTERIOR INTERIO	2012-01-00 - 00 - 00 - 00 - 00 - 00 - 00
30	A 1	1 1	<u> </u>	AND STREET, STREET, STORE ST	ACHING THE REAL PLACE		TTP: CONTRACTOR IN TO 2	THE PARTY AND A PARTY AND A
SI S			2002 (1.75)	MIN NU FEIRIN				WINE COMPANY
Ave	4.00	1 10	7 80	778 44	2557 73	#DIV/01	351.89	3216.42
Max	5.50	1 20	7.92	362.00	3622.90	0.00	503.00	4446.72
Min	3.20	1.06	7.68	218.00	1982.12	0.00	215.00	1972.41

Sep	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
· ·	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
1	LEVEL (ft)	SETPOINT						
		(MGD)			[[1	
	1							
	1	<u></u>						
	10	建設建設	图像1200/01		现实就能能能	1 019	说时的关系和 这些	
2	3.6	1.1	7.78	226	2073.32	660	488	4476.91
315/11/12		1106	和出口的历3			11 1405		
4	4	1.1	7.75	and the second	Land and the second statement of the second	545		We in incident with one descent in the second second
5839	2010 100 100 100	State 1106	22707-02-024			212 B 10 B 10 5 9 5		
6	4	1.16	7.75	212	2050.97	749	323	3124.83
			1000			186		
8	4.9	1.1	7.78	No. of Concession, Spinster, Spinster, Spinster, Spinster, Spinster, Spinster, Spinster, Spinster, Spinster, Sp	Summer of March 2010 and street	678	*******	THE REPORT OF A STATEMENT OF A PARTY OF A PARTY OF A
	636 6121320243		11/2/10/00/20/6	202 Bar 10 202	PRO20121954-23	23308	20.401616.3013022/0	12012109
10	3.5	1.1	/./4	Contraction in the second state of the second state of the second state of the second state of the second state	TRANSPORT OF COMPANY OF COMPANY	562	WE IN SPACE WORTH COMMITS	A IN COLUMN AND A PARTY OF A COLUMN AND
110253000	Contraction of the second seco	相關語語語語[10] 6	Diversit/3/5			en 2431585		
12	3.2	i 1.1	1.72	258	2366.89	705	288	2642.11
104	単語記録は1月1日の15	新生产的产生的 和131			和的理论的问题。	第二日第一日 第三日第三日	SUPER-	
14	4.2	NUMBER OF STREET	/./0	PROVIDENT CONTRACTOR OF A CONTRACTOR	HECH COMMENTS	459	1754552402-48632352193294666666	
11ORSER	200000000000000000000000000000000000000		111112111111111111111111111111111111111	4888440000023HB	0449.60	620	700	6770.00
10	3,2 1996-1996-1996-1996-1996-1996-1996-1996	1,10	7,83	20U Siles and solar	2418.00	039	700	0772.08
10			7 72		1243-3200-322644-3464444	日本の日本の日本の日本の日本	HERE AND A CONTRACT OF A CO	
10		BRANCE BRANC	7.73	建成的 新闻 1000	HORE HAR AND SHOT	502 RECEIPTION	SERVICE PROPOSION	100000000000000000000000000000000000000
20	34	1.0	7 71	構成の単数の対応になったり	NET STREET	468	AFANNASI SAKADI TAKAGO V	00-00-00-00-00-00-00-00-00-00-00-00-00-
2151488	MIRE 102317		NUT THE OWNER	THE REAL PROPERTY AND		100	Contractor States in	STATES CANADA
22	37	12	7 75	Sector and Constrainty Constrainty Constrainty Constrainty Constrainty Constrainty Constrainty Constrainty Const	CHARLEN COLUMN CONTRACTOR	473	DODRAGONIA I DE CODAGUIOS	I MARKARINI SIDER MARKARINI (MILLING) (MILLING
23125	12121337	9202121106	23時期15万万 万	and 234 10274	167-0411980-25	100 00 00 00 00 00 00 00 00 00 00 00 00	SE12042144	11273102
24	3.5	1.1	7.74	Designed by the state of the state	AND DESCRIPTION OF THE OWNER	497		An and supported to the specific street of the
25 10	XIIII		1.		ENGLANDER	1630		NO CONTRACTOR
26	3.7	1.2	7,71	204	2041.63	832	280	2802.24
27.100.00	A 10 10 10 10 10		321 10 10 10 10 10 10 10 10 10 10 10 10 10			111 1111111111111111	ALC: NOT SECTION OF	
28	3.4	1.06	7.79			638		
297.4	AND 18 19 19		6718		的於此為用於	120		
30	7,2	1.2	7.82	190	1901.52	735	299	2992.39
					FERRET	建制的制度	M. COLUMN	19月1日日本
Ave	3.99	1.12	7.75	231.78	2209.25	643.90	340.22	3256.42
Max	7.20	1.20	7.83	320.00	3095.81	1405.00	700.00	6772.08
Min	3.20	1.06	7.71	. 190.00	1901.52	458.00	144.00	1,273.02

Oct	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
1	TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(ibs/day)
	LEVEL (ft)	SETPOINT	1 ·					
}	1	(MGD)		ļ]			
								[
循線	14 10 10 10	通知的意味的 1106		公司 第23章 1998年	和新闻教训	1980 1980 1580		
2	3	1.06	7.73	· · · · · · · · · · · · · · · · · · ·		495		
3 82.00	1988 194 9	通用和自然用(例6	國際國際 1000	國國黨推進國家 322	1 11111111111111111111111111111111111	1000 1000 1000 1000	建制的 建 全部 244	2360155
4	4.2	1.16	7.76		· · · · · ·	552		
5.5.111	<u> </u>		17468		操作的影响的	他的 2007/2		经保持利用的管理
6	3.4	1.1	7.75		· · · ·	622	·	
7.6	2010011419		11.11.11.11.11.11.11.11.11.11.11.11.11.	增长的高利用的27.6	國國國 2532/02	921	1000 AUX 100	1 1 1 3036159
8	3.3	1.1	7.7			624		
9.96						599		
10	3.8	1.2	7.77	348	3482.78	885	225	2251.80
们已经是	18 18 18 5	建制建筑和新闻166	记录 记录 178		設計機器設置	1221 Star 575	新学校学校	
12	3.5	1.06	7.71			716		
13常能推荐。	推測調整的5		開始設備に 第7.81			1992 (1988) (1988) (1988)		
14	3.6	1.1	7.85	416	3816.38	866	337	3091.64
15位河南部	基制的利用的		11.5			10058		
16	4.1	1.1	7.75			636		
17.2.4	10	建立的 图象和1924	10.00	對國際和自治44	期後期6557651	1796	建制的 机构 28 7.	2968.04
18	3,9	1.06	771			616		
19		用的影响的 的	新闻新闻 初初			605		
20	3.5	1.16	7.8		· · · · · ·	582		
21			對時間的7978	116791 1011 328	道德信用单3009/07	公開時間時間 174	Section 19 323	2968)20
22	4.2	1.1	7.83			635		·
237前周期			建建的1286			502		
24	3.5	1.06	7.74	322	2846.61	702	312	2758.20
25 建制建	3 888488519	教育を考慮して	理解影響的第7.9		建設市的構築部	的问题 。1995-199	ではななななない。	
26	5.1	1.16	7.85			599	· · · · · · · · · · · · · · · · · · ·	
27.1111	2010		1 2287			1200		
28	3.5	1.06	7.82	216	1909.53	881	329	2908.49
29 (19)	新教教室 (13)2	和時期的1106	國國國議和國家			1988 1998 1995		
30	4.4	1.06	7,75			689		
31 ST			1994-1997-182	到10月1日第264	精神的2510.01	1998 1997 1998	MARKAN AND AND A DECIMAL AND A	2947/96
Ave	3.99	1.11	7.77	315.11	2975.45	677.23	299.78	2809.54
Max	6.00	1.24	7.90	416.00	3816.38	921.00	337.00	3091.64
Min	3.00	1.06	7.68	216.00	1909,53	495.00	225.00	2251.80

