

**BOROUGH OF TERRE HILL
&
EAST EARL TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA**

JOINT ACT 537 OFFICIAL SEWAGE FACILITIES PLAN

JUNE 2015



743 S. Broad Street
Lititz, PA 17543
(717) 626-7271



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENT

Instructions for Completing Act 537 Plan Content and Environmental Assessment Checklist

Remove and recycle these instructions prior to submission

CHECKLIST INSTRUCTIONS

These instructions are designed to assist the applicant in completing the Act 537 Plan Content and Environmental Assessment Checklist.

This checklist is composed of three parts: one for "General Information," one for "Administrative Completeness," and one for "General Plan Content". A plan must be "administratively complete" in order to be formally reviewed by DEP. The General Plan Content portion of the checklist identifies each of the issues that must be addressed in your Act 537 Plan Update based on the pre-planning meeting between you and/or your consultant and DEP.

Use the right-hand column blanks in the checklist to identify the page in the plan on which each planning issue is found or to reference a previously approved update or special study (title and page number).

If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the plan (or as a footnote) and indicate the page number where this documentation is found.

When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page.

For specific details covering the Act 537 planning requirements, refer to Chapters 71 and 73 of DEP's regulations.

Wastewater projects proposing funding through the following sources must prepare an "Environmental Report" as described in the Uniform Environmental Review Process (UER) and include it with the plan submission designated as "Plan-Appendix A". The following funding programs use the UER process.

- The Clean Water State Revolving Loan Fund (PENNVEST, DEP, EPA)
- The RUS Water and Waste Disposal Grant and Loan Program (USDA-RD)
- The Community Development Block Grant Program (DCED, HUG)
- Other Federal Funding Efforts (EPA)

The checklist items or portions of checklist items required in the Act 537 Plan Update revision and that are also included in the UER process are indicated by shading. Most of the "Environmental Report" document may be constructed from the Act 537 Official Plan Update revision by using "copy & paste" techniques. The technical guidance document *Uniform Environmental Review Process* (UER) (DEP ID. 381-5511-111) is available electronically on DEP's website at www.dep.state.pa.us.

After Municipal Adoption by Resolution, submit three copies of the plan, any attachments or addenda and this checklist to DEP.

A copy of this completed checklist must be included with your Act 537 plan. DEP will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the pre-planning meeting with the municipality to identify planning elements that are not required to be included in the plan.



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Act 537 Plan Content and Environmental Assessment Checklist

PART 1 GENERAL INFORMATION

A. Project Information

1. Project Name **Borough of Terre Hill & East Earl Township Joint Act 537 Sewage Facilities Plan**
2. Brief Project Description This Joint Act 537 Plan is to investigate the formation of a joint sewer authority to construct, own and operate a new regional WWTP. The planning area investigated would combine existing public sewer users and users with malfunctioning OLDS.

B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twtp
East Earl Township	Lancaster	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Gross	Connie	J		Secretary-Treasurer
Additional Individual Last Name	First Name	MI	Suffix	Title

Municipality Mailing Address Line 1	Mailing Address Line 2
4610 Division Highway	
Address Last Line -- City	State ZIP+4
East Earl	PA 17519
Phone + Ext.	FAX (optional) Email (optional)
717.354.5593 + 22	717.355.0426 eastearltwp@comcast.net

C. Site Information

Site (or Project) Name
Borough of Terre Hill & East Earl Township Joint Act 537 Sewage Facilities Plan

Site Location Line 1	Site Location Line 2
East Earl Township	Borough of Terre Hill

D. Project Consultant Information

Last Name	First Name	MI	Suffix
Sweater	Jeffrey	W	
Title	Consulting Firm Name		
Director: Water Resources Engineering	ELA Group, Inc.		
Mailing Address Line 1	Mailing Address Line 2		
743 South Broad Street			
Address Last Line -- City	State	ZIP+4	Country
Lititz	Lancaster	17543	U.S.
Email	Phone + Ext.	FAX	
jwsweater@elagroup.com	717.626.7679	717.626.7040	



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B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twsp
Borough of Terre Hill	Lancaster	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Gregory	Valerie			Secretary-Treasurer
Additional Individual Last Name	First Name	MI	Suffix	Title

Municipality Mailing Address Line 1 300 Broad Street		Mailing Address Line 2 P.O. Box 250	
Address Last Line -- City Terre Hill		State PA	ZIP+4 17581
Phone + Ext. 717.445.4581	FAX (optional) 717.445.9139	Email (optional) office@terrehillboro.com	

C. Site Information

Site (or Project) Name
Borough of Terre Hill & East Earl Township Joint Act 537 Sewage Facilities Plan

Site Location Line 1 East Earl Township	Site Location Line 2 Borough of Terre Hill
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D. Project Consultant Information

Last Name	First Name	MI	Suffix
Sweater	Jeffrey	W	
Title	Consulting Firm Name		
Director: Water Resources Engineering	ELA Group, Inc.		
Mailing Address Line 1 743 South Broad Street	Mailing Address Line 2		
Address Last Line -- City Lititz	State ZIP+4 Lancaster 17543	Country U.S.	
Email jwsweater@elagroup.com	Phone + Ext. 717.626.7679	FAX 717.626.7040	

PART 2 ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the plan, the plan must include items one through eight listed below to be accepted for formal review by the department. Incomplete Plans will be returned unless the municipality is clearly requesting an advisory review.
_____	_____	1. Table of Contents
_____	_____	2. Plan Summary
_____	<u>2</u>	A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - Title 25, §71.21.a.7.i).
_____	<u>3</u>	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference Title 25 §71.21.a.7.ii).
_____	<u>4</u>	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference Title 25, §71.21.a.7.ii).
_____	_____	D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii).
_____	_____	E. Provide a schedule of implementation for the project that identifies the MAJOR milestones with dates necessary to accomplish the project to the point of operational status. (Reference Title 25, §71.21.a.7.iv).
_____	<u>App N</u>	3. Municipal Adoption: Original , signed and sealed Resolution of Adoption by the municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference Title 25, §71.31.f) Section V.F. of the Planning Guide.
_____	<u>App L</u>	4. Planning Commission / County Health Department Comments: Evidence that the municipality has requested, reviewed and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with area wide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference-Title 25, §71.31.b) Section V.E.1 of the Planning Guide.
_____	<u>App J</u>	5. Publication: Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and conduct of a 30 day comment period. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	<u>App K</u>	6. Comments and Responses: Copies of ALL written comments received and municipal response to EACH comment in relation to the proposed plan. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	<u>41,85</u>	7. Implementation Schedule: A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference-Title 25, §71.31.d) Section V.F. of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference Title 25, §71.21.c).
_____	<u>34,38,79,82</u>	8. Consistency Documentation: Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 71.21.(a)(5)(i-iii). (Reference-Title 25, §71.31.e). Appendix B of the Planning Guide.

PART 3 GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	<u>7,44</u>	I. Previous Wastewater Planning
_____	<u>App B</u>	A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
_____	_____	1. Previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1).
_____	_____	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference-Title 25, §71.21.a.5.i.A-D). Section V.F of the Planning Guide.
_____	_____	3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference-Title 25, §71.21.a.5.i.A&B). Section V.D. of the Planning Guide.
_____	_____	4. Through planning modules for new land development, planning “exemptions” and addenda. (Reference-Title 25, §71.21.a.5.i.A).
_____	<u>7,44</u>	II. Physical and Demographic Analysis utilizing written description and mapping (All items listed below require maps, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
_____	<u>Map 1</u>	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
_____	<u>Map 2</u>	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference-Title 25, §71.21.a.1.ii).
_____	<u>Map 5,6</u>	C. Soils - Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems, and areas unsuitable for soil dependent systems. (Reference-Title 25, §71.21.a.1.iii). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference-Title 25, §71.21.a.1.iii).
_____	<u>Map 2</u>	D. Geologic Features - (1) Identification through analysis, (2) mapping and (3) their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. (Reference-Title 25, §71.21.a.1.iii).
_____	<u>Map 2</u>	E. Topography - Depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for onlot systems. (Reference-Title 25, §71.21.a.1.ii).
_____	<u>Map 3</u>	F. Potable Water Supplies - Identification through mapping, description and analysis. Include public water supply service areas and available public water supply capacity and aquifer yield for groundwater supplies. (Reference-Title 25 §71.21.a.1.vi). Section V.C. of the Planning Guide.
_____	<u>Map 2</u>	G. Wetlands-Identify wetlands as defined in Title 25, Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per USDA, SCS mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference-Title 25, §71.21.a.1.v). Appendix B, Section II.I of the Planning Guide.

_____	<u>10,49</u>	III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs
		A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:
_____	<u>10,49,Map 3</u>	1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference-Title 25, §71.21a.2.i.A).
_____	<u>19,50,49</u>	2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's NPDES permitted capacity, and the Clean Streams Law permit number. (Reference-Title 25, §71.21.a.2.i.A).
_____	<u>12,49</u>	3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under Title 25, Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP. (Reference-Title 25, §71.21.a.2.i.B).
_____	_____	4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.i & ii).
_____	_____	5. A detailed description of the municipality's operation and maintenance requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs. (Reference-Title 25, §71.21.a.2.i.C).
_____	_____	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii).
_____	<u>49,Map 3</u>	B. Using DEP's publication titled <i>Sewage Disposal Needs Identification</i> , identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
_____	<u>48,App G</u>	1. The types of onlot systems in use. (Reference-Title 25, §71.21.a.2.ii.A).
_____	<u>50,App G</u>	2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Sewage Facilities Act, the Clean Stream Law or regulations promulgated thereunder. (Reference-Title 25, §71.21.a.2.ii.B).
_____	_____	3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and Title 25 Chapter 73 (relating to standards for sewage disposal facilities). (Reference-Title 25, §71.21.a.2.ii.C).
_____	<u>App G</u>	4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's <i>Sewage Disposal Needs Identification</i> publication. (Reference-Title 25 §71.21.a.2.ii.B).
_____	<u>App O</u>	5. Detailed description of operation and maintenance requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs. (Reference-Title 25, §71.21.a.2.i.C).

_____	_____	C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:
_____	_____	1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71).
_____	_____	2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).
_____	_____	3. Present disposal methods, locations, capacities and transportation methods. (Reference-Title 25 §71.71).
_____	<u>9,47</u>	IV. Future Growth and Land Development
_____		A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
_____	<u>Map 1</u>	1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference-Title 25, §71.21.a.3.iv).
_____	<u>App M</u>	2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – Title 25§71.21.a.3.iv).
_____	<u>Map 2</u>	3. All limitations and plans related to floodplain and stormwater management and special protection (Ch. 93) areas. (Reference-Title 25 §71.21.a.3.iv) Appendix B, Section II.F of the Planning Guide.
_____	<u>Map 1</u>	B. Delineate and describe the following through map, text and analysis.
_____	<u>49,Map 1</u>	1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of EDU's in development, total number of EDU's currently developed and total number of EDU's remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).
_____	<u>Map 1</u>	2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference-Title 25,§71.21.a.3.ii). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference-Title 25, §71.21.a.3.iv).
_____	<u>9,47, Map 1</u>	3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference-Title 25, §71.21.a.1.iv). (Reference-Title 25, §71.21.a.3.iii).
_____	<u>9,47, App O</u>	4. Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference-Title 25, §71.21.a.3.iv). --public ground/surface water supplies --recreational water use areas --groundwater recharge areas --industrial water use --wetlands
_____	<u>12-30,56-67</u>	5. Sewage planning necessary to provide adequate wastewater treatment for five and ten year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference-Title 25, §71.21.a.3.v).

_____	12-30,41, 56-68,69	V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities
_____	<u>60</u>	A. Conventional collection, conveyance, treatment and discharge alternatives including:
_____	<u>62</u>	1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).
_____	<u>64</u>	2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference-Title 25, §71.21.a.4.i).
_____	<u>24,64</u>	3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference-Title 25, §71.21.a.4.ii).
_____	<u>24</u>	a. Repair. (Reference-Title 25, §71.21.a.4.ii.A).
_____	<u>n/a</u>	b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B).
_____	<u>n/a</u>	c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71).
_____	<u>26-27,63, 65-67</u>	d. Improved operation and maintenance. Reference-Title 25, §71.21.a.4.ii.C).
_____	<u>17</u>	e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).
_____	<u>19-30, 54-56</u>	4. Repair or replacement of existing collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).
_____	_____	5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference-Title 25, §71.21.a.4.iii).
_____	_____	6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.ii.B).
_____	<u>61</u>	B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:
_____	Map 2 & 6	1. Soil and slope suitability. (Reference-Title 25, §71.21.a.2.ii.C).
_____	_____	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C).
_____	_____	3. The establishment of a sewage management program. (Reference-Title 25, §71.21.a.4.iv). See also Part "F" below.
_____	<u>64</u>	4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for onlot disposal considering: (Reference-Title 25, §71.21.a.4).
_____	_____	a. Existing technology and sizing requirements of Title 25 Chapter 73. (Reference-Title 25, §73.31-73.72).
_____	_____	b. Use of expanded absorption areas or alternating absorption areas. (Reference-Title 25, §73.16).
_____	_____	c. Use of water conservation devices. (Reference-Title 25, §71.73.b.2.iii).
_____	_____	C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes with consideration of: (Reference-Title 25, §71.64.d).
_____	_____	1. Treatment and discharge requirements. (Reference-Title 25, §71.64.d).
_____	_____	2. Soil suitability. (Reference-Title 25, §71.64.c.i).

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|-------|-------|--|
| _____ | _____ | 3. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.64.c.2). |
| _____ | _____ | 4. Municipal, Local, Agency or other controls over operation and maintenance requirements through a Sewage Management Program. (Reference-Title 25, §71.64.d). See Part "F" below. |
| _____ | _____ | D. The use of community land disposal alternatives including: |
| _____ | _____ | 1. Soil and site suitability. (Reference-Title 25, §71.21.a.2.ii.C). |
| _____ | _____ | 2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C). |
| _____ | _____ | 3. Municipality, Local Agency or Other Controls over operation and maintenance requirements through a Sewage Management Program (Reference-Title 25, §71.21.a.2.ii.C). See Part "F" below. |
| _____ | _____ | 4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part "V", B, 4, a, b, c above). See also Part "F" below. |
| _____ | _____ | E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference- Title 25, §71.21.a.4). |
| _____ | _____ | 1. Commercial, residential and industrial use. (Reference-Title 25, §71.63.e). |
| _____ | _____ | 2. Designated conveyance facilities (pumper trucks). (Reference-Title 25, §71.63.b.2). |
| _____ | _____ | 3. Designated treatment facilities or disposal site. (Reference-Title 25, §71.63.b.2). |
| _____ | _____ | 4. Implementation of a retaining tank ordinance by the municipality. (Reference-Title 25, §71.63.c.3). See Part "F" below. |
| _____ | _____ | 5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference-Title 25, §71.63.c.2). |
| _____ | _____ | F. Sewage Management Programs to assure the future operation and maintenance of existing and proposed sewage facilities through: |
| _____ | _____ | 1. Municipal ownership or control over the operation and maintenance of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference-Title 25, §71.21.a.4.iv). |
| _____ | _____ | 2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference-Title 25, §71.73.b.1.). |
| _____ | _____ | 3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference-Title 25, §71.73.b.2). |
| _____ | _____ | 4. Repair, replacement or upgrading of malfunctioning onlot sewage systems. (Reference-Title 25, §71.21.a.4.iv) and §71.73.b.5 through: |
| _____ | _____ | a. Aggressive pro-active enforcement of ordinances that require operation and maintenance and prohibit malfunctioning systems. (Reference-Title 25, §71.73.b.5). |
| _____ | _____ | b. Public education programs to encourage proper operation and maintenance and repair of sewage disposal systems. |
| _____ | _____ | 5. Establishment of joint municipal sewage management programs. (Reference-Title 25, §71.73.b.8). |
| _____ | _____ | 6. Requirements for bonding, escrow accounts, management agencies or associations to assure operation and maintenance for non-municipal facilities. (Reference-Title 25, §71.71). |

_____	_____	G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference-Title 25, §71.21.a.4).
_____	_____	1. Modification of existing comprehensive plans involving:
_____	_____	a. Land use designations. (Reference-Title 25, §71.21.a.4).
_____	_____	b. Densities. (Reference-Title 25, §71.21.a.4).
_____	_____	c. Municipal ordinances and regulations. (Reference-Title 25, §71.21.a.4).
_____	_____	d. Improved enforcement. (Reference-Title 25, §71.21.a.4).
_____	_____	e. Protection of drinking water sources. (Reference-Title 25, §71.21.a.4).
_____	_____	2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference-Title 25, §71.21.a.4).
_____	_____	3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal that consider lot sizes and protection of replacement areas. (Reference-Title 25, §71.21.a.4).
_____	_____	4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference-Title 25, §71.21.a.4).
_____	<u>31,67</u>	H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference-Title 25, §71.21.a.4).
_____	<u>50,App A</u>	1. Water Quality/Public Health. (Reference-Title 25, §71.21.a.4).
_____	<u>9,47</u>	2. Growth potential (residential, commercial, industrial). (Reference-Title 25, §71.21.a.4).
_____	_____	3. Community economic conditions. (Reference-Title 25, §71.21.a.4).
_____	_____	4. Recreational opportunities. (Reference-Title 25, §71.21.a.4).
_____	<u>50,Map 3</u>	5. Drinking water sources. (Reference-Title 25, §71.21.a.4).
_____	<u>69,App K</u>	6. Other environmental concerns. (Reference-Title 25, §71.21.a.4).
_____	(see presentation)	
_____	<u>12,56</u>	VI. Evaluation of Alternatives
_____	_____	A. Technically feasible alternatives identified in Section V of this check-list must be evaluated for consistency with respect to the following: (Reference-Title 25, §71.21.a.5.i.).
_____	<u>35,38,79,82</u>	1. Applicable plans developed and approved under Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act (33 U.S.C.A. 1288). (Reference-Title 25, §71.21.a.5.i.A). Appendix B, Section II.A of the Planning Guide.
_____	<u>35,38,79,82</u>	2. Municipal wasteload management Corrective Action Plans or Annual Reports developed under PA Code, Title 25, Chapter 94. (Reference-Title 25, §71.21.a.5.i.B). The municipality's recent Wasteload Management (Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.
_____	<u>35,38,79,82</u>	3. Plans developed under Title II of the Clean Water Act (33 U.S.C.A. 1281-1299) or Titles II and VI of the Water Quality Act of 1987 (33 U.S.C.A. 1251-1376). (Reference-Title 25, §71.21.a.5.i.C). Appendix B, Section II.E of the Planning Guide.

_____	35,38,80,83	4. Comprehensive plans developed under the Pennsylvania Municipalities Planning Code. (Reference-Title 25, §71.21.a.5.i.D). The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide.
_____	35,38,80,83	5. Antidegradation requirements as contained in PA Code, Title 25, Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference-Title 25, §71.21.a.5.i.E). Appendix B, Section II.F of the Planning Guide.
_____	35,38,80,83	6. State Water Plans developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference-Title 25, §71.21.a.5.i.F). Appendix B, Section II.C of the Planning Guide.
_____	36,39,81,84	7. Pennsylvania Prime Agricultural Land Policy contained in Title 4 of the Pennsylvania Code, Chapter 7, Subchapter W. Provide narrative on local municipal policy and an overlay map on prime agricultural soils. (Reference-Title 25, §71.21.a.5.i.G). Appendix B, Section II.G of the Planning Guide.
_____	36,39,81,84	8. County Stormwater Management Plans approved by DEP under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference-Title 25, §71.21.a.5.i.H). Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the county Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide.
_____	36,39,81,84	9. Wetland Protection. Using wetland mapping developed under Checklist Section II.G, identify and discuss mitigative measures including the need to obtain permits for any encroachments on wetlands from the construction or operation of any proposed wastewater facilities. (Reference-Title 25, §71.21.a.5.i.I) Appendix B, Section II.I of the Planning Guide.
_____	36,39,81,84	10. Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference-Title 25, §71.21.a.5.i.J). Provide DEP with a copy of the completed Request For PNDI Search document. Also provide a copy of the response letter from the Department of Conservation and Natural Resources' Bureau of Forestry regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide.
_____	36,38,77,80	11. Historical and archaeological resource protection under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission. (Reference-Title 25, §71.21.a.5.i.K). Provide the department with a completed copy of a Cultural Resource Notice request of the Bureau of Historic Preservation (BHP) to provide a listing of known historical sites and potential impacts on known archaeological and historical sites. Also provide a copy of the response letter from the BHP. Appendix B, Section II.K of the Planning Guide.
_____	_____	B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed and concurred with the resolution of identified inconsistencies. (Reference-Title 25, §71.21.a.5.ii). Appendix B of the Planning Guide.
_____	_____	C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference-Title 25, §71.21.a.5.iii).

_____	<u>4,33,68,77</u>	D. Provide cost estimates using present worth analysis for construction, financing, on going administration, operation and maintenance and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within five years from the date of plan submission. (Reference-Title 25, §71.21.a.5.iv).
_____	<u>71</u>	E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within five years from the date of the plan submission. (Reference-Title 25, §71.21.a.5.v).
_____	_____	F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference-Title 25, §71.21.a.5.vi).
_____	_____	1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of sewage management programs. (Reference-Title 25, §71.21.a.5.vi.A).
_____	_____	2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a sewage management program justifying time schedules for each phase. (Reference-Title 25, §71.21.a.5.vi.B).
_____	<u>69</u>	G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - Title 25, §71.21.a.5.vi.D.).
_____	<u>34,69</u>	VII. Institutional Evaluation
_____	<u>69, App C</u>	A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
_____	<u>69</u>	1. Financial and debt status. (Reference-Title 25, §71.61.d.2).
_____	<u>34,69</u>	2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)
_____	_____	3. Existing legal authority to:
_____	_____	a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61.d.2).
_____	_____	b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61.d.2).
_____	_____	c. Set user fees and take purchasing actions. (Reference-Title 25, §71.61.d.2).
_____	_____	d. Take enforcement actions against ordinance violators. (Reference-Title 25, §71.61.d.2).
_____	_____	e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2).
_____	_____	f. Raise capital for construction and operation and maintenance of facilities. (Reference-Title 25, §71.61.d.2).
_____	<u>69</u>	B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:
_____	_____	1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2).
_____	_____	2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.2).
_____	<u>App C</u>	3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference-Title 25, §71.61.d.2).

69

- C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:
1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2).
 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference-Title 25, §71.61.d.2).
 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference-Title 25, §71.61.d.2).
 4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2).
 5. Any other legal documents. (Reference-Title 25, §71.61.d.2).
 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.
- D. Identify the proposed institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference-Title 25, §71.61.d.2).

41,85

VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives

- A. Identify the technical wastewater disposal alternative which best meets the wastewater treatment needs of each study area of the municipality. Justify the choice by providing documentation which shows that it is the best alternative based on:
1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6).
 2. Future wastewater disposal needs. (five and ten years growth areas). (Reference-Title 25, §71.21.a.6).
 3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6).
 4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6).
 5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6).
 6. Available financing methods. (Reference-Title 25, §71.21.a.6).
 7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference-Title 25, §71.21.a.6).
- B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan. (Reference-Title 25, §71.21.a.6)
- C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a Sewage Management Program. (Reference – Title 25 §71.31d)

App A

IX. Environmental Report (ER) generated from the Uniform Environmental Review Process (UER)

- A. Complete an ER as required by the UER process and as described in the DEP Technical Guidance 381-5511-111. Include this document as "Appendix A" to the Act 537 Plan Update Revision. Note: *An ER is required only for Wastewater projects proposing funding through any of the funding sources identified in the UER.*

ADDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS

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

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

I/A TECHNOLOGIES

PARTIAL LISTING OF INNOVATIVE AND ALTERNATIVE TECHNOLOGIES

TREATMENT TECHNOLOGIES

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

SLUDGE TREATMENT TECHNOLOGIES

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

ENERGY RECOVERY TECHNOLOGIES

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

INDIVIDUAL & SYSTEM-WIDE COLLECTION TECHNOLOGIES

Cluster Systems
Septage Treatment
Small Diameter Gravity Sewers
Step Pressure Sewers
Vacuum Sewers
Variable Grade Sewers
Septic Tank Effluent Pump with
Pressure Sewers

**BOROUGH OF TERRE HILL
&
EAST EARL TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA**

JOINT ACT 537 OFFICIAL SEWAGE FACILITIES PLAN

JUNE 2015



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**BOROUGH OF TERRE HILL
& EAST EARL TOWNSHIP
ACT 537 REGIONAL
SEWAGE FACILITIES PLAN**

1.0 Executive Summary

The Borough of Terre Hill (Borough) and East Earl Township (Township) have prepared this Joint Act 537 Sewage Facilities Plan (Act 537 Plan) in compliance with the Pennsylvania Sewage Facilities Act and the Pennsylvania Department of Environmental Protection's (DEP) Act 537 regulations. The objective of the Joint Act 537 Plan is to identify additional sewage needs areas, as well as provide a solution to address existing sewage needs areas within five years of the DEP's approval of the Joint Act 537 Plan. The Act 537 Plan outlines and compares individual and joint wastewater treatment options for the Borough of Terre Hill and East Earl Township.

The service area identified for investigation includes the Borough of Terre Hill, the Village of Goodville (Village) and connecting properties between the Borough and Village. Additional service areas include properties west of the Village of Goodville that are within the Urban Growth Area, as identified in the Eastern Lancaster County (ELANCO) Comprehensive Plan. The ELANCO Region consists of Brecknock, Caernarvon, Earl and East Earl Townships, and the Borough of Terre Hill.

These areas were evaluated for sewage planning based on documented on-lot disposal system (OLDS) failures, such as in the Village of Goodville, and the need to plan for existing sewage facilities updates, such as in the Borough of Terre Hill. Since the Borough and the Township have expressed interest in reviewing the formation of a joint sewer authority to share sewer services and cost, the selection and investigation of connecting properties between the Borough and the Village were determined to be the most logical areas to consider additional OLDS failures.

The Borough operates an activated sludge wastewater treatment plant (WWTP) with a permitted capacity of 0.210 MGD and stream discharge to Black Creek (HQ-WWF). The original WWTP was constructed in 1962, followed by the addition of an extended aeration basin in 1988. The facility has reached the end of its useful life and is not able to adequately remove total nitrogen, as confirmed by monthly average results in DMRs and a draft 2012 DEP Wastewater Plant Performance Evaluation. Therefore, the existing facility is recommended for

replacement in order to comply with future effluent limits, such as the Chesapeake Bay annual mass loading limits.

The East Earl Township's sewage planning area includes the Village of Goodville and residential and commercial properties along Union Grove Road, S.R. 625/Reading Road and S.R. 23/Main Street. The majority of the residential and commercial properties within the sewage planning area are served by individual OLDS. In 2002, the Township's Update Revision to their original 1994 Act 537 Sewage Facilities Plan identified a majority of the OLDS within the Village of Goodville as failing. In 2013, the Township performed a second Update Study to confirm the results of the 2002 Update Revision and selected an alternative to address OLDS failures. The 2013 Update Study confirmed the 2002 Update Revision findings, as well as documented new OLDS failures within the Village. The 2013 Update Study also confirmed the 2002 Update Revision recommendation that the Township construct a sewage collection and conveyance system, and an extended aeration wastewater treatment plant (WWTP) with discharge to surface water. This Joint Act 537 Sewage Facilities Plan identifies additional OLDS failures within East Earl Township along S.R. 625/Reading Road and other Township roads. Please see Map 1 for an outline of the sewage planning area.

To address the sewage needs for both existing aging wastewater infrastructure in the Borough, and OLDS failures within the Township, several sewage treatment alternatives were evaluated. The alternatives reviewed include each municipality pursuing separate wastewater treatment systems, as well as the municipalities forming a joint sewer authority to own and operate a regional wastewater collection system and treatment plant. Consistent with 25 Pa Code § 71.21(b), and based on existing aging infrastructure evaluations, and previous sewage planning studies, the sewage planning areas reviewed need improved sewage facilities within five (5) years from the submission of the Joint Act 537 Plan to the DEP.

The recommended alternative within the Joint Act 537 Plan is Alternative 2. Under Alternative 2, the Borough and the Township form a joint sewer authority to construct, own and operate a wastewater collection system and treatment plant located in East Earl Township. A joint sewer authority allows the municipalities to increase the number of users and therefore maintain lower user rates as compared to separate wastewater treatment. A joint sewer authority, which operates a regional WWTP, allows the municipalities to eliminate multiple discharge

points, such as the Borough's discharge to a high quality stream, and malfunctioning OLDS, which contaminates groundwater. The elimination of multiple discharge points allows for more effective and efficient wastewater treatment through consistent influent flows and loadings, and the sharing of nutrient loadings and offsets. A joint sewer authority will also allow the municipalities to meet the projected growth for the Township and the overall ELANCO Region. Please see Section 4.8 for more information regarding the recommended alternative.

The estimated project cost to construct a regional collection system and treatment plant is \$17,799,309.00 and the estimated user fee is approximately \$279.00 per quarter. The quarterly user rate includes EESA's estimated debt for the Earl WWTP expansion and upgrade, as well as the existing collection system O&M costs for both municipalities, and the proposed O&M costs for Alternative 2.

However, if the Borough and the Township cannot agree on the formation of a joint sewer authority, a contingency alternative, known as Alternative 1 within the Joint Act 537 Plan, recommends the Borough upgrade their existing WWTP, and the Township construct a separate WWTP to serve the Village of Goodville and the S.R.625/Reading Road planning area. The estimated project cost for the Borough to construct a new sequencing batch reactor WWTP is \$4,979,219.00 with an estimated user fee of \$293.00 per quarter. The estimated project cost for the Township construct a collection system and sequencing batch reactor WWTP, independent of the Borough, is \$11,835,000.00 with an estimated user fee of \$272.00 per quarter. Please see the table of contents to locate the proposed individual and joint implementation schedules.

The municipalities intend to seek both grant and low interest loan funding from PENNVEST, and other applicable programs, to cover all or part of the recommended sewage alternative. If PENNVEST or United States Department of Agriculture program funding is unavailable in the form of grants and/or low interest loans, then the municipalities would likely use a combination of private loans and municipal bond to fund the recommend alternative.

This Act 537 Plan serves as an update to the Borough of Terre Hill's 1986 Act 537 Sewage Facilities Plan, as well as East Earl Township's original 1994 and 2002 Act 537 Sewage Facilities Plans.

2.0 Sewage Facilities Planning Act

Originally enacted in 1966 by the Pennsylvania State Legislature, the Pennsylvania Sewage Facilities Act (Act 537) provides a legal mechanism for municipalities to identify and address existing and future wastewater needs, as well as to prevent future sewage disposal problems. The Act 537 statute delegates authority to the Pennsylvania Department of Environmental Protection (DEP) to promulgate regulations under 25 Pa. Code § 71, 72 and 73 (see www.pacode.com for complete regulations) and subsequently enforce those regulations.

Act 537 requires each municipality to develop and maintain an up-to-date Sewage Facilities Plan (Act 537 Plan), which is submitted to the DEP for their review, comment and approval. The Act 537 Sewage Facilities Plan must be reviewed every five years by the municipality to determine the need for a revision; however, an Act 537 Plan revision is also needed when construction of new wastewater facilities (pump stations, certain sewer main extensions, treatment facilities) are proposed or existing sewage disposal methods are determined to be inadequate.

This Joint Act 537 Sewage Facilities Plan, separately and combined, addresses sewage treatment for the Borough of Terre Hill and East Earl Township. The Borough of Terre Hill and East Earl Township, in April of 2014, entered into a joint Consent Order & Agreement (CO&A) to investigate the formation of a joint sewer authority to own and operate a regional wastewater treatment plant (WWTP). A separate Act 537 Plan was prepared for the Borough of Terre Hill in 1986, and the 2013 Act 537 Update Study for the Village of Goodville, originally performed by the ELA Group, Inc., but not approved by the DEP, is included as an attachment to this Joint Act 537 Sewage Facilities Plan. Please see Appendix B for the 2013 Village of Goodville Act 537 Sewage Facilities Study.

3.0 Borough OF Terre Hill

Sewage Facility Review

3.1 Introduction

The Borough of Terre Hill (Borough), located in northeastern Lancaster County, last updated their Act 537 Sewage Facilities Plan in 1986. Currently, the Borough operates a wastewater collection system and wastewater treatment plant (WWTP), and in June of 2013 the Borough received a renewed National Pollution Discharge Elimination System (NPDES) permit with monitoring and reporting requirements for the Chesapeake Bay.

Based on the Borough's 2013 Municipal Wasteload Management Report (Chapter 94 Report) maintained and provided by the Borough's wastewater facilities operator, the Borough provided 1,449 persons with domestic wastewater services in both the Borough and East Earl Township. The 2014 Chapter 94 Report, completed in March of 2015, shows the Borough's sewer system now serves 1,477 persons within the Borough and East Earl Township.

The Borough obtains revenue for the operation of the domestic wastewater collection and treatment system, as well as a maintenance reserve fund, through direct customer billing based on metered water consumption.

3.2 Updated Revision Objective

The purpose of this section of the joint study is to update the Borough's existing Act 537 Sewage Facilities Plan, and determine if the Borough should continue to independently treat its domestic wastewater, or form a joint sewer authority to own and operate a regional collection system and WWTP with East Earl Township. The Sewage Facilities Plan objectives identify wastewater treatment alternatives for the Borough and the recommendation is intended to serve as an update revision to its existing November 1986 Act 537 Sewage Facilities Plan. The 2015 Joint Act 537 Plan provides a recommended sewage alternative that is consistent with the Borough's July 1, 2013 NPDES Permit.

The Borough's 1986 Act 537 Update Revision projected a population in 2010 of 1,450 persons and recommended the expansion of the existing wastewater treatment facilities to achieve nitrification.

3.3 Planning Area Physical Description and Demographics

3.3.1 Introduction

The Borough of Terre Hill is located approximately 15 miles northeast of the City of Lancaster and 3.0 miles northwest of the Village of Goodville. The Borough's planning area is entirely served by public sewer and the wastewater treatment plant is accessible by S.R. 897 to Linden Street to Willow Road. See Map No. 1 for the Borough's sewage planning area.

Several residential properties directly neighboring the Borough, but located in East Earl Township, are also served by the Borough's public sewer system. Table No. 1 below list the roads within East Earl Township that are served by the Borough's public sewer.

Table 1. Location of Borough Public Sewer Provided in East Earl Township

Camp Meeting Drive
Fairview Street
Gentle Drive
Red Run Road
Wide Hollow Road

3.3.2 Borough Planning Area Physical Conditions

The Borough of Terre Hill is elevated above the surrounding farmland and is accessible by S.R. 897 and S.R. 1044. Please see Map No. 2 for topography of the Borough and surrounding area. The planning area for the Borough mostly consists of residential properties with some commercial and light industrial sites present. Limited acreage remains available for development within the Borough. The Borough is entirely served by public sewer, which is collected and sent to the Borough's WWTP by a combination of gravity sewer mains, and pump stations with force mains. Please see Map No. 3 for public water and sewer service area.

The Borough's 2013 Chapter 94 Report states there are currently 615 EDUs connected to the Terre Hill system with the following additions planned: fourteen (14) EDUs in 2014, seventeen (17) EDUs in 2015, seventeen (17) EDUs in 2016, eighteen (18) EDUs in 2017, and twelve (12) EDUs in 2018. Based on the Borough's 2014 Chapter 94 Report, completed in

March of 2015, there are 629 EDUs connected to the Borough's sewer system and seventy-eight (78) total EDUs are projected for connection to the system by 2019.

3.3.3 Population and Future Growth

The Borough of Terre Hill is located within the Eastern Lancaster County (ELANCO) Region, which consists of Brecknock, Caernarvon, Earl and East Earl Townships, and the Borough of Terre Hill. For the Borough, population statistics from the 2008 ELANCO Comprehensive Plan, Borough's 2013 Chapter 94 Report and the Lancaster County Planning Commission's (LCPC) June 2012 report titled *2040 Population Projections for Lancaster County and Municipalities* were reviewed. Data from the U.S. Department of Commerce Census Bureau's website also was reviewed for population data regarding the Borough. The ELANCO Comprehensive Plan and LCPC's *2040 Population Projections for Lancaster County and Municipalities* can be retrieved from the Lancaster County Planning Commission's website (lancastercountyp planning.org).

The Borough has experienced minimal population growth since the 1986 Act 537 Sewage Facilities Plan Update Revision, which listed a population of 1,240 persons (1985) within the Borough. The 2010 U.S. Census lists a population of 1,295 persons within the Borough and the 2013 Chapter 94 Report provides a population of 1,313 persons. The populations for the years 2015 and beyond were obtained from the Lancaster County Planning Commission's *2040 Population Projections for Lancaster County and Municipalities*, which is more recent than the 2008 ELANCO Comprehensive Plan. Table 2 on the subsequent page shows the population information retrieved from the various sources consulted.

Table 2. Terre Hill Historic and Projected Population Growth

Year	Population (persons)
1910	882
1980	1,217
1985	1,240
1990	1,282
2000	1,237
2010	1,295
2015	1,312
2020	1,328
2025	1,338
2030	1,347
2035	1,351
2040	1,354

Developable land within the Borough is limited and therefore so is population growth. The 2008 ELANCO Comprehensive Plan projects that by 2030, the Borough of Terre Hill will add 31 additional dwelling units. The Borough's 2013 Chapter 94 Report states that a total of 78 equivalent dwelling units (EDUs) will be connected to the public sewer by 2018; however, the majority of these dwelling units will be located in East Earl Township. The contiguous areas within East Earl Township, which are served by public sewer, are not considered part of the Borough's official planning area. However, for the purpose of analyzing the existing wastewater facilities infrastructure, the domestic wastewater flows from East Earl Township are included.

3.4 Evaluation of Wastewater Flows and Characteristics

3.4.1 Introduction

Based on the information contained in the 2008 ELANCO Comprehensive Plan and the 2013 Chapter 94 Report, developable land in the Borough is limited and therefore the connection of new dwelling units is limited, too. Wastewater flow and waste load projections for the

planning period are expected to remain largely unchanged and below the permitted hydraulic wastewater capacity.

3.4.2 Wastewater Flows and Characteristics

The existing domestic wastewater flows and characteristics for the Borough of Terre Hill were developed from average monthly DMR data for the period from June 2011 through July 2014. The major contributors of wastewater flow to the collection and treatment facilities are residential and commercial properties.

The Borough of Terre Hill estimates and bills for wastewater flow from residential and commercial users based on water meter data. Wastewater estimates within the sewer bills are based on EDU counts and is conventionally defined as a single family home. According to the 2013 Chapter 94 Report, the Borough equates an EDU to 215 gallons per day (gpd), which has a population equivalent of 2.35 persons at 90 gpd/capita. The Borough also lists a total of 615 EDUs connected to its sewer system with a total population of 1,449 persons served by public sewer ($1,449 \text{ persons} / 615 \text{ EDUs} \approx 2.35 \text{ persons/EDU}$). The Borough's 2014 Chapter 94 Report provides a total of 629 EDUs connected to their sewer system and serves a total population of 1,477 persons.

Table 3 below represents the flow statistics for the Borough's WWTP for the DMR period from June 2011 through July 2014.

Table 3. Terre Hill WWTP Flow Statistics¹

Statistical Parameter	Flow (MGD)
Mean	0.142
Median	0.139
Minimum	0.080
Maximum	0.284

Note 1 - The flow data used to calculate the above statistics was obtained from the monthly average results as reported in DMRs from June of 2011 through July 2014.

From June 2011 through July 2014, the three highest consecutive average monthly flows of 0.2040 MGD, 0.1862 MGD and 0.1951 MGD occurred during March, April and May of 2014, respectively. Based on the DMR flow data from March through May of 2014, the three month maximum average flow is 0.195 MGD.

Influent wastewater data was obtained from the Borough of Terre Hill's DMRs for the period from June 2011 through July 2014. The average monthly operating data was used to determine influent BOD₅ and TSS loads to the WWTP. Table 4 below summarizes the average influent concentrations and loads for BOD₅ and TSS.

Table 4. Terre Hill WWTP Average Influent BOD and TSS Loads

Parameter	Average Concentration (mg/L)	Average Loading (lbs/day)
Biochemical Oxygen Demand (BOD ₅)	124.9	148.2
Total Suspended Solids (TSS)	113.7	135.0

Note 1 - The flow data used to calculate the above values were obtained from the monthly average results as reported in DMRs from June 2011 through July 2014.

Based on influent DMR data, the Borough's influent wastewater is relatively weak in strength and remains well below the WWTP's design organic capacity of 357 lbs per day (lbs/day). Developable land is limited within the Borough, but the 2008 ELANCO Comprehensive Plan depicts an urban growth area outside of the Borough's boundary. The urban growth areas, which abut the Borough's boundary, are limited in acreage and therefore new development is not expected to significantly increase the influent wastewater flows and characteristics observed at the WWTP during the planning period. See Map 4 for zoning and designated urban growth area.

3.5 Wastewater Conveyance and Treatment Alternatives

3.5.1 Introduction

The Borough of Terre Hill owns and operates a wastewater collection system and treatment plant originally installed in 1962 and modified as needed over the decades. The Borough also operates and maintains five pump stations within the collection system. All pump stations have been upgraded recently and the maximum load to each station is less than 50% of

its respective capacity. The majority of the collection system consists of 8 inch diameter gravity sewer.

The Borough's WWTP consists of two Eimco units, an extended aeration basin, chlorine disinfection and an anaerobic digester with reed bed system. The Eimco units are consolidated activated sludge-clarifiers that combine activated sludge and clarification into a single unit, as opposed to conventional secondary treatment that requires separate aeration basins and clarifiers. The Borough has investigated several alternatives as part of this Joint Act 537 Sewage Facilities Plan, including the replacement or use of cured-in-place pipe lining of the existing gravity collection system, and replacement of the existing WWTP. Table 5 on the subsequent page provides the wastewater alternatives reviewed.

Table 5. Borough of Terre Hill Sewage Facilities Plan WWTP Alternatives

Alt. No.	Description	Borough of Terre Hill Required Action	Treatment Method
1	Replace or line existing collection system	Install new sewer mains or reline the existing collection system with cured-in-place pipe liner	Upgrade Collection System
2	Rehabilitate existing WWTP	Construct additional treatment units and upgrade existing treatment units	Upgrade WWTP
3	Oxidation Ditch	Construct new oxidation ditch treatment system to meet future nutrient limits	New WWTP
4	Sequencing Batch Reactor	Construct new sequencing batch reactor system to meet future nutrient limits	New WWTP
5	Joint Sewer Authority	Form a joint sewer authority with East Earl Township and construct a regional WWTP	New WWTP
6	No Action Alternative	Continue to use existing wastewater facilities as is	Existing Collection and Treatment Plant

3.5.2 Existing Collection and Conveyance System

The Borough of Terre Hill operates approximately 24,000 ft of 8-inch and 1,200 ft of 10-inch diameter gravity sewer main, as well as 4,171 ft. of 4-inch force main. Most of the existing gravity sewer mains consist of vitrified clay; however, more recently installed sewer mains are constructed of PVC pipe. Table 6 below lists the pump stations within the wastewater collection system. The Borough's operation staff inspects the pump stations daily and twice per year the collection system mains are flushed. However, since the Borough's 2013 Chapter 94 report indicates that all pumps have recently been replaced or upgraded, these wastewater facilities were not evaluated as part of the Joint Act 537 Plan.

Table 6. Borough of Terre Hill Pump Stations

Station Number	Location	Pump Station Capacity (single pump)	Station Type
1	Fairview Street	70 gpm	Submersible grinder
2	College Avenue	50 gpm	Submersible grinder
3	Lancaster Avenue	50 gpm	Submersible grinder
4	Earl Street	10 gpm (1 unit)	Submersible grinder
5	Linden Street	40 gpm	Submersible grinder

3.5.3 Replacement of Existing Sewer Mains

Since the Borough's original collection system was installed in 1962, sewer main replacement or lining was reviewed as part of this Act 537 Plan. Average monthly and maximum daily flow data obtained from DMRs, from June 2011 through July 2014, are mostly unremarkable and suggests there is minimal inflow and infiltration (I&I). During the same DMR period, three exceptional maximum daily flows occurred, most notably the DMR for October 2012 reported a maximum daily flow of 0.880 MGD; however, the Borough operator had found that some sewer vents were located in areas where water ponded during storm events or were broken and below grade. The operator and Borough staff has worked, and continues to work, to locate sewer vents and cleanouts, which are broken or below grade and therefore need to be repaired. However, the gravity sewer mains were evaluated for replacement for planning and

cost to determine if an immediate need for replacement of the existing infrastructure is required. The following engineering assumptions were used to evaluate the replacement system costs:

- All sewer mains and manholes are assumed to need replacement for the purpose of the Joint Act 537 Plan analysis.
- An average of \$100.00 per foot was assumed for installation of 8-Inch sewer mains to provide a conservative estimate for replacement of the collection system.
- An average of \$125.00 per foot was assumed for installation of 10-Inch sewer mains to provide a conservative estimate for replacement of the interceptor from the collection system to the WWTP.
- Sewer mains are assumed to be buried at 15 feet or less.
- Current Borough GIS data is assumed to accurately reflect the number of manholes, pipe lengths and diameters within the Borough's boundary.
- Based on aerial images, sewer mains along Randall Road and Gentle Drive are assumed to be recently installed and not likely to require lining.
- An estimated total of 105 manholes are likely eligible for manhole lining within the Borough's boundary.
- An average of \$5,000.00 for replacement or lining of manholes is assumed.
- A cost of \$9.50 per square yard for mill and overlay work in all PennDOT roadways.

Table 7 on the subsequent page provides estimated costs for replacement of sewer mains within the Borough. Of the Borough's 24,000 ft of gravity sewer mains, approximately 8,500 feet are operated beneath PennDOT roadways. Performing sewer main replacement within the PennDOT right-of-way can increase the time and costs to replace sewer mains. This is largely a result of PennDOT's paving schedule and road restoration requirements. However, to lower capital costs and extend the life of the existing collection system, the Borough can insert liners within the existing infrastructure using either Felt or UV cured-in-place pipe (CIPP) liners.