Organic Loading Results

Nov	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
(TANK	SPEED	P.H.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(lbs/day)
	LEVEL (ft)	SETPOINT	1		,		, _ ,	
		(MGD)						
1	1	{	1	{			· · ·	}
	·							
116.55	和時間1885	1011年1月1日(1943年1月1日)	10 (10, 17, 18)		影明認識的認識	建設 備新聞11572		2318月21日2月2日
2	7.5	1.06	7.94			504		
30.91	10000-00376	1000000000000000000000000000000000000	AL 19 10 1078			100457		
4	3.9	1,1	7.81	5.2	47.70	674	286	2623.76
5.5	35	106	时间期的7(81)			3 630		
6	3.5	1.06	7.78	And in the local distance of the second s	Constanting in succession of the later.	528		The second state of the se
7,000		SEP 282 9106	1848 B 11/13	101-01-02-061-62	19319930482104	E 3 3 1 1 1 1 1 1 1 1 1 1	210	185648
8	3.2	1.06	7.67	martin laber of the line of the second	States and a state of the state of the	1364	AND COMPANY OF MALE OF A DESCRIPTION OF A D	
9.7	51					10 10115220107/6		
10	3.4	1.06	7.86	Land Control West - Automatic Latities	CONTRACTOR OF STREET, S	733	-	
111122				22.35 1 2244	31333112208746	2010 00000000000	111 100 1010 1010 1010	290816
12	3.5	1.06	7.81	and an an all the line of the second states	In Status on structure and a fail associated	585	LONG AN AND AND AN ADDRESS AND ADD	127 dat - een anno Marman, on Stoan inne fan de
1388.00	100000000000000		北海南部间/9/8			11 00000000000000000000000000000000000		
14	4.3	1.16	/./4	222	2147.72	792	228	2205.76
153243			Summer Lo / Mile			5/6		
16	4.6	1,06	7.8	The state of the state of the state of the	and the second state of th	553	LINES, MARINES, AND AND ALL SHOP YOU WANTED AT A	
			PERFECTION NO.			HERE 1520		THE SHARE SHOWED
18	4.8	1.1 Teallogen of 2000 River 2000	7.84	196	1/98.10	/52	228	2091.67
1948020	建設設置設備 設置		369 REFERENCE			13100000000000002 <u>4</u>		
20	C	1.1	1.65	and interest in the sector of the	Distant Street, 150	80C	STATE THE REPORT OF THE REPORT OF THE	No. of the other states of the
	· · · · · · · · · · · · · · · · · · ·		部の時間においてい	AND	10453232100:41	200	10000000000000000000000000000000000000	1999 1999 1999 1999 1999 1999 1999 199
ZZ 2007-02-108-000	5.2	I.IO	7.9 HOURNESTOE	1930 Participation of the	Menuterran Frencia	/2U	10000000000000000000000000000000000000	SHOLES BURNESS OF STORES
201200	2 C 1000		100000000000000000000000000000000000000	相關的時代。28月1日後の224	和法律的影響とつつまでの	750	の時間には、1993年の1993年の1993	的现在分词 的复数的 化合金
24 560-86	3.5 6000000000000000000000000000000000000	Rente House and the	7.74 #9###\$#\$7\70	HONIN (SURIAN)		7.30	AND SHE WAS DONNED	196-1948-15-1909-15-15-15-16-16-
2018-246	2.5	110000000000000000000000000000000000000	7 70	The second s		500	BURNING NY AVERAGE SECTION	
07889		出版的研究的影响实	31/3013-257.10 31/34013-257.10	THE ROTAL PROPERTY		330	Manager States and States	
28	4.6	1 1	7.86	11202011450425504	AD36 58	\$27	210	2017 12
001024084	NAMESING PARTY	斜闭路出现的 图》	REAL PROPERTY AND					100000000000000000000000000000000000000
30	2.3	116	7 75	THE REPORT OF THE PARTY OF THE	CALL CONTRACTOR OF THE PARTY OF T	557	NEW CONTRACTOR OF STREET, STREE	AND THE REAL PROPERTY AND A DESCRIPTION OF THE REAL PROPE
100							医乳油 医外间的 化	
Ave	4.06	111	7.80	2) 27715	2105 14	676 50	205 /1	2732.01
Max	7 50	1 36	7.00	440.00	4036 56	1364.00	418 30	3837 49
Min	3.10	1.06	7.67	5.20	47.70	457.00	210.00	1856.48

.

ļ

Organic Loading Results

Dec	E.Q.	PLANT 1	INFLUENT	INFLUENT	TSS Loading	INFLUENT	INFLUENT	BOD Loading
	TANK	SPEED	Р.Н.	T.S.S. (mg/l)	(lbs/day)	C.O.D. (mg/l)	B.O.D (mg/l)	(Ibs/day)
	LEVEL (ft)	SETPOINT						
		(MGD)						
	透出影响的现在	1996年2月1日日日	國部議會7.81			640		
2	3.8	1.1	7.81	396	3632.90	666	238	2183.41
334 38	他的 和 的 2		1411 147 18 18 18 18 18 18 18 18 18 18 18 18 18	と言語で	語業語表現	日本語名的 1983年1983年1983年1983年1983年1983年1983年1983年	建成能能能能能	
4	4.9	1.1	7.86			646		
5個半時第	通过的1676	我们的问题。106	國軍的	题指立语言246	期前期期21747 4	1734	2162 Horn Mil 92	1697.96
6	4.2	1.06	7.9			724		
71031131	子的常常经济	和新聞時間的 例	過過調整7,83			能影响的 。14600		
8	3.4	1.1	7.79			645		
9部24月4日	第1893第3 34	EURO 1:06	· 新知道2718	24 423月2日252	元2127227778	國國國家國1076	312 11 15 15 352	3111182
10 Distance interacts	3.6	1.06	7.82	a a substant and a state of the substant of the substant	******	702	The line builde in Section Section and the sector	Lanter lander offensie also size, or inter t
	2002/2019/19/19		展刊出版 7.182	在新行 动的第三人称单数		acada a 269%		
12	4.4	1.1	7.71	244	2238.46	964	306	2807.24
13%。13.6月	31-121-140-319	國際國際認識的				R 2010		
14	3.9	1.1	7.78	are an entry to the second	STREET IN THE ALL DRIVEN AND AND A	791	and the second state of the se	
35 2000000	2011/25197013358		医副性脉脉/286			1503的新闻的105031		
16	4.3	1.05	7.89 185328-2000	278	2457.03	817	485	4287.59
Hilandelsen 40	每期33月105次	1904后曾和松海州910	12132317/0/0	STREET CONTRACTOR		200		
10	3.7 1999/1999/1999	6.1 566999000000000000000000000000000000000	7.78	REALISTICS TO STATE	15-10-10-00-00-00-00-00-00-00-00-00-00-00-	720 Bacaraaneeoooo	STRUCTURE CONTRACTOR	THE PROPERTY OF
4月16日 20	N C SHIRE CHARGE SHE	1.06	7 05	案例用的第1名使用的HHO	A SERVICE CONTRACTOR	102 707	NE REAL PROPERTY OF	10000000000000000002
20	4.0		08/28/2010	10000000000000000000000000000000000000				
2010808330B	3.1	1 1	7 81	1221-1229-1229-1477-1229-1479-1429-1429-1429-1429-1429-1429-1429-142	AND DEPENDENCE OF A DEPENDENCE OF	idaga mangala saking		CONTRACTOR OF STREET, S
24 29 题前记书	30,244,376	1000000000000000	12445167485	AND 100 100 100 100 100 100 100 100 100 10	34550766188		667908418495730	12131327062-31
24	5	1.1	7.79	THE PARTY OF THE PARTY OF THE	THE REAL PROPERTY OF THE PARTY	811	A CONTRACTOR OF A CONT	(Hermitelise a source of the second se
25.00	13 3 9 18 6 3	1218 1219 10 96	Windl. 67/63			FUER 18/12/18/12		CARACTER STATE
26	3	1.06	7.84			782		
2778	3122233	医间隙 原始的	运 需剂和74	11 280	2802124	WE 1997	1508	5084:06
28	3.3	1,1	7.81			826		
29호油 44	推進調整的形	新建設 計加速調化2	段的原始的7.18	が運動に設備する		10.10		部の目的ななので
30	4.3	1.1	7.89	238	2183.41	965	453	4155.82
31条标册	21090193	國時間因為認識	國則前進7.88	利出版和其前的	然間影響機構構	新期1月16月2869		なななななななななななななななななななななななななななななななななななななな
Ave	4.00	1.10	7.81	296.22	2714.10	774.45	407.56	3773.46
Max	6.30	1.30	7.90	446.00	3942.82	1076.00	730.00	7062.31
Min	3.00	0.96	7.63	238.00	2174.74	600.00	192.00	1697.36