Table 7. Borough of Terre Hill Sewer Main Replacement and Manhole Lining Costs

Liner Type	Est. Unit Price ¹	Est. Length or Total Count ²	Total Costs
8-Inch Dia. PVC	\$100.00/ft.	24,000 ft.	\$2,400,000.00
10-Inch Dia. PVC ³	\$125.00/ft.	1,200 ft.	\$150,000.00
Manhole	\$5,000/manhole	105	\$525,000.00
Mill & Overlay	\$9.50/sq. yd.	42,700 sq. yd.	\$405,650.00
Total			\$3,480,650.00
Budgetary Costs⁴			\$4,524,845.00
<p>1. The unit costs are estimated based on recent sewer authority projects within the Lancaster, PA area.</p> <p>2. The estimated total sewer main length within the Borough is used to evaluate costs. Randall Road and Gentle Drive are excluded from the total 8-Inch diameter sewer main length because it was more recently installed.</p> <p>3. The ELA Group estimated 10-Inch CIPP liner costs based on pipe UV costs increase from 8-Inch to 12-Inch diameter liner.</p> <p>4. The Budgetary Costs includes a 20% construction contingency cost, and 10% engineering and construction administration costs.</p>			

3.5.4 Lining Existing Collection System and Manholes

Lining the existing sewer mains with a Felt or UV cured in-place pipe liner has the primary advantages of eliminating excavation and pavement restoration costs. Experienced CIPP installers can install up to two 400 foot sections of Felt or UV liners per day, where laterals are limited, or up to one 400 foot section of CIPP liner per day, where lateral density is substantial.

The Borough's existing wastewater collection system was evaluated for CIPP lining based on the following engineering assumptions:

- All sewer mains and manholes are assumed to need lined for the purpose of the Act 537 Revision Update.
- Sewer mains are assumed to be buried to a maximum depth of 15 feet.
- Current Borough GIS data is assumed to accurately reflect the number of manholes, pipe lengths and diameters within the Borough's boundary.
- Recent Felt and UV liner bid costs were used to develop an average unit price for each liner type.

- Recent manhole lining projects were used to estimate the average unit price for manhole lining.
- An estimated total of 105 manholes are likely eligible for manhole lining.
- Based on aerial images, sewer mains along Randall Road and Gentle Drive are assumed to be recently installed and not likely to require lining.

Table 8 below provides an estimate of the costs to line the entire Borough collection system.

Table 8. Borough of Terre Hill Sewer Main and Manhole Lining Costs

Liner Type	Est. Unit Price ¹	Est. Length or Total Count ²	Total Costs
8-Inch Dia. Felt CIPP	\$27.00	24,000 ft.	\$648,000.00
10-Inch Dia. Felt CIPP ³	\$37.00	1,200 ft.	\$44,400.00
Manhole Liner	\$5,000	105	\$525,000.00
Total			\$1,217,400.00
Felt CIPP Budgetary Costs⁴			\$1,582,620.00
8-Inch Dia. UV CIPP	\$38.00	24,000 ft.	\$912,000.00
10-Inch Dia. UV CIPP	\$55.00	1,200 ft.	\$66,000.00
Manhole Liner	\$5,000	105	\$525,000.00
Total			\$1,503,000.00
UV CIPP Budgetary Costs⁴			\$1,953,900.00
1. The unit costs include mobilization, CCTV, debris removal and post installation inspection. 2. The estimated total sewer main length within the Borough is used to evaluate costs. Randall Road and Gentle Drive are excluded from the total 8-Inch diameter sewer main length because it was more recently installed. 3. Bid cost for 10-Inch CIPP liner were unavailable and therefore estimates for felt liner were based on the percentage increase in UV CIPP liner from 8-Inch to 10-Inch diameter liner. 4. The Budgetary Costs includes a 20% contingency cost, and 10% engineering and construction administration costs.			

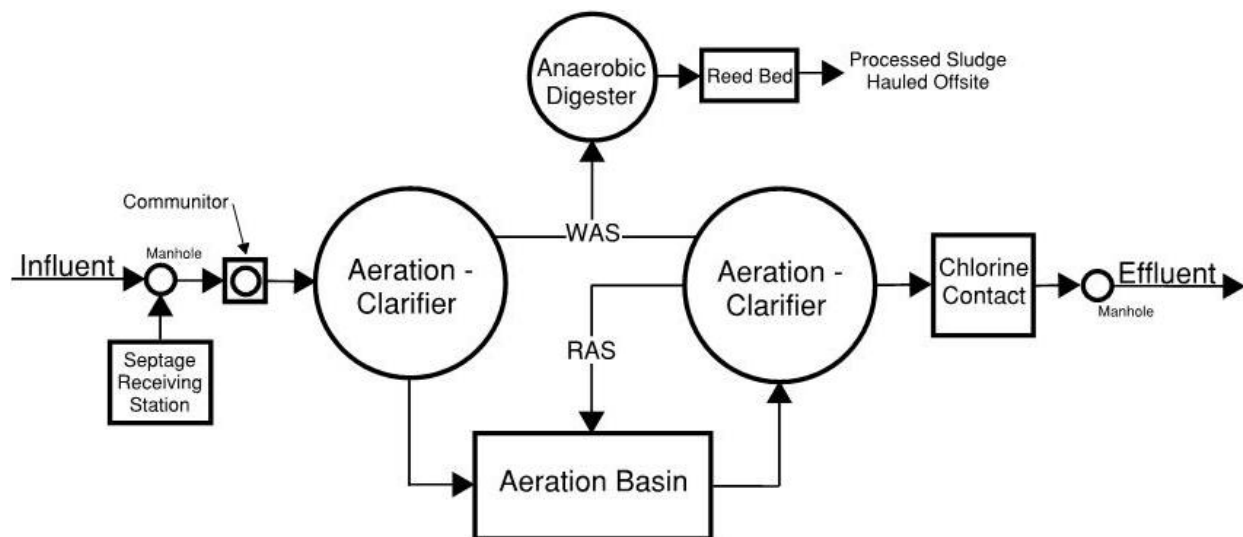
The Felt and UV CIPP liner costs provided in Table 8 provide an estimate for lining of the entire collection system and manholes within the Borough. The Borough's operators regularly inspect the sewer system and have performed some closed circuit television (CCTV) review of the system. The Borough's operations staff perform regular inspections of the collection system to eliminate connection of residential spouts and sump pumps, as well as locate

other sources of inflow and infiltration, such as below grade or broken building sewer vents. Based on recent DMR data, overall strength of wastewater and lack of required sewer main repairs, the Borough operator can continue to inspect sewer mains and manholes using methods, such as CCTV, sonar or smoke testing to identify critical repair needs. This will allow the Borough to target replacement of system components on an as needed basis and control cost, as opposed to replacement or lining of the entire system.

3.5.5 Wastewater Treatment

The Borough's original wastewater treatment plant was constructed in 1962 with additional activated sludge treatment (an extended aeration basin) added in the 1980s. The WWTP is designed to treat 0.210 MGD and remove 357 lbs of BOD/day. In 2013, the average flow to the WWTP was 131,700 gpd and the average organic load was 142 lbs of BOD/day. Figure 1 below shows the current flow schematic of the Borough's WWTP.

Figure 1. Existing Borough WWTP Flow Diagram.



Sludge is wasted from the clarifiers and conveyed to a moderately mixed anaerobic digester and reed bed system for drying. In 2013, the Borough also accepted 30,000 gallons of septage. The WWTP generated 2,160 wet tons of sludge, and hauled 28.6 tons of dry sludge offsite for disposal.

The DMR average monthly data from June 1, 2011 to July 31, 2014, produce a median influent TSS and BOD₅ concentration of 103.5 mg/L and 118.50 mg/L, respectively. Data from

the same DMR period showed the existing WWTP produced a median effluent TSS and CBOD₅ concentration of 12.0 mg/L and 6.5 mg/L, respectively. The median WWTP flow during this period was 0.1387 MGD. Total Nitrogen and Total Phosphorus median effluent concentrations for the same DMR period were 18.44 mg/L and 1.0 mg/L, respectively.

The influent TSS and BOD concentration data suggests the Borough's domestic wastewater is of medium to low strength. The existing WWTP is not designed for advanced nutrient removal, but effluent total phosphorus data indicate that the influent total phosphorus concentrations may remain low.

The DMR data from the same period suggests the existing WWTP meets the NPDES effluent limitations most of the time, but based on the age and current condition of the wastewater components, the system would not meet Chesapeake Bay total nitrogen and total phosphorus mass loading or lower conventional effluent limits. As Pennsylvania continues its efforts to reduce nutrient and sediment loadings to the Chesapeake Bay and meet the U.S. EPA's Chesapeake Bay Total Maximum Daily Load (TMDL), Phase 4 facilities may require nutrient reductions. The Pennsylvania DEP's Watershed Implementation Plan, dated March 6, 2014, explicitly states in regards to Phase 4 and 5 facilities that "a future decision may be made to the establishment of Cap Loads in permits." The U.S. EPA reviews the progress of each state in meeting their Chesapeake Bay TMDL requirements. According to the U.S. EPA's June 26, 2014 evaluation of Pennsylvania's progress, the state failed to meet its nitrogen and sediment reduction targets. It is likely that in order to meet future Bay milestones, the PA DEP could make a decision to implement nutrient cap loads within Phase 4 and Phase 5 NPDES permits.

According to the DEP's Chesapeake Bay Watershed Implementation Plan, there are 900 Phase 4 and Phase 5 facilities within Pennsylvania's portion of the Chesapeake Bay Watershed. Therefore, implementing future nutrient cap loads within Phase 4 and Phase 5 NPDES permits could provide a significant aggregated nutrient load reduction to the Chesapeake Bay. The Borough's most recent NPDES permit, renewed in July of 2013, requires monitoring of total nitrogen and total phosphorus. Table 9 and 10 on the subsequent pages provide the 2013 renewed NPDES permit discharge effluent limitations.

Table 9. Borough of Terre Hill 2013 NPDES Final Effluent Limits

Parameter	Effluent Limitations					
	Mass Units (lbs/day)		Concentrations (mg/L)			
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX
Total Residual Chlorine	XXX	XXX	XXX	0.26	XXX	0.85
CBOD ₅ May 1 - Oct 31	35.0	53.0	XXX	20.0	30.0	40.0
CBOD ₅ Nov 1 - Apr 30	44.0	70.0	XXX	25.0	40.0	50.0
Total Suspended Solids	53.0	79.0	XXX	30.0	45.0	60.0
Fecal Coliform (CFU/100 mL) May 1 - Oct 31	XXX	XXX	XXX	200.0 Geo Mean	XXX	1,000.0
Fecal Coliform (CFU/100 mL) Nov 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000.0
Ammonia-Nitrogen May 1 - Oct 31	5.3	XXX	XXX	3.0	XXX	6.0
Ammonia-Nitrogen Nov 1 - Apr 30	16.0	XXX	XXX	9.0	XXX	18.0
Total Phosphorus	3.5	XXX	XXX	2.0	XXX	4.0

Table 10. Borough of Terre Hill 2013 NPDES Chesapeake Bay Effluent Limits

Parameter	Effluent Limitations				
	Mass Units (lbs)		Concentrations (mg/L)		
	Monthly	Annual	Minimum	Monthly Average	Maximum
Ammonia--N	Report	Report	XXX	Report	XXX
Kjeldahl--N	Report	XXX	XXX	Report	XXX
Nitrate-Nitrite--N	Report	XXX	XXX	Report	XXX
Total Nitrogen	Report	Report	XXX	Report	XXX
Total Phosphorus	Report	Report	XXX	Report	XXX

As the Borough's WWTP equipment ages, and if NPDES limits require the Borough to meet lower effluent concentrations or Chesapeake Bay loading limits, the Borough is likely to see higher operation costs. Based on the DMR results, and DEP's 2012 performance evaluation of the WWTP, the system cannot denitrify and therefore could not meet future NPDES total nitrogen limits. See Table 11 for current WWTP nutrient performance results. The existing WWTP equipment has surpassed its useful planning life and the existing concrete tanks are approaching or have surpassed their useful planning life as well. Several sewage treatment options were evaluated by the Borough including upgrading the existing WWTP, construction of an oxidation ditch system, construction of a sequencing batch reactor (SBR) and shared construction of a regional WWTP. The oxidation ditch and SBR systems were selected for their ability to remove nutrients and accept increased flow rates without disrupting treatment. These systems also provide a comparison of treatment footprint size and costs. Both treatment system technologies are also frequently employed by neighboring municipalities; therefore, providing a network of experienced operators in the event Borough operations staff needs additional support.

3.5.6 Chesapeake Bay Nutrient Requirements

Under the Pennsylvania DEP's Chesapeake Bay Watershed Implementation Plan, the Borough of Terre Hill's WWTP is considered a Phase 4 Sewage Facility ($0.2 \text{ MGD} \leq X < 0.4 \text{ MGD}$) and is required to monitor and report Total Nitrogen and Total Phosphorus concentrations, and annual mass loadings discharged to the Bay. Currently, the DEP does not require nutrient cap loads within existing Phase 4 NPDES permits, unless the discharger proposes to expand the discharge. If a facility does propose to expand the discharge, nutrient cap loads are established based on the existing, non-expanded WWTP design average annual flow, or a Department standard 7,306 lbs per yr (lbs/yr) total nitrogen and 974 lbs/yr total phosphorus, whichever is more stringent. A facility that is assigned Nutrient Cap Loads, must adequately treat wastewater or purchase nutrient credits to remain below the annual mass loading limit. For example, if the Borough of Terre Hill is assigned a nutrient cap load of 7,306 lbs/yr of total nitrogen, the standard total nitrogen nutrient cap load for Phase 4 facilities, they must discharge 7,306 lbs or less. The Borough could select to purchase nutrient credits in lieu of installing biological nutrient removal technology to meet their assigned nutrient cap loads. Nutrient credits can be purchased from a nutrient broker under a long term contract or from a nutrient credit auction. The primary advantage of entering into a long term contract is the set price of nutrient credits for the life of the contract. However, the primary disadvantage of a long term contract is that the Borough is unable to take advantage of lower nutrient credit prices, if dictated by the market. Purchasing credits from an auction is subject to the price fluctuations that result from supply and demand, which can make annual budgeting and user rate determinations more cumbersome. Nutrient credits cannot be purchased to meet any technology based effluent limitations required by a WWTP's NPDES permit.

The Borough's WWTP is currently designed and permitted for a design annual average flow of 0.210 MGD. Based on average monthly effluent DMR data from July 1, 2013 to June 30, 2014, the average total nitrogen and total phosphorus concentration for the Borough's WWTP is 19.6 mg/L and 1.3 mg/L, respectively. Table 11 on the subsequent page displays the calculated mass loadings from the Borough's WWTP.

Table 11. Monthly Nutrient Mass Loadings from July 2013 through June 2014

Monthly DMR	Flow (MGD)	TN (mg/L)	TN Mass Loading (lbs/Mon)	TP (mg/L)	TP Mass Loading (lbs/Mon)
Jul-13	0.1140	24.74	729.18	1.00	29.47
Aug-13	0.1020	26.46	697.78	2.00	52.74
Sep-13	0.1186	25.4	753.71	2.00	59.35
Oct-13	0.1017	25.19	662.33	1.00	26.29
Nov-13	0.1480	22.4	829.46	1.00	37.03
Dec-13	0.1876	17.51	849.27	1.00	48.50
Jan-14	0.1903	15.84	779.33	1.00	49.20
Feb-14	0.2040	16.87	803.65	1.00	47.64
Mar-14	0.1862	13.08	629.67	1.00	48.14
Apr-14	0.1951	13.99	682.91	1.00	48.81
May-14	0.1482	18.44	706.54	1.00	38.32
Jun-14	0.1443	15.22	549.50	2.00	72.21
Total			8,673.34		557.70

The existing performance for total nitrogen is greater than the total nitrogen standard cap load of 7,306 lbs per year and therefore the Borough would likely receive the more stringent nutrient cap load of 7,306 lbs/year of TN. Based on the total phosphorus discharged in Table 11, which is less than the standard total phosphorus cap load of 974 lbs per year, the Borough would receive the more stringent total phosphorus nutrient cap load of 557.70 lbs per year. These results show that the existing system is not capable of effective total nitrogen removal and would likely receive a stringent phosphorus cap load. Consistently achieving nutrient removal would require the installation of new wastewater equipment and/or systems. The Borough could construct a new WWTP to meet future nutrient credit requirements or purchase nutrient credits through a credit broker or on a spot auction.

As of October 2014, the PENNVEST Nutrient Credit Trading results, as posted on the PENNVEST MARKIT[®] website, showed that the average nutrient credit on the spot and forward auction costs between \$2.00 and \$2.50 per nutrient credit. As an example, if the

Borough were assigned the Department's standard Phase 4 TN cap load of 7,306 lbs/yr, and using the calculated TN mass loading of 8,673 lbs from Table 11, the Borough would purchase the difference between the cap load and the TN mass loading discharged, or 1,367 lbs of TN. Based on the October 2014 nutrient credit market results, the Borough would pay either \$2,734.00 or \$3,417.50, depending on the auction results. This calculation does not account for the delivery ratio contained within NPDES permits and future nutrient credit costs are likely to vary.

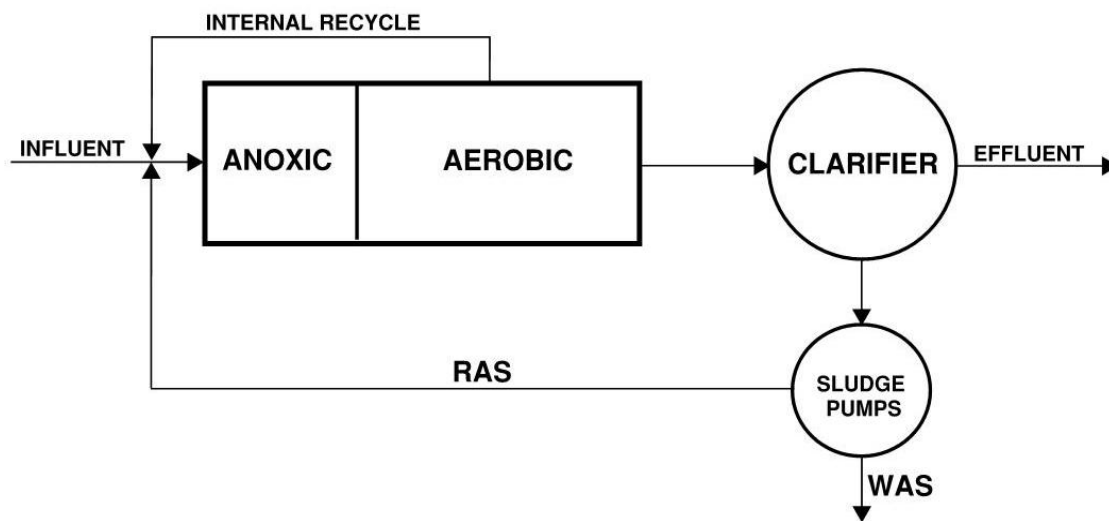
The purchase of nutrient credits is a feasible option for the Borough when considering planning for sewage facilities upgrades; the Borough's future NPDES permit is likely to contain nutrient effluent limits. The Borough's discharge to Black Creek, which is not currently impaired or does not have a TMDL, flows into the Conestoga River, which is impaired. The Department may limit the discharge of nutrients from the Borough to prevent further impairment of the Conestoga River. The Borough's existing wastewater treatment infrastructure is severely aged and therefore nutrient removal technology was given significant consideration in the review of wastewater treatment technology. Since the Borough must plan for replacement of the treatment technology, biological nutrient removal capabilities are likely to increase treatment efficiency and reduce cost. Planning for the Borough's ability to treat for nutrients would also eliminate credit budgeting uncertainty.

3.5.7 Alternative No. 1 - Rehabilitate Existing WWTP

Rehabilitating the Borough's existing WWTP to effectively treat for nutrient removal, as well as meet potentially lower conventional effluent limits requires major modification of the existing system. In order to achieve efficient nitrification and denitrification, the system could be converted to a Modified Ludzack Ettinger or MLE process. Please see Figure 2 for a basic MLE flow diagram. This would involve constructing an additional aeration basin to provide redundancy, conversion of the existing Eimco units into secondary clarifiers and adding anoxic selectors to the front end of the system. The existing aeration basin, as well as a new aeration basin, requires fine bubble diffusers to provide greater oxygen transfer efficiency. The use of anoxic selectors prior to the aeration basins would likely allow the Borough to install smaller blower motors and therefore reduce annual operation and maintenance costs. Replacement of the existing communitor with a fine mesh influent screen is recommended to prevent large or stringy

materials from creating downstream operation problems, such as clogged pumps or accumulation on fine bubble aerators. The installation of UV disinfection is recommended to reduce the handling and discharge of chlorine, needed to dechlorinate to meet effluent limits, and reduce the treatment system footprint. Current DMR effluent phosphorus data suggest the Borough's influent domestic wastewater phosphorus concentration is relatively low; however, system upgrades should include or consider future use of tertiary filtration for effluent polishing and consistent removal of total phosphorus. For the purpose of this study, cloth media filtration is included for phosphorus removal.

Figure 2. Basic Modified Ludzack-Ettinger Treatment Plant Flow Diagram



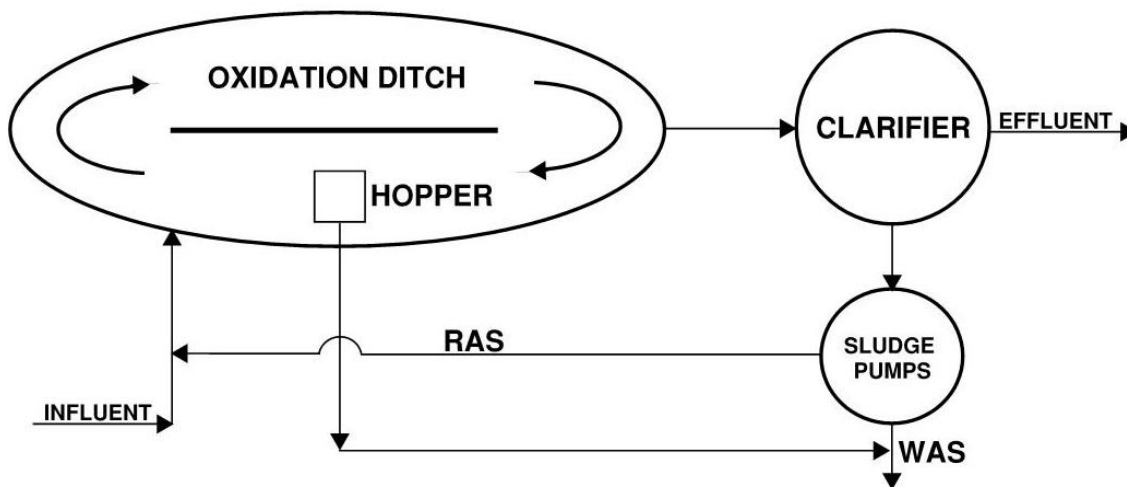
The original Eimco concrete tanks were constructed in the 1960s, and the extended aeration tank dates to the late 1980s. Although the current wastewater treatment tanks are intact, reinvesting in the existing units is not recommended because the structures may not last the life of the additional treatment upgrades. Rehabilitating the existing WWTP requires treatment and flow diversion logistics to maintain uninterrupted wastewater service for the residents of the Borough and East Earl Township. During the construction process, the Borough is still required to meet all NPDES permit limits. Although not recommended, rehabilitating the existing WWTP to provide for nutrient removal is estimated to have a capital cost of approximately \$5,673,732.00 with an estimated annual operation and maintenance (O&M) cost of \$280,000.00.

3.5.8 Alternative No. 2 - Construct Oxidation Ditch WWTP

Oxidation ditch systems can be designed and operated to reduce BOD, TSS, TN and TP to low effluent concentrations, and several large municipal systems within Lancaster County employ the oxidation ditch concept for treatment of municipal wastewater. The general system layout consists of an oval basin with a secondary clarifier. Please see Figure 3 for a basic process diagram.

The oxidation ditch treatment process can be modified to include an anoxic zone within the aeration ditch for enhanced nitrogen removal and an external anaerobic basin can be added to enhance microbiological uptake of phosphorus. The oxidation ditch system is a reliable wastewater treatment technology, and most manufacturers offer a variety of configurations and aeration equipment. However, the systems tend to have larger footprints than other treatment technologies and can have higher capital costs. In order to effectively and consistently achieve the effluent limitations required under the DEP's Chesapeake Bay Watershed Implementation Plan, the oxidation ditch treatment system would require the use of an anoxic zone. Incorporating an anoxic zone within the oxidation ditch could increase the footprint. Also, in order to consistently achieve low effluent total phosphorus concentrations and mass loadings to Black Creek, and depending on the BOD to TP ratio, a separate anaerobic tank and/or filter units may be required. The addition of a separate anaerobic tank, which includes the construction of a concrete tank and recirculation pumps, would increase the footprint and capital costs.

Figure 3. Basic Oxidation Ditch Treatment Plant Flow Diagram



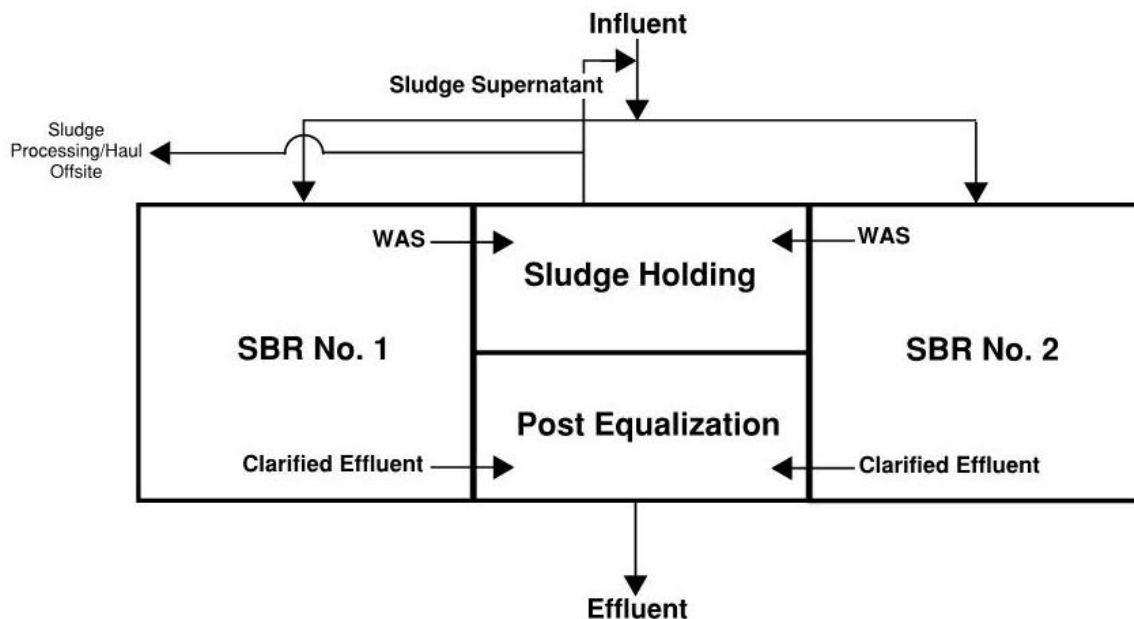
The addition of tertiary filtration would require installation of a cloth filtration unit, which could be housed within a control building or separate structure, but this would increase the overall WWTP footprint and capital costs. Although the Borough's current DMRs suggest a low level of influent phosphorus, for the purpose of this study, phosphorus removal technology is considered necessary to consistently achieve a TP concentration equal to or less than 0.8 mg/L. The existing Terre Hill Borough WWTP is located on approximately 2.4 acres of land; however, only half of the total site is used by the treatment units. An oxidation ditch unit alone would likely require up to a half acre of land area. This does not include the construction of secondary clarification and other WWTP peripherals. The construction of an oxidation ditch system would require minimal flow logistics and would not interrupt current treatment service. The approximate capital cost to construct a new oxidation system is \$6,418,932.00 with an estimated annual O&M cost of \$295,500.00.

3.5.9 Alternative No. 3 - Construct New Sequencing Batch Reactor (SBR)

Sequencing batch reactors (SBRs) provide excellent wastewater treatment when operated well and are widely used in Lancaster County and the general south-central Pennsylvania region. This is beneficial to the Borough's operation staff because an experienced network of operators is available if additional operational knowledge is needed. A SBR treatment system consists of

two or more basins with each basin sharing a common wall. Figure 4 shows a SBR system layout without primary or disinfection treatment.

Figure 4. Basic Sequencing Batch Reactor Flow Diagram



The SBR treatment process operates by alternating influent flow to each basin. As one basin is filled with wastewater, the other basin performs aeration and settling. The ability to perform several operations in a single basin results in a compact footprint and reduces the amount of materials, such as concrete and yard pipe, required to construct the wastewater treatment plant, which reduces the overall capital cost. The SBR process can effectively reduce total nitrogen and total phosphorus concentrations by alternating the treatment cycle periods. A SBR system can produce effluent quality consistent with the current NPDES permit effluent concentration limits, such as the TP limit of 2.0 mg/L, and can be operated to produce a TN concentration of 6.0 mg/L or less. However, in order to achieve a consistent TP effluent limitation of 0.8 mg/L or less in an SBR system, and as required by the DEP's Chesapeake Bay Watershed Implementation Plan, tertiary treatment, such as cloth filtration is required. Existing SBR systems with a hydraulic design capacity comparable to the Borough's have been constructed on a half acre, which included a control building and WWTP peripherals. Construction of an SBR system would not interrupt current Borough sewer service and allow additional land to remain undeveloped for future Borough use or upgrades. The approximate

capital costs to construct a new SBR system is \$4,979,219.00 with an estimated annual O&M cost of \$258,500.00.

3.5.10 Alternative No. 4 - Joint Sewer Authority and Regional WWTP

The Borough of Terre Hill could form a joint sewer authority with East Earl Township to construct and operate a regional WWTP. The Borough does not have available land to develop and therefore cannot increase the number of rate payers for sewer service, with the exception of minor developable land surrounding the Borough, but located in East Earl Township. However, most of the immediate land surrounding the Borough, but within East Earl Township, is not zoned for development and remains agricultural. Without the ability to expand the number of rate payers connected to the existing wastewater collection system, the ownership of these facilities remains fixed and therefore the existing customers are required to pay a higher cost to upgrade and maintain the wastewater facilities. The wastewater treatment upgrade and maintenance costs become increasingly more expensive as treatment requirements become more stringent and wastewater treatment technology increases in cost. Since both municipalities have expressed an interest in sharing sewer services, the formation of a joint sewer authority to construct, own and operate a regional WWTP, is a viable option.

The formation of a regional WWTP would increase the number of rate payers and therefore lower the individual rate payer costs, and allow East Earl Township to mitigate the failing on-lot disposal systems within the Village of Goodville and along S.R. 625. A joint sewer authority would also allow the Borough to keep future wastewater treatment costs lower than the Borough's continued independent wastewater treatment. The Borough's existing collection system could be owned by a joint sewer authority and therefore future upgrade and repair costs could be distributed over a larger user base. The formation of a joint sewer authority would require the Borough to share any allocated nutrient cap load with East Earl Township; however, East Earl Township would receive 25 lbs of TN per OLDS connected to a public sewer and therefore share the additional TN loading with the Borough. A joint sewer authority with a larger nutrient loading can help to buffer O&M costs.

The owners of Conestoga Wood Specialties, which currently own and operate a 19,000 gallon per day (gpd) wastewater treatment plant along the Conestoga River, have expressed

interest in selling land near their existing WWTP to the municipalities for construction of a regional WWTP. This area is considered to be an excellent location for construction of a new treatment plant because it is of low elevation, which allows optimal use of gravity sewer and is close to a larger surface water for stream discharge. An additional benefit to this location is the availability of three phase electric power, which is present for the Conestoga Wood Specialties manufacturing facility, and therefore would eliminate an expense from the capital costs for construction of a new WWTP. Three phase power is beneficial because it allows for use of more efficient equipment, as opposed to single phase power, and can reduce O&M costs, too.

An SBR system would provide a minimal footprint, but achieve excellent effluent quality and could be constructed near the existing 19,000 gpd WWTP with a stream discharge to the Conestoga River. This has an added environmental benefit of removing the Borough's discharge to Black Creek, a designated high quality stream. The regional option is further explored in Section 4 of this study; however, the estimated capital costs for a regional collection system and SBR WWTP is \$17, 799,309.00. The estimated annual O&M cost for a regional WWTP and collection system is \$1,772,339.00.

3.5.11 No Action Alternative

The Borough of Terre Hill could opt to continue using the existing wastewater facilities and delay replacement or upgrade of the facilities. Although delaying replacement and/or upgrading of the existing wastewater treatment facilities does not impact the Borough within the immediate future, the Borough is likely to face higher upgrade costs for each additional year replacement and/or upgrades are delayed. The long term impacts of not planning and implementing wastewater facilities upgrades would likely mean higher costs for Borough ratepayers, as a result of system failures, increased operation and maintenance costs and penalties for water quality violations. The Borough is taking a proactive approach in performing sewage planning for the replacement and/or upgrade of their existing wastewater treatment facilities. Replacement of aging infrastructure is recommended in order to provide environmentally responsible and cost effective sewage treatment, as well as continuous sewer service. The "No Action Alternative" is not considered a viable option to address the Borough's long term sewage needs.

3.6 Present Worth Cost Effectiveness Analysis

The present worth analysis was developed to allow a direct comparison of the life cycle costs of each treatment alternative. Present Worth is the dollar amount, which if invested now at a given fixed interest rate, would provide the funds necessary to make all future payments on the selected wastewater treatment facilities. The future payments for Present Worth calculations for wastewater treatment facilities also include the operation and maintenance costs for the 20 year planning period.

All construction and equipment costs were evaluated based on the Engineering News Records (ENR) 2015 Construction Cost Index, as well as the U.S. Bureau of Labor and Statistics' (BLS) Consumer Price Index. However, a detailed treatment facilities design and site investigation must be performed to develop a detailed cost for financing prior to actual bid. All of the wastewater treatment facilities have been analyzed based on a 20 year planning period. The wastewater facilities costs were developed for the year 2015. The following assumptions were used for the present worth analysis:

- The planning period is 20 years, from 2015 to 2035.
- Costs were developed for the year 2015 (Engineering News Record CCI of 9971).
- A discount rate of 4.625% was provided by the U.S. EPA for the water year from October 1, 2014 to September 30, 2015.
- The annual operations and maintenance costs are assumed to remain constant for the planning period and are based on the design flow.
- The salvage value of capital projects depreciates linearly over the expected life of the project. Land value for right of way/easements and land is assumed to remain constant. The depreciation schedule and salvage value factors are as noted below in Table 12 and follow the recommended U.S. EPA guidelines for present worth evaluations.
- Inflation was not factored into the present worth analysis because of the difference in schedule for completion between the independent and regional alternatives.

Table 12. Year 2035 Salvage Value (Percent of Initial Construction Costs)

Type of Facility	Expected Life	Salvage Value (% of Initial Cost)
Collection and Conveyance	50 Years	60
Pump Facilities	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	33.3
Right-of-Ways/Easements	-----	100
Wastewater Treatment Plant	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	25

The alternatives reviewed are analyzed in Table 13 to determine the present worth for each alternative. Please see Appendix C for a more detailed cost analysis.

Table 13. Borough Wastewater Facilities Present Worth Analysis

	Alternative 1 Upgrade Existing Borough WWTP	Alternative 2 Borough Oxidation Ditch WWTP	Alternative 3 Borough SBR WWTP	Alternative 4 Regional WWTF ^A
Collection System Capital Cost (2015, \$)	n/a	n/a	n/a	\$7,113,650
WWTP Capital Cost (2015,\$)	\$4,111,400	\$4,651,400	\$3,608,130	\$12,898,050
Construction Contingency (15%)	\$616,710	\$697,710	\$541,219	\$1,934,707
Admin, Engineering, Legal Services (20%)	\$945,622	\$1,069,822	\$829,869	\$2,966,551
O&M Cost (2015,\$)	\$280,00	\$295,500	\$258,500	\$1,772,339
Net Present Worth Cost (2015,\$)	\$8,819,271	\$9,770,000	\$7,998,520	\$17,799,309
No. of EDUs in Authorities	629	629	629	2,422
Est. Cost Per EDU (2015,\$)	\$14,021	\$15,532	\$12,716	\$9,616
Est. User Cost (2015,\$)	\$318	\$342	\$292	\$279

3.7 Institutional Evaluation and Recommended Sewage Alternative

The Borough of Terre Hill owns and operates its own existing collection system and wastewater treatment plant. The Borough also owns its own water treatment and distribution system. The Borough Council and operations staff are responsible for the implementation of the DEP regulations governing the wastewater collection and treatment systems. The Borough is capable of administering the Borough only sewer alternative and working with the East Earl Sewer Authority to form a joint sewer authority. Please see Section 4.0 for an institutional evaluation for a joint authority.

Based on the findings of this study, the recommended sewage alternative for the Borough is to form a joint sewer authority with East Earl Township to construct and operate a regional WWTP. The construction of a regional collection system and WWTP, by a joint sewer authority, is estimated to cost \$17,799,309.00 with annual O&M cost of \$1,772,339.00 per year for both the collection and treatment systems. However, if the Borough and East Earl Township are unable to agree on the terms for formation of a joint sewer authority, then the recommended contingency alternative is for the Borough to construct a new WWTP, such as an SBR system on the site of the existing WWTP. The construction of a new Borough system is estimated to have a project cost of \$4,979,219.00 with an annual O&M cost of \$258,500.00.

It is the responsibility of the Borough Council to implement the Borough only alternatives or to establish a joint sewer authority with East Earl Township. The Borough and Township must agree upon a joint sewer authority. Once the determination has been made by the municipalities to either pursue or not pursue the regional alternative, funding availability and options must be reviewed. Please see Section 4.8 for funding options and details. The formation of a joint sewer authority and/or the independent Borough option cannot be pursued until the Joint Act 537 Plan is approved.

3.8 Review of Consistency Requirements - Recommended Regional Alternative

The regulations promulgated by the DEP within 25 Pa. Code § 71.21(a)(5) requires each available alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the DEP under the Storm Water Management

Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a regional WWTP, designed and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Wasteload Management Reports for both municipalities were reviewed and the construction of a regional WWTP would enable both municipalities to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A regional WWTP would take into account projected and existing hydraulic and organic loadings from the Borough and the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. For a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality Act of 1987 that are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The formation of a joint sewer authority with East Earl Township to own and operate a regional WWTP to provide sewer service to portions of the Township and to the entire

Borough is consistent with the *2008 ELANCO Comprehensive Plan*. The formation of a joint sewer authority and the construction of a regional WWTP is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

Preliminary effluent limits were obtained from the DEP for the proposed discharge point from a regional WWTP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to preliminary effluent limits developed by the DEP. Therefore a planned regional WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate failing OLDS is consistent with the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a regional WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land. Please see Map No. 5 for agricultural lands.

- **Stormwater Management Plans**

The construction of a new regional WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new regional WWTP, located at the existing WWTP site, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix D for PNDI Receipt.

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a regional WWTP contains no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP. This proposed project has been submitted to the PHMC for assessment. Please see Appendix E for PHMC review.

3.9 Review of Consistency Requirements - Recommended Borough Alternative

The regulations promulgated by the DEP within 25 Pa. Code § 71.21(a)(5) requires each available alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The Borough's 2013 NPDES permit was reviewed prior to the review of applicable wastewater treatment technologies. The construction of a new Borough WWTP, design and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Reports Wasteload Management Reports for the Borough of Terre Hill was reviewed and the construction of a new WWTP would enable the Borough to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A new Borough WWTP would take into account projected and existing hydraulic and organic loading from the Borough.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. For a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning

requirements. Any provisions required by the Federal Water Quality Act of 1987 that are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The construction of a new Borough WWTP is consistent with the 2008 ELANCO Comprehensive Plan. A new WWTP allows the Borough to continue to provide uninterrupted public sewer service to the residents in the Borough and East Earl Township. The minor growth areas outside of the Borough could connect to the existing system without overloading a new WWTP. A new Borough WWTP is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

The wastewater treatment technologies reviewed are all capable of operating to meet the required NPDES effluent limits and potential Chesapeake Bay nutrient requirements. The recommended Borough alternative allows the municipality to maintain effluent water quality discharged into Black Creek.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to the 2013 NPDES permit developed by the DEP. A new Borough WWTP is consistent with the effluent limits developed under the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a new Borough WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new Borough WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

The Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS application identifies the original wastewater treatment cells as wetlands; however, these man-made treatment units were decommissioned due to ineffective treatment in 2012.

Therefore no wetlands exist within the proposed construction site for the new Borough WWTP.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new Borough WWTP, located at the existing WWTP site, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix D for PNDI Receipt.

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a new Borough WWTP contains the existing Borough WWTP and control building. This proposed project has been submitted to the PHMC for assessment. Please see Appendix E for PHMC review.

3.10 Recommended Borough Only Sewage Alternative Implementation Schedule

An implementation schedule is provided below for the Borough to construct a new WWTP on the existing WWTP site. Should the municipalities, within a six (6) month period, successfully negotiate the formation of a joint sewer authority, a second implementation schedule is provided for the construction of a regional WWTP and can be found in Section 4.11. Permitting time frames were developed based on the PA DEP's *Permit Decision Guarantee* (Doc No. 021-21000-001, Nov 2012) guidance and the allocated business days for Department review.

3.11 Public Participation

The Borough of Terre Hill held several meetings regarding the investigation into the formation of a joint sewer authority with East Earl Township. As part of the Joint Act 537 Study, written public comments and responses can be found in Section 5.0 of this report.

Table 14. Implementation Schedule for Borough WWTP Upgrade

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan to PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Preparing NPDES Permit Application (<u>Assumes Failure To Form Joint Sewer Authority During 6 Month Period</u>)	7/1/2016
Initiate Design of Wastewater Treatment Plant and Develop Technical Specifications	8/1/2016
Prepare Land Development Plans	9/1/2016
Submit Land Development Plans	12/1/2016
Complete Design of Wastewater Treatment Plant and Technical Specifications	1/1/2017
Prepare Bid Plans and Specifications	3/1/2017
Receive Approval of Land Development Plans	4/1/2017
Submit WQM Permit Application to PA DEP	5/1/2017
Receive Approval of WQM Permit	11/1/2017
Submit PENNVEST Application	12/1/2017
Receive PENNVEST Funding Notice & Meeting (Dependent on PENNVEST Board Meeting Schedule)	TBD
Advertise Bids	3/1/2018
Receive Bids	4/14/2018
Issue Notice to Award	5/14/2018
Begin Construction	7/14/2018
Contract Substantial Completion	8/1/2019
Submit WQM Post Construction Certification with "As-Built" Drawings	11/1/2019

4.0 Borough of Terre Hill and East Earl Township

Joint Sewer Authority Review

4.1 Introduction

Since 2002, the East Earl Township supervisors have worked to identify a cost effective and environmentally responsible method for sewage disposal for the Village of Goodville. On December 17, 2012 East Earl Township entered into a Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environmental Protection (DEP or Department) to investigate wastewater disposal alternatives and determine if the original recommendations contained in the July 2002 Act 537 Sewage Facilities Plan Update Revision remained feasible. Please see Appendix F for the signed Consent Order and Agreement. The Township investigated several wastewater disposal methods in the 2013 Act 537 Update Study for the Village of Goodville; however, in mid-2013 the Borough of Terre Hill approached the East Earl Township supervisors about investigating the formation of a joint sewer authority and the sharing of wastewater services. Subsequently, on April 22, 2014 the Borough of Terre Hill and East Earl Township entered into a CO&A with the Pennsylvania DEP to review the formation of a joint sewer authority to own and operate a regional wastewater treatment plant. The approved Task Activity Report required both municipalities to submit a final joint Act 537 Sewage Facilities Plan by June 23, 2015.

4.2 Update Revision Objectives

The purpose of this study is to separately and jointly update the Borough and Township's existing Act 537 Sewage Facilities Plan, and determine if both municipalities should separately treat their domestic wastewater, or form a joint authority to operate a regional WWTP. The Joint Act 537 Plan objectives identify wastewater treatment alternatives for the municipalities and compare those alternatives to determine the most environmentally responsible and cost effective long term sewage disposal methods.

The Joint Act 537 Sewage Facilities Plan serves an update to the Borough of Terre Hill's November 1986 Act 537 Sewage Facilities Plan Update Revision and East Earl Township's 1994 Act 537 Sewage Facilities Plan and 2002 Act 537 Update Revisions. As part of the Joint Act 537 Plan, East Earl Township's 1998 Act 537 Update Revision also was reviewed, along with the 2002 Village of Goodville Update Revision and the 2013 Village of Goodville Update Revision.

4.3 Planning Area Physical Conditions and Demographics

4.3.1 Introduction

The planning area reviewed, and outlined within the approved Task Activity Report, includes the Borough of Terre Hill, East Earl Township along and near S.R. 625, and the Village of Goodville, as well as areas adjacent to Blue Ball. Table 15 below provides more information regarding the planning area. Descriptions of the planning areas for the Borough of Terre Hill are located in Section 3.0 of this study. For a description of the Village of Goodville planning area, see Appendix B. This section discusses the additional planning area within East Earl Township along the S.R. 625 corridor and near Blue Ball. Table 15 shows the additional planning areas considered within East Earl Township.

Table 15. East Earl Township Sewage Planning Area Excluding the Village of Goodville
Conestoga View Drive

Hay Field Drive

Union Grove Road (Borough of Terre Hill Line to end of RL Zoning District)

Spring Grove Road (North of the Conestoga River)

S.R. 625/Reading Road (South of Old Road)

Ironstone Drive

Springville Road (Between S.R. 23 and U.S. 322)

S.R. 23/Main Street (Between Marble Road and VGB for Goodville)

U.S. 322/Division Highway (Between Center Avenue and Sheep Hill Road)

Toddy Drive

Ewell Road

The additional planning area within East Earl Township consists of a mix of land uses, including agricultural, low density residential, commercial and light industrial land use. Located within the Smart Growth Neighborhood Option Overlay District in East Earl Township are two noncontiguous parcels of 32.4 acres and 45.6 acres, which are targeted for high density development. Most of the properties within the East Earl Township sewage planning area rely on individual wells for potable water and on-lot disposal systems for domestic wastewater

treatment, with the exception of the Borough of Terre Hill and area near Blue Ball. Please see Map 3 for the existing public water and sewer service area.