AND INCOME. MICH. MICH. MICH. MICH. MICH. MICH. MICH. MICH.

Appendix B


Appendix C



Appendix D

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Concord Hunt Pump Station Meter: Mag Manufacturer: Sparling Serial#: M193374115 Transmitter: FM626 Recorder: n/a Primary: 4 inch Mag Maximum Capacity: 0-500 GPM

Completed Work

Calibration of Transmitter

Tested: Transit Time Error: 1% Tolerance: <u>+</u>1%

Calibration of Recorder

Tested at: N/A Multiplier: N/A Error: 0% Tolerance: $^+1\%$

Notes: Left equipment in working order. Technician: kg

Calibration of Totalizer

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	+1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Concord Chase I Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M077752504/SP99911-003-03-03 **Transmitter: Tigermag EP FM656** Recorder: 392 Primary: 4 inch Mag Maximum Capacity: 0-200 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Transit Time Tested: -1% Error: Tolerance: +1%

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	$^{+}_{-}1\%$

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Concord Main Plant Meter: Effluent Manufacturer: Milltronics/Chessell Serial#: 45000724/4510-53443-C03 Transmitter: OCM III Recorder: 392 Primary: 9 inch Parshall (with subfloor) Maximum Capacity: 0-2.0 MGD

Completed Work

Calibration of Transmitter

Tested:Flow MeasurementsError:1%Tolerance:+1%

Calibration of Recorder

 Tested at:
 0, 50 & 100%

 Multiplier:
 In %

 Error:
 0%

 Tolerance:
 +1%

Calibration of Totalizer

Tested at:	0,50 & 100%
Multiplier:	X 1000
Error:	0%
Tolerance:	+1%

Notes: Changed display read out on chart recorder from MGD to GPM, cleaned primary and left equipment in working order. Technician: kg

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Mendenhall Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M105762906/SP108521-001-02-02-1499-05 Transmitter: Tigermag EP FM656 Recorder: 1392 Primary: 4 inch Mag Maximum Capacity: 0-500 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: **Transit** Time 1% Error: +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 100
Error:	0%
Tolerance:	+1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Mill Road Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M053305102/UR23931-001-01-01 Transmitter: Tigermag GP FM656 Recorder: 392 Primary: 6 inch Mag Maximum Capacity: 0-1000 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: **Transit** Time Error: -2% +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 100
Error:	0%
Tolerance:	+1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: New Seasons Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M019520800 Transmitter: Tigermag EP FM657 Recorder: 392 Primary: 4 inch Mag Maximum Capacity: 0-1000 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: Transit Time -1% Error: Tolerance: +1%

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Concord Woods Pump Station Meter: Mag Manufacturer: Fischer & Porter Serial#: 95W019358 Transmitter: 50XM1 Recorder: n/a Primary: 6 inch Mag Maximum Capacity: 0-800 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: Transit Time -2% Error: +1% Tolerance:

Calibration of Recorder

Tested at: N/A Multiplier: N/A 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 1
Error:	0%
Tolerance:	$\frac{+}{2}1\%$

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 01/23/2017 Location: Concord Main Plant Meter: Influent Pump Station Manufacturer: Level Controller Seria]#: 20100415020-040 Transmitter: LC150 Recorder: n/a Primary: Influent Tank Maximum Capacity: 12,000 Gallons

Completed Work

Calibration of Transmitter Calibration of Totalizer

Volumetric & Transit Time Test Tested at: Tested: Unit Error: -14% Tolerance: +1%

Calibration of Recorder

Tested at: N/A Multiplier: N/A Error: 0% +1% Tolerance:

Notes: Made corrections to volumetric flow meter, cleaned level transducer and left equipment in working order.

Technician: kg

Volumetric & Transit Time Test Unit Multiplier: X 1000 0% Error: +1% Tolerance:

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Beaver Valley Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M036043001/D24761-001-01-01 **Transmitter: Tigermag EP FM657** Recorder: 392 Primary: 4 inch Mag Maximum Capacity: 0-500 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: Volumetric Test 1% Error: +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 100
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Smithbridge Apartments Pump Station Meter: Mag Manufacturer: Sparliing/Chessell Serial#: M033711801/D230400010101180106 Transmitter: Tigermag EP FM657 Recorder: 392 Primary: 4 inch Mag Maximum Capacity: 0-500 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: Volumetric Test -1% Error: +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 1
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Summit Crossings Pump Station Meter: Mag Manufacturer: Sparling/Honeywell Serial#: M147723410/1030y087657400001 Transmitter: Tigermag EP FM656 Recorder: DR4500 Primary: 3 inch Mag Maximum Capacity: 0-400 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Transit Time Tested: Error: 0% +1% Tolerance:

Calibration of Recorder

Tested at: Flow Rate Multiplier: In % 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	+1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Mr. Wizards Car Wash Meter: Mag Manufacturer: Sparling Serial#: M174552913 Transmitter: FM656 Recorder: n/a Primary: 2 inch Mag Maximum Capacity: 300 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: **Transit** Time Error: 1% +1% Tolerance:

Calibration of Recorder

Tested at: N/A Multiplier: N/A 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/13/2016 Location: Laurel Brooke Pump Station Meter: Discharge Manufacturer: Endress & Hauser/Chessell Serial#: DB09BE16000/UR33209-001-01-01-25-05 Transmitter: ProMag 50 Recorder: 392 Primary: 4 inch pipe Maximum Capacity: 0-200 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Volumetric Test Tested: Error: 1% Tolerance: +1%

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 100
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Brinton Lake Pump Station Meter: Mag Manufacturer: Sparliing/Chessell Serial#: M151185210/D15525-001-01-01 Transmitter: Tigermag EP FM656 Recorder: 392 Primary: 4 inch Mag Maximum Capacity: 0-500 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: Volumetric Test 1% Error: +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Concord Chase II Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M015992199/2743-001-01-01 Transmitter: Tigermag EP FM657 Recorder: 392 Primary: 3 inch Mag Maximum Capacity: 0-100 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Transit Time Tested: Error: -1% Tolerance: +1%