4.3.2 Topography

The topography of the planning area is largely gently rolling hills bisected by the Conestoga River. Within the planning area, and between S.R. 23/Main Street and intersection of S.R. 625/Reading and Spring Grove Road, the land generally slopes towards the Conestoga River. The planning area around Ewell Road and S.R.897/Springville Road largely slopes towards Cedar Creek, a tributary to the Conestoga River. Please see Map 2 to view the topography of East Earl Township.

4.3.3 Geology and Soils

The geology and soils were analyzed within the sewage planning area for the purpose of determining if continued use of on-lot disposal systems is feasible based on the USDA Natural Resources Conservation Service Web Soil Survey Suitability and Limitations Ratings for Sanitary Facilities. Please see Map No. 6 for the soils with OLDS limitations within the planning area. The soils were rated based on their limitation for on-lot disposal systems as follows:

- Slightly Limited Soils are generally favorable for in-ground on-lot disposal system use when the limiting depth is 60 inches or more and contain a slope between 0 and 25 percent. Slightly Limited soils accounts for nearly fifty (50) percent of the soils within the sewage planning area.
- Moderately Limited Soils are not favorable for in-ground on-lot disposal system use and require an elevated sound mound or PA DEP approved Alternate OLDS. Moderately limited soil characteristics include a depth to the limiting zone between 20 and 60 inches and a slope of less than 12 percent and OLDS are generally difficult to site on properties of less than one acre. Moderately Limited

soils account for forty-three (43) percent of the soils within the sewage planning area.

- Very Limited

Soils are very unfavorable for on-lot disposal system use and require significant engineering and construction costs, and require more frequent maintenance. Very Limited soils characteristics include a depth to limiting zone of 20 inches or less or a depth to limiting zone between 20 and 60 inches and slopes in excess of 12 percent, hydric soils, and soils classified as quarry, pits, urban and water. Very Limited soils account for seven (7) percent of the soils within the sewage planning area.

4.4 Future Growth and Land Development in East Earl Township

The *2008 ELANCO Comprehensive Plan* (2008 Plan) identifies areas for growth in East Earl Township, which remain near Blue Ball along U.S. 322, S.R. 23/Main Street and S.R. 897/Springville Road. The 2008 Plan also identifies limited areas for growth surrounding the Borough of Terre Hill. Please see Map 1 for zoning within both municipalities.

In 2012, the Lancaster County Planning Commission (LCPC) performed population projections for Lancaster County and each municipality. The report by LCPC, titled *2040 Population Projections for Lancaster County and Municipalities Description of Methodology* (2040 Projections Study), provides population projections based on mathematical modeling methods used by consulting demographers. Although the study only provides projections and does not provide a forecast for the Township, the projections are incorporated into the Joint Act 537 Plan.

Table 16 below, represents the projections from the 2040 Projections Study; however, the 1990, 2000 and 2010 values are based on U.S. Census data.

Table 16. Historic and Projected Population within East Earl Township

Year	Population (persons)
1990	5,491
2000	5,723
2010	6,507
2015	6,764
2020	7,020
2025	7,233
2030	7,445
2035	7,620
2040	7,794

The LCPC's projections result in a population increase of thirteen (13) percent for East Earl Township from 2015 to 2040, if the study assumptions hold true. The *2008 ELANCO Comprehensive Plan* provides a projected total growth rate from the year 2000 to 2030 of approximately eleven (11) percent for East Earl Township and six (6) to eight (8) percent per decade for the ELANCO Region. Based on the LCPC's population projections, from 2015 to 2040, the East Earl Township is expected to add 1,030 new persons and therefore expected to generate 103,000 gpd.

The East Earl Township currently has land zoned for commercial, industrial and residential development. The majority of the land identified and zoned for development was planned for in the Township's 1998 Act 537 Sewage Facilities Plan Amendment (1998 Amendment) and 1995 Sewage Feasibility Study. The 1998 Amendment, which included the 1995 Sewage Feasibility Study, identified areas of need and future development, as well as recommended the Township construct a collection and conveyance system to send sewage flow from existing and planned growth areas to the then newly constructed Earl Township WWTP. The existing needs and potential growth areas, identified in previous Lancaster County growth

plans, were primarily east of the community of Blue Ball and along S.R.897/Springville Road and Sheep Hill Road. The East Earl Township purchased 250,000 gpd of capacity for existing and future wastewater needs. The capacity purchased by East Earl Township at the Earl Township WWTP is also the maximum amount of sewage flow that can be conveyed from East Earl Township to the Earl Township Sewer Authority's WWTP using the Kinzer Avenue Pump Station. The collection and conveyance infrastructure within East Earl Township, including the existing low pressure sewer system, Witmer Road Pump Station and gravity collection system was designed to handle wastewater flows from those planned areas in the 1998 Amendment.

Since the 1998 Amendment, the Township has amended their zoning for some undeveloped parcels of land immediately east of Blue Ball, and along U.S.322/Division Highway. The designation of these parcels of land was changed to allow for high density residential and commercial development, and must meet the Township's amended zoning ordinance for the Smart Growth Neighborhood Option. An analysis of undeveloped lots east and southeast of Blue Ball suggests up to 742 potential EDUs or up to 185,500 gpd of domestic wastewater.

4.5 Evaluation of Existing WWTF

4.5.1 Introduction

East Earl Township, within the Joint Act 537 study area, is mostly served by on-lot disposal systems, as well as two package WWTPs with stream discharge. Low pressure sewer is used along Ewell Road, S.R.897/Springville Road, U.S. 322 and East Earl Road to convey domestic wastewater to the Earl Township Sewer Authority's WWTP. The East Earl Sewer Authority's 2013 Chapter 94 Report states an average daily flow of 135,260 gpd to the Earl Township Sewer Authority, with an average organic strength of 283 lbs per day. EESA currently has a total of 250,000 gpd of capacity at the ETSA WWTP, which is based on the East Earl Township's 1998 Act 537 Sewage Facilities Plan Amendment.

A majority of the OLDS within the Village of Goodville are failing and these failures have been documented in the 2002 and 2013 Act 537 Sewage Facilities Plan Update Revisions. Since the wells in the Village of Goodville have been reviewed in previous Act 537 Plans, they were not sampled for the Joint Act 537 Study. Additionally, the Borough of Terre Hill is served

by both public water and sewer and therefore no OLDS exist for sampling. Residential potable water wells along S.R. 625/Reading Road, as well as S.R. 23/Main Street, Spring Grove Road and Union Grove Road were reviewed for the Joint Act 537 Plan. The properties located along Toddy Drive and Ewell Road are connected to East Earl Sewer Authority's low pressure sewer system and therefore were not sampled as part of this study.

Excluding the Village of Goodville, the sewage planning area has a total of 141 individual properties that use onsite wells and on-lot disposal systems. However, the properties selected for sampling were narrowed based on a distance of less than 100 feet from the nearest public roadway to the home, or less than one acre and 200 feet from the home to the nearest public roadway. Based on the DEP's *Act 537 Sewage Disposal Needs Identification* document, a total of twenty-five (25) percent of the wells in the service area must be sampled when the service area is between 101 and 500 properties.

Well sampling and surveys were conducted by Martin Water Conditioning on November 11th and 18th of 2014, and the laboratory analysis was performed by Pure-Test Water laboratory. Properties were randomly selected and a contingency list was created in the event that not all property owners wished to participate. A total of thirty-nine (39) property owners of the randomly selected properties were willing to participate in the well sampling and survey for the study. This exceeded the minimum 25 percent required for the service area size. See Map No. 7 for location of well sampling.

4.5.2 Well Surveys, Testing and Results

Martin Water Conditioning conducted the surveys of property owner's knowledge of their water wells and OLDS. Property owners were surveyed to determine the construction type, location, age and treatment, if any, of their wells. The property owners were also surveyed based on the condition of their existing OLDS, frequency of system pumping, age and previous malfunctions. The survey results did not yield useful data and were mostly unremarkable because most homeowner's do not possess detailed knowledge of their water wells and OLDS. Please see Appendix G for the residential survey results.

The wells were analyzed to determine the nitrate levels, with a concentration greater than 10.0 mg/L indicating well failure. The individual property wells were also analyzed for E.Coli

and Total Coliform. Any well found to contain 1 colony forming unit per 100 milliliters (CFU/100 mL) of E.Coli or Total Coliform indicates well failure. Table 17 on the subsequent page provides the sampling results for the well sampling performed in November of 2014. Please see Appendix G for the well sampling results.

Of the thirty-nine (39) wells sampled, twenty-four (24) failed for at least one of the sampling parameters. A total of six (6) potable wells sampled, which did not contain concentrations that exceed well standards, contained nitrates greater than 7.9 mg/L. These results suggest potential nitrate influence from an outside source, such as a malfunctioning OLDS or agricultural land. Table 18 below provides a breakdown of the nitrate distribution among wells sample.

Table 17. East Earl Township Well Sampling Results for Sewage Planning Area

Location	Nitrate (mg/L)	E.Coli (CFU/100 mL)	Total Coliform (CFU/100 mL)
1463 Main St	11.60	0.0	2.0
156 Reading Rd	11.00	9.9	53.1
184 Reading Rd	12.60	2.0	83.1
186 Reading Rd	9.92	0.0	16.4
188 Reading Rd	9.29	0.0	22.2
200 Reading Rd	15.90	0.0	0.0
202 Reading Rd	17.10	0.0	144.5
204 Reading Rd	13.30	0.0	5.3
206 Reading Rd	15.80	0.0	1.0
208 Reading Rd	8.47	22.2	>200.5
244 Reading Rd	12.00	0.0	0.0
290 Reading Rd	2.85	0.0	1.0
310 Reading Rd	7.38	0.0	>200.5
327 Reading Rd	9.17	5.3	16.4
366 Reading Rd	10.90	0.0	0.0
370 Reading Rd	9.40	0.0	3.1
372 Reading Rd	9.45	0.0	5.3
396 Reading Rd	5.09	2.0	118.4
397 Spring Grove Rd	8.21	94.5	>200.5
401 Spring Grove Rd	11.10	12.4	129.8
434 Spring Grove Rd	9.81	0.0	1.0
1462 Union Grove Rd	7.66	0.0	69.7
1476 Conestoga View Dr	14.60	0.0	7.5
1484 Conestoga View Dr	8.00	0.0	1.0

Table 18. Summary of 2014 Nitrate Sampling Results Distribution

Nitrate Concentrations (mg/L)	No. of Samples	Percent of Total Samples	Cumulative Percent of Total Samples
15-20	3	7.6	7.6
10-15	8	20.5	28.1
5-10	18	46.2	74.3
1-5	6	15.5	89.8
<1	4	10.2	100.0
Total	39	100	

A total of 28.1 percent of the samples tested higher than the recommended maximum level of 10.0 mg/L for nitrates. Regulatory requirements state that drinking water that contains one or more bacterial colony forming units per 100 mL of well water is unsafe to drink. A total of six of 39 wells, or 15 percent, sampled returned positive results for E.Coli, and 21 of 39 wells, or 54 percent, sampled returned positive results for Total Coliforms failed the regulatory requirement and are unsafe to drink. The sampling results indicate that 24 of 39 wells, or 61.5 percent, failed one or all three of the sampling parameters, which indicates that the on-lot disposal systems are failing and impacting nearby groundwater.

In 2002, as part of the Act 537 Update Revision for the Village of Goodville, the Township inspected 44 OLDS and sampled 37 potable water wells. Of those samples taken in 2002, twenty-seven (27) percent of wells showed nitrates in excess of 10.0 mg/L and 32 percent contained nitrate concentrations between 5.0 and 10.0 mg/L. The 2002 study also found nineteen (19) percent of wells sampled contained bacteria. In 2013, as part of the Act 537 Update Study for the Village of Goodville, nine (9) wells were sampled with twenty-two (22) percent exhibiting nitrate levels in excess of 10.0 mg/L and forty-four (44) percent of wells contained between 5.0 and 10.0 mg/L of nitrates. For more information on the 2013 Act 537 Update Study, please see Appendix B.

4.6 Wastewater Treatment Alternatives

4.6.1 Introduction

The Borough of Terre Hill and East Earl Township reviewed several wastewater treatment alternatives, including a regional activated sludge wastewater treatment plant, the Borough's continued operation of a separate WWTP, the Township's operation of a new non-regional WWTP, and construction of a pump station and force main to the Township's existing low pressure sewer system.

4.6.2 Evaluation of East Earl Township Wastewater Flows

Wastewater flows for East Earl Township were developed based on a combination of the Townships EDU flow value of 250 gpd/EDU, as well as 19,000 gpd permitted capacity for Conestoga Wood Specialties and 4,000 gpd permitted capacity for the Goodville Industrial Center. Shady Maple Smorgasbord and Goods Store have purchased a combined capacity of 215 EDUs for a combined total flow of 53,750 gpd; however, the Township's Annual Chapter 94 Report for the year 2013 indicates that they have remained below this flow. Wastewater flows for future developments were estimated for the undeveloped properties located at 4440 and 4996 Division Highway because they are within the sewage planning area, and are within the growth boundary identified in the 2008 ELANCO Comprehensive Plan. However, during the public comment period of the Joint Act 537 Plan, the owner-developer of the 4440 Division Highway property formally requested sewage capacity for 235 EDUs from the East Earl Sewer Authority Board and were subsequently approved. However, no capacity has been purchased to date. These parcels are also zoned as Commercial Neighborhood and use the Smart Growth Neighborhood Option Overlay Zone per the SGNO Ordinance. The Section 810.9.A of the SGNO Ordinance requires these parcels to connect to public sewer and therefore these properties are included in sewage planning for East Earl Township. The Borough of Terre Hill's existing WWTP capacity of 0.210 MGD was included into the regional wastewater treatment plant alternative. Table 19 represents the permitted and projected flows for East Earl Township.

Table 19. East Earl Township Calculated Wastewater Flows

Location	EDU	MGD
Village of Goodville		
Residential	106	0.0265
Commercial	13	0.0033
Future Use	5	0.0013
Goodville Industrial Center*	16	0.0040
East Earl Township - 2014/2015 Sewage Planning Area		
Residential	136	0.0340
Conestoga Wood Specialties**	76	0.0190
Shady Maple Smorgasbord	215	0.0540
East Earl, LLC Property - 4996 Division Highway***	230	0.0575
4440 Division Highway***	230	0.0575
*Existing WWTP Capacity Per NPDES PA0085448		
**Existing WWTP Capacity Per NPDES PA0083909		
***Assumed Total Number Of Developable EDUs for Sewage Planning		

4.6.3 Chesapeake Bay Requirements

The Pennsylvania DEP's Chesapeake Bay nutrient requirements were considered when reviewing each sewage disposal alternative. The Borough of Terre Hill, as an existing Phase 4 discharger under the Chesapeake Bay Watershed Implementation Plan, can receive nutrient cap loads based on their existing performance or a Department assigned cap load of 7,306 lbs/yr of total nitrogen (TN) and 974 lbs/yr of total phosphorus (TP), whichever is more stringent. Pennsylvania DEP verification of the estimated Borough nutrient cap loads is required. These nutrient cap loads could be transferred to a joint sewer authority to be used at a regional WWTP.

East Earl Township does not currently operate a WWTP with a stream discharge and therefore is not eligible for nutrient cap loads. However, for each on-lot disposal system constructed prior to August of 2003, and connected by a municipality to a publicly owned treatment works (POTW), an offset of 25 lbs of TN/OLDS is allocated to the municipality. There are approximately 250 existing OLDS within the sewage planning area that can be connected to a POTW in East Earl Township, which would provide the Township with

approximately 6,250 lbs of total nitrogen. These potential nutrient loadings and offsets were considered in the review of wastewater alternatives.

4.6.4 Wastewater Treatment Alternatives

Table 20 lists the wastewater treatment alternatives considered by the municipalities, along with a brief description of each alternative. These alternatives were selected for evaluation based on footprint, construction cost, operation and maintenance costs, treatment efficiency and ability to consistently meet effluent water quality requirements.

Table 20. Joint Act 537 Sewage Facilities Plan Wastewater Treatment Alternatives

Alt. No.	Description	Borough of Terre Hill Required Action	East Earl Township Required Action	Treatment Method
1	Municipalities own and operate separate wastewater treatment facilities.	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a collection system and WWTP to serve the residents and businesses along S.R. 625 and within the Village of Goodville. The WWTP would be located near the existing Conestoga Woods Specialty WWTP	New WWTF
2	Municipalities form joint sewer authority and construct a centralized WWTP.	The Borough works with the Township to create a joint sewer authority to construct, own and operate a regional WWTP	The Township works with the Borough to create a joint sewer authority to construct, own and operate a regional WWTP	New WWTF
3	Connect residents along S.R. 625 and in the Village of Goodville to the East Earl Township's existing low pressure sewer system.	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a sewer collection system with pump stations and force main with connection to the existing LPS at the intersection of S.R. 897 and U.S. 322	New WWTF And Sewer Ext
4	Repair and/or replace existing OLDS in East Earl Township	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	The Township requires residents to construct new on-lot disposal systems (OLDS)	New WWTF And OLDS
5	Township constructs separate wastewater treatment facilities for the residents along S.R. 625 and the Village of Goodville	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a collection system and WWTP with stream discharge near the Conestoga River and S.R. 625 river crossing to serve only the residents near S.R. 625, and separately construct a collection system and WWTP to serve the Village of Goodville	New WWTF
6	Township constructs a spray irrigation system	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a collection system and a spray irrigation treatment and disposal system to serve the Township's domestic wastewater needs only	New WWTF
7	Township constructs a drip irrigation system	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a collection system and a drip irrigation treatment and disposal system to serve the Township's domestic wastewater needs only	New WWTF
8	No Action	Continues operating system as is without replacement and/or repair of existing system	Continue to allow use of malfunctioning OLDS and individual WWTPs, and do not upgrade and/or replace existing sewage facilities	Existing WWTF

4.6.4.1 Alternative No. 1 - Municipalities Construct Separate WWTP

Alternative No. 1 requires the Borough of Terre Hill to construct a new activated sludge wastewater treatment plant to meet only the needs of their existing sewer service area. The estimated project cost for the Borough to construct a new SBR WWTP is \$4,979,219.00, and the estimated annual O&M cost is \$258,500.00. Alternative No. 1 requires the Borough to fund all costs associated with their system, including any future collection system upgrade cost. Future treatment plant upgrade costs as a result of regulatory changes would also solely be the responsibility of the Borough. Please see Section 3.0 for more information regarding the Borough's construction and operation of a new WWTP.

This alternative requires East Earl Township to construct a 0.200 MGD WWTP with a stream discharge to the Conestoga River to meet the needs of the properties within East Earl Township, excluding the properties served by the Borough's public sewer system. For Alternative No. 1 the contributing wastewater flows to a Township only WWTP come from the sewage planning area along S.R. 625/Reading, Village of Goodville, Shady Maple Smorgasbord and the undeveloped lot owned by East Earl, LLC. The Township would construct a collection system with pump stations and force mains to convey wastewater to a new activated sludge treatment system capable of meeting water quality and nutrient removal effluent limits developed by the Pennsylvania DEP. Please see Map 8 for the Alternative No. 1 public sewer layout.

Based on the DEP's 2014 Integrated Water Quality Monitoring and Assessment Report (formerly 303d list) and the Department's Water Viewer for the Enterprise (WAVE) GIS application, the Conestoga river, within East Earl Township, is impaired due to nutrients and sedimentation. Under 25 Pa. Code §§ 93.4a, 93.6 and 96.3, the Department must protect the existing surface water use from degradation or further degradation and therefore develop and implement, through a NPDES permit, protective effluent limits for discharges to waters of the Commonwealth. A draft and final NPDES permit is likely to include more stringent BOD, TSS, TN and TP effluent limitations for discharge to the Conestoga River. The Township, in order to meet the requirements of a final NPDES permit, will likely need to install advanced secondary or tertiary treatment technologies.

In addition to meeting final NPDES discharge effluent limits, a newly constructed WWTP is required to comply with the DEP's Chesapeake Bay Watershed Implementation Plan

mass loading limits or nutrient cap loads, which require new dischargers to operate as a "net zero" discharger of nutrients. There are technological limits to current wastewater treatment technologies and their ability to remove nutrients; however, to operate a WWTP as a "net zero" discharger of TN and TP, facility owners can purchase nutrient credits through a nutrient credit broker or purchase credits from a nutrient auction. A discharger of nutrients is required to purchase nutrient credits, generated within the Susquehanna Watershed, to offset the discharged loading of TN and TP that exceeds their assigned cap load. However, because of the existing stream impairment, and because a TMDL has not yet been developed, the Township is required to meet the nutrient cap loads and cannot purchase credits for nutrients that exceed the cap load. An exceedance of the nutrient cap loads by a discharger is a violation of the CBWIP, and is subject to penalties and/or corrective actions.

However, East Earl Township would receive 25 lbs of TN offset per each OLDS, constructed prior to 2003, that is connected to a publicly owned treatment works (POTW). Based on the sewage planning area, East Earl Township would receive approximately 6,250 lbs/yr of TN. The use of TN offsets will reduce the Township's nutrient credit cost by reducing the total amount of TN nutrient credits required for purchase, if any. The estimated project cost for the Township to construct a new collection system and SBR WWTP is \$11,261,628.00, and the estimated combined annual O&M costs for the collection system and WWTP is \$380,800.00. The operation and maintenance costs include an estimate for the annual purchase of nutrient credits. This alternative requires the Township to fund all costs associated with their system, including any future collection system upgrade cost.

A Township only WWTP can be engineered and constructed, as can a Borough only WWTP. Constructing a new Township WWTP near the Conestoga River has several advantages, including: a relatively large receiving stream, elevation allowing for maximizing use of gravity sewer and therefore minimizing use of pump stations, available 3-Phase power near site, elimination of package WWTP discharges, available land for treatment plant site, and provide connection for areas with potential OLDS failures outside of the current sewage planning area, such as Fetterville. However, a primary disadvantage of Alternative No. 1 is that both municipalities would not have an increased number of users to support long term wastewater costs beyond the planning period. The construction of a Township WWTP would

create a new discharge point and the Township would only have access to TN offsets and minor nutrient loadings obtained from connection of the Conestoga Wood Specialties package WWTP and the Goodville Industrial Center package WWTP. Alternative No. 1 does create multiple discharge points and maintains a smaller user base per each plant. Beyond the sewage planning period, future wastewater treatment replacement and operation costs are likely to increase and therefore increase the per capita cost for the residents and business owners within the municipalities.

4.6.4.2 Alternative No. 2 - Joint Sewer Authority Operates Regional WWTP

Alternative No. 2 requires the Borough and the Township to form a joint sewer authority to own, operate and maintain a regional domestic wastewater collection system and WWTP with a stream discharge to the Conestoga River. The calculated project cost and respective annual operation and maintenance cost for Alternative No. 2 is \$17,799,309.00 and \$588,000, respectively. The annual operation and maintenance cost of \$588,000.00 does not include the municipalities' respective existing collection system maintenance costs, which if included, results in a total annual operation and maintenance costs of \$1,772,339.00.

The joint sewer authority would construct a collection and conveyance system to serve those areas of the Township that are currently served by on-lot disposal systems, and identified within the sewage planning area. A joint sewer authority would take over ownership of the existing Borough collection system and Township collection system, and also replace or install liners on any portion of the existing collection systems determined to be in disrepair. The authority would construct a new regional 0.410 MGD WWTP near the existing Conestoga Wood Specialties' current 19,000 gpd WWTP. Table 21 on the subsequent page shows the flow from contributing locations within the planning area. The Shady Maple Smorgasbord and the East Earl, LLC/4996 Division Highway properties are included in the sewage planning area. According to the ELANCO Comprehensive Plan the properties located at 4440 and 4996 Division Highway are zoned for residential development. Connecting Shady Maple Smorgasbord, as well as the East Earl, LLC property currently located at 4996 Division Highway, reduces capacity in the existing East Earl Sewer Authority's low pressure sewer system. This would also free the East Earl Sewer Authority's purchased capacity at ETSA's WWTP and allow future planned in-fill to occur. Properties zoned for development, and

adjacent to the existing low pressure sewer system, such as the property located at 4440 Division Highway, could connect to public sewer. Additional properties in East Earl Township, such as the Paul Kurtz property along Ranck Road, for which the Developer in 2012 indicated a future development could require 240 EDUs at total build-out, could connect to EESA's gravity sewer, which flows to ETSA's WWTP.

Table 21. Planning Area Estimated Wastewater Flow to Regional WWTP

Location	EDU	MGD
Borough of Terre Hill ¹	629	0.210
East Earl Township		
S.R. 625 Residential & Commercial	136	0.034
Conestoga Wood Specialties ²	76	0.019
Goodville Industrial Center ³	16	0.004
Shady Maple Smorgasbord	200	0.054
Village of Goodville	124	0.031
4996 Division Highway Property - Zoned for Development (East Earl, LLC)		
	230	0.0575
Total	1,397	0.4055
Note: 1. Borough of Terre Hill is allocated 0.210 MGD of wastewater capacity per NPDES Permit PA0020222 and currently has 629 EDUs connected to their system. 2. Conestoga Wood Specialties is allocated 0.019 MGD of wastewater capacity per NPDES Permit PA 3. Goodville Industrial Center is allocated 0.004 MGD of wastewater capacity per NPDES Permit PA0085448.		

The Conestoga River is impaired and therefore a regional WWTP with discharge to the river is more likely to receive a NPDES permit limit with low effluent limits. A regional WWTP is also required to comply with the nutrient standards laid out in the CBWIP, which requires TN and TP discharge effluent concentrations of 6.0 mg/L and 0.8 mg/L, respectively. Based on preliminary effluent limits developed by the Pennsylvania DEP Southcentral Regional Office's engineers, a regional WWTP is likely required to meet a nutrient cap load of 7,306 lbs/yr of TN and 974 lbs/yr of TP. The joint sewer authority would need to install biological nutrient removal treatment technology and potentially tertiary treatment technology, such as filtration, to consistently meet the nutrient limits.

The formation of a joint sewer authority is feasible as demonstrated by the municipalities willingness to enter into a joint Consent Order and Agreement with the DEP. The engineering and construction of a regional sewer collection and conveyance system and WWTP is also feasible. Constructing a regional WWTP near the Conestoga Wood Specialties' existing treatment plant has several advantages, including: surface water for discharge, elevation allowing for maximizing use of gravity sewer and therefore minimizing use of pump stations, available 3-Phase power near site, elimination of multiple discharge points; and available land for construction of treatment plant. The formation of a joint sewer authority between the Borough and Township has several advantages, including: the transfer of nutrient loading available to the Borough to a regional treatment facility, sharing of the Township's TN offsets for connection of OLDS, elimination of the Borough's discharge to Black Creek (a HQ-WWF), the sharing of long term wastewater cost through an increased number of users, and allowing the Township to potentially connect additional areas with potential failing OLDS, such as Fetterville.

4.6.4.3 Alternative No. 3 - Sewer Extension to Low Pressure Sewer System

Alternative No. 3 requires each municipality to pursue construction and operation of independent wastewater facilities without sharing project or operation and maintenance costs. Under this alternative, the Borough of Terre Hill would construct a new WWTP at its existing treatment plant location to serve its existing sewer service area. Separately, the Township would construct a collection and conveyance system to convey domestic wastewater from the planning area to the existing low pressure sewer (LPS) system near the intersection of U.S. 322/Division Highway and East Earl Road.

Beyond the construction of new collection and conveyance systems within the Township's sewage planning area, additional modifications to the existing low pressure sewer system and downstream collection system are required to make this alternative feasible. Modifications, such as sewer main upsizing and pump station upgrades, are required to handle the additional capacity from the sewage planning area.

The modifications to the existing EESA system require the Township to plan for sewer use for additional areas within the planning area and Urban Growth Area, which includes the properties located at 4440 and 4996 Division Highway. It is estimated that if these lots were developed, they would account for up to 460 EDUs or 115,000 gpd. Therefore, line upsizing and

pump station upgrades to the existing EESA sewer system are required to handle the additional flow.

The East Earl Sewer Authority (EESA) has a reserved capacity of 250,000 gpd with the Earl Township Sewer Authority, and currently uses an approximate 141,900 gpd of their reserved capacity. In 2014, the Earl Township Sewer Authority submitted permit applications to the PA DEP to upgrade the Earl Township WWTP for nutrient removal. The upgrades to the WWTP will not result in an increase in domestic wastewater capacity for EESA. With limited available capacity remaining at the WWTP, EESA would be prohibited from sending all of the domestic wastewater flow from the planning area to the Earl Township WWTP, unless EESA pays to expand ETSA's WWTP capacity.

The estimated project cost of conveying domestic wastewater from the Township's planning area, as well as upgrades to the existing EESA LPS system, is estimated to cost approximately \$16,940,673.00. This cost does not reflect homeowners' purchase and installation of individual grinder pumps. The estimated annual O&M costs for the collection system extension and additional WWTP operation is \$461,800.00. The engineering for Alternative No. 3 is feasible and a single discharge point at Earl Township's WWTP is maintained; however, the option is more costly than Alternative No. 1 and 2. Also, this option would require conveying potential areas with OLDS failure, such as Fetterville, over greater distance and therefore increase O&M cost.

4.6.4.4 Alternative No. 4 - Construction of Three Municipal WWTPs

Alternative No. 4, requires the Borough of Terre Hill to separately pursue construction of a new WWTP to serve only the Borough's existing service area. East Earl Township would construct two separate activated sludge WWTPs.

East Earl Township would construct a WWTP to treat the domestic wastewater from the Village of Goodville with a stream discharge and separately construct a WWTP to treat the domestic wastewater from residences along the S.R. 625 area. This alternative is feasible from an engineering analysis and the main advantage is a reduced footprint in terms of collection system size. However, the construction of two separate WWTPs within East Earl Township, and a separate system in the Borough, is not cost effective in terms of project cost and operation and maintenance cost. With existing stream impairment, multiple point source discharges are not the

most protective of stream water quality and therefore not likely to be permitted by the PA DEP. Table 22 represents the estimated project costs to each municipality to construct new wastewater treatment facilities.

Table 22. Comparison of Alternative No. 4 Project and O&M Costs

Municipality	WWTP Cost (2015, US\$)	Collection System Cost (2015,\$)	Contingency Costs (2015,\$)	O&M Costs (2015,\$)
A. Borough of Terre Hill				
Borough WWTP - 0.210 MGD	\$3,608,130	\$0	\$1,371,089	\$258,500
Borough Total Capital Cost	\$4,979,219			\$258,500
B. East Earl Township				
Reading Road WWTP - 0.165 MGD	\$3,347,400	\$3,998,500	\$2,791,442	\$331,400
Village of Goodville WWTP - 0.035 MGD	\$1,591,700	\$1,191,750	\$1,057,711	\$117,550
Township Total Capital Cost	\$13,978,503			\$4448,950

Alternative No. 4 is less advantageous than Alternatives No. 1-3 because of the capital investment and O&M cost to maintain multiple treatment systems within East Earl Township. Construction of a WWTP for the Village of Goodville, with stream discharge to Cedar Creek, is not environmentally beneficial because the receiving stream is impaired and likely to have low assimilative capacity due to the low stream Q₇₋₁₀. Since Cedar Creek is impaired for nutrients, the PA DEP is likely to issue low effluent concentrations to prevent further tributary impairment, as well as to prevent the stream from becoming effluent dominated due to the ratio of effluent to stream flow.

4.6.4.5 Alternative No. 5 - Repair and Replace Existing OLDS

Alternative No. 5 requires each homeowner to repair and replace their failing on-lot disposal system within East Earl Township's planning area. The Borough of Terre Hill would construct a new WWTP on the site of their existing WWTP.

This alternative is not feasible for the majority of the homes within the East Earl Township sewage planning area due to soil quality and limited lot sizes, particularly in the Village of Goodville. A new OLDS system must maintain a minimum setback distance of 100 feet from potable water wells, as well as 10 feet from property lines, easements and right-of-ways. Meeting the setback requirements becomes increasingly difficult with lot sizes of less than one acre. An on-lot disposal system requires a larger drainfield, and a large downstream plume easement, when groundwater nitrate levels become elevated, in order to provide a sufficient recharge area for the dilution of effluent. Twenty-eight (28) percent of the OLDS sampled for the Joint Act 537 Study show elevated nitrate levels above 10.0 mg/L and an additional forty-six (46) percent contained nitrates between 5.0 and 10.0 mg/L. On-lot disposal systems capable of denitrification can cost \$30,000.00 or more. On-lot disposal systems, such as the Orenco AdvanTex systems, can reduce nitrates to 20.0 mg/L or less; however, a large recharge area is still required to reduce the nitrate plume from 20.0 mg/L to 10.0 mg/L at the property line. Since the properties sampled for this study are on one acre or less, replacing existing OLDS is not a preferred option.

4.6.4.6 Alternative No. 6 - Construction of a Spray Irrigation System

Alternative No. 6 requires the Borough of Terre Hill to separately pursue construction of a new WWTP to treat only the Borough's existing service area. East Earl Township would construct an activated sludge treatment system, such as an extended aeration system, with a large lagoon and spray irrigation for application of the treated effluent.

The Township would construct a collection and conveyance system to convey wastewater to a new wastewater treatment plant. Spray irrigation systems can be an effective wastewater treatment alternative for municipal wastewater by employing soil microbes to remove organic and nutrient wastewater constituents. However, these systems require an increased level of operator attention as compared to some other treatment technologies. This is partially due to the maintenance of the spray field grounds.

Maintenance of spray irrigation grounds can be labor intensive if irrigation lines and fixed spray headers are constructed. Since spray irrigation systems use soil to treat municipal wastewater, and to prevent line damage, the use of machinery is limited on spray fields. Therefore increased operator labor is required to remove the cover crop and subsequently

prevent total nitrogen accumulation within the groundwater. Other irrigation systems exist, such as center pivot irrigation, which is considered an economical spray system. The level of treatment required in a spray irrigation system is dictated by soil type, existing groundwater quality and field application type, such as direct to human consumption agricultural crops.

The use of treated effluent is prohibited from direct spray onto agricultural crops intended for direct human consumption, unless the effluent quality is consistent with U.S. EPA and PA DEP requirements. For example, treated domestic effluent can be applied to direct to human agricultural crops if applied 15 days prior to harvest and the effluent quality is consistent with Class B or higher standards. These effluent standards require a high degree of disinfection, as well as biological treatment.

To produce the required effluent quality for application onto agricultural crops, the capital investment for wastewater treatment technologies is similar to that of treatment systems with stream discharge. However, total project capital investment increases beyond that of treatment systems with stream discharge because of the total land required for spray application. Also, spray irrigation systems must be capable of providing 120 days of wastewater storage capacity, in the event spray is prohibited due to low ambient temperatures and precipitation. For example, irrigation of treated wastewater in winter months is limited due to snow accumulation and freezing of surface soil. Therefore, the capital cost of a spray irrigation system is also dependent on the required storage capacity. Spray irrigation systems also require the installation of monitoring wells throughout the site and require occasional sampling by the system operator.

A spray irrigation system to treat the full flow of the East Earl Township's portion of the sewage planning area is estimated to require a minimum of 75 acres. More land may be required depending on the topography, underlying geology, and soil quality and to meet setback requirements. Spray irrigation was not feasible for the Village of Goodville because of cost and available land. Creating a larger system for the entire East Earl Township planning area would costs two to three times that of the alternative reviewed in the 2013 Update Revision for the Village of Goodville. Also, spray irrigation systems can be operator intensive, and although the systems receive WQM permits, the PA DEP is issuing permits for spray irrigation with 5 year renewal clauses.

The primary advantage of spray irrigation treatment of domestic wastewater is the system's ability to passively reduced pollutant loadings. The engineering of a spray irrigation system is feasible; however, because of the land area required for spray application and lagoon impoundments, capital cost and O&M costs, Alternative No. 6 was not further considered as an effective long term wastewater disposal solution.

4.6.4.7 Alternative No. 7 - Construction of a Drip Irrigation System

Alternative No. 7 requires the Borough of Terre Hill to separately pursue construction of a new WWTP to treat only the Borough's existing service area. East Earl Township would construct a wastewater collection and conveyance system and a wastewater treatment plant with drip irrigation and disposal.

The Township would be required to construct a collection and conveyance system to convey wastewater to a new wastewater treatment plant. The collection system would likely convey wastewater to the same location as a spray irrigation system.

Drip irrigation systems require the construction of irrigation lines below the soil surface. Unlike spray irrigation systems, which rely on microbes in the soil surface to treat and remove wastewater constituents, drip irrigation systems are designed for disposal of treated effluent. Therefore, wastewater treatment systems that use drip irrigation disposal methods must be designed to accomplish a higher degree of treatment to prevent contamination of groundwater. The capital costs for wastewater treatment technology with nutrient removal for disposal through a drip irrigation field is the same as a WWTP with direct discharge to surface water. Additional capital costs are required for construction of drip irrigation pump facilities, drip irrigation lines and land acquisition. This option is not considered cost effective because significant additional expense is required on top of the cost to construct a WWTP capable of secondary or better treatment. No further review of this option is considered necessary.

4.6.4.8 Alternative No. 8 - No Action Alternative

Alternative No. 8 does not require either municipality to construct and operate new wastewater treatment facilities. Under this alternative the Borough would continue operating their existing wastewater treatment facilities and the Township would continue to allow use of existing malfunctioning OLDS. The Borough's wastewater treatment facilities are aging and are likely to require additional capital investment for continued operation, and the existing treatment

technology is not likely to meet future water quality effluent requirements. The majority of OLDS within the sewage planning area in East Earl Township are malfunctioning, and lot size and soil type prohibit replacement with new on-lot disposal systems. The malfunctioning OLDS will continue to degrade groundwater quality. Therefore, the "No Action" alternative is not considered feasible for either facility and is not given additional consideration as a viable alternative in the Joint Act 537 Sewage Facilities Plan.

4.7 Present Worth Cost Effectiveness Analysis

The present worth analysis was developed for comparison of the costs of each viable treatment alternative. Present Worth is the dollar amount, which if invested now at a fixed interest rate, would provide the funds necessary to make all future payments on the selected wastewater treatment facilities. The operation and maintenance costs are included in the future payments for Present Worth calculations for wastewater treatment facilities for a 20 year planning period. Performing a Present Worth analysis of the wastewater treatment alternatives allows for a direct comparison of the entire life cycle cost of the viable wastewater treatment alternatives.

All construction and equipment costs were evaluated based on Engineering News Records 2015 Construction Cost Index, as well as the U.S. Bureau of Labor and Statistic's Consumer Price Index. However, detailed treatment facilities design and site investigation must be performed to develop a detailed cost for financing prior to actual bid. All of the wastewater treatment facilities have been analyzed based on a 20 year planning period and costs are based on early 2015 dollar values. The following assumptions were used in the present worth analysis:

- The planning period is 20 years, from 2015 to 2035.
- Costs were evaluated in terms of 2015 values (Engineering News Record CCI of 9971.96).
- A discount rate of 4.625% was used, as required by the U.S. EPA, for the water year from October 1, 2014 to September 30, 2015.
- The annual operations and maintenance costs are assumed to be fixed cost for the planning period.

- The salvage value of capital projects depreciates linearly over the expected life of the project. Land value for right of way/easements and land is assumed to remain constant. The depreciation schedule and salvage value factors are as noted below in Table 23 and follow the recommended U.S. EPA guidelines for present worth evaluations.

Table 23. Year 2035 Salvage Value (Percent of Initial Construction Costs)

Type of Facility	Expected Life	Salvage Value (% of Initial Cost)
Collection and Conveyance	50 Years	60
Pump Facilities	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	33.3
Right-of-Ways/Easements	-----	100
Wastewater Treatment Plant	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	25

Please see Table 24 on the subsequent page for an abbreviated comparison of Present Worth cost for each alternative investigated in this section. Please see Appendix C for a more detailed estimate of the alternatives compared in this section, as well as the Section 3.0.

4.8 Institutional Evaluation and Recommended Alternative

The Borough of Terre Hill's Public Works Department operates a collection system and 0.210 MGD WWTP with discharge to Black Creek. The Borough has a full time operator and assistant operator, as well as a part time administrator. The Borough does not currently have outstanding financial obligations for their collection system and WWTP.

In East Earl Township, the East Earl Sewer Authority operates a combination of gravity sewer collection and low pressure sewer conveyance systems. The Authority has two employees who operate and maintain the collection system, as well as a part time administrator and five (5) authority members. East Earl Township's domestic wastewater flows are conveyed to either the Earl Township WWTP or the New Holland Borough WWTP for treatment. Currently, the EESA has an agreement to share upgrade costs with the Earl Township Sewer Authority (ETSA) for the Earl Township WWTP. Those shared costs include an expansion and upgrade of the WWTP to meet the Chesapeake Bay nutrient requirements; however, no additional capacity is provided to the East Earl Sewer Authority. The future financial obligation that EESA is responsible for, for

the proposed upgrades to the Earl Township WWTP, is approximately \$5,000,000.00; however, ETSA currently holds \$1,500,000.00 in EESA tapping fees. Therefore, the likely future EESA debt will be approximately \$3,500,000.00. The Earl Township Sewer Authority is currently waiting to receive permits from the PA DEP to move forward with the construction of the proposed upgrades and to determine the exact costs EESA must contribute.

Alternative No. 2 is the recommended wastewater alternative, which requires the Township and Borough to construct, and operate and maintain a regional collection system and WWTP with a discharge outfall on the Conestoga River. However, if the Borough and the Township are unable to agree upon the details of a joint sewer authority, then the municipalities are recommended to implement Alternative No. 1. Under Alternative No. 1, the Township is required to construct a WWTP near Conestoga Wood Specialties, or in the same location as a regional WWTP, with a discharge outfall on the Conestoga River.

Alternative No. 2, which includes the formation of a joint sewer authority to construct, operate and maintain a regional WWTP, is recommended as the primary long term wastewater solution based on the following:

- The municipalities can provide a more cost effective long term domestic wastewater solution by combining the total number of sewer users and therefore lowering the user rates than compared to continued separate operation. The Borough of Terre Hill is mostly built out and there is limited growth potential of the land surrounding the Borough, but within East Earl Township. A regional WWTP provides a more cost effective solution to Borough and Township residents connected to the Borough's public system. Regionalization of domestic wastewater services are likely to be beneficial beyond the twenty (20) year sewage planning period because wastewater treatment and operation costs are likely to continue to increase. Therefore, an increased number of users is likely to keep future individual user costs lower when compared to separate municipal system construction and operation cost.
- Regionalization of public sewer services can offer an economy scale, which yields reduced costs and greater resource management. Specifically, a joint sewer authority to construct, own and operate a regional collection system and WWTP, allows the municipalities to merge staff and reduce costs from administration, laboratory sampling,

and other operation and maintenance costs. The sharing of public services through regionalization is an increasing trend with local governments and other industries, such as education and healthcare. The Borough and Township share police services and some roadway services, and can benefit from sharing public sewer services too. Beyond the scope of this sewage planning study, the regionalization of sewer services, and increase in user base, may provide future costs benefits as a result of regulatory changes for the municipalities, such as more strict effluent limits and sampling costs distributed over a larger user base..

- The connection of malfunctioning OLDS in East Earl Township to public sewer eliminates a source of groundwater contamination. Since most lot sizes with malfunctioning OLDS are small, and meeting current set back requirements is not possible, the replacement or repair of existing OLDS is considered not possible.
- The elimination of multiple discharge points from package WWTPs, including Conestoga Wood Specialties and Goodville Industrial Center, and the Borough of Terre Hill's WWTP discharge to Black Creek, an HQ-WWF stream, reduces the potential impact points to the Conestoga River Watershed. Unlike large municipal WWTPs, small package WWTPs tend to have part time operators and/or inconsistent influent loading, which makes consistent operation and treatment difficult. This often results in the discharge of higher organic loadings for parameters of concern, such as phosphorus.
- Allows East Earl Township to meet the projected population growth as provided in the ELANCO Comprehensive Plan and therefore provide public sewer to accommodate the projected growth. This can be accomplished by freeing up existing capacity on the existing low pressure sewer system and gravity sewer system that is operated by EESA, which conveys wastewater to Earl Township Sewer Authority's WWTP.
- Allows the municipalities to share nutrient loading and Total Nitrogen offsets at a regional WWTP, which can be beneficial for design and engineering of a new WWTP, as well as operation. A larger WWTP can more cost effectively and consistently remove nutrients through the application of technology, such as cloth filtration, which otherwise can be cost prohibitive for smaller WWTP owners to install.

- Allows East Earl Township greater flexibility to connect malfunctioning OLDS that were not discovered during this planning study. For example, the Township may be able to connect Fetterville or other areas, if OLDS are malfunctioning and replacement is not feasible.
- A regional WWTP can more easily buffer varying organic loadings from commercial users, such as restaurants, and therefore provide a more consistent influent strength. A more consistent influent wastewater allows an operator to consistently meet water quality requirements and reduce or maintain operational costs.

East Earl Township is a township of the second class under the applicable laws of the Commonwealth of Pennsylvania. The administrative and legal activities which must be undertaken by East Earl Township, to implement the recommendations of the Joint Act 537 Plan, are the responsibility of the Township. The Township will negotiate with the Borough to form a joint sewer authority. The joint sewer authority will determine wastewater staff needs to operate a regional collection system and treatment plant, if the regional alternative is agreed upon by the both the Borough and Township. The joint sewer authority will also submit all necessary permit applications in their name, as well as all pertinent environmental documentation.

The estimated project costs for the construction of a regional collection system and WWTP, by a joint sewer authority, is \$17,799,309.00 with annual O&M cost of \$588,000.00 per year for combined operation of the proposed collection and treatment system. However, if the Township and the Borough of Terre Hill are unable to agree on the terms for formation of a joint sewer authority, then the Township is recommended to follow Alternative 1 and construct a new WWTP near the existing Conestoga Wood Specialties' existing WWTP. The construction of a new Township collection and treatment system is estimated to have a project costs of \$11,835,363.00 with an annual O&M cost of \$380,800.00. For more information pertaining to costs of the wastewater alternatives, see Table 24 within this section.

It is the responsibility of the Township to implement the Township-only alternative or to implement Alternative No. 2 and establish a joint sewer authority with the Borough. Both municipalities are regulated by the Commonwealth of Pennsylvania and therefore have the authority to implement wastewater planning, construct, operate and maintain wastewater

facilities, and set user rates. The Borough and Township must agree upon a joint sewer authority.