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % Error: 0% +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 10
Error:	0%
Tolerance:	<u>+</u> 1%

P.O. Box 304 Flourtown, PA 19031

SERVICE REPORT

Concord Township Sewer Authority 664 Concord Road Glen Mills, PA 19342

Contact Person: Chris Mariani

Contract: Annual Date of service: 12/27/2016 Location: Cheyney Road Pump Station Meter: Mag Manufacturer: Sparling/Chessell Serial#: M174542913/SP97683-001-01-01-297 Transmitter: Tigermag EP FM657 Recorder: 392 Primary: 6 inch Mag Maximum Capacity: 2000 GPM

Completed Work

Calibration of Transmitter Calibration of Totalizer

Tested: **Transit** Time Error: 0% +1% Tolerance:

Calibration of Recorder

Tested at: 0, 50 & 100% Multiplier: In % 0% Error: +1% Tolerance:

Notes: Left equipment in working order. Technician: kg

Tested at:	Flow Rate
Multiplier:	X 100
Error:	0%
Tolerance:	+1%

Appendix E

🛛 🥪 penns	sylvania	3			PAD	EP Chapter 94 Spre	eadsheet				·····
DEPARTMEN PROTECTION	NT OF ENVIRONI	MENTAL				Sewage Treatment	t Plants		Re	eporting Year:	2016
l						· · · · · · · · · · · · · · · · · · ·		1			
Facility Name:	Concord Town	ship Gentral Sev	wage izeatmeni	Plant		Permit No.:	PA0055212		P	ersons/EDU:	3.5
Existing Hydraulic O	lesion Canacit	vr [1.9 M	en.		Existing Organic Da	eigo Canacibo	[5.404	he BOD5/day	
Upgrade Planned in	Next 5 Years?	~	NO	Year	[]	Lingrade Planned in	Next 5 Years?		NO	Year:	······
Future Hydraulic Des	sion Capacity:			GD	L	Future Oreanic Desi	on Canacity:		"	bs BOD5/day	L.,
			······································				3			,	
	Ma	onthly Average	Flows for Past	Five Years (M)	3(D)		Monthh	z Average BOE) <u>5 Loads (or P</u> a	ast Eive Years (i	bs/day)
Month	2012	2013	2014	2015	2016	Month	2012	2013	2014	2015	2016
January	0.932	0.956	0,988	1.147	0.98	January	2,521	2,599	2,150	2,682	3,485
February	0.95	0.954	1.009	1.102	0.98	February	3,007	2.936	2,411	2,054	3,831
March	0.956	0.948	1.017	1.159	1.064	March	2,572	2,340	1,718	2,956	3,586
April	0.946	0.957	1.007	1.12	1.053	April	2,135	2,249	1,707	3,007	3,972
Мау	0.991	0.963	1.059	1.123	1.069	May	1,903	3,211	2,814	2,663	4,411
June	0.959	1.025	0.998	1.155	1.031	June	2,492	2,374	2,651	3,121	3,550
July	0.99	0.97	0.955	1,124	1,012	July	2,822	1,798	2,547	3.194	2,748
August	0.94	0.944	0.948	1,109	1.025	August	2,307	2,316	3,138	3,606	3,216
Soptember	0.996	0.938	0.977	1.03	1.063	September	2,563	1,629	2.410	4.538	3,256
October	0.987	0.982	1.004	0.978	1.085	October	2,815	1,548	2,494	3,324	2,810
November	0,942	0.987	1,101	0.981	1.101	November	2,828	2,515	2,193	3,492	2,738
December	0.987	0.98	1.075	0,979	1,127	December	2,011	2,109	2,679	3,218	3,773
Appust Avo	0.965	0.985	1.012	1.024	1.049	Appual Ave	2 408	0.202	2 400	3 155	9448
Mariba: Avg	0.900	0.905	1.012	1.009	1.049	Mar Ma Ava	3,007	2,302	9.128	4.538	3,440
Max : Aug Batio	1.00	1 02	1.05	1.05	1.05	Max two rwg	1 20	1 10	1 30	1.44	1.28
Existing EDUs	1.02	1.02		1.0.5		Existing FDUs	1.45	1.450	1.00		1.20
Elow/EDU (GPD)		I.,			I	Load/EDU					
Flow/Capila (GPD)						Load/Capita					
Exist. Overload?	NO	NO	ND	NO	NO	Exist, Overlead?	NO	NG	NÖ	NO	NO
		Projected Floy	ws for Next Elv	e Years (MGD)			Pro	ecled BOD31	oads for Next J	Five Years (lbs/s	day)
	2017	2018	2019	2020	2021		2017	2018	2019	2020	2021
New EDUs	310.0	306.0	306.0	303.0	314.0	New EDUs	310	306	306	303	314
New EDU Flow	0.07161	0.070686	0.070688	0.069993	0.072534	New EOU Load	181.040	178.704	178.704	176.952	183.376
Proj. Annual Avg	1.087	1.15769	1.22837	1.29837	1.3709	Proj. Annual Avg	2.943	3,122	3,301	3.478	3,661
Proj. Max 3-Mo Avg	1.128	1.201	1.274	1.347	1.422	Proj. Max Avg	3,896	4,133	4,370	4,604	4,847
Proj. Overload?	NO	NO	NO	NO	NO	Proj. Overload?	NO	NO	NO	NŬ	NO
Show Precipital	tion trata on H	yorauuc Graph	?								
	Taba	Manthia One da	distlan far Dao	t Dive Venne <i>(</i> te	oher)						
Month	2012	Monthly Precip	2014	2015	2016						
lanuan	10.2	2013	2014	2013							
February											
March											
April											
May											
June											
July											
August											
Seplember											
October											
November											
December											
-											





Concord Township, Delaware County

43 Thornton Road Glen Mills, PA 19342

ANNUAL WASTELOAD MANAGEMENT <u>REPORT</u>

"2016 Chapter 94 Report"

Riviera at Concord Sewage Treatment Plant NPDES PA0054780

March 2017

Prepared By:

Bradford Engineering Associates, Inc. Walter A. Fazler, PE 2710 Concord Road, Suite 3 Aston, Pa 19014 (610) 497-6200 (610) 500-5677 fax wfazler@bea-inc.com

Preparer:

Permittee:

Signature Walter Fazler, PE *Signature* Dominic A. Pileggi, Chairman

Section 1.0	Introduction	2
Section 2.0	Hydraulic and Organic Loadings	3
Section 3.0	Hydraulic and Organic Loadings Projections	8
Section 4.0	Sewer Extensions	12
Section 5.0	Condition of the Sewer System	12
Section 6.0	Sewage Pumping Stations	13

LIST OF APPENDICES	APPENDIX LETTER
Riviera at Concord Sewage Treatment Plant Influent Loadings	A
Riviera Sewage Treatment Plant Plan View	В
Map of Sewer System	C
Flow Meter Calibration Reports	D
PaDEP Chapter 94 Excel Spreadsheet	E

Section 1.0 Introduction

Concord Township owns and operates a sewage collection and treatment facility located in Concord Township Delaware County. The system is comprised of The Central Sewage Treatment Plant (CSTP), The Riviera at Concord Sewage Treatment Plant (RSTP), approximately 13 sewage pump stations and approximately 50 miles of sewage collection and conveyance piping.