Following approval of the Joint Act 537 Sewage Facilities Plan, the Borough and Township must take the following steps to implement recommended wastewater alternative:

- The municipalities must begin preliminary negotiations to form a joint sewer authority to determine details, such as the total number of Authority members, number of Authority members represented by each municipality, number of wastewater operators required, required administrative staff, billing procedures, authority facilities required, if any, and user rate structure.
- Each municipality must authorize through a resolution or ordinance, their intention to organize a Joint Sewer Authority, which is consistent with the Municipal Authorities Act.
- Following negotiations and resolution to form a joint sewer authority, the municipal authorities must file an application to form a joint sewer authority with the Secretary of the Commonwealth, which is consistent with the requirements of the Municipal Authorities Act
- Following issuance of a certificate of incorporation by the Secretary of the Commonwealth, and the organization of a joint sewer authority, the Joint Sewer Authority Secretary shall certify to the Secretary of the Commonwealth the Joint Sewer Authority Officers in accordance with the Municipal Authorities Act.
- Following certification of the Joint Sewer Authority, a consulting engineer must be selected to perform the permitting and design of a new regional WWTP. The permitting applications would be filed under the new Joint Sewer Authority.
- The Joint Sewer Authority will also need to pursue the acquisition of any rights-of-way and land needed to implement the approved sewage planning. This includes land for the construction of pump stations and a WWTP.
- The Joint Sewer Authority will also submit the necessary funding applications to either the appropriate government agencies or private institutions.

If both municipalities are unable to negotiate the formation of a joint sewer authority to implement Alternative No. 2, then the municipalities have the ability to separately implement the contingency alternative, Alternative No. 1. Once the determination has been made by the municipalities to either pursue or not pursue the regional alternative, the municipalities can pursue funding to implement separately, Alternative No. 1, or jointly, Alternative No. 2. Financing for the selected wastewater alternative can occur through a combination or individual use of bank loans, direct capital financing, municipal bonds, USDA Rural Development funds or PENNVEST funds.

- Bank loans from a private lender can be obtained to finance the selected wastewater alternative. These loans can be obtained in several forms, including Real Estate Loans, Installment Loans, Syndicated Loans, and Commercial and Industrial Loans, and private loans offer some flexibility, including the ability to select from multiple lenders and flexibility in repayment schedules. If bank loans are selected as a full or partial financing option, the loan types and lender requirements should be reviewed, as well as interest rates, which are likely to vary, based on the implementation of and sewer alternative selected.
- Direct capital financing requires the municipalities to fund capital expenditure from their own capital funds, which avoids the use of a third party and subsequent financing fees and interest rates. However, direct funding does not allow the municipalities to support other required construction projects during the fiscal year and therefore is most likely not a favorable funding source for the selected wastewater alternative.
- PENNVEST, also known as the Pennsylvania Infrastructure and Investment Authority, provides low interest loans and/or grants. The eligible costs covered by PENNVEST include engineering and design, improvements to existing facilities and new construction. The PENNVEST low interest loan interest rates range from one (1) to five (5) percent with terms of 20 years, and in special cases can be extended to 30 years. Grant eligibility depends on the affordability rate and is determined at the time of submission by PENNVEST. A PENNVEST application cannot be submitted until all sewage planning and permits are obtained. PENNVEST evaluates the applications based on the cost-effectiveness of the selected wastewater option, environmental impacts and sewer needs.

PENNVEST limits the total funding eligibility to \$11,000,000.00 for a single municipality and \$20,000,000.00 for multi-municipality projects. PENNVEST requires applicants to submit a Second Opinion Review for projects with a project cost (capital and contingency) that exceeds \$10,000,000.00. If Alternative No. 1 is selected, the Borough does not require a Second Opinion Review, but East Earl Township would require a Second Opinion Review. If Alternative No. 2 is selected, and in order to qualify for PENNVEST funding, the municipalities would be required to obtain a Second Opinion Review. The primary advantage of PENNVEST funding, is the availability of low interest loan and, if eligible, grant money. There are additional considerations when accepting PENNVEST loans and/or grants, such as "or equal" requirements for bidding and required written approval from the PA DEP and PENNVEST for change orders. Written approval for change orders is required for cost greater than \$25,000.00 or two (2) percent of the original construction cost, whichever amount is less; total cost of all change orders greater than ten (10) percent of the original construction cost; and change in scope of the project as defined by PENNVEST regulations.

- United States Department of Agriculture (USDA) Rural Development Program also offers grants and loans for rural communities to improve water and wastewater infrastructure that are otherwise unable to obtain commercial credit and have less than 10,000 people. The USDA Rural Development loans offer up to a 40 year payback period or based on the useful life of the facilities financed. The loans offered also include fixed interest rates, which is based on the need of the project and the median income of the area to be served.
- Municipal bonds can be taxable and tax-exempt. The two most common types of municipal bonds are general obligation bonds and revenue bonds. General obligation bonds are backed by the full faith and credit, and taxing power of the issuer. Revenue bonds are backed by the revenues from the project, such as sewer bills. Municipal bonds provide the majority of funding for water and wastewater infrastructure. Municipal bond interest rates are market set and vary by credit, term and tax status. Municipal bonds require an investment banker to sell and distribute the bonds and are generally favorable to risk adverse investors because of the various tax-exemptions, as well as steady stream

of income payments. Prior to sale of a municipal bond, rating agencies, such as Standard and Poor's, must rate the bond. Generally, the higher the rating, such as AAA, the lower the risk to an investor and therefore the lower the interest rate paid on the bond. Bond Counsel and the Authority's Solicitor must review documentation for financing to protect their respective clients. A Bond Trustee disburses the proceeds and collects payments from the Borrower, and enforces the Borrower's obligations. A Bond Insurer supports the Borrower's credit in exchange for a fee, and provides a bond insurance policy. A municipal bond can be developed in approximately twelve (12) weeks.

The final funding instrument or instruments will be determined based on the municipalities' selection of a joint sewer authority or independent municipal options. The PENNVEST funding option has been included within the Implementation Schedule to provide funding milestone; however, should the municipalities select a municipal bond funding option, a period of twelve (12) weeks may be needed. Additional grant and funding opportunities may become available that were not reviewed as part of this study and should be assessed to determine the applicability and benefit to the municipalities.

Table 24. Calculated Present Worth Analysis of Wastewater Facilities (2015,\$)

Item	Alternative No. 1		Alternative No. 2	Alternative No. 3		Alternative No. 4		
	Borough SBR WWTP	Township Collection System & SBR WWTP ^A	Regional Collection System & SBR WWTP ^A	Borough SBR WWTP	Township Sewer Extension to Existing LPS ^A	Borough SBR WWTP	Township SBR WWTP S.R. 625/Reading Road ^A	Township Extended Aeration WWTP (Village of Goodville) ^A
Flow (MGD)	0.210	0.200	0.410	0.210	0.205	0.210	0.165	0.035
WWTP Construction Cost	\$3,608,130	\$3,658,900	\$5,784,400	\$3,608,130	\$3,163,900	\$3,608,130	\$3,347,400	\$1,591,700
Collection System Construction Cost	\$0	\$4,917,450	\$7,113,650	\$0	\$9,111,950	\$0	\$3,998,500	\$1,191,750
Construction Contingency Cost	\$541,219	\$1,286,452	\$1,934,707	\$541,219	\$1,841,377	\$541,219	\$1,101,885	\$417,517
Construction Cost Total	\$4,149,349	\$9,862,802	\$14,832,757	\$4,149,349	\$14,117,227	\$4,149,349	\$8,447,785	\$3,200,967
Admin, Engineering, Legal Services	\$829,869	\$1,972,560	\$2,966,551	\$829,869	\$2,823,445	\$829,869	\$1,689,557	\$640,193
Total Project Cost	\$4,979,219	\$11,835,363	\$17,799,309	\$4,979,219	\$16,940,673	\$4,979,219	\$10,137,342	\$3,841,161
WWTP Annual O&M Cost	\$258,500	\$263,800	\$382,000	\$258,500	\$248,300	\$258,500	\$228,900	\$75,050
Present Worth WWTP O&M Cost	\$3,326,424	\$3,394,625	\$4,915,644	\$3,326,424	\$3,195,169	\$3,326,424	\$2,945,526	\$965,756
Collection System Annual O&M Cost	\$0	\$117,000	\$206,000	\$0	\$213,500	\$0	\$102,500	\$42,500
Present Worth Collection O&M Cost	\$0	\$1,505,577	\$2,650,845	\$0	\$2,747,356	\$0	\$1,318,988	\$546,897
WWTP Salvage Value	\$758,615	\$1,044,433	\$1,607,266	\$758,615	\$769,433	\$758,615	\$956,266	\$372,300
Present Worth WWTP Salvage Value	\$307,123	\$422,835	\$650,696	\$307,123	\$311,502	\$307,123	\$387,141	\$150,724
Collection System Salvage Value	\$0	\$2,542,950	\$3,517,450	\$0	\$4,543,703	\$0	\$2,166,016	\$526,933
Present Worth Collection System Salvage Value	\$0	\$1,029,504	\$1,424,027	\$0	\$1,839,503	\$0	\$876,904	\$213,327

Individual Net Present Worth Cost	\$7,998,520	\$15,283,225	-	\$7,998,520	\$20,732,192	\$7,998,520	\$13,137,810	\$4,989,763
Combined Net Present Worth Cost	\$23,281,745		\$23,291,074	\$28,730,713		\$26,126,093		
Projected EESA Annual Debt Service	\$0	\$213,726	\$213,726	\$0	\$213,726	\$0	\$213,726	
Total Number of EDUs Served within Authorities	629	1,793	2,422	629	1,793	629	1,793	
Existing O&M Cost (2015,\$)	\$174,070	\$1,005,047	\$1,184,339	\$174,070	\$1,005,047	\$174,070	\$1,005,047	
Cost/EDU (2015,\$)	\$12,716	\$8,523	\$9,616	\$12,716	\$11,562	\$12,716	\$10,110	
Projected User Fee (per quarter)	\$292	\$272	\$279	\$292	\$327	\$292	\$300	
Note A - Does not include cost to individual homeowners required to install grinder pump systems.								

4.9 Review of Consistency Requirements - Recommended Regional Alternative

The regulations promulgated by the Pennsylvania DEP within 25 Pa. Code § 71.21(a)(5) require each viable alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the Pennsylvania DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory and regulatory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a regional WWTP, designed and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Wasteload Management Reports for both municipalities were reviewed and the construction of a regional WWTP would enable both municipalities to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A regional WWTP would take into account projected and existing hydraulic and organic loadings from the Borough and the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. In order for a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality Act of 1987 that

are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The formation of a joint sewer authority between the Borough of Terre Hill and East Earl Township, to own, operate and maintain a regional WWTP to serve the Township and the entire Borough is consistent with the *2008 ELANCO Comprehensive Plan*. The formation of a joint sewer authority and the construction of a regional WWTP are also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommend future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

Preliminary effluent limits were obtained from the Pennsylvania DEP for the proposed discharge point from a regional WWTP. Please see Appendix N for the preliminary effluent limits developed by the PA DEP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to the preliminary effluent limits developed by the Pennsylvania DEP, which can be found in Appendix N. Therefore a planned regional

WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate failing OLDS is consistent with the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a regional WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new regional WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed. It is anticipated that limited wetland disturbance would be required for the proposed projects and would be handled through Chapter 105 General Permits.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new WWTP, located near the Conestoga Wood Specialties WWTP, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix H for PNDI Receipt.

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a regional WWTP contains no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP. A basic Act 537 Plan narrative was submitted to the PHMC for assessment and their subsequent response can be located in Appendix I.

4.10 Review of Consistency Requirements - Recommended Township Alternative

The regulations promulgated by the Pennsylvania DEP within 25 Pa. Code § 71.21(a)(5) require each viable alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the Pennsylvania DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory and regulatory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a new WWTP in East Earl Township, designed and operated by the East Earl Sewer Authority in accordance with a final NPDES permit, is not in conflict with the Pennsylvania Clean Stream Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

The East Earl Sewer Authority's Chapter 94 Wasteload Management Report for the year 2013 was reviewed and the construction of a new WWTP would enable the Township to address new domestic wastewater needs and address malfunctioning OLDS. A new WWTP would take into account projected and existing hydraulic and organic loadings from the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. In order for a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning

requirements. Any provisions required by the Federal Water Quality Act of 1987, which are not met through the Act 537 Sewage Facilities Plan, will be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The construction of new WWTP in East Earl Township, and operated by East Earl Sewer Authority, to provide sewer service to the Township is consistent with the *2008 ELANCO Comprehensive Plan*. The construction and operation of a new WWTP in East Earl Township is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process. A new East Earl Township WWTP would allow the Authority to manage new domestic wastewater flows from areas identified for development within the county plans.

- **Antidegradation**

Preliminary effluent limits were obtained from the Pennsylvania DEP for the proposed discharge point from a new WWTP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to preliminary effluent limits developed by the Pennsylvania

DEP and located in Appendix N. Therefore a planned WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate malfunctioning OLDS is consistent with the Clean Streams Law, and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a new Township WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed. It is anticipated that limited wetland disturbance would be required for the proposed projects and would be handled through Chapter 105 General Permits.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new WWTP, located near the Conestoga Wood Specialties WWTP, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix H for PNDI Receipt.

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a new WWTP contains no building or other structures, aside from the existing 19,000 gpd Conestoga

Wood Specialties WWTP. A basic Act 537 narrative was submitted to the PHMC for assessment and their response can be found in Appendix I.

4.11 Sewage Facilities Implementation Schedule

An implementation schedule is provided below for the formation of a joint sewer authority to construct, operate and maintain a regional WWTP. However, should the municipalities be unable to agree within a six (6) month period to negotiate the formation of a joint sewer authority, a second implementation schedule is provided for the construction of a WWTP to serve only East Earl Township. Permitting timeframes were developed based on the PA DEP's *Permit Decision Guarantee* (Doc No. 021-21000-001, Nov 2012) guidance and the allocated business days for Department review.

Table 25. Proposed Joint Sewer Authority Implementation Schedule for Regional Alternative

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan To PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Joint Sewer Authority Formation	1/1/2016
Finalize Joint Sewer Authority	7/1/2016
Begin Preparing NPDES Permit Application	7/1/2016
Initiate Design of Regional Collection System and WWTP and Develop Technical Specifications	9/1/2016
Submit WWTP NPDES Permit Application to PA DEP	1/1/2017
Prepare Regional Land Development Plans	3/1/2017
Receive Draft Regional NPDES Permit Application	7/1/2017
Submit Regional Land Development Plans	9/1/2017
Complete Design of Regional Collection System and WWTP and Technical Specifications	10/1/2017
Submit WQM Permit Application To PA DEP	12/1/2017

Prepare PENNVEST Application	2/1/2018
Receive Land Development Approval	3/1/2018
Receive WQM Permit	5/1/2018
Submit PENNVEST Application	7/1/2018
Prepare Bid Plans and Specifications	7/1/2018
Receive PENNVEST Funding Approval	1/1/2019
Advertise Bids	3/1/2019
Receive Bids	4/15/2019
Issue Notice to Award	5/15/2019
Begin Construction of Collection System	7/15/2019
Begin Construction of WWTP	9/1/2019
Complete Construction of Collection System	12/31/2020
Complete Construction of WWTP	12/31/2020
Submit WQM Post Construction Certification with "As-Built" Drawings	3/31/2021

Table 26 East Earl Township Implementation Schedule for Township WWTP

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan To PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Preparing NPDES Permit Application (<u>Assumes Failure To Form Joint Sewer Authority During 6 Month Period</u>)	7/1/2016
Initiate Design of Township Collection System and WWTP and Develop Technical Specifications	9/1/2016
Submit Township WWTP NPDES Permit Application to PA DEP	1/1/2017
Prepare Township Land Development Plans	3/1/2017
Receive Draft Township NPDES Permit Application	7/1/2017

Submit Township Land Development Plans	9/1/2017
Complete Design of Collection System and WWTP and Technical Specifications	10/1/2017
Submit WQM Permit Application To PA DEP	12/1/2017
Prepare PENNVEST Application	2/1/2018
Receive Land Development Approval	3/1/2018
Receive WQM Permit	5/1/2018
Submit PENNVEST Application	7/1/2018
Prepare Bid Plans and Specifications	7/1/2018
Receive PENNVEST Funding Notice & Meeting (Dependent on PENNVEST Board Meeting Schedule)	TBD
Advertise Bids	3/1/2019
Receive Bids	4/15/2019
Issue Notice to Award	5/15/2019
Begin Construction of Collection System	7/15/2019
Begin Construction of WWTP	9/1/2019
Complete Construction of Collection System	12/31/2020
Complete Construction of WWTP	12/31/2020
Submit WQM Post Construction Certification with "As-Built" Drawings	3/31/2021

5.0 Public Participation

Separately, the municipalities discussed the Act 537 Plan objectives and potential outcomes at their respective public meetings in 2014. From March 11, 2015 to April 11, 2015, the Borough and the Township solicited written comments from the public through public notification in the Lancaster Newspaper on March 7th, 2015. Please see Appendix J for proof of public notification.

A special joint East Earl Township Board of Supervisors and Terre Hill Borough Council meeting was conducted on Tuesday March 17, 2015 at the Garden Spot Fire Rescue Station 3, located at 4315 Division Highway in Blue Ball, PA. The purpose of this meeting was to allow

the ELA Group, Inc. to make a formal presentation of their findings in preparation of the Joint Act 537 Plan draft report and to address any questions asked by the public. Township, Borough and Lancaster County Planning Commissions, and Township and Borough sewer and water authorities were invited and encouraged to attend this special meeting and provide written comments.

Public comments were received by the municipalities within the Borough of Terre Hill and East Earl Township and can be found in Appendix K with written municipal responses to each comment.

The ELA Group publicly provided a brief status update to the Borough of Terre Hill's Council on May 12, 2015 at 7:00 pm. The ELA Group also presented at the East Earl Township Office, located at 4610 Division Highway in East Earl on May 12, 2015 at approximately 8:30pm to the East Earl Township Supervisors and public present. The purpose of the second presentation was to address some of the public comments and further explain some of the areas reviewed as part of the draft Joint Act 537 Plan.

Appendix A

Uniform Environmental Review

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

The Borough of Terre Hill currently operates under their 1986 Act 537 Sewage Facilities Plan, approved by the then Pennsylvania Department of Environmental Resources. The Borough's current 0.210 million gallon per day (MGD) wastewater treatment plant (WWTP) was constructed in 1962 and subsequently updated in 1988, and serves 1,449 persons within the Borough and East Earl Township. However, the treatment plant has reached the end of its useful planning life and is unable to meet future nutrient requirements, and likely unable to meet more stringent effluent limits. Although development is limited within the Borough boundary, the Borough does provide public sewer to the surrounding land adjacent to the Borough, but within East Earl Township. The surrounding area to the Borough has limited growth potential. Additionally the stream which the Borough's WWTP discharges to is classified as a High-Quality Warm Water Fishes stream. Ultimately, the Borough must update sewage planning to address its long term sewage treatment and disposal needs. For more information on the existing Borough system, see Section 3.0 of the Joint Act 537 Plan.

East Earl Township, which surrounds the Borough of Terre Hill, last updated its sewage planning in 1990, 1992 and 1994, with more recent amendments in 1998 and 2002. The 2002 Act 537 Sewage Facilities Update Revision (2002 Update Revision) specifically addressed the Village of Goodville, located just northeast of Blue Ball, Pennsylvania. The Village of Goodville is home to approximately 330 residents and some commercial establishments. The 2002 Update Revision identified malfunctioning on-lot disposal systems (OLDS) through well sampling of 37 potable wells, which showed that twenty-seven (27) percent contained nitrates above the 10.0 mg/L limit and nineteen (19) percent showed bacterial contamination. In 2013, under Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environmental Protection (PA DEP), the Township performed an update revision (2013 Update) to the 2002 Update Revision to determine the necessary corrective actions to address the OLDS malfunctions. The 2013 Update confirmed the OLDS malfunctions and 2002 Update Revision recommendation of construction of a wastewater collection system and treatment plant. However, prior to submission of the 2013

Update Study to the PA DEP, the Borough of Terre Hill approached East Earl Township about the possibility of exploring the formation of a joint sewer authority to construct, own and operate a regional WWTP. On April 22, 2014, the Borough and Township jointly entered into a CO&A with the Pennsylvania DEP to update their respective sewage facilities planning, review additional areas within the Township for OLDS malfunctions and to determine the feasibility of forming a joint sewer authority. For more information on the Township's existing systems, please see Section 4.0 of the Joint Act 537 Plan.

The Joint Act 537 Sewage Facilities Plan represents an official update to the Borough's 1986 Act 537 Plan and the Township's 1994 Act 537 Plan. The purpose of this Joint Act 537 Plan is to identify additional OLDS malfunctions within East Earl Township, determine the wastewater alternative most protective of human health and the environment, and investigate the feasibility of shared sewer service through a joint sewer authority. The wastewater alternatives reviewed in the Joint Act 537 Plan include, separate operation of wastewater facilities for the municipalities, a regional WWTP and a no-action alternative. The Joint Act 537 Plan also identifies additional OLDS malfunctions outside of the Village of Goodville and within the Township. More details on the wastewater alternatives evaluation can be found in Section 3.5 and Section 4.6 of the Joint Act 537 Plan.

The financing options reviewed and considered within the Joint Act 537 Plan consider use of PENNVEST and USDA Rural Development funds as an option for a joint sewer authority. The funding under these programs must be consistent with the National Environmental Policy Act or NEPA (42 USC § 4321 et seq.). The project does not meet the definition of Categorical Exclusion as defined in the PA DEP's *Guidelines for the Uniform Environmental Review Process* (Doc. No. 381-5511-111) and therefore the project must undergo an Environmental Assessment.

1.2 Project Description

The sewage planning area reviewed in the Joint Act 537 Plan includes the Borough of Terre Hill, Village of Goodville and portions of East Earl Township east of Blue Ball and along S.R. 625/Reading Road. Please see Map 1 for the sewage planning area.

The Borough of Terre Hill's WWTP has a hydraulic design flow of 0.210 MGD and is also designed to treat up to 357 lbs per day (lbs/day) of BOD. The Borough's public sewer system, originally constructed in 1962, serves the entire Borough and limited area adjacent to the Borough, but within East Earl Township. Currently, the WWTP flow averages 0.140 MGD and 148 lbs/day of BOD.

East Earl Township is served by a combination of gravity sewer, low pressure sewer system and OLDS. The gravity sewer and low pressure sewer systems convey wastewater to the Earl Township Sewer Authority's sewer system and New Holland Borough's sewer system, and is mostly concentrated near or around the town of Blue Ball.

The selected alternative, Alternative No. 2 - Regional Collection System and WWTP, recommends the municipalities form a joint sewer authority to construct, own and operate a regional WWTP with a stream discharge to the Conestoga River. The proposed location of a regional WWTP maximizes the use of gravity conveyance and would use treatment technology that allows the Joint Sewer Authority to meet the federal and state regulatory requirements of a final NPDES Permit, as well as the preliminary effluent limits and nutrient mass loading limits provided by the PA DEP. Please see Appendix N for the preliminary limits. Following a detailed review of an NPDES Permit Application to the PA DEP, the Joint Sewer Authority will be required to meet the preliminary effluent limits or potentially more stringent effluent limits; however, the technology selected allows operators to adjust accordingly to meet effluent limits.

If the municipalities are unable to agree or negotiate the formation of a joint sewer authority, Alternative No. 1 is recommended as a contingency. Alternative No. 1 recommends the Borough and Township, if unable to form a joint sewer authority, construct separate wastewater facilities. The Borough would construct a new WWTP on the site of its existing WWTP. The Township would construct a new WWTP at the same location proposed for a regional WWTP. However, the Borough and Township are willing to work towards a joint sewer authority as demonstrated by their willingness to enter together into a CO&A with the PA DEP.

The primary funding source will be determined upon completion of a formation of a regional WWTP. The Joint Sewer Authority will evaluate all funding sources, including

bank loans, municipal bonds, PENNVEST and the USDA Rural Development Program. The estimated cost and projected user fees for the recommended alternatives were developed based on 2015 dollar values.

The total project cost for Alternative No. 2 for a regional collection system and WWTP, and including contingency cost, is estimated to be \$17,799,309.00 with annual operation and maintenance (O&M) costs for the WWTP and collection system estimated to be \$588,000.00 per year. The calculated cost per EDU for Alternative No. 2 is \$9,616.00 with a projected quarterly user fee of approximately \$272.00. For more information on the costs of the recommended alternative, Alternative No. 2, see Table 24 in Section 4. 8.

As a contingency, Alternative No. 1 costs are provided, if the municipalities are unable to negotiate a joint sewer authority. The total project cost for a new Borough WWTP is estimated to be \$4,979,219.00 with an annual O&M cost of \$258,500.00. The total project costs for a Township collection system and WWTP, and including contingency costs, is estimated to be \$11,835,363.00 with annual O&M costs of \$380,800.00. The calculated cost for Alternative No. 1 for the Borough, and East Earl Township residence connected to the Borough system, is \$12,716.00 per EDU with a projected quarterly user fee of approximately \$292.00. The calculated cost for East Earl Township residences along S.R. 625/Reading Road, Village of Goodville and properties along S.R. 897/Springville Road near Blue Ball is \$8,523.00 per EDU with a projected quarterly user fee of \$272.00. For more information on the costs of the contingency alternative, Alternative No. 1, see Table 20 in Section 4.6.4.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Alternatives Considered Alternative No. 1 - Separate Municipal WWTPs:

Alternative No. 1 recommends each municipality would construct its own wastewater treatment plant, and the Township would construct a new collection system. The Borough could construct a new WWTP on the site of its existing system. Additional acreage is available for construction of a new WWTP on the existing system and logistically this would not interrupt service. The discharge would remain in the same location and continue to discharge to Black Creek, a high-quality warm water fishes designated stream. The rehabilitation of the existing system was compared to the construction of a new oxidation ditch system and a new sequencing batch reactor (SBR) system. Rehabilitation of the

existing system was eliminated as a viable option because the integrity of the existing concrete structures could not be verified and the cost of replacing piping and internal equipment approaches that of a new WWTP. Oxidation ditch systems were considered with tertiary filtration because the technology is proven to effectively reduce BOD and TSS, and can be designed to remove nutrients. However, oxidation ditch systems were eliminated because of the footprint and subsequent costs. Sequencing Batch Reactor technology with tertiary filtration is also proven technology and can produce low BOD and TSS concentrations, and can be operated to reduce nutrient concentrations and mass loadings discharged to Black Creek. The SBR technology can perform biological treatment and clarification in a single basin, and a separate tertiary filtration unit can provide additional effluent polishing. The SBR system has a more compact footprint than an oxidation ditch system and therefore was selected as the primary treatment technology. The Borough WWTP would be designed to meet their 2013 NPDES Permit effluent limits, as well as anticipation of future nutrient limits and therefore will address water quality regulations, such as those in 25 Pa. Code Chapters 93 and 96. The construction of a new WWTP would allow the Borough to provide uninterrupted public sewer service and continue to protect public health and safety. The same technology reviewed was considered for the East Earl Township.

East Earl Township would construct an SBR system near the existing Conestoga Wood Specialties 0.200 MGD WWTP with a discharge to the Conestoga River, a designated warm water fishes stream. The Township would also construct a combination of gravity sewer, low pressure sewer, and pump station and force mains to convey wastewater to the plant. A Township WWTP would be designed based on the preliminary effluent limits developed by the PA DEP and therefore will address water quality regulations, such as those in 25 Pa. Code Chapters 93 and 96. The construction of a new WWTP would allow the Township to provide public sewer service and eliminate malfunctioning OLDS, a source of groundwater contamination and environmental degradation. The treatment of domestic wastewater would also eliminate a public health and safety concern to Township residence and business owners. A Township WWTP would also eliminate the discharge from several package WWTPs and therefore improve effluent and water quality. For more information on Alternative No. 1, see Section 4.6.4.1.

Alternative No. 2 - Joint Sewer Authority & Regional WWTP: Alternative No. 2 recommends the Borough of Terre Hill and East Earl Township form a joint sewer authority to construct, own and operate a regional WWTP with discharge to the Conestoga River. A regional WWTP would require the Joint Sewer Authority to construct a regional collection system, which consists of gravity sewer, low pressure sewer, and force and pump station, to convey wastewater to regional WWTP with discharge to the Conestoga River. Per the reasons reviewed in Alternative No. 1, an SBR system with tertiary treatment was selected for use at a regional wastewater facility. The construction of a regional collection system and WWTP would protect public health and safety by eliminating malfunctioning OLDS. A regional WWTP would also eliminate multiple discharges from package WWTPs, and the discharge from the Borough of Terre Hill to Black Creek, a HQ-WWF stream. Regionalization of wastewater treatment would provide more efficient treatment and therefore benefit water quality through a single controlled discharge point. For more information on Alternative No. 1, see Section 4.6.4.2.

Alternative No. 3 - New Borough WWTP & Township Sewer Extension: Alternative No. 3 requires the Borough to separately construct a new SBR WWTP and the East Earl Township to construct additional collection and conveyance systems for connection of non-sewered areas in the Township to the Authority's existing low pressure sewer system. The East Earl Sewer Authority (EESA) owns and operates a low pressure sewer system east of Blue Ball, which conveys domestic wastewater to the neighboring Earl Township's collection system and treatment plant. This option includes the construction of gravity sewer, low pressure sewer, and force mains and pump stations to convey wastewater to the existing low pressure sewer system. However, upgrades to the existing low pressure sewer system are also necessary, as is the construction of additional treatment capacity at the Earl Township WWTP. The East Earl Sewer Authority conveys wastewater to the Earl Township Sewer Authority's WWTP and the New Holland Borough's WWTP. This option provides for the protection of public health and safety as discussed in Alternatives No. 1 and No. 2, and provides the environmental benefit of eliminating multiple discharges. For more information on Alternative No. 1, see Section 4.6.4.3.

Alternative No. 4 - New Borough WWTP & Two Township WWTPs: This alternative considered the construction of a new Borough SBR WWTP and, separately, the construction of two new WWTPs in East Earl Township. Two WWTPs were considered to treat the Village of Goodville separately from the homes and businesses along S.R. 625/Reading and S.R. 897/Springville Road near Blue Ball. This option also provides for the protection of public health and safety as discussed in the previous alternatives. For more information on Alternative No. 1, see Section 4.6.4.4.

Alternatives No. 8 - No Action Alternative: The no action alternative allows the Borough to continue to use the existing WWTP without giving consideration to replacement of the existing treatment technology or future effluent limits. Under this same alternative the Township would not take any action on the malfunctioning OLDS and would not consider future changes to population. For more information on Alternative No. 1, see Section 4.6.4.8.

2.2 Comparison of Alternatives

Alternative No. 1 provides a feasible path for each municipality to move forward; however, from a long-term cost effective perspective, Alternative No. 2 provides the best path forward. Alternatives No. 1 and No. 2 are similar in quarterly user cost, but Alternative No. 2 is more likely to provide benefits beyond the twenty (20) year planning period, as a result of material, labor and technology costs increases. Alternative No. 2 allows the municipalities to share services, eliminate malfunctioning OLDS and multiple discharge points, and increase the sewer user base by combining users in both municipalities. Under Alternative No. 2, East Earl Township can better meet projected population growth and planned development by allowing the Township to remain below its purchased capacity at the Earl Township WWTP.

Based on existing zoning, the planned growth areas within East Earl Township are mostly east and southeast of Blue Ball. Properties east of Blue Ball, and along S.R.23/Main Street, Ewell Road and S.R. 897/Springville Road north of U.S.322/Division Highway, convey domestic wastewater south to the Witmer Road Pump Station. The Township's existing zoning along Ewell Road and U.S.322/Division Highway allows for high density development and commercial development on remaining undeveloped acreage. The

Township conveys domestic wastewater from the properties south of U.S.322/Division Highway and located along East Earl Road, Rancks Road, Sheep Hill Road and S.R.897/Springville Road to the Earl Township collection system and WWTP. East Earl Township's existing zoning along these same roads, as well as along the south side of U.S.322/Division Highway allow for low density and light industrial development on the remaining undeveloped acreage. Alternative No. 2 allows the East Earl Township to convey domestic wastewater from north of the U.S. 322/Division Highway to a regional WWTP. Under this same alternative the Township can continue to convey the domestic wastewater from existing and new development south of the U.S.322/Division Highway to the Earl Township WWTP. East Earl Township would also have flexibility in connecting malfunctioning OLDS that were not discovered during the development of the Joint Act 537 Sewage Facilities Plan.

However, if East Earl Township conveyed all domestic wastewater to the Earl Township WWTP, from S.R.625/Reading Road, the Village of Goodville and the planned growth areas east and southeast of Blue Ball, the Township would be required to upgrade existing collection and conveyance systems from East Earl Township and Earl Township, as well as construct or purchase additional capacity at the Earl WWTP. This concept was reviewed under Alternative No. 3 of the Joint Act 537 Plan.

As part of Alternative No. 3 and the additional flow conveyed to the Earl Township WWTP, the municipalities gave consideration to the low flow conditions of the receiving streams for existing and potential discharges, as well as proximity of those discharge points to other dischargers and the impacts those conditions have on final effluent limits, and capital and operation costs. The municipalities also considered the distance to convey wastewater from the source to the treatment facilities and system upgrades that are required to accommodate the increased flow, which includes flow from malfunctioning OLDS that were not identified as part of this Joint Act 537 Plan.

Alternative No. 1 and Alternative No. 2 are close on a quarterly user rate basis; however, Alternative No. 2 provides the Township with flexibility to handle future sewer needs and reduces the number of point source discharges to the Conestoga River Watershed, including the Borough's discharge to Black Creek a designated High Quality stream, and therefore is

considered the more environmentally beneficial option. Alternatives No. 3 and No. 4 were eliminated based on the lack of flexibility for the Township to meet long term sewage disposal needs and the capital and operation and maintenance costs. Alternative No. 8, or the "No Action" Alternative, is not considered viable because it does not address the malfunctioning OLDS or projected growth in East Earl Township and therefore does not meet their sewer needs. Alternative No. 8 does not address the aging wastewater treatment infrastructure within the Borough of Terre Hill and does not allow the Borough to continue to meet public sewer needs and future water quality limits. Therefore, Alternative No. 8 does not address the Borough's long-term sewage facilities needs.

Table 1 on the subsequent page provides the present worth analysis performed on the reasonable sewer alternatives.

Table 1. Calculated Present Worth Analysis of Wastewater Facilities (2015,\$)

Item	Alternative No. 1		Alternative No. 2	Alternative No. 3		Alternative No. 4		
	Borough SBR WWTP	Township Collection System & SBR WWTP ^A	Regional Collection System & SBR WWTP ^A	Borough SBR WWTP	Township Sewer Extension to Existing LPS ^A	Borough SBR WWTP	Township SBR WWTP S.R. 625/Reading Road ^A	Township Extended Aeration WWTP (Village of Goodville) ^A
Flow (MGD)	0.210	0.200	0.410	0.210	0.205	0.210	0.165	0.035
WWTP Construction Cost	\$3,608,130	\$3,658,900	\$5,784,400	\$3,608,130	\$3,163,900	\$3,608,130	\$3,347,400	\$1,591,700
Collection System Construction Cost	\$0	\$4,917,450	\$7,113,650	\$0	\$9,111,950	\$0	\$3,998,500	\$1,191,750
Construction Contingency Cost	\$541,219	\$1,286,452	\$1,934,707	\$541,219	\$1,841,377	\$541,219	\$1,101,885	\$417,517
Construction Cost Total	\$4,149,349	\$9,862,802	\$14,832,757	\$4,149,349	\$14,117,227	\$4,149,349	\$8,447,785	\$3,200,967
Admin, Engineering, Legal Services	\$829,869	\$1,972,560	\$2,966,551	\$829,869	\$2,823,445	\$829,869	\$1,689,557	\$640,193
Total Project Cost	\$4,979,219	\$11,835,363	\$17,799,309	\$4,979,219	\$16,940,673	\$4,979,219	\$10,137,342	\$3,841,161
WWTP Annual O&M Cost	\$258,500	\$263,800	\$382,000	\$258,500	\$248,300	\$258,500	\$228,900	\$75,050
Present Worth WWTP O&M Cost	\$3,326,424	\$3,394,625	\$4,915,644	\$3,326,424	\$3,195,169	\$3,326,424	\$2,945,526	\$965,756
Collection System Annual O&M Cost	\$0	\$117,000	\$206,000	\$0	\$213,500	\$0	\$102,500	\$42,500
Present Worth Collection O&M Cost	\$0	\$1,505,577	\$2,650,845	\$0	\$2,747,356	\$0	\$1,318,988	\$546,897
WWTP Salvage Value	\$758,615	\$1,044,433	\$1,607,266	\$758,615	\$769,433	\$758,615	\$956,266	\$372,300
Present Worth WWTP Salvage Value	\$307,123	\$422,835	\$650,696	\$307,123	\$311,502	\$307,123	\$387,141	\$150,724
Collection System Salvage Value	\$0	\$2,542,950	\$3,517,450	\$0	\$4,543,703	\$0	\$2,166,016	\$526,933
Present Worth Collection System Salvage Value	\$0	\$1,029,504	\$1,424,027	\$0	\$1,839,503	\$0	\$876,904	\$213,327

Individual Net Present Worth Cost	\$7,998,520	\$15,283,225	-	\$7,998,520	\$20,732,192	\$7,998,520	\$13,137,810	\$4,989,763
Combined Net Present Worth Cost	\$23,281,745		\$23,291,074	\$28,730,713		\$26,126,093		
Projected EESA Annual Debt Service	\$0	\$213,726	\$213,726	\$0	\$213,726	\$0	\$213,726	
Total Number of EDUs Served within Authorities	629	1,793	2,422	629	1,793	629	1,793	
Existing O&M Cost (2015,\$)	\$174,070	\$1,005,047	\$1,184,339	\$174,070	\$1,005,047	\$174,070	\$1,005,047	
Cost/EDU (2015,\$)	\$12,716	\$8,523	\$9,616	\$12,716	\$11,562	\$12,716	\$10,110	
Projected User Fee (per quarter)	\$292	\$272	\$279	\$292	\$327	\$292	\$300	
Note A - Does not include cost to individual homeowners required to install grinder pump systems.								

Under the recommended alternative, Alternative No. 2, the area to be disturbed for a regional collection system will occur mostly in Township roads and Pennsylvania State routes. The total construction of a new SBR WWTP with access drive is expected to disturb approximately 3.0 acres. The required pump stations are estimated to disturb less than 1.0 acre combined. Additional land disturbance is necessary for the installation of the collection and conveyance system and will be concentrated within existing roadways. There will be temporary environmental impacts from the earth disturbance activities and construction of a WWTP with discharge outfall, impacting floodplains and streams. The selected location for a regional WWTP is outside of the floodplain. All necessary permitting for the temporary construction impacts will be obtained from the PA DEP, and all necessary Highway Occupancy Permits will be obtained from the Pennsylvania Department of Transportation.

Under the contingency alternative, Alternative No. 1, the area to be disturbed for a regional collection system will remain mostly the same as in Alternative No. 2. However, the need for sewer mains along S.R. 1044/Union Grove Road are eliminated and therefore the land disturbance impacts from the collection system are less than Alternative No. 2. Land disturbance for Alternative No. 1 increases with the construction of separate Borough and Township WWTPs. The estimated area of land disturbance for a new SBR system at the Borough's existing WWTP is less than 1.5 acres. The estimated area of land disturbance for a new SBR system for the Township is estimated to be less than 2.5 acres with an access drive.

Alternative No. 2 - Regional WWTP:

The area to be affected by this alternative is approximately 3.2 acres, which includes a 0.410 MGD SBR WWTP, control building and access drive, and would be located between Conestoga Creek Road and S.R. 625/Reading Road. The new WWTP would be constructed immediately southeast of the existing Conestoga Wood Specialties existing 19,000 gpd WWTP.

The construction of a regional WWTP will temporarily impact the immediate environment surrounding the WWTP location. These impacts will be the result of earth disturbance activities and construction of an outfall pipe to the Conestoga River. All necessary temporary permits will be obtained from the PA DEP prior to construction.

Additional temporary environmental impacts will occur as a result of the construction of an interceptor from the gravity sewer system to the WWTP. This will occur near the crossing of S.R. 625/Reading Road and the Conestoga River. The necessary temporary permits will be obtained from the PA DEP for the construction.

The regional collection and conveyance system will also require the construction of a pump station, likely to be located off of Frogtown Road. The pump station can be located outside of the floodplain and earth disturbances will most likely be limited to less than 10,000 square feet. The nearest stream to the proposed pump station location is Cedar Creek. A second pump station will be located off of Spring Grove Road, but north of the Conestoga River. This pump station will be small and earth disturbance is likely to be less than 2,500 square feet. This pump station will be located well outside of the flood plain and no watercourse is located near the proposed site. A third pump station will be constructed on the site of the existing Borough of Terre Hill WWTP. The pump station construction will involve limited earth disturbance and shall remain under 0.5 acre. The closest watercourse to the proposed pump station location is Black Creek.

The construction of a regional collection system will involve earth disturbance mainly within state routes and township roads, including S.R. 625/Reading Road, S.R. 23/Main Street, S.R. 897/Springville Road (Township), S.R. 1044/Union Grove Road, and S.R. 897 East Main Street (Borough). The necessary Highway Occupancy Permits will be obtained for this work. Please see the Sewage Facilities Planning Area Map No.1 to view the delineated planning area in East Earl Township and Borough of Terre Hill.

The construction of a regional collection and conveyance system will eliminate the use of individual malfunctioning OLDS, a source of groundwater contamination. A regional WWTP will eliminate multiple discharge points, including the Borough's discharge to a high quality warm water fishes designated stream. Operation of a new regional SBR WWTP with tertiary filtration will produce a higher quality effluent than is currently discharged by the Borough's WWTP and the separate package WWTPs at the Conestoga Wood Specialties and Goodville Industrial Center sites.

Alternative No. 1 - Separate Municipal WWTPs

The area to be affected by the construction of a new Borough SBR WWTP will be less than 1.5 acres and the area to be affected by a new Township WWTP is approximately 3.2 acres, which includes a 0.200 MGD SBR WWTP, control building and access drive, and would be located between the Conestoga Creek Road and S.R. 625/Reading Road. The new Township WWTP will be constructed immediately southeast of the Conestoga Wood Specialties' existing 19,000 gpd WWTP.

The construction of a new Borough WWTP will temporarily impact the environment surrounding the existing WWTP site. The earth disturbances will remain outside of the floodplain and do not require work within waters of the Commonwealth. The existing outfall structure can be retained for discharge from a new Borough WWTP. All necessary temporary permits will be obtained from the PA DEP prior to construction. The closest watercourse to the site is Black Creek.

The construction of a Township WWTP will temporarily impact the immediate environment surrounding the WWTP location. These impacts will be the result of earth disturbance activities and construction of an outfall pipe to the Conestoga River. All necessary temporary permits will be obtained from the PA DEP prior to construction.

Additional temporary environmental impacts will occur as a result of the construction of an interceptor from the gravity sewer system to the WWTP. This will occur near the crossing of S.R. 625/Reading Road and the Conestoga River. The necessary temporary permits will be obtained from the PA DEP for the construction.

The Township collection and conveyance system will also require the construction of a pump station, likely to be located off of Frogtown Road. The pump station can be located outside of the floodplain and earth disturbances will most likely be limited to less than 10,000 square feet. The nearest stream to the proposed pump station location is Cedar Creek. A second pump will be located off of Spring Grove Road, but north of the Conestoga River. This pump station is relatively small and earth disturbance is likely to be less than 2,500 square feet. This pump station will be located well outside of the flood plain and no

watercourse is located near the proposed site. The closest watercourse to the proposed pump station location is Black Creek.

The construction of a Township collection system will involve earth disturbance mainly within state routes and township roads, including S.R. 625/Reading Road, S.R. 23/Main Street, S.R. 897/Springville Road, and S.R. 1044/Union Grove Road. The necessary Highway Occupancy Permits will be obtained for this work. Please see the Sewage Facilities Planning Area Map No.1 to view the delineated sewage planning area in East Earl Township.

The construction of a Township collection and conveyance system will eliminate the use of individual malfunctioning OLDS, a source of groundwater contamination. A Township WWTP will eliminate multiple discharge points, including the separate package WWTPs onsite at Conestoga Wood Specialties and the Goodville Industrial Center. Operation of a new Township SBR WWTP with tertiary filtration will produce a higher quality effluent than is currently discharged by the separate package WWTPs at the Conestoga Wood Specialties and Goodville Industrial Center sites.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECT

The selected alternative is Alternative No. 2: Construction of a new regional collection, conveyance, and regional Sequencing Batch Reactor (SBR) WWTP. This Alternative was selected for the following reasons:

- It is the most cost effective when considering all of the Borough of Terre Hill and East Earl Township rate payers.
- The pooling of more rate payers through regionalization helps mitigate future O&M and capital costs for the Borough and Township beyond the planning period.
- It is the most environmentally responsible option as a result of ceasing the Borough's 210,000 gpd WWTP discharge to a relatively small HQ WWF stream; eliminating the Goodville Industrial Center's 4,000 gpd WWTP discharge to a small receiving stream (Cedar Run); and terminating the Conestoga Wood Specialties' 19,000 gpd WWTP discharge to Conestoga River. These three discharges will be combined with the influent wastewater from malfunctioning OLDS, into a single discharge from a regional WWTP to the Conestoga River.

- A regional WWTP can provide greater nutrient reductions than package WWTPs and can therefore reduce the annual nutrient mass loading to the Conestoga River Watershed and the Chesapeake Bay Watershed.
- It takes approximately 275 existing OLDS offline and conveys their sewage to an advanced treatment system and eliminates a direct source of groundwater contamination.
- It allows for additional OLDS to be taken offline and connected to public sewer from future needs areas identified by the Township and PA DEP in East Earl Township.
- It provides East Earl Township flexibility when using their existing sewage collection systems that convey wastewater to the Earl Township Sewer Authority WWTP and New Holland Borough WWTP.
- Allows the Joint Sewer Authority to potentially accept wastewater from areas without public sewer, and which are outside of the Township, including Churchtown and Beartown.
- Allows the Joint Sewer Authority to accept septage pumped from nearby OLDS and therefore generate a supplemental revenue stream.

3.1 Land Use / Important Farmland / Formally Classified Lands

Alternative No. 2, the construction of a regional WWTP, will utilize land within the Township that is zoned Industrial-Light for the regional WWTP and associated treatment equipment/processes. This is a permitted use by local zoning ordinances and is consistent with the ELANCO comprehensive plan. The collection and conveyance systems will be contained primarily within the Township and State road right-of-ways. A new regional WWTP will require a new parcel of approximately 3.2 acres of land to be subdivided to allow sufficient room for expansion if ever needed in the future.