Riviera at Concord Sewage Treatment Plant

The Riviera Sewage Treatment Plant (RSTP) and collection system was dedicated to the Concord Township Sewer Authority in June 2009. The RSTP operates under NPDES permit PA0054780.

The RSTP and collection system was constructed in conjunction with the age-restricted community Riviera at Concord. This community consists of 205 single-family dwellings, 1 community facility and 2 neighboring residential homes. The system was extended to serve the Reserve at Garnet Valley Subdivision which consists of 30 single-family homes. There are no commercial establishments connected to this system.

The Riviera Sewage Treatment Plant is designed for hydraulic flows of 0.0635 million gallons per day (MGD) and influent loadings of 240 milligrams per liter (mg/L) 5-day Biochemical Oxygen Demand (CBOD) and 240 mg/L Total Suspended Solids (TSS). The biological treatment process is the extended aeration configuration of the activated sludge process. This process provides secondary level of sewage treatment.

The influent loading concentrations have always looked extremely high from the time the plant first started receiving flow. We have not been able to reliably document an exact cause for this condition but it appears that the use of water reducing fixtures common in new construction combined with users contributing the same amount of organic and solid material results in a higher strength wastewater.

The actual plant flows are running at only 30% of the plant design flows. This factor is what allows the plant to perform well within the permit discharge limitations even though the strength of the incoming waste is much higher than typical values. A plan view of the RSTP is included in the Appendix.

Section 2.0 Hydraulic and Organic Loadings

The following section will be presented in the format suggested by PaDEP in a document titled "Chapter 94 Wasteload Management Report Template."

Riviera at Concord Sewage Treatment Plant

a. A line graph depicting the monthly average flows is shown in Chart 1. Rain fall has been added for reference. The permitted capacity of the RSTP is 0.0635 MGD:



Concord Township Sewer Department Riviera at Concord WWTP - NPDES PA0054780 2016 Chapter 94 Report Printed ######

- b. The data indicates that the average flows to the treatment plant were well within the permitted average annual flow capacity.
- c. A hydraulic overload does not exist at the RSTP. A corrective action plan is not necessary.
- d. As part of standard operating procedures, the operators try to anticipate excessive flow conditions by speeding up the process and lowering the level of the E.Q. tank so as to increase its holding capacity.
- e. The plants historical hydraulic loading is depicted in Table 2 and graphically in Chart 2. The monthly rainfall is also shown for reference. Rainfall is recorded daily at the main plant.

Table 2							
	RST	P Hydraulic L	oading (MGD	}		Rain Fall (in)	
Month	2012	2013	2014	2015	2016		
January	0.022	0.027	0.030	0.029	0.029	1.40	
February	0.019	0.027	0.026	0.026	0.028	8.20	
March	0.022	0.029	0.028	0.030	0.029	2.50	
April	0.022	0.029	0.030	0.031	0.031	3.15	
May	0.021	0.028	0.030	0.029	0.030	7.70	
June	0.021	0.028	0.030	0.031	0.028	2.70	
July	0.020	0.027	0.028	0.027	0.028	5.90	
August	0.022	0.028	0.027	0.027	0.028	1.25	
September	0.023	0.028	0.030	0.029	0.030	4.55	
October	0,024	0.031	0.032	0.031	0.032	1.70	
November	0.026	0.032	0.033	0.032	0.034	1.70	
December	0.031	0.032	0.032	0.034	0.034	4.85	
Annual Average							
(AA)	0.023	0.029	0.030	0.030	0.030		
3 Month Max							
Average	0.027	0.032	0.032	0.032	0.033		
Ratio (3 month							
Max to AA)	1.18	1.10	1.09	1.08	1.11		
5 Year Hydraulic							
Ratio					1.11		



MAIN LIFT STATION

CURRENT AVERAGE MONTHLY FLOW	0.030 MGD
CURRENT AVERAGE MONTHLY MAX FLOW	0.032 MGD
PUMP CAPACITY (Each Pump)	0.525 MGD
AVAILABLE PEAK	16.4

f. A line graph depicting the average monthly organic Loading is shown in Chart 3. The data indicates higher than normal domestic sewage. Removal efficiencies are extremely high and the plant has no problem processing the organic loading.



- g. An organic overload does not exist at the RSTP. A corrective action plan is not necessary.
- h. There was one anomaly in the organic loading for the 2016 calendar year. It occurred in August during the first couple of weeks. The cause is unknown.
- i. An organic overload does not exist at the RSTP. A corrective action plan is not necessary.
- j. Sampling frequency occurs twice per week and the results are evaluated by an accredited lab. All samples are documented by a chain of custody document and packed in ice.
- k. 24-hour composite samples are taken of the influent and of the effluent to evaluate BOD, TSS, CBOD, NH₃/phos w/H₂SO₄, COD, Total phos. w/H₂SO₄, & Alkalinity. A fecal grab sample is also done.

- 1. The influent BODs sample is taken at the flow equalization tank prior to treatment at the main processing plant.
- m. There is no hauled-in septage received at the RSTP.
- n. The influent loadings are calculated by using the influent BOD5 concentration (mg/l) and the effluent flow data. The results are displayed in Appendix B. The facility also uses the AllMax Operator10 Wastewater Data Software to do actual calculations and to prepare the monthly DMR reports.
- o. The plants historical organic loading is depicted in Table 3 and shown in graphical format in Chart 4.

Table 3							
	RSTP O	rganic Loadir	ıg (lbs./day)				
Month	2012	2013	2014	2015	2016		
January	57	94	81	43	113		
February	68	106	64	71	1.02		
March	68	74	45	59	98		
April	50	76	52	46	96		
Мау	38	72	65	34	80		
June	48	65	65	57	112		
July	66	50	57	89	94		
August	74	55	87	149	54		
September	65	46	74	126	80		
October	90	63	7 7	95	61		
November	94	68	86	94	62		
December	75	65	72	109	74		
Annual							
Average (AA)	66	70	69	81	85		
Max Average	94	106	87	149	113		
Ratio (3 month							
Max to AA)	1.42	1.53	1.27	1.84	1.32		
5 Year Organic							
Ratio					1.48		



Section 3.0 Hydraulic and Organic Loadings Projections

Riviera at Concord Sewage Treatment Plant

a. Hydraulic Loading Projection

The following tables will outline the RSTP 5-year hydraulic loading projections. At present, there are no planned projects in the watershed serviced by the RSTP.

	TABLE 4								
	RSTP Past 5-year Connections								
Year	# of EDUs Connected	gpd/EDU	New Flow						
2012	0	231	0.0000						
2013	0	231	0.0000						
2014	0	231	0.0000						
_2015	0	231	0.0000						
2016	0	231	0.0000						

Table 5 outlines the calculation of the 5-year adjusted annual average flow. The adjusted annual average flow is calculated by adding the flow from all EDUs connected to the annual average (AA) flow for each calendar year. This provides an "Adjusted Annual Average Flow" for each year. The average of the AA flows determines the 5-year adjusted annual average flow.

	RSTP	Calculation of Ad	TABLE 5 justed Annual A	verage Flow		··· · · · · ·	
Year	AA Flow in MGD	<u></u>	All ED	Us connected		· · · · · · · · · · · · · · · · · · ·	Adjusted AA Flow
]		2012	2013	2014	2015	2016	
2012	0.023		0.0000	0.000	0.000	0.000	0.023
2013	0.029			0.000	0.000	0.000	0.029
2014	0.030				0,000	0.000	0.030
2015	0.030					0.000	0.030
2016	0.030		·				0.030
Total	0.141					Total	0.141
5 Year						5 Year	
Average	0.028				_	Average	0.028
1							

Table 6 is the 5-year flow projections. The first year's projection starts with the 5-year adjusted annual average flow as shown in Table 5. At present, there are no planned projects in the watershed serviced by the RSTP. Chart 5 is the 5-year projection show in graphical format.

	<u> </u>		TABLE 6		<u> </u>			
RSTP Adjusted Projections								
Year	Previous Year's Annual Average Flow	New EDUs	Increased Flow (2) (MGD)	Projected Annual Average Flow(3) (MGD)	Projected Max Month Flow (4) (MGD			
2017	0.028	3	0.001	0.029	0.032			
2018	0.029	0	0.000	0.029	0.032			
2019	0.029	0	0.000	0.029	0.032			
2020	0.029	0	0.000	0.029	0.032			
2021	0.029	0	0.000	0.029	0.032			
5 Yr Avg. H	lydraulic Ratio	1.11	· · · · · · · · · · · · · · · · · · ·	• • • • • • • • • • • • • • • • • • •				
Notes								
1. The 2016 p 2. Increase Fl over 5 years.	projection starts with the low = New EDUs x CTSD (e 5-year adjusted gpd/EDU or 231	l annual average as calcula / 1,000,000. New EDUs is	ted in Table 12 based on all committe	d EDUs spread			
3. Projected	Annual Average Flow = P	revious Years Ar	nual Average Flow + Incre	ased Flow				

4. Projected Max Month = Projected Annual Av. Flow x 5-year average hydraulic ratio



b. Organic Loading Projections

The organic loading projection is shown in the following tables and graphs. At present, there are no planned projects in the watershed serviced by the RSTP.

Table 7				
RSTP Average Monthly Influent BOD5				
	1			
Month	Average BOD5 (mg/l)	verage BOD5 (lbs./day)		
January	511	113		
February	466	102		
March	449	98		
April	384	96		
May	350	80		
June	469	112		
July	379	94		
August	275	54		
September	341	80		
October	249	61		
November	264	62		
December	291	74		
Monthly Average	369	85		

KSTP Projec				
KSTP Projected Organic Loading				
Projected Annual	Annual Average BOD5	Maximum Monthly BOD5		
Average Loading	Loading Projections 1	Loading Projections 2		
from new EDUS	(lbs./day)	(lbs./day)		
2	88	1:		
0	88	12		
0	88	11		
0	88	1:		
0	88	1:		
	Projected Annual Average Loading from new EDUS 2 0 0 0 0 0	Projected Annual Average Loading from new EDUSAnnual Average BOD5 Loading Projections 1 (lbs./day)288088088088088088088088		

1. AA BOD5 projection = Average monthly BOD5 from Table 7 + New EDUs converted to BOD5 using the average concentration in Table 7

2. Max Monthly BOD5 Loading Projection = AA BOD5 Loading Projection x 5-year Organic Ratio from Table 3

PRODUCTION OF THE

na a Serra Terra

Construction and the second
utter til til som fandersken and


Section 4.0 Sewer Extensions

- a. There were no Sewer Department sponsored sewer extensions constructed in the 2016 calendar year.
- b. There were no sewer projects approved or exempted in the 2016 calendar year.
- c. A map showing all known proposed projects which require public sewers is attached to this report as Appendix E.
- d. There are no planned projects in the Riviera at Concord service area.

Section 5.0 Condition of the Sewer System

The system was installed in the early 2000's in accordance with Authority specifications and under inspection and surveillance by the Authority's engineer. The plant and collection system is operated and maintained by five (5) operators, all of whom, but two, have DEP Class A licenses. The Sewer Department maintains and encourages continuing education for all operators. The Sewer Department has implemented a scheduled preventive maintenance program for the plant, pump stations, and collection lines. The overall condition of the collection system is very good. The integrity of the collection system is maintained through constant surveillance and the fact that the system is relatively new is a major advantage to the Sewer Department. The Sewer Department also maintains a sufficient reserve fund in the event it needs to respond to an emergency type situation. All collection lines are more than adequate to handle any anticipated increases in flows. Before any new developments are approved, it is standard procedure to have the Sewer Department's consulting engineer do an evaluation of the collection lines' ability to handle the projected increased flows. An annual reserve fund has been established to provide for infrastructure maintenance and repair.

The system experienced no SSOs during 2016.

Concord Township modified its resale certification process to include a full inspection of private sewers. Essentially, any property sold within the Township, which is connected to the public sewer system, is inspected to insure the system is operating as designed. The CTSD staff performs all inspection work as part of this process. Any deficiencies are noted and required to be repaired prior to closing.

Section 6.0 Sewage Pumping Stations

There are no pump stations in the Rivera at Concord service area.

Appendix A

Jan	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
	10027				
2	0.039				
31	0.028				
4	0.029				
5	1.0041				
6	0.025	VALUES AND THE THE CARD AND THE ADDRESS AND THE	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	THE REPORT OF THE PARTY OF THE	
7	201 1 201024				
8	0.027	234	51.91	518	114.92
91.	F. F. F. 101028				
10	0.027	STOCKED STOCKED STOCKED STOCKED	1. S. M. L. N. LAW STRATE AND DESCRIPTION OF A DESCRIPTIO	and the recent of the rest of the second	WARTEN MARTINESS STREET, STREET, STREET, STREET, STREET, ST
	100026				
12	0.037	THE REAL PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE	and the state of the	Kalesconcer Picture and and a second	
13	KO1026				
14	0.027				
12					
16	0.020				
	0.020				
10	0.020				
20	0.026				
20 51					
<u>-1</u> 22	0.027	210	46.41	503	111 17
23	0.027				
24	0.038	TRANSPORTED IN CALCULATION OF THE CALCULATION OF TH	CHIRLING AND CONTRACT AND		THE PERSON AND A CONTRACT OF A CONTRACT
25	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 				
26	0.026	ANTO MEDICAL MANAGEMENT OF CONCENTION OF	A CONTRACTOR OF	THE PROPERTY AND A DESCRIPTION OF THE PARTY OF	AND REAL PROPERTY OF THE PARTY OF THE PART
27	111110024				
28	0.025				
29	1. 1. 10. 10. 10. 10. 10. 10. 29			N HALLANS AN	
30	0.042	· · · · · · · · · · · · · · · · · · ·			
31	10.0018				
Ave	0.029	222.00	49.16	511	113.04
Max	0.042	234.00	51.91	518	114.92
Min	0.018	210.00	46.41	503	111.17

Concord Township Sewer Department Chapter 94 Report

Feb	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT]	
	(MGD)				
a second	12112				
2	0.027				
312 2 1	0.025				
4	0.025				
539	0.025	1.1.100	20.85	316	65.89
6	0.025				
7.6	1.01027				
8	0.021	what a set that the book of the bill of the set of the	anter e marter de la compañsió destrictados de la compañsió	Deliver and the second s	NAMES OF COMPANY AND ADDRESS OF COMPANY AND ADDRESS OF COMPANY
9	01025				
10	0.024	NER CONTRACTOR OF CONTRACTOR	125 (SALES HIGH BARRIER BARRIER		STANDARD ST
	0.002				
12 26520000	0.025				
10	0.025				
	0.025				
16	0.028				
17	0.026				
18	0.026	land have a second s	NYE BERETERE CENTER OF BERETERE		
19-1-1	0.027	376	84.67	615	188.49
20	0.026				
21	1.0.033				
22	0.026				
23. 24	0.027				
24	0.027		and a second state of the second		AND THE ADDRESS OF THE OWNER AND THE OWNER
25- 1	10.027				
26	0.025	CENTRE CAREFORNIAL CONTRACTOR			
26	0.020				
20	0.025				
K205					
Ave	0.026	238.00	52.76	466	102.19
Max	0.033	376.00	84.67	615	138.49
Min	0.021	100.00	20.85	316	65,89