Based on current zoning and the Township's push to preserve farmland over the previous decade, the construction of the selected alternative is anticipated to primarily allow growth to occur in areas already zoned and designated for growth; such as the

areas identified near the Borough and the community of Blue Ball. Blue Ball contains two noncontiguous parcels of 32.4 acres and 45.6 acres that are located within East Earl Township's Smart Growth Neighborhood Option Overlay District, which targets land for high density development based on the Lancaster County Planning Commission's *Balance: Growth Management Plan*. Public sewer is available to these undeveloped areas, but there is insufficient capacity in the East Earl Sewer Authority's existing collection and conveyance system, and the Earl Township Sewer Authority's WWTP is unable to accept domestic wastewater from the entire planning area within the East Earl Township. If domestic wastewater was sent entirely to the Earl Township WWTP, upgrades to the existing EESA collection system and Earl Township treatment plant would be needed. This option was reviewed under Alternative No. 3. However, construction of Alternative 2 will enable the municipalities to meet their anticipated projected population growth and wastewater needs over the next twenty (20) years.

The land where the proposed WWTP will be located is classified as Prime Agricultural Soils by the Lancaster County GIS database, as are a majority of the soils located within both municipalities. This project will have a direct impact on Prime Agricultural Soils, but not on agricultural preservation since the land is not zoned Ag. See Maps 1, 4, and 5 for the Zoning, Preserved Farms and Agricultural Security Areas, and Prime Agricultural Soils Maps, respectively. No National or State Parks, forests, or trails will be impacted by this proposed project, nor do any exist within a mile of the project area. The S.R. 23/Main Street is classified as a Scenic Byway; however, only buried piping and flush mounted manholes will be contained within or along this Scenic Byway. Therefore the below ground infrastructure complies with the Township's Scenic Byway Ordinance.

Alternative No. 1 - Separate Municipal WWTPs, which remains a contingency in the event the municipalities are unable to negotiate a joint sewer authority, requires the Township to construct a new Township WWTP. The Borough would construct a new WWTP on the site of its existing WWTP, which does not contain farm land or Prime Agricultural Soils.

3.2 Floodplains

Under Alternative No. 2, the municipalities would construct the proposed regional WWTP, accessory structure, and any earthen fill will be located outside of the 100 year floodway and floodplain, although a portion of security fencing, the WWTP outfall structure and potential step aeration system would be located in the 100 year floodway and floodplain. See Map 2 for FEMA floodplain mapping. The proposed design does not require any variances from the local zoning ordinances and the project does require permits through the PA DEP's Chapter 105 General Permits Program for the proposed work within the floodplain.

Under Alternative No. 1, the Township would construct a WWTP, accessory structures, and any earthen fill will be located outside of the 100 year floodway and floodplain, although a portion of security fencing, the WWTP outfall structure and potential step aeration system would be located in the 100 year floodway and floodplain. The proposed Township WWTP does not require any variances from the local zoning ordinances and the project does require permits through the PA DEP's Chapter 105 General Permits Program for the proposed work within the floodplain. The Borough would construct a new WWTP on the site of its existing WWTP and this is expected to remain outside of the 100 year floodway and floodplain.

3.3 Wetlands

Under Alternative No. 2, the proposed regional WWTP project area disturbance will be located outside of all jurisdictional wetlands. However, the WWTP outfall structure and potential step aeration system may impact a limited amount of wetlands directly along the Conestoga River stream bank. The Outfall structure will be located along a steep overbank area to allow a step aeration system to work, if selected as part of this project, or as a future WWTP upgrade. Stream banks with steep slopes are not conducive to wetland formation and the proposed location is selected to minimize disturbance to wetlands.

There will be one crossing of the Conestoga River at S.R. 625/Reading Road via gravity sewer that will be bored a minimum of three (3) feet below the stream channel

bottom. Cedar Run will be crossed at S.R. 23/Main Street via a low pressure sewer main and will be horizontally directional drilled at a minimum of three (3) feet below the stream channel bottom. Consequently, the chosen methods for crossing streams should minimize wetland disturbance.

The proposed collection and conveyance systems will be contained primarily within the Township and State road right-of-ways, which appear to have no jurisdictional wetlands.

Based on the aforementioned, it appears the cumulative wetland disturbance will be less than 0.10 acres and should be eligible for permitting through the PA DEP's Chapter 105 General Permits Program. See Map 2 for wetland mapping.

Under Alternative No. 1, the Borough would construct a new WWTP on the site of its existing WWTP. No work is anticipated within wetlands for the construction of a separate Borough WWTP. Under this alternative, the Township would construct a separate WWTP as described in Section 4.6.4.1 of the narrative to the Joint Act 537 Plan.

3.4 Historic Resources

The proposed WWTP site has no structures within the general vicinity, aside from the existing 19,000 gpd package wastewater treatment plant that was constructed within the 1990's. The existing 19,000 gpd WWTP is the only structure that is proposed to be demolished for the recommended alternative, Alternative No. 2 - Regional WWTP.

The proposed collection and conveyance systems will primarily be contained within the Township and State road right-of-ways and should have no impact on historical resources.

If the municipalities are unable to negotiate the formation of a joint sewer authority, the Borough's construction of a new WWTP on the site of its existing WWTP will require demolition of the existing WWTP. This is applicable under Alternative No. 1; however, the demolition of the Borough's existing WWTP is likely also to occur under Alternative No. 2.

See Appendices E and I for the Cultural Resources Notification application packages and PHMC responses.

3.5 Sensitive Biological Resources

Within the last two years a search of the Pennsylvania Natural Diversity Inventory (PNDI) database has been performed for both the proposed regional WWTP site and the Borough of Terre Hill's existing WWTP. The PNDI search returned no potential impacts to Sensitive Biological Resources.

See Appendices D and H for the PNDI review receipts.

3.6 Water Quality Issues

Preliminary effluent limits were obtained from the PA DEP for the proposed discharge point for a new regional WWTP to the Conestoga River (WWF). The wastewater treatment technologies reviewed are capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The selected wastewater alternative, Alternative No. 2 - Regional WWTP, reduces the impact of 275 existing OLDS on groundwater and eliminates direct sources of groundwater degradation. The Alternative No. 2 - Regional WWTP also eliminates multiple WWTP stream discharges and combines the influent wastewater sources into a single source for efficient treatment and discharge to a larger receiving stream. The Alternative No. 1 - Separate Municipal WWTPs, which remains a contingency in the event the municipalities fail to negotiate a joint sewer authority, reduces the impact of 275 existing OLDS on groundwater; however, the construction of two separate municipal plants maintains two (2) discharge points instead of one (1). The Borough would continue to discharge to an HQ-WWF designated stream, but the Township would eliminate two (2) package plant discharges.

This project area is not within a sole-source aquifer recharge area as designated by the EPA.

3.7 Coastal Resources

This project area is not located within a coastal zone management area.

3.8 Socio-Economic Issues

The selected alternative does not appear to impose any disproportionate adverse effects on minority and disadvantaged populations based on the latest census bureau statistics and the proposed location of the WWTP.

3.9 Air Quality

An increase of dust may occur as a result of construction activities associated with the proposed actions of this plan update. As a requirement of the local conservation district, dust must be treated to maintain the existing level of air quality, which may be achieved by applying water to soils. Other industry practices may be used to reduce dust from construction activities.

A well-operated SBR WWTP typically produces minimal odors, if any. Odors from SBR WWTPs are typically localized to the immediate area surrounding the WWTP, compared to the odors emanating from manure applied to the agricultural fields surrounding the proposed project site. Odors at the WWTP and pump stations will be continually monitored and the system optimized as much as possible to minimize odors, and odor control equipment is easily applied to the localized sites.

3.10 Transportation

Transportation patterns within the study area will not permanently change as a result of the proposed improvements. Traffic patterns will change to accommodate construction equipment and to maintain a level of safety for all construction laborers when work is being completed within the road right-of-way. Transportation patterns will be returned to pre-existing conditions once construction is completed.

3.11 Noise Abatement and Control

The WWTP blower motors are typically the loudest components of a WWTP. The proposed blower motors will be housed in a solid concrete walled room that is integral to the SBR basins. It is anticipated that adjacent property owner will not experience an increased level in noise pollution after the proposed WWTP is in operation. Insulation can be added if required to abate noise pollution. The types of

pumps typically used in pump stations for wastewater conveyance are submersible and the motors are housed within noise containing structures.

3.12 Wild and Scenic Rivers

This study area is not located within wild or scenic rivers.

3.13 Miscellaneous Environmental Considerations

Not applicable.

4.0 SUMMARY OF MITIGATION

Watercourses of the Commonwealth of Pennsylvania will be disturbed during construction of the proposed WWTP stream discharge, collection system and potentially during the proper abandoning of the three existing WWTP stream discharges. A field survey will be conducted prior to design of the proposed collection system and WWTP to map all environmental resources within the proposed project area. During the field survey, a wetland survey will be conducted by a qualified professional. If wetlands are present, then they will be avoided to minimize impacts as much as possible. However, if a wetlands area needs to be disturbed, then it shall be returned to its natural state, as permitted by the PA DEP.

5.0 PUBLIC PARTICIPATION

The Pennsylvania Department of Environmental Protection requires a 30 day public comment period for all Act 537 Plan Updates. See Appendix J for the advertisement of Notice of Public Comment Period for Joint Act 537 Official Sewage Facilities Plan, joint special public meeting agenda and minutes. See Appendix K for all written public comments and municipal responses addressing public comments.

The Plan has been submitted to Lancaster County Planning Commission for comment, and has been presented and made available to the East Earl Township and Borough of Terre Hill Planning Commissions, as well as the water and sewer authorities/Public Works Departments.

Appendix B
2013 Village of Goodville
Act 537 Sewage Facilities Study

**EAST EARL TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA**

**ACT 537 OFFICIAL SEWAGE FACILITIES PLAN
UPDATE REVISION - VILLAGE OF GOODVILLE**

JUNE 2013

Draft Print

*Submitted to DEP for review,
but never approved.*



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I. INTRODUCTION

This Act 537 Plan Update Revision has been prepared to reevaluate wastewater management alternatives for the Village of Goodville, East Earl Township.

Act 537, enacted by the Pennsylvania Legislature in 1966 requires every municipality in the state to develop and maintain an up to date sewage facilities plan. The main purpose of a municipalities' Sewage Facilities Plan is to protect the health, safety and welfare of the citizens living in the municipality. It is a plan for correcting malfunctioning onlot septic systems, overloaded sewers or treatment plants. The existence of untreated or improperly treated sewage in surface water, on the surface of the ground or in ground water allows disease organisms to reach people through drinking water, insects or direct contact.

The Township prepared a prior 537 plan in 1994 addressing the entire Township. At that time the Village of Goodville was proposed to be served by non-structural alternatives consisting of an on-lot management program. An ordinance 92-1998 was adopted to implement this program. The management program established conditions for placement of new septic systems and maintenance and replacement of existing systems.

The Township's Existing Act 537 Plan was approved by the Department of Environmental Protection (DEP) on June 17, 1998. This plan addressed four areas around the Village of Blue Ball and Borough of Terre Hill that could be served by existing wastewater facilities in Terre Hill and Earl Township. Goodville was not addressed in this plan as initial sewer feasibility studies for the Village of Goodville first performed in 1988, 1995 and 1998 had determined that public sewer would not be affordable for the residents of Goodville and the Township and Authority were unable to fund the projects on their own..

An Act 537 Update Revision was prepared in 2002 to specifically address the Village of Goodville. The Revision was initiated to obtain planning approval to support eligibility of a Community Development Block Grant (CDBG) and PENNVEST funding assistance for the project to make the project affordable for the residents of Goodville.

Water testing, documentation of septic system malfunctions and high nitrate levels in groundwater support recommendations in the Revision that the continued use of individual on-lot disposal systems is not a reliable wastewater management option.

The 2002 Revision developed the basis for a recommended wastewater management plan that utilized a pressure sewer collection and conveyance system and a new wastewater treatment facility with a stream discharge to an unnamed tributary of Cedar Creek. The Plan Revision was approved by DEP in August 2002.

Efforts to implement the plan and construct the wastewater facilities have been delayed since 2002 due to funding and NPDES permitting issues. As a result of the continuing need for the Township to proceed with implementation of a wastewater management plan the DEP and the Township in 2010 initiated discussions for a Consent Order to perform a 537 Plan Update Revision specifically for the Village of Goodville. A copy of the Consent Order is provided in **Attachment 1**.

A task activity report was submitted and approved by the Department on February 27, 2013 to establish the objectives and goals for preparation of this Update Revision.

II. UPDATE REVISION OBJECTIVES

The 2002 Update Revision provided a detailed wastewater needs assessment that included water testing of 37 wells and inspection and survey of 44 on-lot disposal systems in Goodville.

A sampling of wells in Goodville will be performed to determine if the conclusions from the 2002 Update Needs assessment are still valid.

The cost estimates and present worth evaluation conducted in the 2002 Update are no longer considered current. A number of factors impact the estimates of capital and annual costs that must be considered in the current update as follows:

- Inflationary effects to construction and operating costs over the 11 years since the previous Update.
- Changes in treatment requirements due to restrictions on nutrient discharges (nitrogen and phosphorus) to the impaired Chesapeake Bay drainage area.
- Limitations on availability of sites due to agricultural preservation.

Develop possible alternatives for wastewater management for the Village of Goodville.

Conduct a cost effectiveness alternative analysis to determine a recommended wastewater management alternative.

Evaluate the recommended alternative in accordance with Act 537 guidelines for conformance with State and local planning requirements.

Develop an implementation plan including estimated project costs, user rates and schedule of construction.

III. PLANNING AREA PHYSICAL CONDITIONS AND DEMOGRAPHICS

Goodville is a semirural agriculturally based community located 3.2 miles east of the Borough of New Holland. State Route 23 runs through the center of the Village.

The 537 Update planning area for the Village of Goodville is depicted on **Map 1**. Alternatives for wastewater management will specifically address the properties within the planning area in order to comply with the requirements of the Consent Order. **Map 1** also includes the current zoning within the planning area. It includes a mix of Residential Low Density, Residential Medium Density, Commercial Neighborhood and two parcels of light industrial.

East Earl Township adopted the Elanco Region Comprehensive Plan on August 12, 2008, henceforth establishing the Elanco North and South Urban Growth Areas. The Village Growth Area (VGA) for the Village of Goodville was adopted by East Earl Township on March 12, 2002. **Map 1** also illustrates the Village Growth Boundary for the Village of Goodville.

The Village has continued to rely on individual wells for potable water and individual on-lot disposal systems, holding tanks or privies for wastewater disposal.

Soils and Geology

As noted in previous studies the soils in the planning area are marginal for support of on-lot disposal and the underlying limestone geology presents concerns with rock pinnacles and sinkholes. Please refer to the 1998 537 Plan Map 4 Limitations for On-Lot Sewage Disposal and Map 5 Geology.

The majority of soils in the planning area are Duffield silt loam, with a minority of Hagerstown silty clay loam in the higher sloped areas. Both soils are deep well drained soils and are considered prime agricultural soils.

Formations of Buffalo Springs, Ledger and Zooks Corner limestone underlie the planning area and are identified as carbonate and potentially hazardous for groundwater supplies because they are highly susceptible to pollution. These conditions allow for surface water including water

from septic system drainage fields to reach groundwater without adequate filtration and treatment in the soil by flowing through fractures and channels in the limestone.

Prime Agricultural Land

Prime agricultural lands are dominant in the surrounding farmland around Goodville. Lancaster County is very successful in efforts to protect prime farmland. **Map 2** illustrates the extent of properties under some sort of farmland protection. Conservation easements restrict the ability to utilize the farmland for any other purpose other than farming. This limits alternatives utilizing sewer easements or onsite wastewater treatment on agriculturally preserved lands.

Population and Future Growth

The Village continues to experience very limited growth due to zoning restrictions and lack of availability of adequate wastewater disposal.

The population of the planning area in 2002 was 336 residents as detailed by a 2001 Community Block Grant income survey. This was based on the responses from 100 surveys which identified 303 persons or an average of 3.03 persons per household. The study accounted for over 89% of the planning area. A total of 112 residences were identified.

A current review of zoning records indicates that there are 106 residential housing units in the planning area. The 2010 census information on the number of persons per housing unit for the entire Township is 3.06. Because the income survey was more detailed and specific to the planning area and type of housing units in the planning area, a household density of 3.0 persons will be used for estimating wastewater flow.

In addition to residential properties there are 14 commercial and institutional properties in the planning area.

The use of pressure sewer for collection and conveyance also contributes to reduced wastewater flows attributed to infiltration and inflow associated with more traditional gravity sewer systems. The use of individual wells for water supply and the use of water conserving toilets also contribute to lower wastewater flow rates. As a result a flow estimate of 90 gallons per person per day is used for planning purposes.

Future growth in the planning area will be restricted by the Village Growth Boundary and lack of developable land within the planning area. It is estimated that there maybe five (5) additional lots that maybe developed in the future once public sewer is available.

The prior 2002 Update utilized a 35,000 gallon per day treatment facility for the alternative analysis based on wastewater flows of 250 gpd/equivalent dwelling unit.

In order to comply with the requirements of the Consent Order to specifically address the wastewater needs of the planning area and maximize the affordability of the proposed system, a 35,000 gallon treatment facility is also proposed to reflect primarily the existing needs and very limited infill within the planning area. The reduction of industrial operations also resulted in a reduction of flows associated with consolidation of the existing wastewater treatment system located at the former Rutt's facility.

These flows are proposed to be consistent through the 20 year planning period from 2013 to 2033:

Residential EDU's: 106 at 3.0 persons/ EDU and 90 gpd/ person = 28,620 gpd

Commercial, Industrial and Institutional EDU's: 14 @ 270 gpd/EDU = 3,780 gpd

Future Infill Development: 5 EDU's @ 270 gpd/EDU = 1,350 gpd

Total 33,750 gpd

Use 35,000 gpd

IV. EVALUATION OF WASTEWATER TREATMENT NEEDS AND CONCERNS

The 2002 Revision included a comprehensive testing of well water and evaluation of the existing OLDS to determine the need for wastewater treatment or alternatives. There were 44 OLDS inspected and a total of 37 well water samples were taken. Samples were tested for the presence of nitrates, total coliform, and E. coli bacteria.

A statistical analysis of the results revealed that 27% of the wells tested exhibit nitrate levels in excess of the 10.0 mg/L maximum recommended level for drinking water. Another 32% have nitrate levels that are between 5.0 and 10.0 mg/L.

As part of this update Revision DEP and the Township agreed to reverify the well testing by testing 10% of the properties in the planning area for a total of 9 wells. The nitrate testing results are summarized in Table 1 and laboratory results are located within **Attachment 3. Map 4** also illustrates where the samples were taken from Goodville and provides a summary of the laboratory results.

TABLE 1
Summary of 2013 Sampling Nitrate Distribution

Nitrates (mg/l)	No. of Samples	Percent of Total	Cumulative Percent of Total
10-15	2	22.2	22.2
5-10	4	44.5	66.7
1-5	2	22.2	88.9
<1	1	11.1	100.00
Total	9	100.00	

As noted in Table 1, 22.2% of the samples tested higher than the recommended maximum level of 10 milligrams per liter (mg/L).

TABLE 2
Well Water Sampling Properties

Resident Information		Physical Address		Previously Sampled
First Name	Last Name	No.	Street	
Ruth	Martin	1526	Main Street	Yes
Darwin & Bonita	Horst	1548	Main Street	No
Nan, Wanda, & Kim	Oberholzer	1582	Main Street	No
Samuel & Mabel	Horning	119	Brendel Road	No
Mary Jane	Sauder	1625	Main Street	No
Earl & Margaret	Martin	118	Spring Grove Road	No
Paul & Ellen	Zeiset	129	Spring Grove Road	No
Dawn	Musser	1583	Main Street	Yes
Floyd & Rebecca	Petersheim	1569	Main Street	Yes

In 2002 nineteen (19) percent of the sampled wells were contaminated with bacteria. These wells are considered unsafe for drinking water for a water quality standard for E. Coliform of 1 or more bacteria colonies counted per 100 ml of well water.

The 2013 well water sampling results showed 4 out of 9 well samples tested positive for Coliform for a total of 44 percent of the samples.

As a result of a review of the sampling results with DEP it was agreed that the test samples continue to reflect the well contamination, which verified the conclusions reached in the 2002 537 Revision Update. Consequently, no additional sampling above the initial 9 well samples was needed for this update revision.

Results of the well water testing were sent to all participating property owners. If there were any contaminant levels above the state maximum concentration level, the owner was advised to contact their local health department to learn of corrective measures.

OLDS Deficiencies

There is prior substantial evidence through complaints, letters from DEP, SEO records, and inspections of various on-lot systems that there are numerous malfunctions and/or illegal discharges occurring in the Village. Map 5 On-Lot Disposal System Deficiencies as presented in the 2002 Revision detailed the malfunctions, illegal discharges, and properties with holding tanks. Of the 44 properties examined in 2002, 32 of them, or 73%, had either active malfunctions, suspected malfunctions, or illegal discharges present.

There are two (2) documented OLDS malfunctions in within Goodville since the 2002 537 Plan update, as described in the letter from East Earl Township within **Attachment 5**. Both properties, 1611 Main St and 113 Spring Grove Road, were able to construct new sand mounds under a repair permits to correct these issues.

Due to the small lot sizes and the lack of a public water system, there is insufficient room for the placement of replacement on-lot systems on many of these lots. The surrounding soils are marginal and the geology poses potential disposal problems. In January 2012 three water samples were taken from 129, 135, and 155 Springville Road to preliminarily determine the nitrate levels within the local groundwater. These three are properties that are located gradient of the only farmland that could potentially be used to site and on-lot disposal system (the Rieff Farm). The nitrate results from the lab were 2.14, 0.79, and 14.76 mg/L respectively. Therefore, the prospect of permitting and constructing a community-type on-lot system is highly unlikely without use of advanced sewage treatment prior to discharge.

A follow-up property survey for this update included nine (9) surveys, which are included within **Attachment 4**. Results from the survey did not provide any new pertinent information on the condition of existing OLDS or shed any light on whether additional malfunctions have arisen with these properties since the 2002 537 Plan update. A majority of the residents surveyed turned out to be renters and owners that knew very little about their existing on-lot water and sewer systems. One property surveyed, 1582 Main St, utilizes a holding tank for sewage disposal that was installed in 1999 that is pumped out once per month. Another property, a farm located at 129 Spring Grove Rd utilizes a privy for sewage disposal. Six out of the nine residents surveyed said they have their septic or holding tanks pumped out on a regular basis.

V. PLANNING AND FACILITIES ALTERNATIVES

Collection and Conveyance

The 2002 Update Revision concluded that due to topography and the size of the Village that the use of a low pressure sewer collection and conveyance system is the only feasible alternative for sewerage the Village of Goodville. **Map 3** illustrates the topography of the planning area. The fact that State Route 23 running through the center of the village undulates vertically and the majority of the properties tend to slope away from State Route 23 does not allow efficient use of gravity sewers. In addition the shallow rock structure and limitations on the placement of manholes on adjacent agriculturally preserved lands present problems with alternative sewer routing.

Low pressure sewers are already in extensive use by the East Earl Township Authority. A low pressure sewer system uses smaller diameter PVC lines that can be laid along the ground contours to avoid deeper depths of burial required for gravity sewers. Grinder pumps at individual properties are used to collect wastewater and pump it through the lines to a point of treatment or to a transfer pumping station. Since there have been no significant changes to the planning area and topography and geology have not changed, the conclusion that the use of low pressure sewer is the most feasible method of collection and conveyance is still valid.

The estimated cost of the low pressure sewer system including rights of way/land was estimated in 2002 at \$1,214,500. Construction costs in the 11 years since 2002 have increased by 45% as measured by the Engineering News Record construction cost index (Major Cities 1913=100) 2002 Average index of 6538/June 2013 index of 9542. The updated collection and conveyance cost based on the 2002 preliminary design is \$2,236,200 including a 10% contingency and 25% for project related design, legal, administrative and construction management costs.

As affordability has been a significant factor in implementation of a wastewater management alternative for Goodville an alternative low pressure sewer layout was evaluated utilizing a duplex grinder pump installation to serve up to 4 individual properties as opposed to individual grinder pump stations for each property. The intent is to reduce the number of pumping units by up to half as a cost savings. Duplex pumps, coupled with an offline 500 gallon septic tank to provide wastewater storage during power outages or pump failure and a networked alarm monitoring system would provide enhanced reliability needed for pump facilities serving more than one property.

The duplex pumps would be located on a leased property easement which would be convenient for the extension of gravity laterals from each of up to four adjoining properties. An additional annual cost of \$100/site is assumed for lease payments to property owners who would agree to allow the community grinder pump stations on their property. Pumps and pressure lines would utilize rear property lines easements where possible to make connection from existing sewer laterals going to septic tanks in the rear of the property. It is assumed due to access constraints that a portion of the pressure sewer lines would be bored.

A conceptual layout of the shared grinder pump alternative is shown on **Map 12A**. The collection and conveyance cost is \$2,280,000 including a 10% contingency and 25% for project related design, legal, administrative and construction management costs. This pumping alternative appears to require a minimum of 30 duplex grinder pump systems to be able to collect and convey Goodville's sewer, opposed to the 88 stations if each individual property were to receive its own station. This equates to 66% less pumps that the Authority would have to maintain if duplex pump systems are still required for individually owned pump systems, or 32% less pumps if simplex pump systems are allowed for individually owned pump systems.

East Earl Township Authority has been considering requiring individual property owners to take on ownership and maintenance of new pump systems that are installed within the Municipality. If individual properties are responsible for ownership and operation of their own grinder pump systems, then operational and maintenance costs to the Authority are dramatically lowered due them not having to pay electric or maintain the pumps and controls. If this occurs, then a simplex pump station at each property is the cheapest alternative for collection and conveyance.

Wastewater Treatment Alternatives

The 2002 Update Revision evaluated the following Waste Water Treatment Plant (WWTP) alternatives:

1. Construction of an extended aeration WWTP with stream discharge.
2. Construction of an extended aeration WWTP with spray irrigation discharge.
3. Construction of an extended aeration WWTP with drip irrigation discharge.
4. Construction of a community OLDS.
5. Connection into the existing sanitary sewer system in Blue Ball.
6. Joint Treatment Facilities with Terre Hill Borough
7. Joint Treatment Facilities with Caernarvon Township
8. Construction of a lagoon system with stream discharge.

Construction of a WWTP with a Stream Discharge.

This alternative was originally selected as the recommended alternative in the 2002 Update Revision. It involved the construction of a conventional type extended aeration WWTP. The effluent would be discharged to the tributary of Cedar Run. The estimated original cost of this alternative was \$798,700 in 2002. Since 2002, new requirements for reduction of nitrogen and phosphorus have been required as a result of establishment of Total Maximum Daily Load (TMDL) limits in the drainage basin of the Chesapeake Bay. New treatment facilities must have a no net increase in nitrogen and phosphorus loads. In addition to more stringent effluent limits on Total Nitrogen (10 mg/l vs. no limitation) and Phosphorus (0.5 mg/l vs. 2 mg/l), the remaining nitrogen loads (1,065 pounds per year) and phosphorus (53.3 pounds per year) in the effluent discharge must be offset by the implementation of Best Management Practices that reduce nutrient loads to the stream (examples include the establishment of stream side buffers or agricultural credits from improved practices such as cover crops) or the purchase of nutrient trading credits. Discussions with DEP's office of planning indicate that the current annual cost of nutrient credits average around \$9.00/lb of Nitrogen and \$6.00/lb of Phosphorus. Purchasing nutrient credits is the only alternative that is explored for stream discharges within this analysis due to it being difficult to determine the cost to install Best Management Practices (BMP's) and to determine the amount of credits DEP will allow to be taken for each BMP. As a result of these regulatory changes the previous cost estimates for this alternative must be reevaluated.

The original recommended WWTP site was selected from a review of 30 different sites. The WWTP was to be located at the rear of a lot on 1604 Main Street located on the south side of Route 23. The location would make use of an existing storm water discharge pipe to reach a tributary of Cedar Creek. The discharge site is located on a preserved farm. Plan approval was granted on the basis that the stormwater pipe is on a utility easement that predated the agricultural preservation.

Subsequent to the plan approval there was an issue with the application of the National Pollutant Discharge Elimination System (NPDES) permit on allowing the discharge at the proposed outfall of the storm water pipe due to the proposed point of discharge being located within an organic farm. Neither the organic farmer nor DEP could determine if this discharge would invalidate the organic farm's certification. As this answer was being investigated, East Earl Township was notified that they were not going to be awarded any grant monies for the proposed sewer upgrades in Goodville. Consequently, without the grant monies the project became too unaffordable for the residents and the municipality to undertake.

During a meeting with East Earl Township and DEP in July of 2010, DEP questioned whether a new discharge point could be utilized further downstream from the organic farm property. As a result of a request for new preliminary effluent limits under the Chesapeake Bay TMDL, the Department of Environmental Protection identified a new Point of First Use 1,100 feet further downstream from the proposed discharge on the preserved organic farm, which is located on a preserved non-organic farm. This discharge point negates the use of the existing storm water pipe and would require a new easement for 1,860 foot outfall pipe across two protected farms.

To avoid the objections associated with impacts to agriculturally preserved farmland alternative WWTP sites are proposed as follows and are illustrated within **Map 5**:

- A. **Site ID 1:** A proposed WWTP along Route 23 on the southwest side of the intersection with Route 23 and Fetterville Road. The outfall line from this site would be able to follow the State Highway shoulder right of way and discharge a distance of 1,000 feet from the WWTP at the Cedar Creek crossing of Route 23, which has been labeled **Point of Discharge A**.

TABLE 3A
WWTP Alternative A Estimated Capital Costs

	Cost
Wastewater Treatment Facility	\$ 955,500
Effluent Outfall	\$ 60,000
Lower Pressure Main to WWTP	\$ 44,000
Land Acquisition	\$ 40,000
Total Estimated Construction Cost	\$ 1,099,500
Construction Contingency, 10%	\$ 109,950
Project Related Costs, 25%	\$ 274, 875
Total Estimated Capital Costs	\$ 1,484,325

- B. **Site ID 2:** A proposed WWTP along Route 23 (about 800 feet west of WWTP Alternate A) on the southeast side of the intersection of Route 23 and the Farm access drive near Cedar Creek. The outfall line from this site would be able to follow the State Highway shoulder right of way and discharge a distance of 200 feet from the WWTP at the Cedar Creek crossing of Route 23, which has been labeled **Point of Discharge A**. **Map 6** shows the FEMA delineated floodplain for this area. The proposed WWTP will be located outside of the delineated floodplain.

TABLE 3B
WWTP Alternative B Estimated Capital Costs

	Costs
Wastewater Treatment Facility	\$ 955,500
Effluent Outfall	\$ 10,500
Lower Pressure Main to WWTP	\$ 93,500
Land Acquisition	\$ 40,000
Total Estimated Construction Cost	\$ 1,099,500
Construction Contingency, 10%	\$ 109,950
Project Related Costs, 25%	\$ 274, 875
Total Estimated Capital Costs	\$ 1,484,325

C. Site ID **3**: proposed WWTP at the northwest corner of the Conestoga Wood Specialties (CWS) property located at 245 Reading Rd, East Earl, PA, which is located 12,150 feet from the western growth boundary of Goodville, see **Map 10**. An existing 19,000 gpd WWTP (built in the early 1990's) with direct discharge to the Conestoga River is currently located in this area of the property, which solely serves the Conestoga Wood Specialties uses. The outfall line from this site would be able to follow farmland and discharge a distance of 200 feet from the WWTP to the Conestoga River which has been labeled **Point of Discharge B**. **Map 11** shows the FEMA delineated floodplain for this area. The proposed WWTP will be located outside of the delineated floodplain.

TABLE 3C
WWTP Alternative C Estimated Capital Costs

	Costs
Wastewater Treatment Facility	\$ 955,500
Effluent Outfall	\$ 10,500
Lower Pressure Main to Pump Sta.	\$ 93,500
Pump Sta. and Force Main to CWS	\$ 1,035,300
WWTP & PS Land Acquisition	\$ 50,000
Total Estimated Construction Cost	\$ 2,144,800
Construction Contingency, 10%	\$ 214,480
Project Related Costs, 25%	\$ 536,200
Total Estimated Capital Costs	\$ 2,895,480

Due to the high capital and O&M costs for Goodville/East Earl Township Sewer Authority to utilize this option with no cost sharing with Terre Hill, this alternative is also not further considered within this analysis.

Construction of an WWTP with Spray Irrigation Discharge

This alternative included a conventional extended aeration WWTP. However, the effluent would be discharged on land through the use of a spray irrigation system. Because a stream discharge is avoided, more stringent effluent limits would not apply. However, the concerns expressed in the 2002 update still present significant limitations and costs.

- A. The topography and underlying geology of the area present physical features such as limestone rock pinnacles and sinkholes. Topography land slopes generally need to be less than 12% for spray irrigation on a grass crop land to avoid channeling of effluent and runoff. Limestone formations are listed as items that must be isolated when designing and laying out a spray irrigation field. This would necessitate the use of buffer and isolation areas and the need for a larger land area for placement of the spray field than the minimal calculated spray irrigation area.
- B. There would need to be substantial storage facilities off site for effluent which would need to be held during periods when the ground surface is frozen or not suitable for spray irrigation. This storage facility would need to hold a minimum of approximately 120 days worth of capacity.
- C. There would be constant grounds keeping (mowing, undergrowth removal, etc.) required for the spray field. Wastewater spray irrigation is not suitable for growing agricultural products intended for human consumption.
- D. The cost of obtaining additional land for the spray field. Farmland is estimated to currently cost \$20,000/ acre.
- E. There is a limited availability of unpreserved farmland in the vicinity of Goodville. Further extensions of force mains to reach a suitable site increase capital and operational costs for pumping longer distances.

Evaluation of spray irrigation is based on the use of center pivot irrigation. Center pivot systems can function on slopes up to 15% This type of irrigation is considered the most economical method of application and is widely used by agriculture for irrigation. Center pivot while slightly more land intensive due to the circular layout, is less a less costly installation and involves lower operation and maintenance costs over buried pipe and spray nozzle or reel systems that involve a moving hose reel and spray nozzle.

Based on a moderate 1.5 inch/week application rate, an estimated minimum of 6 acres is needed for actual application. Two center pivots for redundancy are used. A single span center pivot with a radius of 236 feet is needed. Total minimum acreage including a buffer area is estimated at 28 acres. **Map 8** shows a potential spray irrigation layout for this proposed design alternative. An additional 4 to 5 acres would be needed for a earthen lined lagoon to store an estimated 4.2 million gallons of effluent during periods when spray application is not permitted during periods of inactive vegetation, frozen ground and rain events.

Additional land area for a treatment and pumping facilities must also be considered as well as residual lands that would be purchased to acquire the farmland as it is impractical to assume that property lines will exactly conform to the outline of the facility. A potential area for application was located on farmland north of Valley View Drive between Spring Grove and Brendle Roads. It is our understanding the two properties are not under an agricultural easement at this time. Total acreage to accommodate the proposed system would be 35 acres.

TABLE 4
Spray Irrigation Alternative Estimated Capital Costs

	Costs
Wastewater Treatment Facility	\$ 900,000
Transfer Pump Station	\$ 100,000
Force Main	\$ 119,000
Storage Lagoon	\$ 335,000
Spray Irrigation Pumping Facilities	\$ 75,000
Spray Irrigation System	\$ 75,000
Land Acquisition	\$ 700,000
Total Estimated Construction Cost	\$ 2,304,000
Construction Contingency, 10%	\$ 230,400
Project Related Costs, 25%	\$ 576,000
Total Estimated Capital Costs	\$ 3,110,400

The updated estimated cost of this alternative is \$3,110,400. Any unsuitable land in the spray field would require additional land and additional cost).

Construction of an WWTP with Drip Irrigation Discharge

This alternative involves the use of a drip irrigation system to discharge the effluent from the WWTP. The additional aspects to be considered for Goodville for this alternative are as follows:

- A. Similar topography issues as mentioned above for spray irrigation.

- B. Additional cost to the construction of the WWTP due to the need for filtration prior to the drip irrigation system.
- C. The cost of acquisition of additional land for construction of the drip field.

The advantage of drip irrigation allows more precise application of effluent at the soil surface avoiding problems with mist drift associated with spray irrigation. Drip irrigation piping can also be laid to fit to the boundaries of the field area to make more effective use of land.

Drip irrigation systems are more capital and operationally intensive due to the filtration required to reduce line clogging and installation of the piping and drip tubing which much take into account pressure changes due to topography as well as the ability to drain the lines. Application rates are also generally fixed as part of the design limiting flexibility for different crop water uptake rates.

Based on a design loading of 3,000 gpd/acre, the estimated land area need is 15 acres. A preliminary evaluation by the system manufacturer estimated a total of 24 drip zones and 254,000 feet of drip tubing. The analysis will also utilize the same site as the spray irrigation alternative.

TABLE 5
Drip Irrigation Alternative Estimated Capital Costs

	Costs
Wastewater Treatment Facility	\$ 750,000
Transfer Pump Station	\$ 100,000
Forcemain	\$ 119,000
Drip Irrigation Pumping Facilities	\$ 45,000
Drip Irrigation System	\$ 374,000
Land Acquisition	\$ 300,000
Total Estimated Construction Cost	\$ 1,688,000
Construction Contingency, 10%	\$ 168,800
Project Related Costs, 25%	\$ 422,000
Total Estimated Capital Costs	\$ 2,278,800

The updated estimated cost for this alternative is \$3,986,800 assuming suitable acreage in the vicinity of the plant could be set aside for the drip irrigation field).

Construction of a Community OLDS

This alternative used a community OLDS to dispose of the WWTP effluent. The additional aspects to be considered with the construction of a community based OLDS would include:

- A. Given the soils in the area, numerous elevated sand mounds would need to be employed. This would require the use of a substantial dedicated land area. The size of such a system would be determined by the soils investigation and testing (deep soil probes and percolation testing).
- B. There would be an ongoing need for grounds keeping to keep any underbrush from growing on the mounds.

Due to the need for testing of the soils, the size and number of elevated sand mounds is unknown. For the purpose of the 2002 update analysis, a cost was based on an optimistic average percolation rate and a soil depth of 24" and the ensuing requirement for system size as required by DEP regulations regarding sizing and construction of OLDS. These systems are not permitted in areas with rock outcrops, shallow pinnacles, sinkholes, or closed depressions. A projected twenty separate 50' by 100' elevated sand mound systems would be required (with isolation and maintenance spacing). Additional replacement area would also need to be set aside. A total of 8 acres is assumed to be needed for this alternative. **Map 7** shows a potential sand mound system layout for this proposed design alternative.

TABLE 6
Community OLDS Alternative Estimated Capital Costs

	Costs
Treatment Facilities	\$ 955,000
Pumping Facilities	\$ 100,000
Forcemain	\$ 119,000
Sand Mound System(s)	\$ 500,000
Land Acquisition	\$ 160,000
Total Estimated Construction Cost	\$ 1,834,000
Construction Contingency, 10%	\$ 183,400
Project Related Costs, 25%	\$ 458,500
Total Estimated Capital Costs	\$ 2,475,900

The updated cost of this alternative is estimated to be \$2,278,800 assuming suitable acreage in the vicinity of the plant could be set aside for the absorption field.

Connection into the Existing Sanitary Sewer System in Blue Ball

Inquiries into available capacity in the Blue Ball system for Goodville indicate that there is presently 110,000 to 115,000 gpd of unallocated capacity that is available on a first come first serve basis. This is primarily due to reduced development demand during the recession. There remains the cost issues with conveyance of Goodville flows to the nearest connection point in Blue Ball (1.7 miles west of Goodville at the intersection of S.R. 23 and Ewell Road) which was originally estimated at \$2,200,000. In addition to the 1.7 mile conveyance line extension, it appears that the existing Blue Ball conveyance system may require substantial upgrades in line size to accommodate the additional flow this alternative would convey to Blue Ball. Due to the high capital costs and known potential for additional costs to upgrade the Blue Ball system, this alternative is not further considered.

The current tapping fees of \$10,327/EDU would be assessed for each connection on top of the proposed capital improvements.

The other option for extending the East Earl Township Sewer Authority system to Goodville would be via Fetterville Road and S.R. 322 to Sheep Hill Road, See **Map 9**. This 2.4 mile route would avoid any existing conveyance issues that lie within the Blue Ball.

TABLE 7
East Earl Sewer Extension Alternative Estimated Capital Costs

	Costs
Pumping Station	\$ 200,000
Forcemain	\$ 1,214,500
Land Acquisition	\$ 10,000
Capital Contribution (Tapping Fees)	\$ 1,240,000
Total Estimated Construction Cost	\$ 2,664,500
Construction Contingency, 10%	\$ 290,450
Project Related Costs, 25%	\$ 666,125
Total Estimated Capital Costs	\$ 3,597,075

Due to the high capital costs, this alternative is also not further considered.

Joint Treatment Facilities with Terre Hill Borough

There is currently about 150,000 gpd of capacity remaining at the existing Terre Hill Borough plant for serving the Village of Goodville. However the existing 300,000 gpd wastewater treatment facility was put into operation in 1963 and it is near the end of its useful service life.

The facility recently received its NPDES permit renewal, however Terre Hill Borough feels they probably only have 5 more years of useful life remaining in this facility and they are starting to look into other alternatives.

Recent preliminary discussions between Terre Hill Borough and East Earl Township have suggested a future interest in construction of a new regional treatment facility to accommodate nearly 100% of both municipalities' current and future public sewage needs. The proposed wastewater treatment facility would be located at the northwest corner of the Conestoga Wood Specialties property located at 245 Reading Rd, East Earl, PA, which is located 2.3 miles from the western growth boundary of Goodville. An existing 19,000 gpd WWTP (built in the early 1990's) with direct discharge to the Conestoga River is currently located in this area of the property, which solely serves the Conestoga Wood Specialties uses. The outfall line from this treatment facility would be able to extend through farmland owned by Conestoga Wood Specialties and discharge directly to the Conestoga River, which is located 200 ft from the proposed treatment facility.

Even though Terre Hill Borough has sufficient land to construct a new treatment facility near their existing one, they feel having a regional facility with East Earl Township will result in lower O&M costs for each municipality and the project will in turn have a lower life cycle cost than any other alternative. Additionally, Terre Hill Borough's treatment facility currently discharges to the Black Creek, which is classified as a high quality stream. It is anticipated that effluent limit for discharges to this stream are going become stricter as time goes by, and required upgrades to treatment facilities discharging to the Black Creek will be more frequent and costly than treatment facilities discharging the Conestoga Creek (a much larger stream, which is classified a warm water fishery).

The scope of study within the Task Activity Report for this consent order only included the Village of Goodville Growth Boundary, and not investigation in to municipal planning for all of East Earl Township and Terre Hill Borough. Consequently, further investigation of this alternative is not possible within the time constraints of the consent order to evaluate treatment costs, existing and future potential connections, and the impact on the overall project affordability to the residents of Goodville, East Earl Township, and Terre Hill Borough.

A pump station and 2.3 mile 4-inch force main from Goodville to the Conestoga Wood Specialties property would need to be constructed along with a cost share contribution toward the wastewater treatment facilities. Or a regional pump station with a 6" or 8" force main could

be constructed west of Goodville along SR 23 that could accommodate flows from the Blue Ball area, as well as Goodville. The potential is that an economy of scale of this project and large increase in rate payers will result in overall lower costs to offset the distance to pump to a new facility. **Map10** illustrates some potential options for sewerage Goodville and Terre Hill.

Joint Treatment Facilities with Caernarvon Township

As part of the 537 Update, representatives from East Earl Township contacted the Board of Supervisors of Caernarvon Township regarding any interest in exploring joint treatment facilities to address the needs of the Village of Goodville and needs in Caernarvon Township. The Township in a letter dated February 20, 2013, indicated they have no plans at this time for a joint treatment facility, see **Attachment 2**. No further evaluation of this alternative is proposed.

Construction of a Lagoon System with Stream Discharge

This alternative originally used an aerated lagoon system to treat the wastewater prior to discharge to a stream. Due to the increase in the required quality of the effluent to meet newer regulatory limits for nutrients, this alternative is no longer considered feasible to treat wastewater to the required quality.

No Action Alternative

This alternative continues to utilize existing individual on-lot disposal systems for wastewater management in the planning area. Individual property owners would be responsible for providing adequate wastewater facilities on their property. This alternative is not considered feasible as all individual property owners will not be capable of funding the facilities necessary to meet water quality requirements. In addition sufficient lot size and suitable soil conditions are not consistently available on every lot to allow a replacement system meeting DEP regulations. As each lot in the planning area relies on a common groundwater source for drinking water, continued use of unsuitable on-lots systems will continue to degrade water quality in the planning area. As a result this alternative is no longer considered.

Present Worth Cost Effectiveness Analysis

Estimating Methodology - Present worth costs for the wastewater treatment and disposal alternatives were developed for alternative comparison purposes. The costs were developed for planning purposes using data from previous construction projects, updating prior cost estimates and utilizing various publications and equipment vendors budget costs. As noted previously the costs of the alternatives developed in the 2002 537 Update Revision have increased by a factor of 45% (9542/6538 based on the Engineering News Record 20 Major

Cities Cost Index. By the same period annual costs as measured by the Consumer Price Index have increased by a factor of 30%.

Detailed design and site investigation will provide more detailed cost information to be used to base financing on prior to actual bids for the construction.

All facilities have been based on the 20 year build out needs of the Planning area. Costs are based on 2013 dollars.

Present Worth Costs - Present Worth is the sum the cost in 2013 dollars of the cost necessary to construct the alternative and provide funds which if invested at an interest rate over a 20 year period would also provide the annual operation and maintenance cost of the alternative. Where facilities have a service life beyond the 20 year planning period, the present worth includes funds that if invested at an interest rate will accrue to the amount of the relative future remaining “salvage” value after 20 years.

A present worth analysis allows a more relative evaluation of alternatives by including the relative value of project cost, annual operating and maintenance costs, and the value of longevity into a single cost.

The following assumptions are used for the present worth analysis:

- The planning period is from 2013 to 2033 over a 20 year period.
- Costs are based on 2013 values (ENR Index of 9542).
- The interest rate used is 7.625%.
- Annual operations and maintenance costs are assumed to remain constant for the planning period and are based on the design flow.
- The salvage value of capital projects depreciates linearly over the expected life of the project. Land value for right of way/easements and land is assumed to remain constant. The depreciation schedule and salvage value factors are as noted below in **Table 8** and follow recommended EPA guidelines for present worth evaluations.

TABLE 8
Year 2033 Salvage Value
(Percent of Initial Construction Costs)

Type of Facility	Expected Life	Salvage Value (% of Initial Cost)
Collection and Conveyance	50 Years	60
Pumping Facilities	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	33.3
Right-of-Ways/Easements	-----	100
Wastewater Treatment Plant	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	25

Alternatives for Present Worth Analysis – The four remaining alternatives initially screened in the previous section are evaluated in the present worth analysis. The cost breakdown for the present worth analysis is presented in **Table 9**. Alternative 1 utilizing a package wastewater treatment facility and stream discharge has the lowest estimated present worth cost at approximately \$2,877,300.

TABLE 9
Present Worth Analysis of Selected Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	WWTP Stream Discharge	WWTP Spray Irrigation	WWTP Drip Irrigation	WWTP Community System
Capital Improvement Costs (1)				
Treatment and Disposal	\$ 955,500	\$ 1,385,000	\$ 1,169,000	\$ 1,455,000
Pumping Facilities	\$ 0	\$ 100,000	\$ 100,000	\$ 100,000
Force Mains and Outfall Piping	\$ 104,000	\$ 119,000	\$ 119,000	\$ 119,000
Land	\$ 40,000	\$ 700,000	\$ 300,000	\$ 160,000
Total Capital Related Costs	\$ 1,099,500	\$ 2,304,000	\$ 1,688,000	\$ 1,834,000
Contingency	\$ 109,950	\$ 230,400	\$ 168,800	\$ 183,400
Project Related Costs	\$ 274,875	\$ 576,000	\$ 422,000	\$ 458,500
Total Capital Costs - Present Worth	\$ 1,484,325	\$ 3,110,400	\$ 2,278,800	\$ 2,475,900
Annual Operations and Maintenance Cost (1)				
Equipment	\$ 45,000	\$ 75,000	\$ 75,000	\$ 60,000
Labor	\$ 40,000	\$ 52,000	\$ 45,000	\$ 45,000
Power	\$ 30,000	\$ 40,000	\$ 35,000	\$ 30,000
Chemicals	\$ 16,000	\$ 12,000	\$ 12,000	\$ 12,000
Nutrient Credit Trading Purchases	\$ 10,000	\$ 0	\$ 0	\$ 0
Solids Handling	\$ 20,000	\$ 16,000	\$ 16,000	\$ 16,000
Total Annual O&M	\$ 161,000	\$ 195,000	\$ 183,000	\$ 163,000
Present Worth of O&M Costs	\$ 1,625,900	\$ 1,969,200	\$ 1,848,000	\$ 1,646,000

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	WWTP Stream Discharge	WWTP Spray Irrigation	WWTP Drip Irrigation	WWTP Community System
Salvage Values				
Salvage Value (2)	\$ 314,875	\$ 1,175,925	\$ 711,935	\$ 520,950
Present Worth of Salvage Values	\$ 78,495	\$ 264,724	\$ 160,302	\$ 144,546
Net Present Worth (3)	\$ 2,930,630	\$ 4,814,876	\$ 3,966,498	\$ 3,977,354

Notes:

- (1) Estimated capital and annual O&M costs in 2013 dollars based on treatment and disposal only as collection and conveyance costs will be similar for all alternatives.
- (2) Salvage Value based on estimated values in the preceding table and 20 year depreciation.
- (3) Present Worth in 2013 dollars and based on a 7.625% interest rate and 20 year time period.

Selected Alternative

After review of the different alternative treatment types and WWTP locations, it is recommended that the construction of the extended aeration WWTP with stream discharge is the chosen alternative. The selected alternative collection, conveyance and treatment system is depicted on **Map 12 (Selected Collection, Conveyance, and Treatment Alternative)**. It is the most cost effective alternative that was able to be assessed by this study in the time that was permitted by DEP within the consent order agreement. It also uses the least amount of land and minimizes the effects on agricultural farmland. The plant would serve Goodville and will eliminate the problem of malfunctioning OLDS and illegal discharges that have plagued the community for years. However, finding a way to make this selected alternative affordable for the residents of Goodville is still the biggest challenge at hand.

The plant would be located along Route 23 near the intersection of Fetterville Road with a discharge to Cedar Creek in the vicinity of the Route 23 crossing.

WWTP and Conveyance System Cost

Cost estimates for the chosen alternative for the proposed plant, including the biological treatment units, the collection and conveyance system, effluent discharge pipe, land acquisition, and all associated project costs and contingencies are as follows:

TABLE 10
Selected Alternative Estimated Capital Costs

Description	Projected Cost
Treatment Plant	\$ 955,500
Low-Pressure Collection and Conveyance System	\$ 1,689,000
Discharge Pipe	\$ 104,000
Land/Right-of-Ways	\$ 40,000
Total Construction Costs	\$ 2,788,500
Construction Contingency, 10%	\$ 278,850
Project Related Costs, 25% (Legal, Design, Construction Management)	\$ 697,125
Total Projected Cost	\$ 3,764,475

PennVest Loan rates assumed to be applicable to financing the project at this time as provided by PennVest for planning purposes are 1.724% for the first 5 years and 2.169% for years 6 to 20. Initial user fees to finance the total project cost and cover annual operating and maintenance costs are calculated at \$1,915/EDU/year based on 120 EDU's.

The estimated user fee range for this project would be \$478.67 per quarter for the project debt service plus operation and maintenance costs, which are estimated to add an additional \$175/EDU per quarter. This would make the project unaffordable for the residents of Goodville to totally finance construction and operate the treatment plant and conveyance system without substantial support from grant funding, loan forgiveness or other sources of revenue from the Township or Sewer Authority.

For example there are estimated to be 1,400 EDU's in the EESA system with projected quarterly rates of \$175. With the addition of the 120 EDU's from Goodville the resulting cost /EDU/quarter would need to increase by an estimated \$151/year or \$38/quarter to a total of \$213/ quarter for all EESA customers support the construction and operation of the Goodville wastewater management facilities. However, finalized cost per EDU can only be assessed once the financing is secured for the selected alternative, which will occur just prior to bidding.

Biosolids Management

The Township will contract with a local, licensed biosolids hauler to dispose of the biosolids generated at the WWTP at an approved site.

VI. INSTITUTIONAL EVALUATION AND RECOMMENDED ALTERNATIVES

The East Earl Sewer Authority is responsible for the operation and maintenance of public sewage facilities Blue Ball and the surrounding area and will be responsible for the project in Goodville. The Township's SEQ is responsible for the implementation of PA DEP regulations governing the siting and operation of OLDS which would be required if additional development occurs outside the Goodville VGB. It is the Township's opinion that these institutional management agencies and individuals are sufficient to administer any of the alternatives evaluated in Section V. The Township and the Authority recognize; however, that additional staff may be necessary for proper maintenance of additional public sewer facilities.

The cost of administration, operation, and maintenance of the project will be the basis for and funded through the user rates. The staff of the Authority under the current operations will handle billing.

East Earl Township is a township of the second class existing under the applicable laws of the Commonwealth of Pennsylvania. The administrative and legal activity which must be undertaken by East Earl Township to implement the elements of this Update Revision is that the East Earl Sewer Authority will remain the primary managing institution and will evaluate the need for additional staff to properly operate the Goodville collection, conveyance, and treatment facility.

Selected Treatment and Institutional Alternative

The selected plan is to construct and operate an East Earl Sewer Authority sewage treatment plant to address the on-lot malfunctions in Goodville. The opinion of probable construction cost is \$2,788,500 and the estimated contingency and associated project cost is \$278,850 and \$697,125 respectively. The complete mechanism for funding the treatment plant has not been finalized and cannot be finalized until a PENNVEST application process is completed. The PENNVEST application cannot be completed until this Act 537 Update Revision is approved.

Existing and Future Development Areas Served by OLDS

The OLDS Management Program is applicable for any Goodville property outside the VGB that is not proposed to be served by the sanitary sewer system. This program encourages homeowners to have their systems pumped out every three years and is designed to perpetuate the use of OLDS as well as protect the groundwater resources.

VII. REVIEW OF CONSISTENCY REQUIREMENTS

Title 25, Chapter 71.21 (a) (5) of the Pennsylvania Code requires that each alternative which is available to provide for new or improved sewage facilities for each area of need be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, plans developed under the Federal Water Quality Act, antidegradation requirements, Pennsylvania's prime agriculture land policy, plans adopted by the County and approved the PA DEP under the Storm Water Management Act, wetland protection, protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory, and the Historical and Museum Commission. The viable alternatives identified to serve the sewage planning needs of Goodville involve construction of a WWTP and a low-pressure collection and conveyance sewer system in Goodville. These alternatives are similar in nature; therefore, an overall consistency determination was deemed satisfactory. The consistency determination is as follows:

Comprehensive Planning

The construction of an East Earl Township sewage treatment plant to provide sewer service for the industrial, commercial, and residential areas in Goodville is consistent with the Elanco Region Comprehensive Plan (2008). The Plan is also consistent with Balance, the Lancaster County Growth Management Plan (2006).

Federal Water Quality Act

The Federal Water Quality Act of 1987 establishes specific planning requirements for wastewater facilities planning. These requirements only apply to municipalities intending to apply for financial assistance from the Federal government for the construction of sewerage facilities. Consideration of applications for financial assistance from these municipalities depends on compliance with these planning requirements. Several of these planning requirements are beyond the scope of the plan content requirements for sewage facilities planning under Act 537.

A significant provision of the Federal Water Quality Act of 1987 provides for the capitalization of state revolving fund programs in the states. This fund is a separate component of the PENNVEST program in Pennsylvania. Counties that propose to implement their official sewage plan updates with these funds must meet several specific planning requirements in order to be eligible to receive funding. While many of these requirements may be met through the normal plan content of the Act 537 planning process, several are outside the scope of Act 537.

The combination of this Act 537 and the parallel application process underway for application to PENNVEST will satisfy these requirements.

Antidegradation Requirements Contained in Chapters 93, 95, and 102

As part of the on-going communications with DEP, the Department was contacted to determine the projected effluent limitations that would be contained in an NPDES permit for a new treatment plant discharging to an unnamed tributary to the Cedar Run. New construction of treatment facilities is consistent with the policies of anti-degradation.

Pennsylvania's Prime Agricultural Land Policy

The proposed WWTP site, as well as the collection and conveyance lines, was designed to be located outside of all designated Ag Preserved and Ag Security Land. Consequently, this proposed project should have no impact on Prime Agricultural Land.

Wetland Protection Under Chapter 105

After review of both the 1998 Act 537 Amendment and the 1994 Act 537 Update, there are no wetlands on the proposed plant site or in the area of any of the collection and conveyance system. Therefore, the proposed new plant construction is consistent with Wetlands Protection.

Protection of Plant and Animal Species of Concern

(As Designated by the Department of Environmental Resources, Bureau of Forestry, Pennsylvania Game Commission, Pennsylvania Fish Commission, and/or Contained in the Pennsylvania Natural Diversity Inventory (PNDI).) A PNDI search was completed for the proposed plant site. A hit for Bog Turtles potentially being near the site came up on the search. Vortex Environmental

Pennsylvania Historical and Museum Commission Site Assessment

Pennsylvania Historical and Museum Commission (PHMC) regulations state that if a project is being funded by either State or Federal funds and/or requires a PA DEP permit, a Historical Commission Site Assessment form must be completed.

VIII. SEWAGE FACILITIES PROGRAM IMPLEMENTATION AND SCHEDULE

East Earl Township proposes to begin implementation of this Plan upon approval by PA DEP. The major aspects of the Plan and their preliminary milestone dates are as follows based on a DEP approval date of December 15, 2013:

Item	Date
Submit NPDES Part I Permit Application	1/10/14
Initiate Design WWTP and Collection and Conveyance System	1/10/14
Grinder Pump and Lateral Locations Verification Mailing	2/1/14
Prepare Right-of-Way Plats	3/1/14
Submit Highway Occupancy Permit	5/1/14
Prepare Erosion and Sedimentation Plan	6/1/14
Initiate Subdivision and Land Development Plans	6/1/14
Submit Part II Water Quality Management Permit Application	7/1/14
Complete Design	9/1/14
Main Line and Right-of-Ways Finalized	9/15/14
Submit PENNVEST Application	10/1/14
Prepare Bid Plans and Specifications	2/1/15
Advertise Bids	3/10/15
Receive Bids	4/30/15
Issue Notice to Award	6/15/15
Award Contract and Issue Notice to Proceed	6/9/15
Receive Part II Permit and PENNDOT Permit	6/30/15
Begin Construction	7/1/15
Contract Substantial Completion	5/1/16
Final Restoration/Contract Complete	7/1/16

IX. PUBLIC PARTICIPATION

To date, there have been several public meetings during development of the 1998 537 Plan and the 2002 Update Revision regarding the prospect of sanitary sewer service for Goodville. As part of the 2013 Update Revision, residents were notified by informational letter of the Townships intent to perform a reevaluation of sewer service for Goodville.

As part of the required public participation in adoption of this Update Revision the following public meetings were scheduled:

- Advertised Public Comment Period from July 10th through August 9th, 2013
- Lancaster County Planning Commission Meeting: July 22, 2013
- East Earl Township Planning Commission Meeting: August 6, 2013
- East Earl Township Supervisors Workshop: August 8, 2013
- East Earl Sewer Authority Meeting: August 12, 2013
- East Earl Township Supervisors Meeting: August 13, 2013

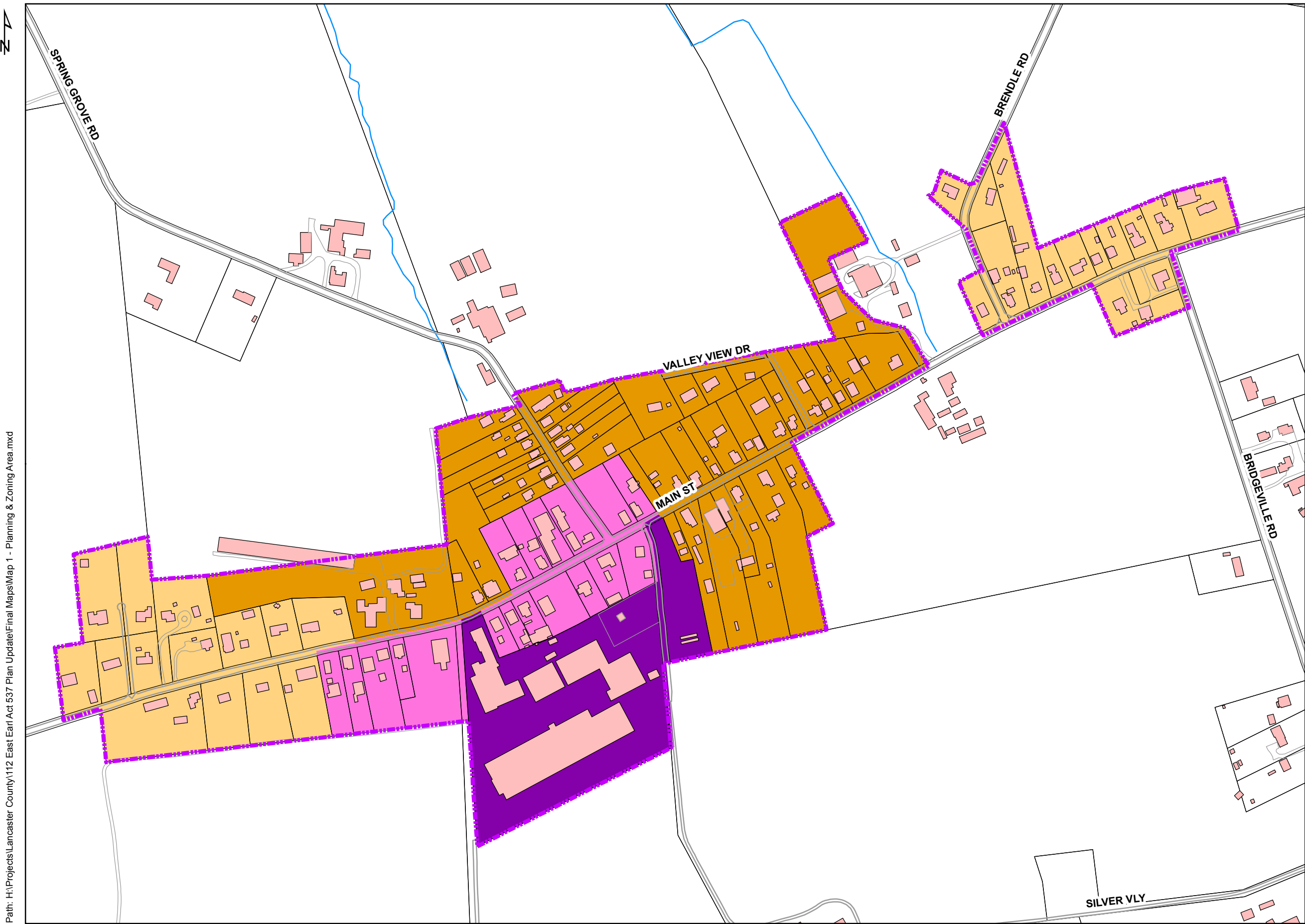
No public written comments were received from the residents of Goodville during the 30 day public comment period. The only public comments that were received other than those from the East Earl Township and Lancaster County Planning Commissions (**Attachments 7 & 8** respectively), were from State Representative Gordon Denlinger, the East Earl Sewer Authority,

the East Earl Township Supervisors, and Terre Hill Borough. The comments from these entities, as well as the East Earl Township Planning Commission, were similar in content; requesting DEP to allow East Earl Township to have more time for the Joint Authority alternative with Terre Hill Borough to be fully vetted.

Comments received from the Lancaster County Planning Commission, dated July 23, 2013, were utilized to make modifications to the Study as requested.

Attachment 10 presents all written comments that were received during the public comment period.

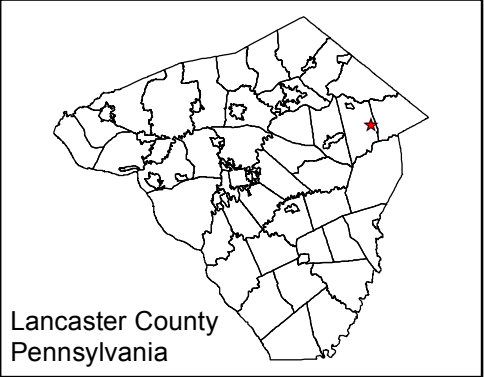
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 1
Planning Area & Zoning
Map
June 2013**

Project Location Map



Map Legend

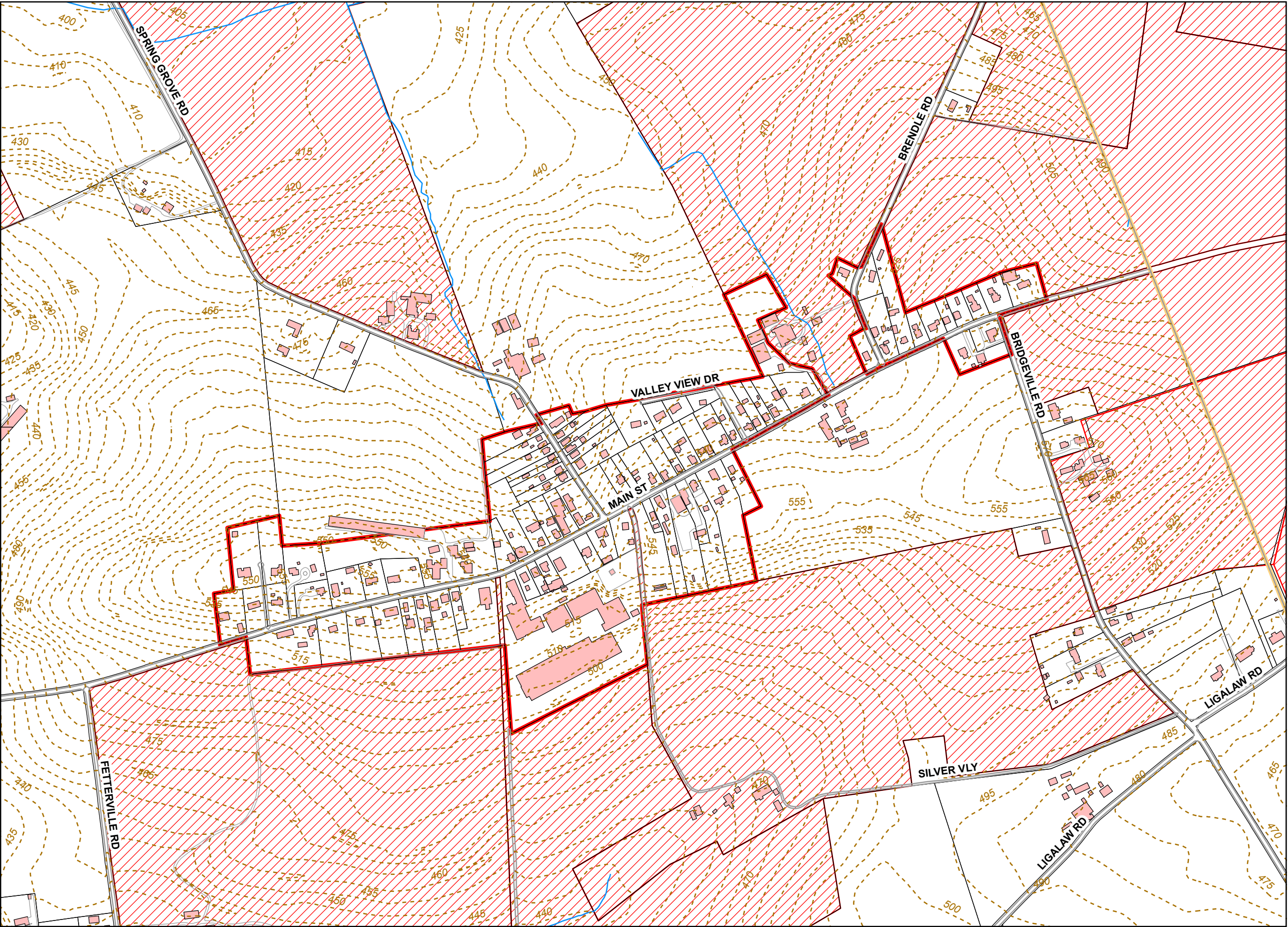
- Goodville Village Growth Area
- Buildings
- Streams
- Parcels
- Zoning**
 - CN - COMMERCIAL NEIGHBORHOOD
 - IL - INDUSTRIAL LIGHT
 - RL - RESIDENTIAL LOW DENSITY
 - RM - RESIDENTIAL MEDIUM DENSITY

1 inch = 350 feet

0 175 350 700 1,050 Feet



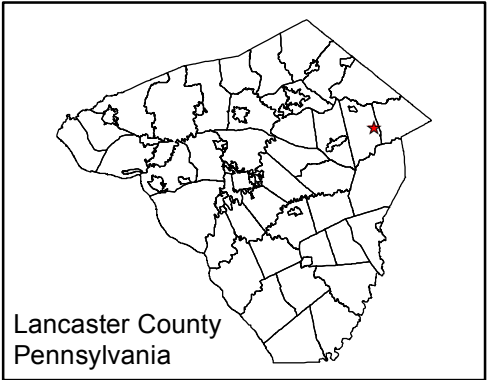
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 2
Agricultural Security
Areas Map
June 2013**

Project Location Map



Map Legend

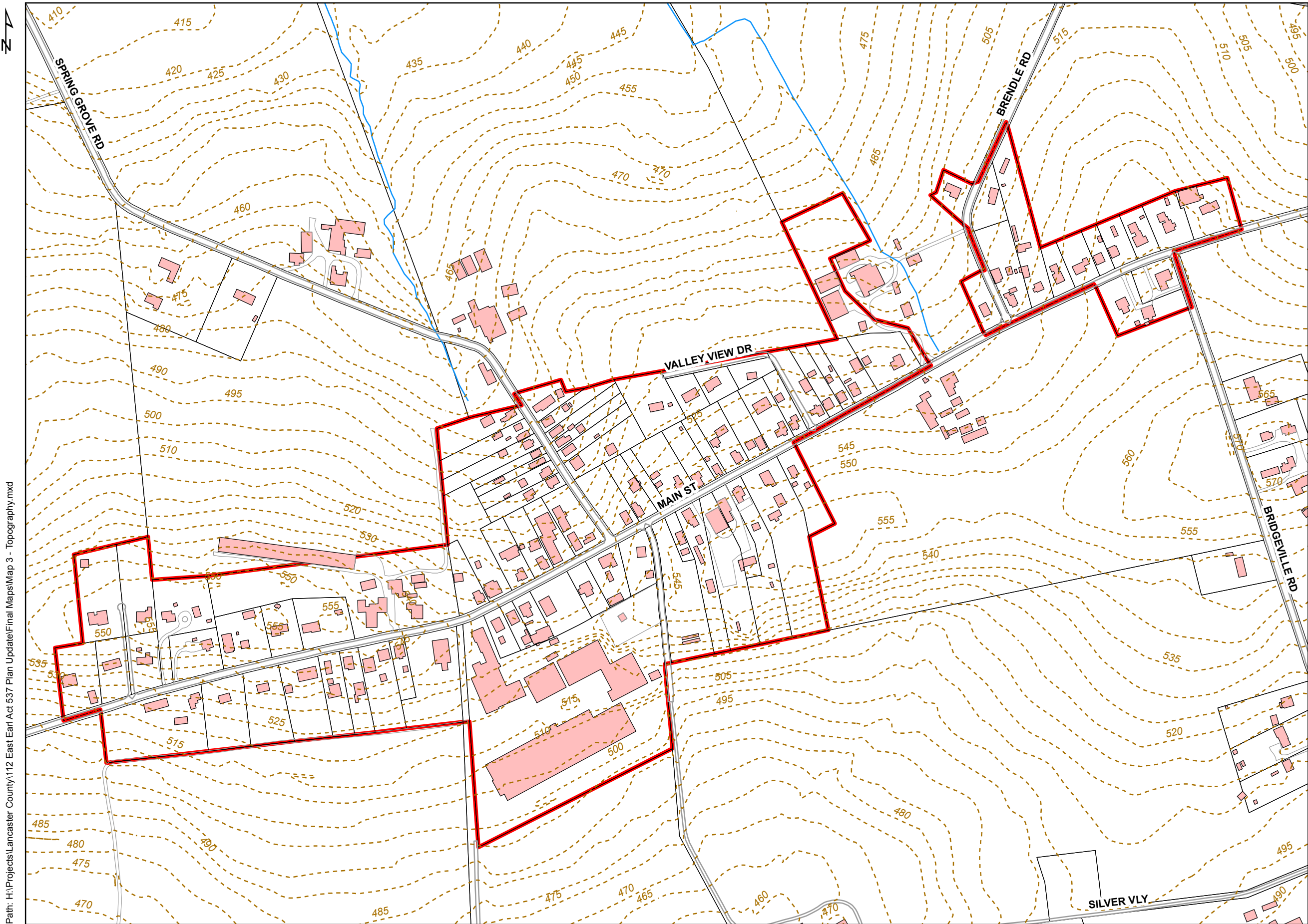
- Municipal Boundaries
- Goodville Village Growth Area
- Ag Security
- Buildings
- Streams
- Contours

1 inch = 500 feet

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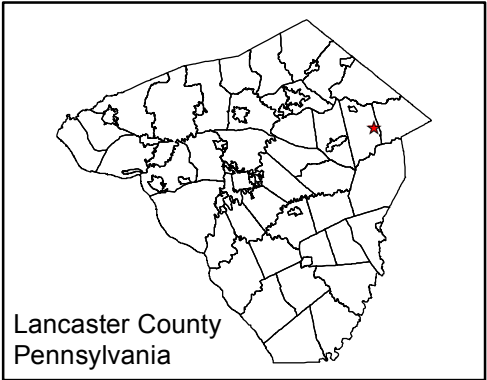
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 3
Topographic Map
June 2013**

Project Location Map



Map Legend

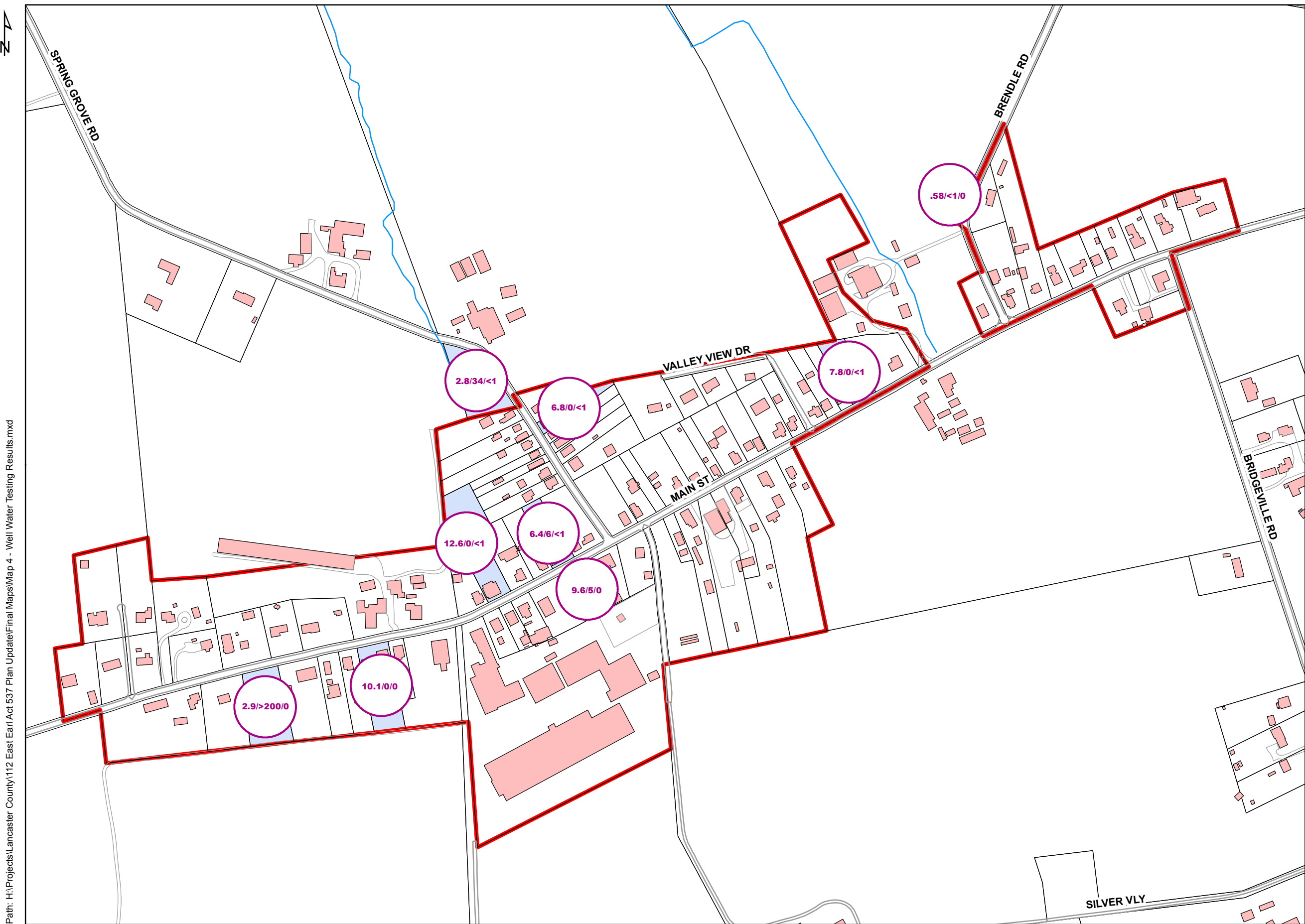
- Goodville Village Growth Area
- Buildings
- Streams
- Contours

1 inch = 350 feet

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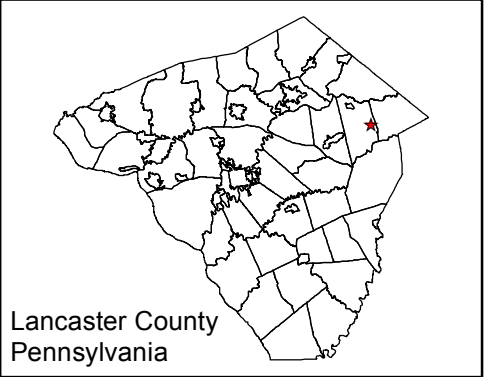
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East Earl Township
Act 537 Plan Update

Goodville Sewer System
Map 4
Well Water Testing
Results Map
June 2013

Project Location Map



Map Legend

- Properties Sampled
- Goodville Village Growth Area
- Buildings
- Streams

Nitrates/Total Coliform/Fecal Coliform



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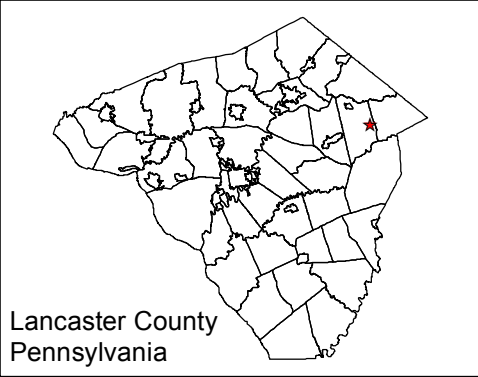
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East Earl Township
Act 537 Plan Update

Goodville Sewer System
Map 5
WWTP Location
Alternatives
June 2013

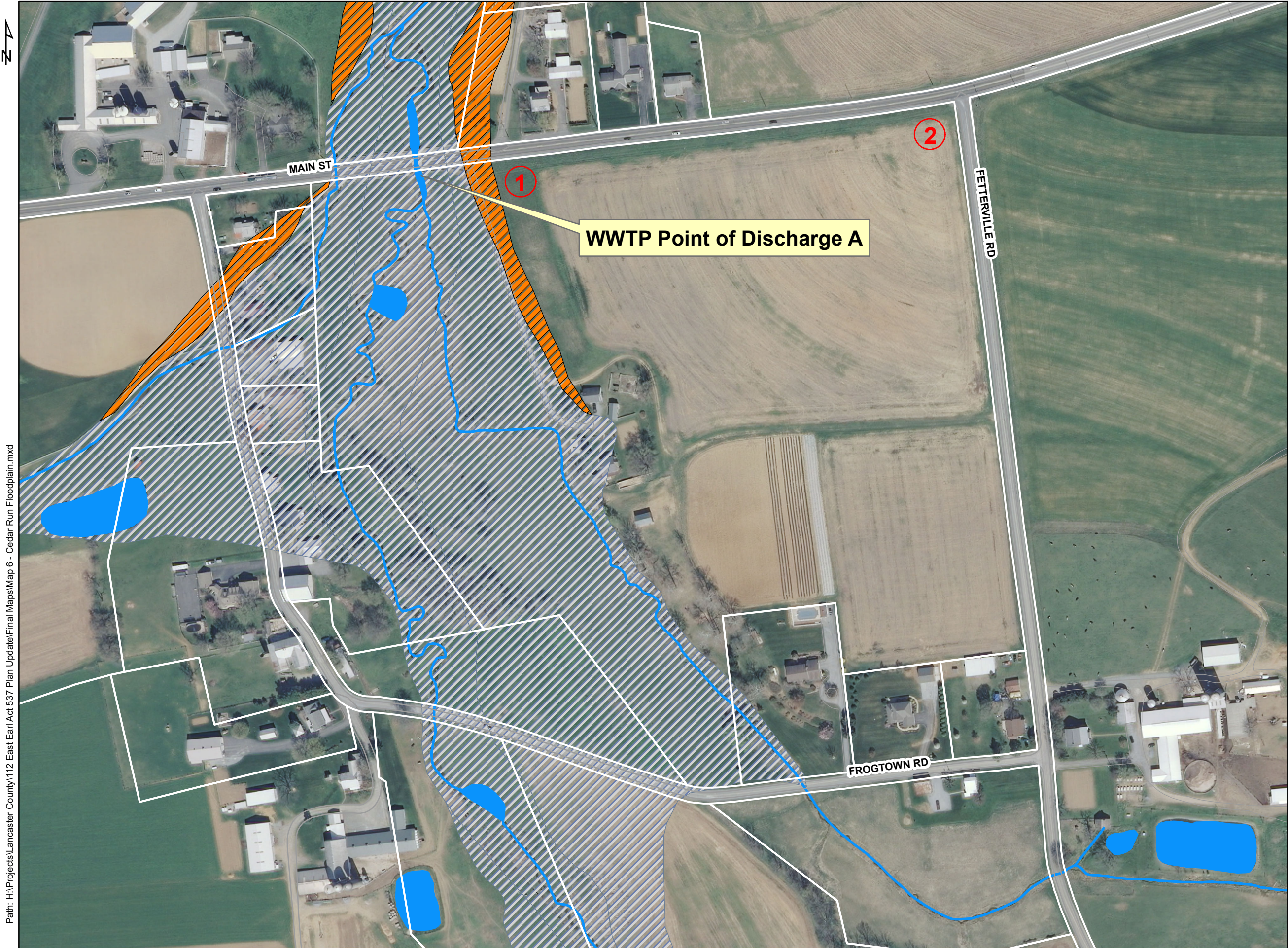
Project Location Map



- Legend**
- Municipal Boundaries
 - Goodville Village Growth Area



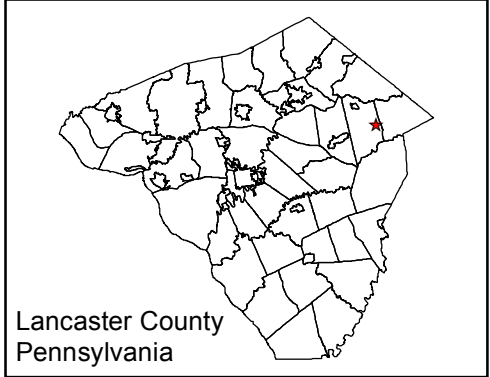
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 6
Cedar Creek Floodplain
At WWTP Alternative 1 &
2 Mapping
June 2013**

Project Location Map

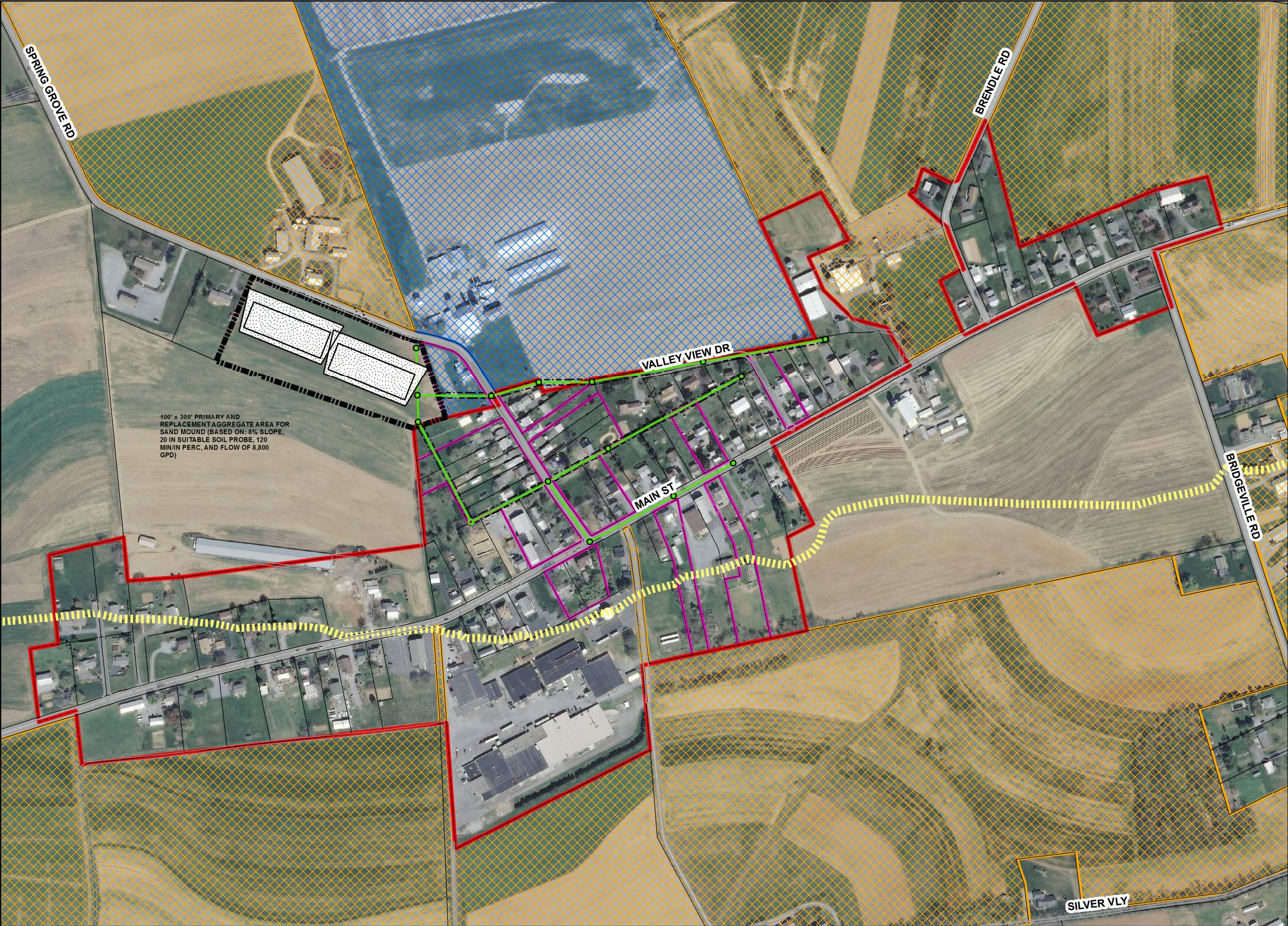


Legend

- Floodplain**
- .2 PCT Annual Chance
 - Zone AE



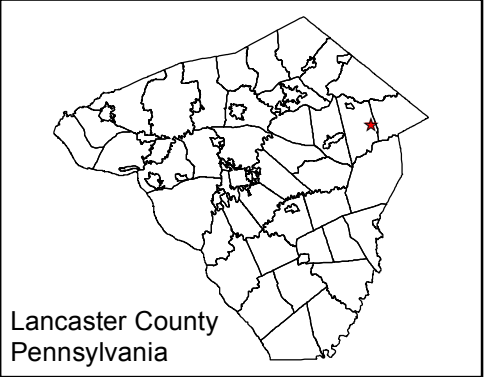
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 7
OLDS Absorption Area
Alternative Map
June 2013**

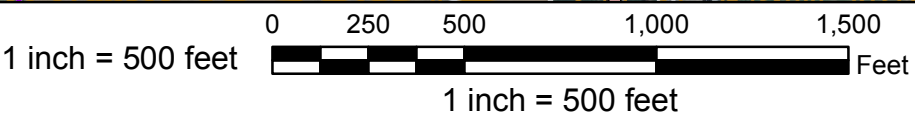
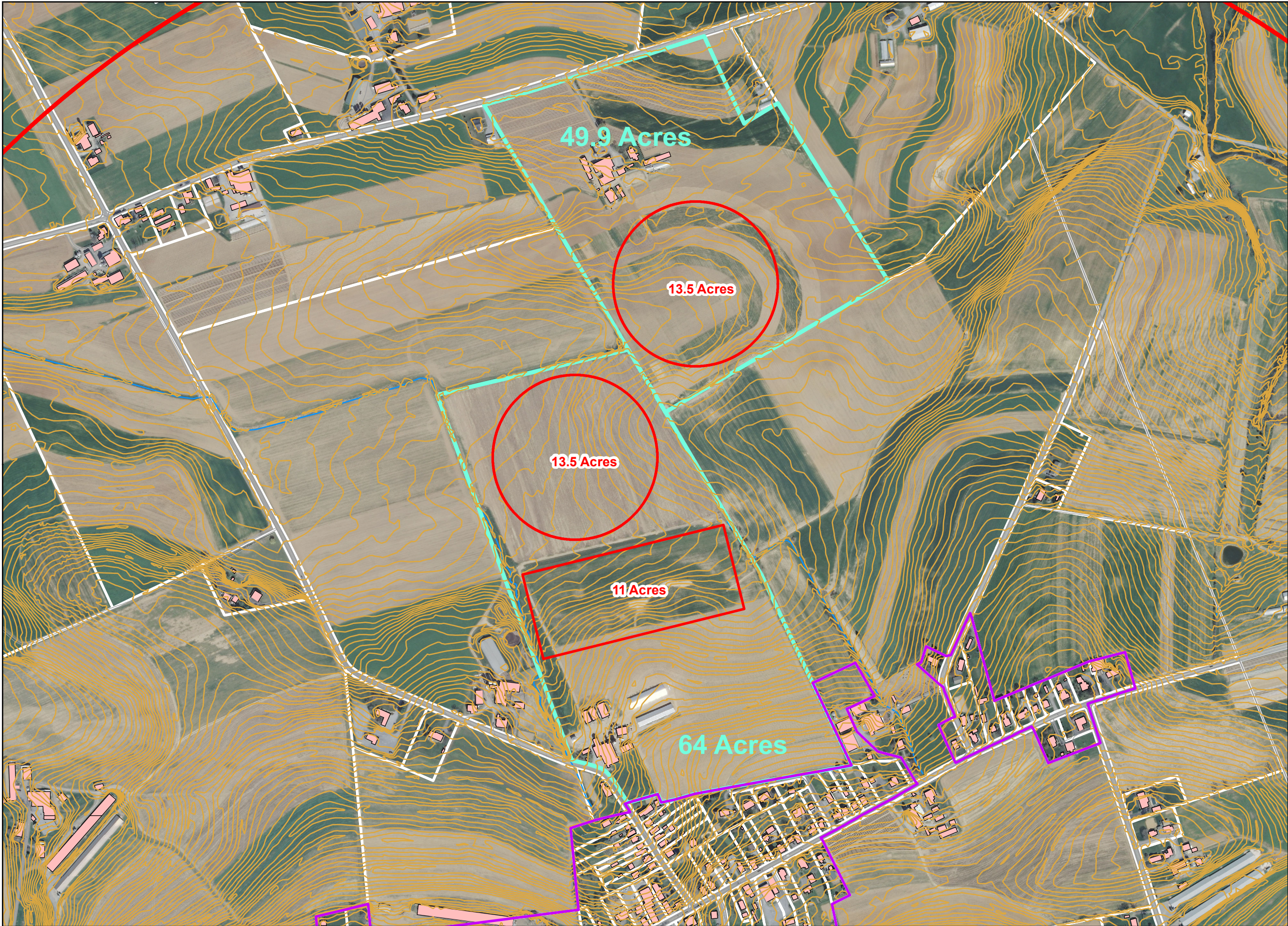
Project Location Map