Concord Township Sewer Department Chapter 94 Report

Mar	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
2	0.037	THE PROPERTY AND A DESCRIPTION OF THE PROPERTY OF T	THE REPORT OF STATE PARTY PROVIDED AND A DESCRIPTION	19-19-22 DECISIONE STRATE THE STRATE	
3	0.025				
4	0.027	306	67.63	493	108.96
5.	. 0.035				
6	0.032				
7	0.026				
8	0.025				
9	0.036				
10	0.025				
11	0.030				
12	0.038				
13	0.025				
14	0.028				
15	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
16	0.040	and a compared by Service and Realized Device of Realized Strength			
17					
18	0.026	366	79.06	404	87.27
19	10028				
20	0.031	TRANSPORT OF BUILDING TO LOOK AND TO DEFT.	na fall kome komen ander in med som en bekenne det förstade		
21-03-04	x 01027				
22	0.043				
23.0 28	0.026				
24	0.028				
20					
20	0.039				
24.00	0.020				
20	0.030				
20					
30 97 E 88	0.030				
			1000000000000000000000000000000000000		
May	0.030	350.00	73.34	440.50 	100
Min	0.043	306.00	67.62	404.00	£03
	0.024	500.00	07.03		

Concord Township Sewer Department Chapter 94 Report

Apr	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
arther statements and the				The second second second second	
		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	83 <u>890</u>		194 (5)
	0.033				
1	0.030				
5	0.030				
6	0.029				
7	0.020				
8	0.026		- Colorante and a second state	MARCHEN MARTINE MANAGEMAN	Control of the second
98	01028				
10	0.029				
11	1.7.1 10 0026				
12	0.030				
13	10039				
14	0.026				
15	0.030	220	54118	393	96.69
16	0.036				
17. 新聞	6.0.033				
18	0.028	No.41 INTERNET COMMENCE STATES	G & FOLT & COLUMN STREET, MYSSING, AND DOM:	Abroation o transmitte faitherint score fur	THE MEMORY CONTRACTOR OF A STATE OF A STATE
19	51.2 10/034				
20	0.031	IN THE REPORT OF THE REPORT	upper and shipping the sector of the	REAL PROPERTY AND A P	
21	0.038				
ZZ	0.028				
23	0.001				
24 65 - 58 - 58	0.031				
26	0.028				
20	0.028				
28	0.030				
29	10097				
30	0.029	CONTRACTOR DESCRIPTION OF THE PERSON OF THE	Souther and a substances and a substances of the	TO ALCONOMIC DESCRIPTION OF THE OWNER OF THE O	STORES IN THE REPORT OF A DESCRIPTION OF A DESCRIPTION OF A
Ave	0.031	276.00	69.01	383.50	95.60
Max	0.042	332.00	83.90	393.00	96.69
Min	0.026	220.00	54 .1 3	374.00	94.51

Concord Township Sewer Department Chapter 94 Report

May	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
	alitan Thursday (Marine Contra States)				
2					
	0.027				
	0.027				
6	0.027	208	47.36	272	61.93
7	0.027	200			
8	0.026				
9	12 17 10 0028				
10	0.026		The full for the first state of the second sta	anera carrandana kenanang separat kenanggalah kena	
11	0.037				
12	0.026				
13、北部	0.026				
14	0.027				
15	10.0031				
16	0.026				An entry find, whittenand, insures the Arrive of the 100 king
17 日本	0.026				
18	0.029		-	-	Received and and stated and several states
19	10.037				
20	0.027	352	79.85	428	97.09
21	16 Mar 19 0:053				
ZZ	0.031				
24	0.029				
24 054 (8)	0.020				
26	0.036				
20 27 - 19 - 19 - 19	0.000				
28	0.028	THE REPORT OF	an bei men di kan ber di kan ber di kan ber di kan ber		In a second s
29	0027				
30	0.027	a hand and a series of the ser	a an a sharp the second se	a na	an a
31	5				
Ave	0.029	280.00	63.60	350.00	80
Max	0.039	352.00	79.85	428.00	97
Min	0.025	208.00	47.36	272.00	62

Concord Township Sewer Department Chapter 94 Report

Jun	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
1	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
e e e e e e e e e e e e e e e e e e e	(MGD)]	
1	SET 10037				
2	0.029		PERMITER CONTRACTOR OF THE PERMIT		
3	1.0.032	240	63185	380	101010
4	0.032				
58			NET CONTRACTOR		
6	0.031				
7	100038				
8	0.026				
9	0028				
10	0.028				
11 64	0028				
12	0.028				
13	101028				
14	0.027		THE INPECT CONTRACTOR OF STORES		an Rowlinson of the Automatic second of an interaction in the
15 8 9	F 0.031				
16	0.037	an a			nin harrist and a statement of the second
	A 101026	292	64129	558	122.86
18	0.029	STATISTICS STATISTICS	n an Filmer		IN SAME AND
19					
ZU STRANS	0.025				
21.554	0.020				
22 50	0.030				
20	0.027				
25	0.027				
26	0.034			TO HIS SHOW TO HER COMPANY	
97 9 7	1000				
28	0.042				
29 (19)	0.028				
30	0.028	THE PARTY OF THE	NATIONAL STREET, STREE		ARTING CARTERING CONTRACTOR AND A
Ave	0.031	266.00	64.07	469.00	112
Max	0.042	292.00	64.29	558.00	123
Min	0.025	240.00	63.85	380.00	101

Concord Township Sewer Department Chapter 94 Report

Jul	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(Ibs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
		3380 444 814 814	1.4.1.16.86.82		411 2972
2	0.031			1999 - SHILE SHOW & SHOW & STATE	
3	0.035				
4	0.024	· · · · · · · ·			
5	MARK 10025				
6	0.024				
死 外間	10.024				
8	0.025				
91. 844	CHE H 1 101026				
10	0.026				
	0.026				
12	0.023	NAMES OF BELLEVILLE PROPERTY AND DESCRIPTION OF BELLEVILLE	and the state of the	Marine and an approximate investory address with a difference structure	and the sector of the line of the sector of
13 / 11日	Sec. 1026				
14	0.026		THE ACCOUNTS OF MINING MICH.	1277-121-122-127-127-127-127-127-127-127	Construction of the second
15	1991 SHEED 01027	1984 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	145108	Nation 19252	57.38
[16 [889-100-100-100-100-100-100-100-100-100-10	0.029		ANTIN CONTRACTOR		
	101029				
18	0.028	THE REPORT AND A STREET		Sector Contractor Contractor	Kanings (Res: Software) and the
19	101028				
20	0.027				
	0.000				
22 66	0.020				
<u>20</u> 00000000000000000000000000000000000	0.026				
24 95	0.020				
26	0.028				
20 07 10 00	0.028				
28	0.035	n an	治疗的结核的治疗。 新治疗结核的治疗的 和治疗的治疗的治疗的 和治疗的治疗的治疗的 和治疗的治疗的 治疗的 和治疗的 治疗的 治疗的 治疗的 治疗的 治疗的 治疗的 治疗的		
29	10026				
30	0.025	and the second		BURNUR BURNER BURDER	Contraction of the second s
31 445 4	7				
Ave	0.027	#DIV/0!	65.95	378.50	94
Max	0.035	0.00	86.82	505.00	130
Min	0.023	0.00	45.08	252.00	57