- Map Legend**
- Goodville Village Growth Area
 - Parcels
 - Ridge Line
 - Proposed Right-of-Way
 - Proposed Gravity Sewer
 - Sanitary Sewer Manholes
 - Proposed New Parcel for Community Sewer
 - Ag Preserve (2010)
 - Ag Preserve Applications Pending (2009)
 - Properties with Suspected Malfunctions



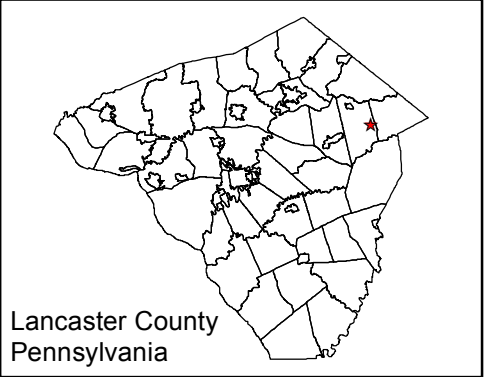
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**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 8
Spray Irrigation
Absorption Area Map
June 2013**

Project Location Map

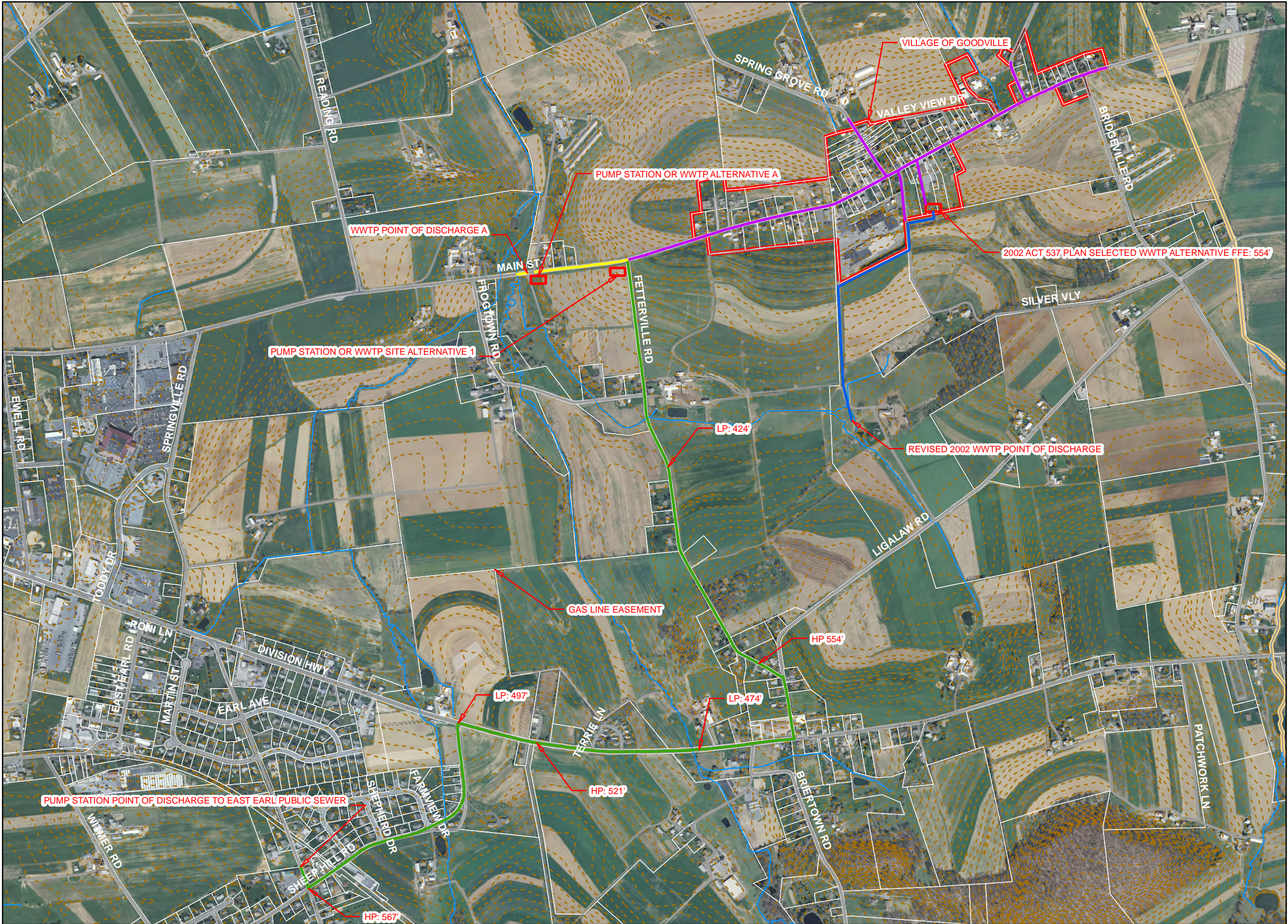


Map Legend

- Goodville Village Growth Area
- Buildings
- Streams



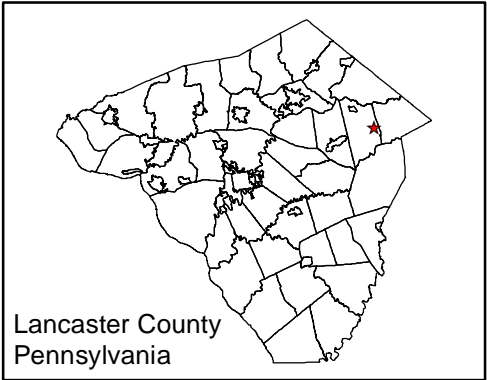
Path: H:\Projects\Lancaster County\112 East Earl Act 537 Plan Update\Final Maps\Map 9 - EETSA Public Sewer Extension Options.mxd



East Earl Township
Act 537 Plan Update

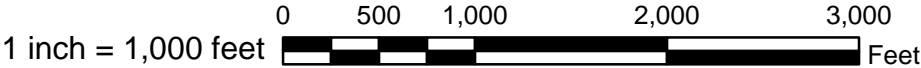
Goodville Sewer System
Map 9
EETSA Public Sewer
Extension Options Map
June 2013

Project Location Map

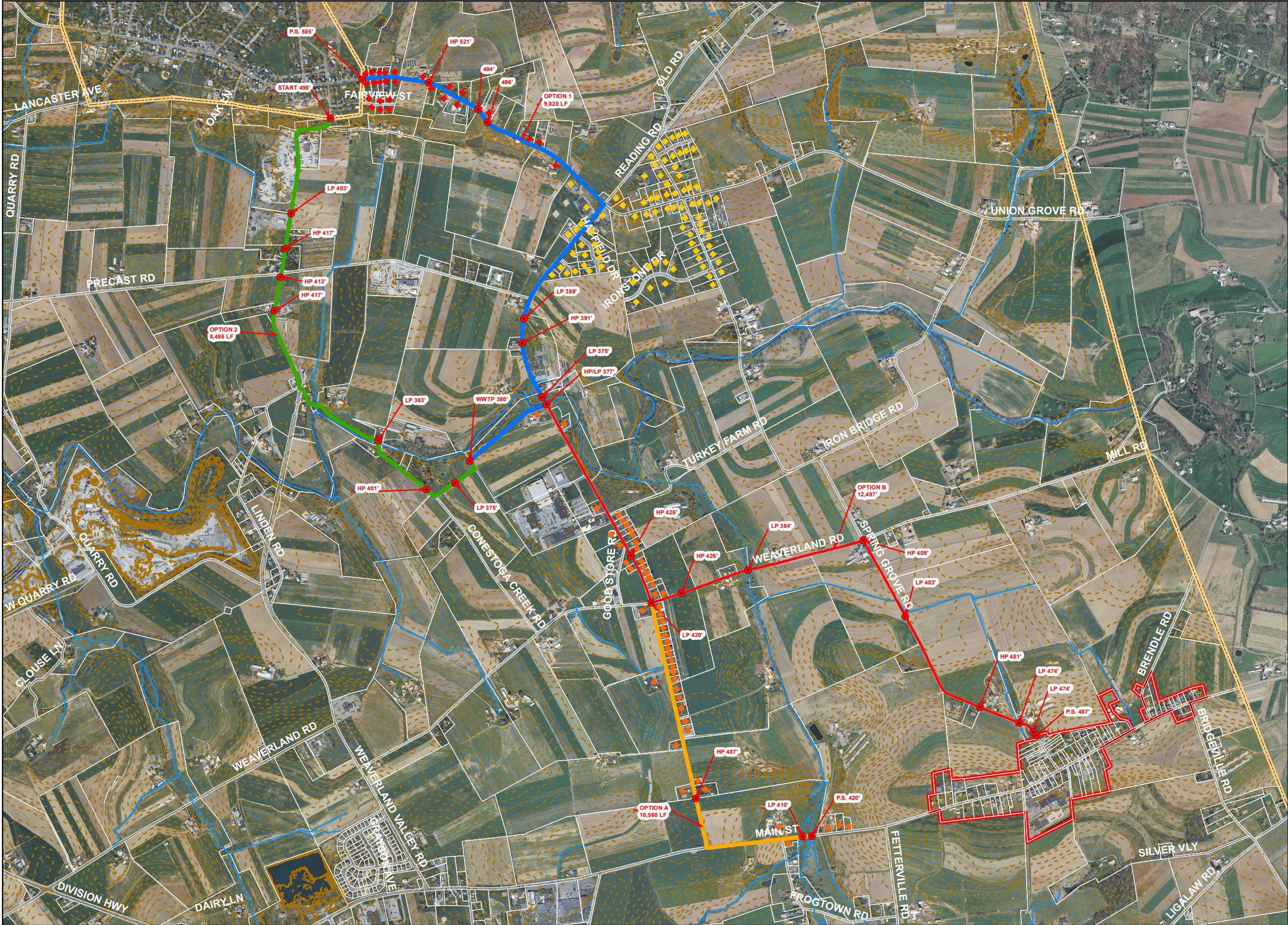


Map Legend

- Municipal Boundary
- Goodville Village Growth Area
- Streams
- Topography



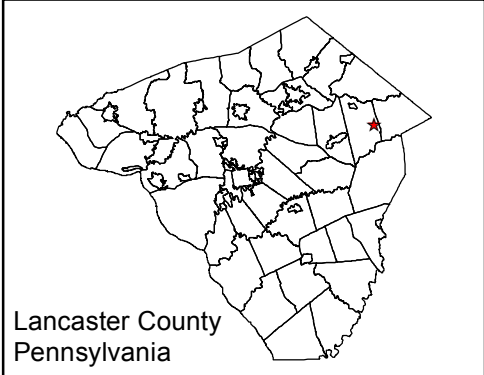
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**East Earl Township
Act 537 Plan Update**

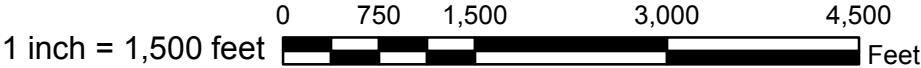
**Goodville Sewer System
Map 10
Conestoga Wood
Specialties Force Main &
WWTP Alternative Map
June 2013**

Project Location Map



Map Legend

- Municipal Boundary
- Goodville Village Growth Area
- Streams
- Topography



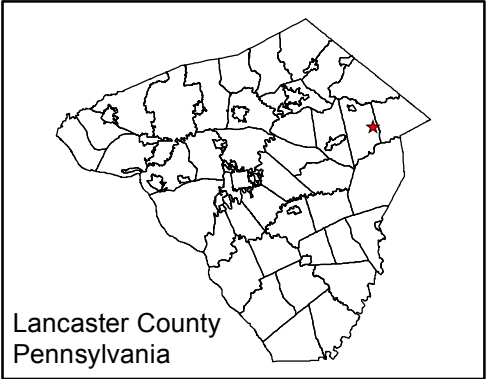
Path: H:\Projects\Lancaster County\112 East Earl Act 537 Plan Update\Final Maps\Map 11 - Conestoga Wood Floodplain.mxd





**East Earl Township
Act 537 Plan Update**

**Goodville Sewer System
Map 11
Conestoga River
Floodplain at Conestoga
Wood Specialties
Mapping
February 2013**

Project Location Map

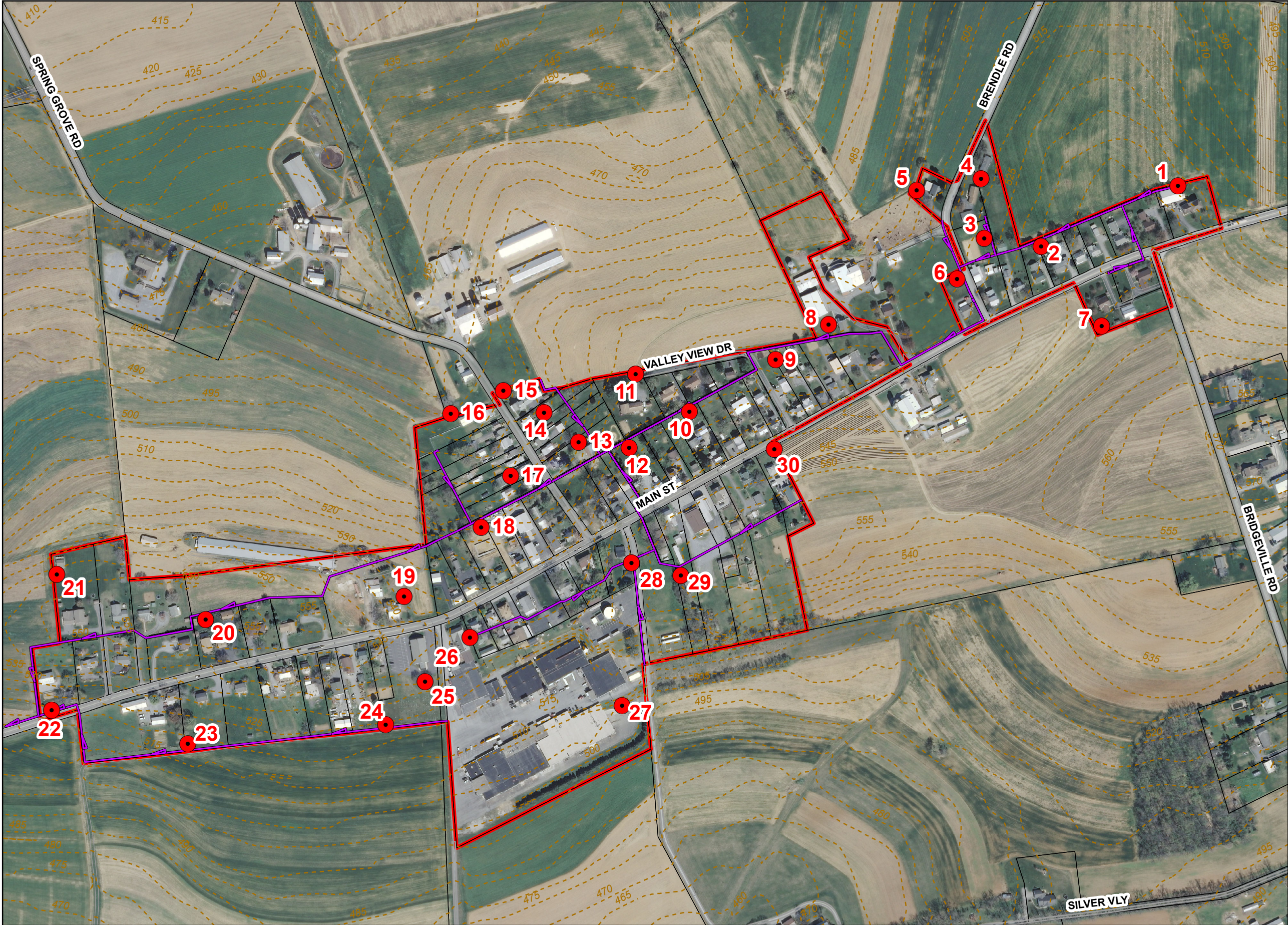


Legend

- Floodplain**
-  .2 PCT Annual Chance
 -  Zone AE



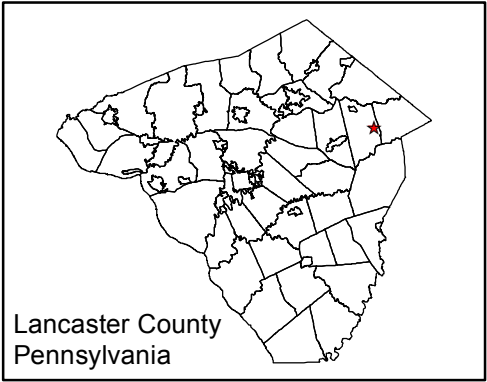
Path: H:\Projects\Lancaster County\112 East Earl Act 537 Plan Update\Final Maps\Map 12A- Selected Collection Alternative.mxd



**East Earl Township
Act 537 Plan Update**

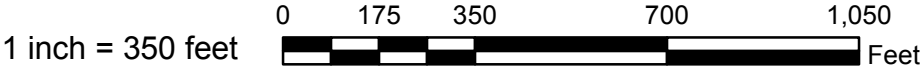
**Goodville Sewer System
Map 12A
Selected Collection
Alternative Map
June 2013**

Project Location Map



Map Legend

- Goodville Village Growth Area
- Contours
- Parcels
- Low Pressure Force Main
- Duplex Pump Station



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the Matter of:

East Earl Township	:	Sewage Facilities Planning
Lancaster County	:	

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 17TH day of DECEMBER, 2012, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection ("Department"), and East Earl Township ("East Earl").

The Department has found and determined the following:

- A. The Department is the agency with the duty and authority to administer and enforce the Pennsylvania Sewage Facilities Act ("Act 537"), Act of January 24, 1966, P.L. (1965) 1535, as amended, 35 P.S. §750.1 et seq.; the Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. §691.1 et seq.; Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, as amended, 71 P.S. §510-17; and the Rules and Regulations promulgated pursuant thereto.
- B. East Earl is a municipality in Lancaster County, organized and existing under the laws of the Commonwealth of Pennsylvania, with an address of 4610 Division Highway, East Earl, PA 17519.
- C. East Earl prepared and submitted an Act 537 Official Sewage Facilities Plan Update ("Plan Update") to the Department on July 10, 2002.
- D. The Department approved the Act 537 Plan by letter dated August 16, 2002.
- E. The approved plan addressed the sewage disposal needs of the Village of Goodville by providing for the construction of a sewage treatment plant and associated infrastructure, with a discharge to an unnamed tributary of Cedar Creek, a tributary to the Conestoga River.
- F. On May 10, 2002 East Earl Sewer Authority ("EESA") submitted an NPDES permit application to the Department for the discharge from the sewerage system referenced in paragraph E, above.
- G. On June 4, 2002 EESA submitted a Water Quality Part II permit application to the Department for the sewerage system referenced in paragraph E, above.
- H. On March 20, 2003 the Department informed EESA of technical deficiencies with the NPDES permit application.
- I. On June 9, 2003 the consultant for EESA requested that the Department render a decision on the NPDES permit application based on the original application.

- J. By letter dated June 22, 2005, the Department notified EESA that the pending permit application was still deficient and that the permit application would be denied if the deficiencies were not addressed in 60 days.
- K. On December 13, 2005 the Department denied the NPDES permit application.
- L. On January 29, 2008 the Department sent a Compliance Notice to East Earl relating to its failure to address the sewage disposal needs of Goodville.
- M. By letter dated February 14, 2008 East Earl responded to the Compliance Notice.
- N. By letter dated May 8, 2008 East Earl requested preliminary effluent limits for a different discharge point.
- O. By letter dated May 22, 2008 the Department provided the preliminary effluent limits for two potential discharge locations and requested a schedule from East Earl for developing a plan to serve the needs of Goodville.
- P. East Earl responded by letter dated July 21, 2008 indicating that it intended to engage in conversation with a neighboring municipality but did not commit to submitting any planning by a certain date.
- Q. The Department issued a second Compliance Notice on April 8, 2010 to East Earl for its failure to address the sewage disposal needs of Goodville.
- R. East Earl responded to the Compliance Notice by letter dated May 28, 2010.
- S. By letter dated June 16, 2010 the Department reminded East Earl of its obligation under the Sewage Facilities Act and the regulations to address the sewage disposal needs in Goodville.
- T. On July 26 2010, Department staff met with officials from East Earl, its consultant, and the Lancaster County Planning Commission, Senator Mike Brubaker and Representative Gordon Denlinger and their staff. Options were discussed regarding addressing the sewage disposal needs in Goodville.
- U. By letter dated September 13, 2010 East Earl updated the Department on its activities relating to the options discussed at the July 26 meeting.
- V. By letter dated September 14, 2010 the East Earl consultant provided additional information to the Department relating to their recent efforts to address the needs in Goodville.
- W. By letter dated September 27, 2010 the Department responded to East Earl's consultant regarding his proposed plan for dealing with the Goodville planning requirements.
- X. On December 15, 2010 the Department and East Earl's consultant, Jeffrey Sweater of the ELA Group, Inc., exchanged correspondence regarding the latest efforts to address the planning for Goodville.
- Y. By letter dated January 5, 2011 East Earl provided an update to the Department on its efforts to address the planning for Goodville.

- Z. By letter dated January 18, 2011 the Department conveyed information regarding planning reimbursement and the submission of a task activity report ("TAR") for the Goodville project.
- AA. By letter dated June 23, 2011 East Earl provided an update to the Department on its efforts to address the planning for Goodville.
- BB. On August 11, 2011 the Department and the consultant for East Earl exchanged correspondence regarding the latest developments in the efforts to address the planning for Goodville.
- CC. On October 11, 2011 the Department received a copy of a Feasibility Study from the consultant for East Earl for addressing the sewage needs in Goodville.
- DD. On November 10, 2011 a meeting was held to discuss the planning for Goodville. This meeting was attended by Department staff, representatives of East Earl, the EESA, and consultants for East Earl and the EESA.
- EE. On December 9, 2011 the Department received from East Earl's consultant a proposed schedule for submitting planning for Goodville.
- FF. On May 8, 2012 the Department and the consultant for East Earl exchanged correspondence regarding the latest developments in the efforts to address the planning for Goodville.

After full and complete negotiation of all matters set forth in this Consent Order and Agreement and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by East Earl as follows:

1. **Authority.** This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to: Section 5 of the Clean Streams Law, 35 P.S. §691.5, Section 10 of the Sewage Facilities Act, 35 P.S. §750.10, and Section 1917-A of the Administrative Code, *supra*. Failure of East Earl to comply with any term or condition of this Consent Order and Agreement shall subject East Earl to all penalties and remedies provided by those statutes for failing to comply with an order of the Department.

2. **Findings.**

(a) East Earl agrees that the findings in Paragraphs A through FF are true and correct and, in any matter or proceeding involving East Earl and the Department, East Earl shall not challenge the accuracy or validity of these findings.

(b) The parties do not authorize any other persons to use the findings in this Consent Order and Agreement in any matter or proceeding.

3. **Corrective Action.**

(a) Within sixty (60) days of the date of this Consent Order and Agreement, submit a TAR, for preparation of an Act 537 Official Sewage Facilities Plan Update to address the sewage disposal needs of the Village of Goodville.

(b) In the event the Department requires more information to approve the TAR, such information shall be forwarded to the Department within thirty (30) days of receiving a written request from the Department.

(c) Within one hundred eighty (180) days of the Department's approval of the TAR, East Earl shall submit to the Department an officially adopted Act 537 Official Sewage Facilities Plan Update revision that addresses the sewage disposal needs of the Village of Goodville, is consistent with the TAR, and meets the requirements of 25 Pa. Code §§71.21 and 71.31.

(d) In the event that the Department determines that additional information is necessary to administratively complete the Plan Update revision, East Earl shall submit such information within thirty (30) days of receiving a written request for such additional information from the Department.

(e) In the event that the Department determines that any other additional information or analysis is necessary, East Earl shall submit such information or analysis within sixty (60) days of receiving a written request for such additional information or analysis from the Department.

(f) Upon approval by the Department, East Earl shall implement the Plan Update revision in accordance with the implementation schedule contained therein.

4. Stipulated Civil Penalties.

(a) In the event East Earl fails to comply in a timely manner with the provisions of Paragraph 3 East Earl shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount determined under the following schedule:

(i) For any violation of Paragraphs 3(b), 3(d), or 3(e), \$50.00 per day for each violation;

(ii) For any violation of Paragraphs 3(a), 3(c), or 3(f), \$100.00 per day for the first 10 days of each violation, and \$300.00 per day for each violation extending beyond the first 10 days.

(b) Stipulated civil penalty payments shall be payable monthly on or before the fifteenth day of each succeeding month, and payment shall be made by corporate check, or the like, made payable to the Commonwealth of Pennsylvania and sent to the Department as indicated in Paragraph 8 below.

(c) Any payment under this paragraph shall neither waive East Earl's duty to meet its obligations under this Consent Order and Agreement nor preclude the Department from commencing an action to compel East Earl's compliance with the terms and conditions of this Consent Order and Agreement. The payment resolves only East Earl's liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

(d) Stipulated civil penalties shall be due automatically and without notice.

5. Additional Remedies.

(a) In the event East Earl fails to comply with any provision of this Consent Order and Agreement, the Department may, in addition to the remedies prescribed herein, pursue any remedy available for a violation of an order of the Department, including an action to enforce this Consent Order and Agreement.

(b) The remedies provided by this paragraph and Paragraph 4 (Stipulated Civil Penalties) are cumulative and the exercise of one does not preclude the exercise of any other. The failure of the Department to pursue any remedy shall not be deemed to be a waiver of that remedy. The payment of a stipulated civil penalty, however, shall preclude any further assessment of civil penalties for the violation for which the stipulated civil penalty is paid.

6. **Reservation of Rights.** The Department reserves the right to require additional measures to achieve compliance with applicable law. East Earl reserves the right to challenge any action that the Department may take to require those measures.

7. **Liability of Township.** East Earl shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, agents, employees, or contractors.

8. **Correspondence with Department.** All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

DEP – Clean Water Program
Timothy K. Wagner
Sewage Planning Supervisor
909 Elmerton Ave
Harrisburg, PA 17110

9. **Correspondence with the Township.** All correspondence with East Earl concerning this Consent Order and Agreement shall be addressed to:

East Earl Township Supervisors
David Zimmerman
Chairman
4610 Division Hwy
East Earl, PA 17519

East Earl shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and Agreement, including its enforcement, may be made by mailing a copy by first class mail to the above address.

10. **Severability.** The paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

11. **Entire Agreement.** This Consent Order and Agreement shall constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

12. **Attorney Fees.** The parties shall bear their respective attorney fees, expenses and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

13. **Modifications.** No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the parties hereto.

14. **Titles.** A title used at the beginning of any paragraph of this Consent Order and Agreement may be used to aid in the construction of that paragraph, but shall not be treated as controlling.

15. **Decisions under Consent Order.** Any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code §1021.2, nor an adjudication under 2 Pa. C.S. §101. Any objection, which East Earl may have to the decision, will be preserved until the Department enforces this Consent Order and Agreement.

16. **Termination.** The obligations of this Consent Order and Agreement shall terminate when the Department determines that East Earl has complied with the requirements of Paragraph 3.

17. **Resolution.** Attached hereto as Appendix A is a resolution of the Board of Supervisors of East Earl Township authorizing its signatories below to enter into this Consent Order and Agreement on its behalf.

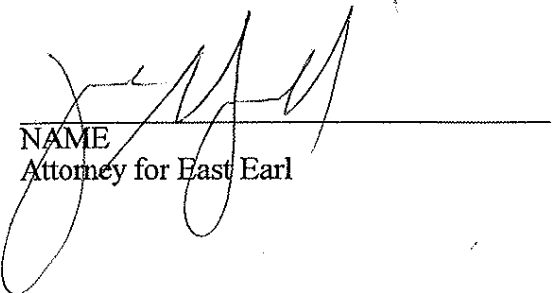
IN WITNESS WHEREOF, the parties hereto have caused this Consent Order and Agreement to be executed by their duly authorized representatives. The undersigned representatives of East Earl certify under penalty of law, as provided by 18 Pa.C.S. §4904, that they are authorized to execute this Consent Order and Agreement on behalf of East Earl; that East Earl consents to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that East Earl hereby knowingly waives its rights to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, the Act of July 13, 1988, P.L. 530, No. 1988-94, 35 P.S. §7514; the Administrative Agency Law, 2 Pa.C.S. §103(a) and Chapters 5A and 7A; or any other provision of law. Signature by East Earl's attorney certifies only that the agreement has been signed after consulting with counsel.


FOR EAST EARL TOWNSHIP:

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION:


NAME
Chairman


NAME Maria D. Bebenek
Program Manager


NAME
Attorney for East Earl


Martin R. Siegel
Assistant Counsel

Caernarvon Township, Lancaster County

2147 Main Street, Narvon, PA 17555

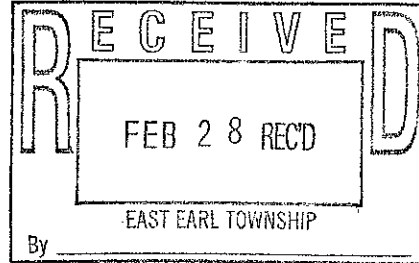
717-445-4244

Fax: 717-445-7119

www.caernarvonlanaster.org

February 20, 2013

Board of Supervisors
East Earl Township
4610 Division Highway
East Earl, PA 17519



Re: Sewer

Gentlemen,

In response to your letter of January 15, 2013, Caernarvon Township, in conjunction with the Township Engineer, John Roche of Vision Engineering, Inc. is in the process of reviewing and updating our Act 537 Plan.

We have no plans for a joint sewage treatment facility at this time.

Thank you for your attention in this matter.

Best Regards,

Gary Van Dyke, Supervisor

Terry L. Hartranft, Supervisor

Terry L. Martin, Supervisor

cc: John Roche, Vision Engineering, Inc.
Caernarvon Township Planning Commission

Laboratory, Analytical, & Biological Services, Inc.

P.O. Box 836
409 North Avenue
East Berlin, PA 17316

Phone (717) 259-6550
Fax (717) 259-0766
PADEP LAB ID # 01-550
MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1526 Main Street**
SAMPLE ID: **052113-W03A-C**
DATE & TIME COLLECTED: **05/21/13 @ 10:50am**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	>200	MPN/100ml	0	SM 9223	No	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	2.88	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1042	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: Maureen M. Dunlap, Maureen M. Dunlap / Office Manager

Laboratory, Analytical, & Biological Services, Inc.

P.O. Box 836
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East Berlin, PA 17316

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ELA Group, Inc.
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Corporate Office
743 South Broad Street
Lititz, PA 17543


05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1548 Main Street**
SAMPLE ID: **052113-W03D-F**
DATE & TIME COLLECTED: **05/21/13 @ 11:05am**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	0	MPN/100ml	0	SM 9223	Yes	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	10.14	mg/L	10	EPA 300.0	No	0.40	05/22/13/1100	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By:  Maureen M. Dunlap / Office Manager

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MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1582 Main Street**
SAMPLE ID: **052113-W03G-I**
DATE & TIME COLLECTED: **05/21/13 @ 11:15am**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	5	MPN/100ml	0	SM 9223	No	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	9.60	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1118	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: Maureen M. Dunlap, Maureen M. Dunlap / Office Manager

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East Berlin, PA 17316

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PADEP LAB ID # 01-550
MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

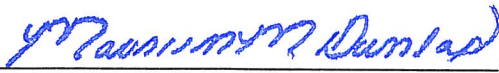
05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **119 Brendel Road**
SAMPLE ID: **052113-W03J-L**
DATE & TIME COLLECTED: **05/21/13 @ 11:30am**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	0	MPN/100ml	0	SM 9223	Yes	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	0.58	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1136	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: , Maureen M. Dunlap / Office Manager

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PADEP LAB ID # 01-550
MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1625 Main Street**
SAMPLE ID: **052113-W03M-O**
DATE & TIME COLLECTED: **05/21/13 @ 11:45am**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	0	MPN/100ml	0	SM 9223	Yes	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	7.79	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1154	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: , Maureen M. Dunlap / Office Manager

Laboratory, Analytical, & Biological Services, Inc.

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Fax (717) 259-0766
PADEP LAB ID # 01-550
MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **118 Spring Grove Road**
SAMPLE ID: **052113-W03P-R**
DATE & TIME COLLECTED: **05/21/13 @ 12:40**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	0	MPN/100ml	0	SM 9223	Yes	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	6.81	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1212	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: , Maureen M. Dunlap / Office Manager

Laboratory, Analytical, & Biological Services, Inc.

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East Berlin, PA 17316

Phone (717) 259-6550
Fax (717) 259-0766
PADEP LAB ID # 01-550
MDE ID # 300

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **129 Spring Grove Road**
SAMPLE ID: **052113-W03S-U**
DATE & TIME COLLECTED: **05/21/13 @ 12:50**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	34	MPN/100ml	0	SM 9223	No	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	2.78	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1230	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By:  Maureen M. Dunlap / Office Manager

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ELA Group, Inc.
Aaron Moyer, EIT
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743 South Broad Street
Lititz, PA 17543

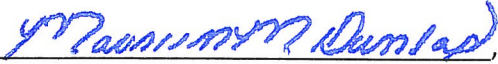
05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1583 Main Street**
SAMPLE ID: **052113-W03V-X**
DATE & TIME COLLECTED: **05/21/13 @ 1:05pm**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	6	MPN/100ml	0	SM 9223	No	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	6.44	mg/L	10	EPA 300.0	Yes	0.40	05/22/13/1248	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: , Maureen M. Dunlap / Office Manager

Laboratory, Analytical, & Biological Services, Inc.

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East Berlin, PA 17316

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ELA Group, Inc.
Aaron Moyer, EIT
Corporate Office
743 South Broad Street
Lititz, PA 17543

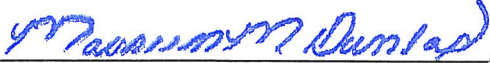
05/23/13 DRINKING WATER REPORT

SAMPLE ADDRESS: **1569 Main Street**
SAMPLE ID: **052113-W03Y-AA**
DATE & TIME COLLECTED: **05/21/13 @ 1:20pm**
DATE & TIME RECEIVED: **05/21/13 @ 2:50pm**
COLLECTED BY: **Client, ABM**

Parameter	Result	Units	Maximum Limit	Method	Complies w/ DEP	Reporting Limit	Analysis Date/Time	Analyst
Total Coliform	0	MPN/100ml	0	SM 9223	Yes	0	05/21/13/1530	BS
Fecal Coliform*	<1	CFU/100ml	0	SM 9222D	Yes	0	05/21/13/1530	JDC
Nitrates as N	12.58	mg/L	10	EPA 300.0	No	0.40	05/22/13/1306	JAW

*03,06

Note: The maximum limits are based on the EPA maximum contaminant levels. Please contact the US Department of Housing and Urban Development for updates to these acceptance levels.

Reviewed & Approved By: , Maureen M. Dunlap / Office Manager

Mailing Address

P.O. Box 69
Goodville, PA
17528

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Nan M. Wanda & Kim Oberholzer STREET: 1582 Main St CITY: East Earl
ZIP: 17519 PHONE #: _____ OWNER OR RENTER? NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? 1998 SPRING? _____ CISTERN? _____ PUBLIC? _____ OTHER? casing 42'

If you have a well: Is it DUG or DRILLED? HOW DEEP? 420 ft. Cased? Y / N pump 400'

How far is the well or spring from the drain field? 135 ft. Is well UP/DOWNHILL? uphill 4 1/2 GPM

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? ONE

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
<u>HOLDING TANK</u>	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER <u>2000 gallon tank - pumped monthly</u>		<u>installed 1999</u>

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
<u>HOLDING TANK</u>	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / N How often? once a month Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Mailing Address

1336 UNION GROVE RD
EAST EARL, PA 17519

DOOR-TO-DOOR
NEEDS SURVEY

between 1554 & 1542

Munic.: East Earl Co.: Lancaster Study Area: Goodyville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Darwin L & Bonita S. Horst STREET: 1548 MAIN ST CITY: East Earl
ZIP: 17519 PHONE #: _____ OWNER OR RENTER? (Circled) NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER? _____

If you have a well: Is it DUG or (Circled) DRILLED? HOW DEEP? 400 ft. Cased? (Y) N 300 feet with flexible pump set pipe

How far is the well or spring from the drain field? 32 ft. Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / (N) When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? one

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>(Circled) INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>(Circled) INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? No

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / (N) How often? _____ Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / (N) When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

MAILING ADDRESS

295 HAATINGS PARK RD
DENVER, PA 17517

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodyville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Ruth N. Martin STREET: 1526 Main Street CITY: _____

ZIP: _____ PHONE #: _____ OWNER OR RENTER? NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? HOW DEEP? _____ ft. Cased? Y / N

How far is the well or spring from the drain field? 162 ft. Is well UP/DOWNHILL? uphill

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? Two

One or more sewage systems? one COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / N How often? every two years Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Mailing Address

PO Box 53
Goodville, PA
17528

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: MARY JANE SNAVER STREET: #1625 Main St CITY: East Earl
ZIP: _____ PHONE #: _____ OWNER OR RENTER? OWNER NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? HOW DEEP? _____ ft. Cased? Y / N

How far is the well or spring from the drain field? 60' ft. Is well UP/DOWNHILL? uphill

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? Two - Two buildings
One or more sewage systems? one COMMERCIAL/RESIDENTIAL? use same well & seepage bed

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y N How often? every two years Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y N When? _____ By permit? Y N What part? _____

TANK: REPAIRED/REPLACED _____ LINE: REPAIRED/REPLACED _____ DRAIN FIELD: REPAIRED/REPLACED _____

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Mailing Address

P.O. Box 47

Goodville, PA

17528

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodville Date: 5/21/13

General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Samuel J + Mabel R. Hornung STREET: 119 ~~Brandt Rd~~ CITY: East Earl

ZIP: _____ PHONE #: _____ OWNER/OR RENTER? _____ NUMBER OF RESIDENTS: 1

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? HOW DEEP? _____ ft. Cased? Y / N

How far is the well or spring from the drain field? 80' ft. Is well UP/DOWNHILL? B uphill

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? one

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER <u>pump every 2 years</u>		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? (Y) / N How often? every two years Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

**DOOR-TO-DOOR
NEEDS SURVEY**

Munic.: East Earl Co.: Lancaster Study Area: Goodyville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Paul & Ellen Z. Zeiser STREET: 129 - Spring Grove Rd CITY: EAST EARL
ZIP: 17519 PHONE #: _____ OWNER OR RENTER? OWNER NUMBER OF RESIDENTS: 8

What kind of water system do you have? WELL? ☐ SPRING? ☐ CISTERN? ☐ PUBLIC? ☐ OTHER? ☐

If you have a well: Is it DUG or DRILLED? HOW DEEP? ? ft. Cased? Y / N

How far is the well or spring from the drain field? _____ ft. Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? This is a farm No. of dwelling units? one

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
<u>PRIVY</u>	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / N How often? _____ Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Mailing Address

PO Box 57
Goodville, PA
17528

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Floyd K + Rebecca Petersheim STREET: 1569 Main CITY: East Earl
ZIP: _____ PHONE #: _____ OWNER ☒ OWNER ☐ RENTER? NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER? Drilled 10/90
If you have a well: Is it DUG or DRILLED? HOW DEEP? 475 ft. Cased? Y / N pump at 455
How far is the well or spring from the drain field? 70 ft. Is well UP/DOWNHILL? 26 PM

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? Two - (one building)

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL? _____

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? (Y) / N How often? Twice a year Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Mailing Address

1148 LOGAN LN
NARVON, PA 17555

DOOR-TO-DOOR
NEEDS SURVEY

Munic.: East Earl Co.: Lancaster Study Area: Goodyville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Dawn M. Muser STREET: 1583 - Main Street CITY: _____

ZIP: _____ PHONE #: _____ OWNER OR (RENTER?) NUMBER OF RESIDENTS: _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? _____ ft. Cased? Y / N

How far is the well or spring from the drain field? 80 ft. Is well UP/DOWNHILL? uphill

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTENER, ION, OTHER _____

Was the water ever tested? (Y) N When? March

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? _____

One or more sewage systems? _____ COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY) ?

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? (Y) N How often? 4 times a year Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

**DOOR-TO-DOOR
NEEDS SURVEY**

Munic.: East Earl Co.: Lancaster Study Area: Goodyville Date: 5/21/13
General weather conditions: Hot, humid, partly cloudy with isolated showers

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide solutions.

(CIRCLE OR FILL IN AS APPROPRIATE; ADD COMMENTS AS NEEDED)

NAME: Earl S + Margaret A. Martin STREET: 118 - Spring Grove CITY: Goodyville
ZIP: 17528 PHONE #: _____ OWNER OR RENTER? _____ NUMBER OF RESIDENTS: _____

What kind of water system do you have? (WELL? SPRING? CISTERN? PUBLIC? OTHER? _____)

If you have a well: Is it DUG or DRILLED? _____ ft. Cased? Y / N _____

How far is the well or spring from the drain field? _____ ft. Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, (SOFTENER), ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc.) _____

How large is your lot? _____ No. of dwelling units? one

One or more sewage systems? yes COMMERCIAL/RESIDENTIAL? _____

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY) ?

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BORE HOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you every noticed any of the following near your septic system? _____

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round? _____

Have you ever had your system pumped out? Y / N How often? _____ Last time? _____

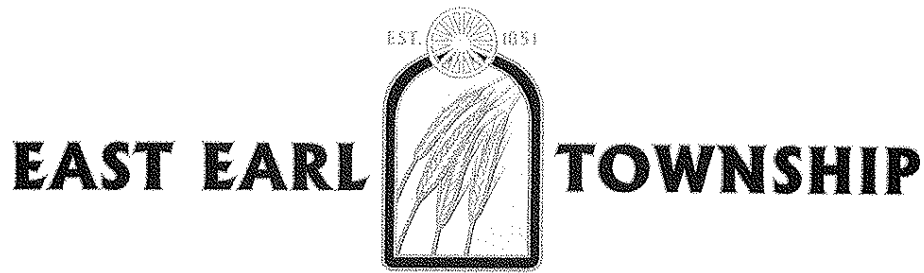
If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system every been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE YOUR PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 • Phone 717-354-5593 • Fax 717-355-0426

June 25, 2013

Jeffrey Sweater
ELA Group, Inc.
743 South Broad Street
Lititz, PA 17543

Dear Jeff:

Following is a listing of on-lot system failures that occurred in Goodville from 2002 to the present time as provided by Quinn Haller, SEO for East Earl Township:

2005- Earl Eaby 1611 Main Street – surface discharge, system replaced with an elevated sandmound bed.

2006- Earl Eaby 1530 Main Street- surface discharge due to broken end caps. End caps replaced no further issues.

2006- Gary Sheetz 113 Spring Grove Road- surface discharge, system replaced with an elevated sandmound bed.

2010- Big O Electric 1538 Main Street, Anonymous reports of surface discharges, never able to find evidence of a malfunction. Owner told us it was runoff from redirecting his downspouts.

Sincerely,

Connie J. Gross
Secretary-Treasurer

copy – Board of Supervisors

**TOWNSHIP OF EAST EARL
LANCASTER COUNTY, PENNSYLVANIA
RESOLUTION NO. 17-2013**

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF EAST EARL, LANCASTER COUNTY, PENNSYLVANIA, TO ADOPT AN OFFICIAL SEWAGE FACILITIES PLAN UPDATE REVISION FOR EAST EARL TOWNSHIP.

WHEREAS, the Board of Supervisors of the Township of East Earl (the "Board of Supervisors") authorized the preparation of an Official Sewage Facilities Plan Update Revision ("Plan") for the Goodville area; and

WHEREAS, ELA Group, Inc. was selected as the consultant to assist the Board of Supervisors in the preparation of the Plan; and

WHEREAS, pursuant to the regulations of the Pennsylvania Department of Environmental Protection (the "Department"), the Board of Supervisors advertised the preparation of the proposed Plan and provided a 30-day public comment period for such Plan; and

WHEREAS, the Township provided a copy of the proposed Plan to the Lancaster County Planning Commission for review in accordance with the regulations of the Department; and

WHEREAS, the Board of Supervisors desires to adopt the proposed Sewage Facilities Plan Update Revision as an update to the Township's official Sewage Facilities Plan in accordance with the provisions and requirements of the Pennsylvania Sewage Facilities Act and the Regulations of the Department.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of East Earl Township, Lancaster County, Pennsylvania, as follows:

Section 1. The Board of Supervisors adopts the official sewage facilities plan update revision entitled "Act 537 Official Sewage Facilities Plan Update Revision – Village of Goodville", prepared by ELA Group, Inc., in the form and content presented at this public meeting, as the official sewage facilities plan update revision for the Township in accordance with the Pennsylvania Sewage Facilities Act and the regulations of the Department.

Section 2. The Plan as adopted by the Board of Supervisors shall include the following chapters and all charts, tables, diagrams, appendices, figures and textual matter contained there and appended thereto:

SECTION I – INTRODUCTION
SECTION II – UPDATE REVISION OBJECTIVES
SECTION III – PLANNING AREA PHYSICAL CONDITIONS AND DEMOGRAPHICS
SECTION IV – EVALUATION OF WASTEWATER TREATMENT NEEDS AND CONCERNS
SECTION V – PLANNING AND FACILITIES ALTERNATIVES
SECTION VI – INSTITUTIONAL EVALUATION AND RECOMMENDED ALTERNATIVES
SECTION VII – REVIEW OF CONSISTENCY REQUIREMENTS
SECTION VIII – SEWAGE FACILITIES PROGRAM IMPLEMENTATION AND SCHEDULE
SECTION IX – PUBLIC PARTICIPATION
TABLES
MAPS
ATTACHMENTS

Section 3. The Board of Supervisors adopts the following recommendations set forth in the Plan as the alternatives of choice which shall be implemented by the Township upon approval of the Plan by the Department in accordance with the implementation schedule set forth in Section 8 of the Plan.