Concord Township Sewer Department Chapter 94 Report

Aug	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
NEWSCONT CONTRACTOR					
	1074 01 101030				
2	0.023	The second state of the second			
S.C. S.R.	111111111010 <u>25</u>				
4	0.037	和新市地区和高速的新生产的外的大学了271			
<u>5</u> .	2001023	644	66.50	2400 million (1990)	4 0
0					
8 Alexandread	0.024				
	0.020				
IU Ru	0.020				
	0.020				
12	0.029				
	0.027				
14 闭行:2月18日	0.027				
16	0 027				
10 17 - 17 - 17 - 17					
18	0.038				
10	01024		0.14.14.1811.88	150	2 977
20	0.025	The Constant of the Constant of the Constant of Consta	IN DRAFTER AND DESTINATION OF A STATE OF A ST	Internet of the second second second	
21	MARTIN 0029				
22	0.026	<u>Librich Company and Constantions (Constantions)</u>		<u>, and a substantiane and a substant</u>	
23	1100024				
24	0.024				
25	6.0025				
26	0.026				
27	0.026				
28	0.028				
29	1.0027				
30	0.028				· · ·
31	111 10:033				
Ave	0.027	377.00	73.97	275.00	54
Max	0.038	410.00	81.38	400.00	77
Min	0.023	344.00	66.56	150.00	30

Concord Township Sewer Department Chapter 94 Report

Sep	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(Ibs/day)	B.O.D (mg/l)	(Ibs/day)
	(MGD)				
11	1411 HILL 101029				
2	0.029	226	54.28	550	132.11
3	Star 1 101026				
4	0.030				
5	0.026				
6	0.017				
7	10.018				
8	0.029		anarati da da tra brada da bastila da Bran da		Martin Colored and the Colored State of Colored State of Colored State
9	12,111,111,01029				
10	0.029		The second s		·
	HIP 11 101040				
12	0.029		LANTANAN DARAK MANANAN MANANAN MANANAN MANANAN MANANA	an a	
18	NH 11 10 10 29				
14	0.029	Toursellast constant of the second	NTALEN BALLTON OF STATEMAN	NEW TOTO PROVIDENT POLICE DATA DATA	AND
15	E 10.029				
16	0.026	246	53.14	132	28.51
	EXIST 201027/				
18	0.033				
	0.028				
20				NHUSKE STREET	
20	0.035				
22	0.03				
20	0.020				
24 6E	0.030				
20	0.020				
20 572 - 20	0.029				
26年前日前日期 28	0.020				
20	0.029				
30					
ave	0 029	236.00	53.71	341.00	80
Max	0.040	246.00	54,28	550.00	132
Min	0.017	226.00	53.14	132.00	29

Concord Township Sewer Department Chapter 94 Report

Oct	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(Ibs/day)	B.O.D (mg/l)	(Ibs/day)
	SETPOINT				
	(MGD)				
National Internets Office	Now To HO TEAPER STIPS OF SMALL DOALS AND DO	**************************************		ling mitigation contrast and a second	and a second
2	0.032	a an	和重要的考虑和目的情况是这时间最优的分子。	a selection de contrainent management	i Der Marken and State and State and State and State and State
3.000					
4	0.026			THE SECOND CONTRACTOR OF THE PROPERTY OF THE PROPE	
54	10028				
6	0.031	an inter line manual in the second statistical statistics	and the second		-
	31111110034		64.487/7	6 12 2 2 2 2 2 186	19 7 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10
8 Interaction	0.026				
91 1 2 2	1011 10025				
10	0.025	AND THE OWNER OF THE PARTY OF	and an and the second second and the second	International Contraction of Contractions of Contractory and	in consideration structure as a second and a second second second second second second second second second sec
<u>11</u>	10.027				
12	0.030	THE REPORT OF LOT OF	terren auf hörstatiganiserin scher andere andere state internationale	including and the second states and the second states and the second states and the second states and the second	LINNERS CONTRACTOR OF THE OWNER O
13: 3: 5	128212.10:036				
14	0.027			linder 1951 dates i de sectores a distances compositions	
15	141 120 028				
16	0.036				
	H K 60028				
18	0.035				
19	MARK 11 01040				
20	0.034			THE ACTUAL STATE STATE AND A STATE AND AND AND A STATE AND A ST	
21	1.1.2.10.026	1 206	4518	311	68.22
22	0.028				
23 - 1 014	15 JUL 0.030				
24	0.030				
25.	1. 15 10039				
26	0.028				
27. 35.	0.036				
28	0.028		······································		
29	10.036				
30	0.030				
31	R. 4 8 4 80 027				
Ave	0.031	188.00	46.98	249	60.79
Max	0.041	206.00	48.77	311	68.22
Min	0.023	170.00	45.18	186	53.36

Concord Township Sewer Department Chapter 94 Report

Nov	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(lbs/day)	B.O.D (mg/l)	(lbs/day)
		а. 			
	0.030				
2	0.029				
33	0.040				
4	0.026	264	57.69	335	73.20
5	6 0.027				
6	0.031				
7	0.026				
8	0.025				
9	0.029				
10	0.031				
	1 101032				
12	0.028	· · · · · · · · · · · · · · · · · · ·			
13 3 1	1 1 1 1 0 0 0 3 3				
14	0.031				
15	0031				
16	0.031				
17 日 日	F 1100032				
18	0.031	334	87.47	192	50.28
19	E 101034				
20	0.036				
21	10032				
22	0.033				
23	T 41 - 10 - 01033				
24	0.032				
25	0.031				
26	0.030				
27	0.047				
28	0.033				
29 4 4	BIELE 101023				
30	0.032				
Ave	0.032	299.00	72.58	264	61.74
Max	0.047	334.00	87.47	335	73.20
Min	0.025	264.00	57.69	192	50.28

Concord Township Sewer Department Chapter 94 Report

Dec	PLANT 1	INFLUENT	TSS Loading	INFLUENT	BOD Loading
	SPEED	T.S.S. (mg/l)	(Ibs/day)	B.O.D (mg/l)	(lbs/day)
	SETPOINT				
	(MGD)				
2	0.032	212	55 69	360	94.58
	0.002				
4	0.033			Reality Residential Local Annaly Service	
51.4	12 10:030				
6	0.028	in the fit of the second s			ooyana (inginya adam na mingiada na inginya na dan dah dalam na dan dalam na dan dalam na dan dalam na dan dalam
7.	0.033				
8	0.032				
9	110.029				
10	0.032				
112	1 101032				
12	0.032				
13	1111 1 1 0.039				
14	0.031				1960 ini katang mangangkan katang menangkan kerangkan katang
15	27-17 -00041				
16	0.029	264	64.07	221	53.64
17	295111HE01031				
18	0.045	TO CONTRACTOR OF THE OWNER POINT	100-2011.0101011000000000000000000000000	HARMING HARMING THE PARTY OF	ALLEMPIC MERINE AND A CONTRACT OF A
19.	A 10:031				
20 20	0.031	TATAL ALIGN FROM THE ADDRESS OF THE PARTY		THE COURSE OF COMPANY	AN PROPERTY AND A PROPERTY
21					
22	0.029	In the second	SHOREST HERDER CONTRACTOR		
23273744					
24	0.042				
	0.027				
20 67	0.037				
28					
20	0.046				
30	<u>ምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምም</u>				
21					
Ave	0.034	238.00	59.88	291	74.11
Max	0.048	264.00	64.07	360	94.58
Min	0.027	212.00	55.69	221	53.64

Concord Township Sewer Department Chapter 94 Report

Appendix B



Appendix C