1. The Plan recommends that all present and future public wastewater needs in the Goodville area be addressed through the conveyance of sewage to an East Earl Sewer Authority conveyance and treatment facility.
2. The Plan proposes the construction of a wastewater collection, conveyance, and treatment system to address the immediate and future needs of the Goodville area.

Section 4. This Resolution shall become effective and be in force immediately.

DULY ADOPTED this 13th day of August, 2013, by the Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, in lawful session duly assembled.

ATTEST:

TOWNSHIP OF EAST EARL
Lancaster County, Pennsylvania


Secretary-Treasurer


Chairman, Board of Supervisors

(SEAL)

CERTIFICATION

I, Connie J. Gross, Secretary of the Board of Supervisors of East Earl Township, Lancaster County, Pennsylvania, do hereby certify that the foregoing is a true and correct copy of a Resolution duly adopted at a legally constituted meeting of the Board of Supervisors of East Earl Township held on August 13, 2013, at which meeting a quorum was present and voted in favor thereof.

Signed Connie J. Gross
Secretary



EAST EARL TOWNSHIP



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 Phone 717-354-5593 Fax 717-355-0426

August 7, 2013

Jeffrey Sweater
ELA Group, Inc.
743 South Broad Street
Lititz, PA 17543

Dear Jeff:

At their regular monthly meeting on August 6, 2013, the East Earl Township Planning Commission reviewed the Act 537 Plan Update Revision for Goodville. Additionally, the Planning Commission was updated on discussions between East Earl Township, Terre Hill Borough, the East Earl Sewer Authority and Terre Hill Borough Sewer Authority regarding a joint treatment plant to handle sewage for both municipalities. They understand that all entities involved are interested in pursuing a joint venture.

The Planning Commission unanimously approved the Act 537 Plan revision. They expressed strong support to continue exploring the joint treatment plant option by East Earl Township and Terre Hill Borough. The Planning Commission feels a joint treatment plant facility will result in lower long-term costs for everyone and appears to be the best solution to provide a public sewer system for the village of Goodville.

Realizing that a joint venture will require time to work out specifics, the Planning Commission recommends that agreements to develop this project be pursued so planning can move forward.

Sincerely,

EAST EARL TOWNSHIP
PLANNING COMMISSION

A handwritten signature in cursive script that reads "Connie J. Gross". The signature is written in dark ink and is positioned below the printed name of the signatory.

Connie J. Gross, Clerk



County Commissioners
Scott Martin, Chairman
Dennis P. Stuckey, Vice-Chairman
Craig Lehman

Executive Director
James R. Cowhey, AICP

JUL 02 2013

ELA GROUP, Inc.

Planning Commission

150 North Queen Street
Suite #320

Lancaster, PA 17603

Phone: 717-299-8333

Fax: 717-295-3659

www.co.lancaster.pa.us/planning

13LU

RECEIVED

JUL 02 2013

ELA GROUP, Inc.

MEMORANDUM

To: Connie J. Gross, Secretary
East Earl Township

From: Community Planning Division of Lancaster County Planning Commission

Date: June 28, 2013

Re: Receipt of a Community Planning Review
Community Planning File #: 20-53A
Proposed Act 537 Sewage Facilities Plan for the Village of Goodville

The Lancaster County Planning Commission has received the above-referenced proposal on **June 28, 2013** and scheduled the proposal for review at its meeting on **July 22, 2013 at 3:00 p.m.** in the **1st Floor LCPC Meeting Rooms at 150 North Queen Street, Binns Park Annex, Lancaster, Pennsylvania.**

All those interested in the proposal are welcome to attend the meeting and comment on the proposal. However, attendance is not necessary. Copies of the staff's review comments are available to applicants and to the public after 8:30 a.m. on the Thursday prior to the meeting. A copy of the final letter of recommendation from the Planning Commission will be mailed to you following the meeting.

You and any other parties listed below are the only persons receiving this formal scheduling information. Therefore, please feel free to contact others who should be made aware of the review.

Thank you for your cooperation in submitting this proposal. Should you have any questions regarding this submittal, please contact the community planner for the above referenced municipality at (717) 299-8333.

FPB/fe

Copy: J. Douglas Martin, East Earl Township Planning Commission Secretary
Blakinger Byler & Thomas, East Earl Township Solicitor
Carol L. Martin, Brecknock Township Municipal Secretary
Kathy Norris, Caernarvon Township Municipal Secretary
Brenda S. Becker, Earl Township Municipal Secretary
Lester O. Houck, Salisbury Township Municipal Secretary
Valerie A. Gregory, Terre Hill Borough Municipal Secretary
Jeffrey Sweater, ELA Group, Inc.

S:\COMMUNPL\LCPC\2013\7-22-13\SCHEDULING LETTERS\Arcawides\AW-20-53A.doc





Planning Commission

150 North Queen Street
Suite #320

Lancaster, PA 17603

Phone: 717-299-8333

Fax: 717-295-3659

www.co.lancaster.pa.us/planning

County Commissioners

Scott Martin, Chairman

Dennis P. Stuckey, Vice-Chairman

Craig Lehman

Executive Director

James R. Cowhey, AICP

MEMORANDUM

13LU

To: Connie J. Gross, Secretary
East Earl Township

From: Randall L. Heilman, AICP *RLH*
Senior Community Planner

Thru: Frank P. Behlau, AICP
Director for Community Planning

Date: July 23, 2013

Re: CPF #: 20-53A, Act 537 Plan Update Revision for the Village of
Goodville
East Earl Township
LCPC Meeting of July 22, 2013

RECOMMENDATION

The Lancaster County Planning Commission (LCPC) has reviewed the above-referenced Act 537 Official Sewage Facilities Plan Update Revision and recommends approval with consideration given to the commentary below. The effect of the proposal would be to provide an updated plan that meets the existing and future wastewater collection and treatment needs of the Village of Goodville in East Earl Township.

PROPOSAL

Prior to this effort, East Earl Township received approval of its current Act 537 Sewage Facilities Plan in 1998 by the Department of Environmental Protection (DEP). An Act 537 Update Revision was prepared in 2002 to specifically address the Village of Goodville. The revision was initiated to obtain planning approval to support eligibility of a Community Development Block Grant (CDBG) and PENNVEST funding assistance for the project to make the project affordable for the residents of Goodville. The Act 537 Plan revision was approved by DEP in August



of 2002; however efforts to implement and construct the wastewater facilities have been delayed since 2002 due to funding and NPDES permitting issues. As a result of the continuing need for the Township to proceed with implementation of a wastewater management plan, the DEP and the Township in 2010 initiated discussions for a Consent Order to perform an Act 537 Plan Update Revision specifically for the Village of Goodville. In order to comply with the requirements of the Consent Order to specifically address the wastewater needs of the planning area and maximize the affordability of the proposed system, a 35,000 gallon treatment plant is proposed to reflect primarily the existing needs and very limited infill within the planning area. The plant would be located along Route 23 near the intersection of Fetterville Road with a discharge to Cedar Creek in the vicinity of the Route 23 crossing.

COMMENTARY

East Earl Township has prepared an Act 537 Plan Update Revision in response to a Consent Order and Agreement between the Township and the Department of Environmental Protection (DEP) to address the public sewer needs of the Village of Goodville. This has been an arduous task for the Township that has taken over a decade to complete due to financial, environmental, and administrative constraints. The Township should be commended for its efforts, and its willingness to work with DEP to find an alternative which will serve the residents of the Village of Goodville, and ultimately receive approval by DEP as an acceptable method of providing public sewer to the village as it has been determined the continued use of individual on-lot disposal systems is not a reliable wastewater management option.

The proposed 35,000 gallon treatment facility will serve the existing 106 residential dwelling units, the 14 commercial and institutional properties, and have capacity for five (5) additional infill properties through the 20 year planning period from 2013 to 2033. The Village of Goodville is small in scale with a population of just over 300 people located along the Route 23 corridor. The Village of Goodville's Village Growth Area (VGA) is finite since it is surrounded by prime agricultural ground and the Township's intent is not to expand its boundary into that agriculturally zoned land. The scale of the proposed wastewater treatment system and the very limited capacity for infill is consistent with the both *Balance*, the Lancaster County Growth Management Plan and the Elanco Region Comprehensive Plan (2008). The Staff of the Lancaster County Planning Commission recommends approval of the proposed Act 537 Plan Update Revision for the Village of Goodville subject to the following comments:

1. **Page 7** – The Plan states that the “Village Growth Boundary for the Village was established by the Township on March 12, 2002.” In addition, the plan should indicate that East Earl Township adopted the Elanco Region Comprehensive Plan on August 12, 2008, henceforth establishing the Elanco North and South Urban Growth Areas (UGAs), as well as the Village Growth Area (VGA) for the Village of Goodville.
2. **Page 9** - Light Industrial is not included in the gallons per day (gpd) calculations. The Plan references two parcels which are zoned Light Industrial in the village and it is unclear whether they are taken into account in the Commercial Institutional EDUs.

3. **Page 14** – The Plan should identify how the Township will offset the excess nitrogen and phosphorus in the proposed effluent discharge. The Plan indicates the implementation of Best Management Practices will be utilized to reduce nutrient loads to the stream; however, a more detailed discussion of those examples cited would provide guidance to the decision making process of what to utilize singularly or in combination to reduce the nutrient loads.
4. **Page 26** – The Plan indicates that the selected alternative is cost effective. However, on page 27, the Plan states that the estimated user fee for this project would be \$478 per quarter and that “this would make the project unaffordable for the residents of Goodville to totally finance construction and operate the treatment plant and conveyance system....” The plan should include additional discussion and analysis of ways of financing this project in order to make it affordable to the residents.
5. **Page 29** – The Plan states, “Comprehensive Planning is consistent with the East Earl Township Comprehensive Plan” when it should state that it is consistent with the Elanco Region Comprehensive Plan (2008). Additionally, another sentence could be added that states the Plan is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006).

CONSISTENCY WITH COMPREHENSIVE PLANS

Lancaster County Comprehensive Plan

The current Lancaster County Comprehensive Plan Growth Management Element, *Balance*, considers East Earl Township to be both an urban and rural municipality, thus the urban/rural strategies of this element apply. The Rural Goal is to minimize scattered development in rural areas by focusing growth in **Rural Centers: Village Growth Areas, Crossroads Communities, Rural Business Areas and Rural Neighborhoods**.

East Earl Township has one adopted Village Growth Area (Goodville) that is intended to take very limited development in East Earl Township. A Village Growth Area (VGA) is an area appropriate for future development that includes a traditional village at its center, adjacent developed portions of a township, and additional capacity to absorb a portion of the township's future land use needs through reinvestment or new development over a 25-year period. Key criteria to guide planning for Village Growth Areas include:

- Development should be provided with public sewer and/or public water service where appropriate and feasible to support existing and projected levels of development.
- Residential development should occur in Village Growth Areas at an average density of 2.5 units per net acre.

- Non-residential development should occur at intensities which are compatible with the character of the village and the capacity of infrastructure and services to support the development.

Wastewater disposal is a critical issue for the Rural Strategy because of 1) the role played by public collection and disposal systems in shaping development patterns and 2) the environmental and planning implications of on-lot systems. Act 537 planning can be a powerful tool to promote implementation of local and county planning programs if it supports the future land use intent defined in planning policy documents.

Finally, *Balance* states development in Designated Rural Areas must be supported by OLDS (*On-Lot Disposal Systems*). From a planning perspective, development served by on-lot systems can consume extensive amounts of land in rural areas in order to meet DEP requirements for drainage fields. From a public health and safety and natural resource protection perspective, on-lot systems that are failing because they are poorly maintained or have reached their useful life must be addressed. On-lot system failure is a major contributor to water quality problems. Municipalities should enact OLDS ordinances that mandate maintenance and inspection of on-lot systems. East Earl Township has an existing OLDS Management Program that was adopted in 1998 and amended in 2010 that requires that homeowners have their systems pumped out every three years and provide a receipt to the Township as verification.

Municipal Comprehensive Plan

The *Elanco Region Comprehensive Plan (2008)* has a Community Facilities Plan that addresses strengths and issues, goals, and strategies for both the region and individual municipalities for community facilities planning. The plan states that on-site sewage disposal systems are also a problem in the Village of Goodville in East Earl Township. While there is an existing package treatment plant serving an industrial complex, it is not feasible to expand it to serve the entire village due to cost and environmental issues.

One the strategies in this Plan is to review municipal land development regulations and 537 plans for consistency with the land use and community facilities goals of this Plan, especially related to restricting centralized sewer and water facilities outside of the region's Designated Growth Areas (DGAs). Ensure that DGAs, zoning designations, and sewer and water service areas are as consistent as possible. The proposed Act 537 Update Revision – Village of Goodville does a quality job in analyzing the planning goals and policy statements that are applicable for this targeted Act 537 update.

This review was prepared with the assistance of Mary Frey, AICP, Principal Countywide Planner.

FPB\RLH\fe

Copy: J. Douglas Martin, East Earl Township Planning Commission Secretary
Blakinger Byler & Thomas, East Earl Township Solicitor
Carol L. Martin, Brecknock Township Municipal Secretary
Kathy Norris, Caernarvon Township Municipal Secretary
Brenda S. Becker, Earl Township Municipal Secretary
Lester O. Houck, Salisbury Township Municipal Secretary
Valerie A. Gregory, Terre Hill Borough Municipal Secretary
Jeffrey Sweater, ELA Group, Inc.

PROOF OF PUBLICATION NOTICE IN

State of Pennsylvania}
 } ss:
 County of Lancaster}

Penny L. Stauffer of the County and State aforesaid, being duly sworn, deposes and says that the Intelligencer Journal-New Era a daily newspaper of general circulation published at Lancaster, County and State aforesaid, was established 1794-1877 since which date said daily newspaper has been regularly issued in said county, and that a copy of the printed notice or publication is attached hereto exactly the same as was printed and published in the regular editions and issues of said daily newspaper on the following dates:

10TH DAY OF JULY 2013

Affiant further deposes that she is the Billing Clerk duly authorized by the Lancaster Newspapers, Inc., a corporation, publisher of said Intelligencer Journal-Lancaster New Era-Sunday News a newspaper of general circulation, to verify the foregoing statement under oath, and also declares that affiant is not interested in the subject matter of the aforesaid notice or advertisement and that all allegations in the foregoing statement as to time, place and character of publication are true.

LEGAL NOTICE
 Notice is hereby given that the Board of Supervisors of East Earl Township, Lancaster County, PA, has caused to be prepared and proposes adoption of revision to its official sewage facilities plan in accordance with a document entitled ACT 537 OFFICIAL SEWAGE FACILITIES PLAN REVISION- VILLAGE OF GOODVILLE ("The Plan").

Written comments are invited from the public. Such comments may be submitted until August 9, 2013, to the following address:

ELA Group, Inc.
 743 S. Broad Street
 Lititz, PA 17543
 Attn. Jeff Sweater
 The Plan will be available for inspection on weekdays during regular business hours (8 a.m. to 4:30 p.m. Monday through Thursday and 8 a.m. to noon Friday) until noon Friday, August 9, 2013 at the Township Office at 4610 Division Highway, East Earl, PA 17519.

The Plan pertains to the Village of Goodville, which is not currently served by public sewers. The Plan addresses the Goodville sewer needs through the year 2033.

Conveyance and treatment options were developed and evaluated to satisfy the projected Township needs for Goodville. The alternatives were evaluated with respect to cost, constructability, operability and various environmental factors. They were all evaluated for consistency with the goals and objectives of various planning, environmental and natural resource laws and policies of the Commonwealth of Pennsylvania.

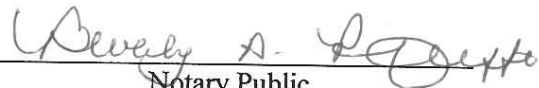
Major recommendations of the Plan are as follows:

1. Construction of a low pressure sewer collection and conveyance system to service the area within the village Growth Boundary.
 2. Construction of a 35,000 gpd wastewater treatment facility west of the Village with a discharge to Cedar Run located west of the Village.
 3. Preserve the integrity of the Village and the surrounding agricultural area resources.
 4. Continue to rely on on-lot systems for wastewater treatment and disposal outside of the public sewer area.
- By East Earl Township Board of Supervisors


 (Signature)

COPY OF NOTICE OF PUBLICATION

Sworn and subscribed to before me this
 10TH DAY OF JULY 2013


 Notary Public

My commission expires _____
 Commonwealth of Pennsylvania

NOTARIAL SEAL
 BEVERLY A. PFEIFFER, Notary Public
 Lancaster City, Lancaster County
 My Commission Expires July 5, 2017



GORDON DENLINGER, MEMBER
99TH LEGISLATIVE DISTRICT



House of Representatives
Commonwealth of Pennsylvania
Harrisburg

July 25, 2013

☐ PO BOX 202099
HARRISBURG, PENNSYLVANIA 17120-2099
PHONE: (717) 787-3531
FAX: (717) 705-1986
E-mail: gdenling@pahousegop.com

☐ 390 EAST MAIN STREET, SUITE 301
EPHRATA, PENNSYLVANIA 17522
PHONE: (717) 733-4002
FAX: (717) 733-3992

WEBSITE: www.RepDenlinger.com

Department of Environmental Protection
Attn: Timothy K. Wagner,
Sewage Planning Supervisor
Southcentral Regional Office
909 Elmerton Ave.
Harrisburg, PA 17110

Dear Mr. Wagner:

Thank you for working with East Earl Township as they evaluate the wastewater management alternatives for the village of Goodville. It has been brought to my attention, by the East Earl Township ("the Township") Board of Supervisors, that the municipality would like an extension of time to implement a joint sewer facility solution with Terre Hill Borough ("the Borough"). Your time and consideration is greatly appreciated.

As you well know, under Act 537 every municipality within Pennsylvania must maintain an up-to-date sewage facilities plan, in order to ensure the well-being of the municipality's citizens. The Township has examined numerous alternatives that satisfy the requirements of Act 537 and which will provide the best results for the citizens of Goodville. After careful research, the Township has determined that a joint sewer connected with Terre Hill Borough would best serve the interest of residents in both municipalities through cost saving and environmental efficiency.

A new, joint treatment facility for both municipalities would deliver many benefits to the residents of both municipalities. Such a facility would supply nearly all of the current sewage needs of both Terre Hill and East Earl Township, as well as the future needs. Additionally, a joint sewage facility would discharge into the Conestoga River, which would prove to be a more cost effective solution than Terre Hill's current discharge into the Black Creek, which is a high quality stream. Furthermore, the proposed joint facility would be the most cost effective option for both municipalities.

COMMITTEES

AGRICULTURE AND RURAL AFFAIRS
APPROPRIATIONS
SUB COMMITTEE ON FISCAL POLICY,
CHAIRMAN
FINANCE, VICE CHAIRMAN
LEGISLATIVE AUDIT ADVISORY
COMMISSION, CHAIRMAN
POLICY
JOBS CREATION, CO-CHAIRMAN
TOURISM AND RECREATIONAL
DEVELOPMENT

CAUCUSES

FIREFIGHTERS
HISTORY
PENN STATE
PRO-LIFE
SPORTSMEN'S
VALUES ACTION TEAM, CHAIRMAN

RECEIVED

AUG - 6 2013

EAST EARL TOWNSHIP

Thus far, only the Goodville Growth Boundary was examined in the scope of study and more time is needed to fully examine this promising alternative. Therefore, on behalf of East Earl Township, I would like to request additional time for the Township to work with Terre Hill Borough to develop a joint sewage facilities plan. Without an extension to more fully examine a joint facility, the leaders of East Earl Township believe they will be forced to choose an alternative that will be less beneficial for both municipalities. I believe the joint municipality facility option has significant merit, and that it is worthy of careful consideration. I would sincerely appreciate your consideration of a grant of additional time.

I am aware that you have many demands on your time and resources. Thank you for your attention to this important matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Gordon R. Denlinger", written in a cursive style.

Gordon R. Denlinger

State Representative

99th Legislative District

CC: East Earl Township Board of Supervisors
4610 Division Highway
East Earl, PA 17519



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 • Phone 717-354-5593 • Fax 717-355-0426

August 8, 2013

Jeffrey Sweater
ELA Group, Inc.
743 South Broad Street
Lititz, PA 17543

Dear Jeff:

The East Earl Township Board of Supervisors approved the Act 537 Plan revision at their meeting on August 8, 2013. However, they do not feel that the plan identified as being best in the Plan is the best option. They feel they are being forced to accept this option at this time due to time constraints required by DEP.

The Supervisors feel that the best option to provide public sewage to Goodville is to work with Terre Hill Borough on a joint treatment plant. Terre Hill will eventually have to update their treatment facilities, and it makes sense to pursue a long-range planning option that will benefit both municipalities, especially since we're assured that land is available for a joint project.

The Supervisors support requesting DEP to grant additional time to allow the Township and Borough to vigorously pursue this option.

Sincerely,

EAST EARL TOWNSHIP
BOARD OF SUPERVISORS

Connie J. Gross, Secretary-Treasurer

East Earl Sewer Authority

P. O. Box 339
Blue Ball, PA 17506
(717)354-5593 ext. 25

August 19, 2013

Re: East Earl Township/Terre Hill Borough Regional Treatment Plant

The East Earl Sewer Authority would like to express their support of the investigation of a regional treatment plant for East Earl Township/East Earl Sewer Authority and Terre Hill Borough in order to address the sewage needs of Goodville and other areas in both municipalities.

Over the years, much research has been done to find a solution to provide public sewer to Goodville. This option may be the solution the Township is looking for. In order to properly evaluate this option, the Township would need additional time. With the financial constraints all municipalities face and the stricter regulations to adhere to, the Authority feels this option warrants additional evaluation.

In conclusion, the Board of the East Earl Sewer Authority fully supports the investigation of a regional treatment plant and would like to request additional time to evaluate the feasibility of this option. The Authority would like to see the sewage concerns of Goodville addressed as promptly as possible, and believe working with Terre Hill Borough to address their needs in conjunction with our concerns would be more cost efficient and effective.

Sincerely,

East Earl Sewer Authority

5 PM

12/13

Annual Basis

East Earl Sewer Authority
Profit & Loss
 January through December 2012

	Jan - Dec 12
Income	
401.00 · Sewer Rents	697,920.63
410.00 · Surcharges	1,329.41
425.00 · Reimbursed Customer Income	3,058.07
701.00 · Interest Income	32,929.45
920.00 · Tapping Fees	209,315.00
Total Income	944,552.56
Expense	
500.00 · Sys. Operator Svcs.	80,095.57
501.00 · Additional Services - System Op	39,020.00
502.00 · Operator Wages	26,170.72
503.00 · Soc. Security	2,002.09
504.00 · Workers Comp	1,658.69
504.10 · Employee Insurance	467.55
504.20 · Unemployment Comp	994.37
504.30 · Pension	451.62
505.00 · System Insurance	3,829.00
505.10 · Insurance - vehicle	1,655.25
508.00 · Maintenance - Sewer Facilities	2,806.60
509.00 · Maintenance - Other	5,860.23
511.00 · Fuel Oil Pumping Station	5,194.30
512.00 · Electric	18,146.08
513.00 · Water	336.04
514.00 · Sewer Treatment	231,632.77
517.00 · Sludge Removal	3,525.00
518.00 · Telephone	5,705.86
526.00 · Depreciation	278,561.71
529.00 · Other Materials and Supplies	52,536.16
530.00 · Other Operating Expenses	9,222.66
531.00 · Reimbursed Customer Costs	4,065.57
551.00 · Gas & Oil	692.35
602.00 · Clerical Services	21,518.26
605.00 · Insurance-E&O & Liab.	1,272.00
607.00 · Billing and Collection Expense	1,309.97
608.00 · Engineer Fees	
608.10 · General Engineering	32,803.50
608.20 · Engineering GIS	1,630.60
Total 608.00 · Engineer Fees	34,434.10
609.00 · Legal Fees	14,902.81
610.00 · Audit Fees	7,350.00
612.00 · Authority Meeting Costs	2,475.00
613.00 · Postage and Office Supplies	2,192.74
615.00 · Advertising	642.34
625.00 · Other General Expense	776.19
629.00 · Computer Support	326.36
802.00 · Debt Service	
802.10 · Principal Payment	
802.11 · Principal-System	0.00
802.12 · Principal-Maint. Bldg.	0.00
Total 802.10 · Principal Payment	0.00
802.20 · Interest Expense	
802.21 · Interest-System	12,772.18
802.22 · Interest-Maint. Bldg	5,838.43
Total 802.20 · Interest Expense	18,610.61
Total 802.00 · Debt Service	18,610.61
Total Expense	880,440.57
Net Income	64,111.99

Appendix C

Detailed Cost Analysis

Detailed Cost Analysis Summary

The Joint Act 537 Sewage Facilities Plan cost information included in the Executive Summary and Narrative, is based on the detailed cost analysis, titled *Joint Act 537 Plan Detailed Cost Analysis: Wastewater Treatment Plant Capital and O&M Costs*. A second cost analysis, titled *Joint Act 537 Plan Detailed Cost Analysis: Wastewater Treatment Plant and O&M Costs With Projected Development To 2019*, is provided based on the increased projected and reserved capacity contained within the 2014 Chapter 94 Municipal Wasteload Reports for each municipality. However, the East Earl Township 2014 Chapter 94 Municipal Wasteload Report for flows sent to the Earl Township Sewer Authority contains an estimated 160 EDUs for a proposed development. This value has been modified to include 235 EDUs based on the East Earl Sewer Authority's capacity approval in April of 2015.

Existing User Base - 2015

Joint Act 537 Plan Detailed Cost Analysis: Wastewater Treatment Plant Capital and O&M Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration	
Design Flow (MGD)	0.210	0.210	0.210	0.200	0.200	0.410	0.410	0.205	0.165	0.035	
WWTP Land Area Required (Acre)	0.5	2.0	0.5	3.5	2.5	4.0	3.2	0.5	2.0	1.0	
WWTP Land Costs (2015,\$) ^A	\$ -	\$ -	\$ -	\$ 402,500.00	\$ 287,500.00	\$ 460,000.00	\$ 368,000.00	\$ 12,500.00	\$ 230,000.00	\$ 25,000.00	
WWTP Capital Costs											
Equalization Tank	\$ 275,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,000.00	
Influent Pump Station	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 365,000.00	\$ 365,000.00	\$ 250,000.00	\$ 200,000.00	\$ 90,000.00	
Influent Screen	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 15,000.00	
Aeration Equipment	\$ 400,000.00	\$ 400,000.00	\$ 557,900.00	\$ 400,000.00	\$ 557,900.00	\$ 750,000.00	\$ 1,300,000.00	\$ 557,900.00	\$ 455,000.00	\$ 215,000.00	
Treatment Unit Tank	\$ 350,000.00	\$ 880,000.00	\$ 457,100.00	\$ 880,000.00	\$ 457,100.00	\$ 1,060,000.00	\$ 850,000.00	\$ 457,100.00	\$ 400,000.00	\$ 200,000.00	
Anoxic Selector	\$ 215,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Post Equalization ^B	\$ -	\$ 90,000.00	\$ -	\$ 90,000.00	\$ -	\$ 180,000.00	\$ -	\$ -	\$ -	\$ 35,000.00	
Secondary Clarifier Modifications	\$ 185,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Secondary Clarifier	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,000.00	
Cloth Filter	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 135,700.00	
UV Disinfection	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 220,000.00	\$ 220,000.00	\$ 110,000.00	\$ 110,000.00	\$ 55,000.00	
Septage Receiving Station ^C	\$ -	\$ -	\$ -	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ -	\$ 200,000.00	\$ -	
Control Building	\$ 100,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 800,000.00	\$ 800,000.00	\$ 550,000.00	\$ 470,000.00	\$ 190,000.00	
Potable Water System w/Onsite Well	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ -	\$ 20,000.00	\$ 20,000.00	
Anaerobic Digester Upgrades	\$ 450,000.00	\$ 450,000.00	\$ 450,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Sludge Holding - Aerobic ^B	\$ -	\$ -	\$ -	\$ 350,000.00	\$ -	\$ 350,000.00	\$ -	\$ -	\$ -	\$ 90,000.00	
Mobilization	\$ 130,000.00	\$ 130,000.00	\$ 125,000.00	\$ 130,000.00	\$ 125,000.00	\$ 200,000.00	\$ 200,000.00	\$ 125,000.00	\$ 110,000.00	\$ 40,000.00	
Sitework w/Excavation	\$ 250,000.00	\$ 400,000.00	\$ 200,000.00	\$ 400,000.00	\$ 200,000.00	\$ 620,000.00	\$ 310,000.00	\$ 200,000.00	\$ 200,000.00	\$ 125,000.00	
Electrical	\$ 195,000.00	\$ 190,000.00	\$ 126,730.00	\$ 190,000.00	\$ 125,000.00	\$ 315,000.00	\$ 130,000.00	\$ 125,000.00	\$ 115,000.00	\$ 55,000.00	
Controls & Instrumentation	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 80,000.00	\$ 80,000.00	\$ 140,000.00	\$ 140,000.00	\$ 80,000.00	\$ 70,000.00	\$ 20,500.00	
Piping	\$ 565,000.00	\$ 565,000.00	\$ 145,000.00	\$ 565,000.00	\$ 145,000.00	\$ 940,000.00	\$ 235,000.00	\$ 145,000.00	\$ 230,000.00	\$ 145,000.00	
HVAC	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 180,000.00	\$ 180,000.00	\$ 85,000.00	\$ 71,000.00	\$ 20,500.00	
Tapping Fee to Earl Township (appr. \$8700/EDU)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Construction Cost Subtotal	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ 1,591,700.00	
Total Construction Cost (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ 1,591,700.00	
WWTP Salvage Value (2015,\$)	\$ 1,130,183.33	\$ 1,115,183.33	\$ 758,615.83	\$ 1,516,433.33	\$ 1,044,433.33	\$ 2,128,516.67	\$ 1,607,266.67	\$ 769,433.33	\$ 956,266.67	\$ 372,300.00	
Present Worth WWTP Salvage Value (2015,\$) ^D	\$ 457,550.97	\$ 451,478.27	\$ 307,123.10	\$ 613,923.00	\$ 422,835.37	\$ 861,722.90	\$ 650,696.57	\$ 311,502.53	\$ 387,141.38	\$ 150,724.42	
N= 20 i= 0.04625											
WWTP Operation & Maintenance Costs											
Operator Wage & Benefit	\$ 135,000.00	\$ 140,000.00	\$ 110,000.00	\$ 140,000.00	\$ 110,000.00	\$ 175,000.00	\$ 150,000.00	\$ 60,000.00	\$ 90,000.00	\$ 30,000.00	
Administrative	\$ 10,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 17,000.00	\$ 17,000.00	\$ 11,000.00	\$ 9,500.00	\$ 3,400.00	
Insurance	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 4,500.00	\$ 1,500.00	
Electric	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 105,000.00	\$ 85,000.00	\$ 45,000.00	\$ 33,000.00	\$ 7,500.00	
Chemical	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 22,500.00	\$ 32,000.00	\$ 32,000.00	\$ 15,000.00	\$ 5,000.00	
Natural Gas or Diesel	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 2,000.00	\$ 2,000.00	\$ 1,500.00	\$ 1,000.00	\$ 500.00	
Materials & Equipment	\$ 24,500.00	\$ 24,500.00	\$ 20,000.00	\$ 24,500.00	\$ 20,000.00	\$ 32,000.00	\$ 25,500.00	\$ 25,500.00	\$ 21,500.00	\$ 6,500.00	
Constructural/Other	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 22,500.00	\$ 22,500.00	\$ 25,500.00	\$ 15,000.00	\$ 5,000.00	
Nutrient Credits (assumes TN & TP = \$2.50/credit)	\$ -	\$ -	\$ -	\$ 5,300.00	\$ 5,300.00	\$ -	\$ -	\$ 5,300.00	\$ 4,400.00	\$ 900.00	
Sludge Handling	\$ 20,000.00	\$ 20,000.00	\$ 25,000.00	\$ 20,000.00	\$ 25,000.00	\$ 30,000.00	\$ 35,000.00	\$ 29,500.00	\$ 30,000.00	\$ 10,000.00	
Annual PA DEP NPDES Permit Fee	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 250.00	
Vehicle Operation and Maintenance	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	
Professional Services - Software and Support	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	
Total WWTP O&M Costs (2015,\$)	\$ 280,000.00	\$ 295,500.00	\$ 258,500.00	\$ 300,800.00	\$ 263,800.00	\$ 419,000.00	\$ 382,000.00	\$ 248,300.00	\$ 228,900.00	\$ 75,050.00	
WWTP Operation & Maintenance Present Worth (2015,\$) ^D	\$ 3,603,090.38	\$ 3,802,547.17	\$ 3,326,424.51	\$ 3,870,748.52	\$ 3,394,625.87	\$ 5,391,767.39	\$ 4,915,644.74	\$ 3,195,169.08	\$ 2,945,526.39	\$ 965,756.90	
N= 20 i= 0.04625											

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems Capatial Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration	
Collection System Land Area (Acre)				1.0	1.0	1.0	1.0	1.0	1.0	0.0	
Collection System Land Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ -	
Collection System Capital Costs											
Gravity Sewer Main 8-Inch Dia PVC											
Conestoga View	\$ -	\$ -	\$ -	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ -	
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ -	
Union Grove Rd ^A	\$ -	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ -	
S.R.625/Reading Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,140,000.00	\$ -	\$ -	
Gravity Sewer Main 10-Inch Dia PVC											
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ -	\$ 1,437,500.00	\$ -	
Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 412,500.00	\$ 412,500.00	\$ -	\$ 412,500.00	\$ -	
S.R. 23/Main Street	\$ -	\$ -	\$ -	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ -	\$ 218,750.00	\$ -	
S.R. 897/Toddy Drive	\$ -	\$ -	\$ -	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ -	\$ 187,500.00	\$ -	
Sewer Main to WWTP	\$ -	\$ -	\$ -	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ -	\$ 150,000.00	\$ -	
Precast Manholes - Concrete	\$ -	\$ -	\$ -	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 290,000.00	\$ 310,000.00	\$ -	
Forcemain 2-Inch Dia PVC											
Ironstone Dr	\$ -	\$ -	\$ -	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ -	
Spring Grove Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	
Valley View Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	
Silver Road to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ -	\$ 12,500.00	
Forcemain 4-Inch Dia DI											
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ -	
S.R. 897 & E Main St to Union Grove Rd (high point)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,000.00	\$ 80,000.00	\$ -	\$ -	\$ -	
Forcemain 6-Inch Dia DI											
Frogtown Rd to S.R. 625	\$ -	\$ -	\$ -	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ -	\$ -	
S.R. 23 to Frogtown Rd	\$ -	\$ -	\$ -	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ -	\$ 592,000.00	
Forcemain 8-Inch Dia DI	\$ -	\$ -	\$ -								
Borough of Terre Hill (Existing WWTP Site) to Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 812,500.00	\$ 812,500.00	\$ -	\$ -	\$ -	
Pump Stations w/Backup Power & Controls											
Spring Grove Road (North of Conestoga River)	\$ -	\$ -	\$ -	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ -	
Village of Goodville (Frogtown Rd)	\$ -	\$ -	\$ -	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ -	\$ 443,200.00	
Borough of Terre Hill (Existing WWTP Site)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 831,000.00	\$ 831,000.00	\$ -	\$ -	\$ -	
S.R. 23/Main Street Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 720,150.00	\$ -	\$ -	
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	
State Route Mill & Overlay											
S.R. 625/Reading Rd (N. of Conestoga River)	\$ -	\$ -	\$ -	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ -	
S.R. 625/Reading Rd (S. of Conestoga River)	\$ -	\$ -	\$ -	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ -	
S.R. 23/Main Street (S.R. 897/Springville Rd to S.R. 625/Reading Rd)	\$ -	\$ -	\$ -	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ -	
S.R. 23/Main Street (S.R. 625 to Frogtown Rd)	\$ -	\$ -	\$ -	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ -	
S.R. 23/Main Street (Frogtown Rd to Bridgeville Rd)	\$ -	\$ -	\$ -	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ -	\$ 116,550.00	
S.R. 897/Springville Rd (Toddy Dr to S.R. 23/Main St)	\$ -	\$ -	\$ -	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ -	
S.R. 1044 (E Main St to S.R. 625)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 202,700.00	\$ 202,700.00	\$ -	\$ -	\$ -	
U.S. 322 (Ewell Rd to E Earl Rd)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,800.00	\$ 22,800.00	\$ -	
State Route Mill & Overlay Subtotal	\$ -	\$ -	\$ -	\$ 400,400.00	\$ 400,400.00	\$ 603,100.00	\$ 603,100.00	\$ 423,200.00	\$ 306,650.00	\$ 116,550.00	
Existing Forcemain & Low Pressure Sewer System Upgrades											
Low Pressure Main Increase to 10-Inch DI											
S.R. 23 & S.R. 625 to East Earl Road	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 936,250.00	\$ -	\$ -	
East Earl Road to Witmer Road Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	
Kinzer Avenue								\$ 1,802,500.00			
Pump Station Upgrades											
Witmer Road Pump Station Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	
Kinzer Avenue Pump Station Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	
Construction Cost Sub Total	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	
Total Construction Cost (2015,\$)	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	
Collection System Salvage Value (2015,\$)	\$ -	\$ -	\$ -	\$ 2,542,950.00	\$ 2,542,950.00	\$ 3,517,450.00	\$ 3,517,450.00	\$ 4,543,703.33	\$ 2,166,016.67	\$ 526,933.33	
Present Worth Salvage Value (2015,\$) ^P	\$ -	\$ -	\$ -	\$ 1,029,504.86	\$ 1,029,504.86	\$ 1,424,027.95	\$ 1,424,027.95	\$ 1,839,503.20	\$ 876,904.65	\$ 213,327.21	
N= 20 i= 0.04625											

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems O&M Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR		Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration
Collection System Operation & Maintenance Costs											
Operator Wage & Benefits	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00		\$ 30,000.00	\$ 30,000.00	\$ 40,000.00	\$ 25,000.00	\$ 10,000.00
Officer Compensation	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ -	\$ -
Advertising	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 500.00	\$ 500.00	\$ 500.00	\$ -	\$ -
Administrative	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 10,000.00	\$ 10,000.00	\$ 2,500.00
Insurance	\$ -	\$ -	\$ -	\$ 3,500.00	\$ 3,500.00		\$ 5,000.00	\$ 5,000.00	\$ 4,000.00	\$ 3,000.00	\$ 1,500.00
Electric	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 40,000.00	\$ 40,000.00	\$ 60,000.00	\$ 7,500.00	\$ 2,500.00
Natural Gas or Diesel	\$ -	\$ -	\$ -	\$ 5,000.00	\$ 5,000.00		\$ 5,000.00	\$ 5,000.00	\$ 7,000.00	\$ 3,500.00	\$ 1,500.00
Materials & Equipment	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 30,000.00	\$ 15,000.00	\$ 7,500.00
Constructural/Other	\$ -	\$ -	\$ -	\$ 10,000.00	\$ 10,000.00		\$ 15,000.00	\$ 15,000.00	\$ 20,000.00	\$ 10,000.00	\$ 5,000.00
Vehicle Operation and Maintenance	\$ -	\$ -	\$ -	\$ 2,500.00	\$ 2,500.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 2,500.00	\$ 2,500.00
Professional Services - Software and Support	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
Professional Services - Engineering	\$ -	\$ -	\$ -	\$ 25,000.00	\$ 25,000.00		\$ 30,000.00	\$ 30,000.00	\$ 25,000.00	\$ 20,000.00	\$ 5,000.00
Communications	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 3,000.00	\$ 1,500.00
LS for O&M of Existing Borough System	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 25,000.00	\$ 25,000.00			
Collection System Operation & Maintenance Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 117,000.00	\$ 117,000.00		\$ 206,000.00	\$ 206,000.00	\$ 213,500.00	\$ 102,500.00	\$ 42,500.00
Collection System Operation & Maintenance Present Worth Cost (2015,\$) ^D	\$ -	\$ -	\$ -	\$ 1,505,577.05	\$ 1,505,577.05		\$ 2,650,845.07	\$ 2,650,845.07	\$ 2,747,356.42	\$ 1,318,988.44	\$ 546,897.65
N= 20 i= 0.04625											
WWTP & Collection System Sub Total (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 10,086,350.00	\$ 8,576,350.00		\$ 14,380,050.00	\$ 12,898,050.00	\$ 12,275,850.00	\$ 7,345,900.00	\$ 2,783,450.00
Construction Contingency (15%)	\$ 616,710.00	\$ 697,710.00	\$ 541,219.50	\$ 1,512,952.50	\$ 1,286,452.50		\$ 2,157,007.50	\$ 1,934,707.50	\$ 1,841,377.50	\$ 1,101,885.00	\$ 417,517.50
Construction Cost Subtotal	\$ 4,728,110.00	\$ 5,349,110.00	\$ 4,149,349.50	\$ 11,599,302.50	\$ 9,862,802.50		\$ 16,537,057.50	\$ 14,832,757.50	\$ 14,117,227.50	\$ 8,447,785.00	\$ 3,200,967.50
Admin, Engineering, Legal Services (20%)	\$ 945,622.00	\$ 1,069,822.00	\$ 829,869.90	\$ 2,319,860.50	\$ 1,972,560.50		\$ 3,307,411.50	\$ 2,966,551.50	\$ 2,823,445.50	\$ 1,689,557.00	\$ 640,193.50
WWTP & Collection System Present Worth (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00		\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00	\$ 3,841,161.00
Net Present Worth of Total Project (2015,\$) ^E	\$ 8,819,271.41	\$ 9,770,000.90	\$ 7,998,520.81	\$ 17,652,060.72	\$ 15,283,225.69		\$ 25,601,330.61	\$ 23,291,074.28	\$ 20,732,192.77	\$ 13,137,810.80	\$ 4,989,763.92

Joint Act 537 Plan Detailed Cost Analysis: Overall Cost Summary and User Rates

Description	Alternative 1					Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration
EDU Count - Planning Area & Existing EESA										
Borough of Terre Hill (2013 Chap 94 Report)	629	629	629			629	629			
Existing East Earl Sewer Authority (including Shady Maple Smorgasbord)				1437	1437	1437	1437	1437		1437
Village of Goodville										
Residential				106	106	106	106	106		106
Commercial				13	13	13	13	13		13
Future				5	5	5	5	5		5
Goodville Industrial Center				16	16	16	16	16		16
Conestoga Wood Specialty ^F				76	76	76	76	76		76
East Earl Sewer Authority Planning Area Residential & Commercial				140	140	140	140	140		140
Total EDUs Served	629	629	629	1793	1793	2422	2422	1793		1793
Total Cost Per EDU (2015,\$) ^G	\$ 14,021.10	\$ 15,532.59	\$ 12,716.25	\$ 9,844.99	\$ 8,523.83	\$ 10,570.33	\$ 9,616.46	\$ 11,562.85	\$ 10,110.19	
Projected EESA Debt for the Earl Sewer Authority WWTP Upgrades (2015,\$)	\$ -	\$ -	-	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	
Projected EESA Annual Debt Service for the Earl WWTP Upgrades (2015,\$) ^H N= 240 i= 0.172%	\$0.00	\$0.00	\$0.00	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$ 213,726.40	
WWTP & Collection System Projected Construction Costs (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00	\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00	\$ 3,841,161.00
Projected Intitial Tapping Fee Revenue ^J OLDS & CWS Tapping Fees Tapping Fee= \$7,160	\$ -	\$ -	\$ -	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	
Projected Alternative Initial Debt (2015,\$)	\$5,673,732.00	\$6,418,932.00	\$4,979,219.40	\$11,406,003.00	\$9,322,203.00	\$17,331,309.00	\$15,286,149.00	\$14,427,513.00	\$11,465,343.00	
Projected Alternative Aunual Debt Service (2015,\$) ^H N= 240 i= 0.172%	\$346,464.67	\$391,970.07	\$304,054.47	\$696,504.00	\$569,257.41	\$1,058,330.95	\$933,443.90	\$881,011.56	\$700,127.58	
Exisiting O&M Costs ^I	\$174,070.00	\$174,070.00	\$174,070.00	\$1,005,047.22	\$1,005,047.22	\$1,184,339.32	\$1,184,339.32	\$1,005,047.22	\$1,005,047.22	
Projected O&M Costs for New Collection, Conveyance, and Treatement Systems	\$280,000.00	\$295,500.00	\$258,500.00	\$417,800.00	\$380,800.00	\$625,000.00	\$588,000.00	\$461,800.00	\$331,400.00	\$117,550.00
Projected User Fee (per quarter)	\$318.18	\$342.42	\$292.78	\$295.50	\$272.60	\$296.00	\$279.29	\$327.36	\$300.35	
Projected User Fee (per month)	\$106.06	\$114.14	\$97.59	\$98.50	\$90.87	\$98.67	\$93.10	\$109.12	\$100.12	

Footnotes

A - Land cost reflect \$115,000/Industrial Acre and \$25,000/Agricultural Acre and are based on land appraisal values obtained by East Earl Township for the S.R.897 re-alignment project.

B - Manufacturer include post equalization equipment and tanks within quotes. No separate line items was provided for these treatment unit costs.

C - Septage Receiving Stations, which receives hauled in septage from tanker trucks, allow municipalities to generate revenue. The WWTP O&M Cost do not reflect a potential revenue stream for this activity.

D - Interest (Discount) Rate is provided by the U.S. EPA for the water year from October 1, 2014 to September 30, 2015.

E - Net Present Worth = WWTP & Collection Capital Costs + Present Worth WWTP O&M + Present Worth Collection Sys O&M - Present Worth WWTP Salvage Value - Present Worth Collection Sys Salvage Value + Mill & Overlay Costs

F - Conestoga Wood Specialties' Package WWTP NPDES Permit PA0083909 permits discharge up 19,000 gpd and is required under Part C of their NPDES Permit to connect to public sewer when it becomes available. Note: 19,000 gpd/250 gpd/EDU = 76 EDUs.

G - The "Total Cost Per EDU" does not reflect individual homeowners costs to purchase and install a grinder pump system, and does not include costs to terminate septic system.

H - Assumes 20 year loan term with 240 scheduled payments and a PENNVEST blended monthly intrest rate of 2.063%/12

I - Existing 2014 Budgets for East Earl and Terre Hill O&M costs (minus Terre Hill's estimated WWTP costs), inflated by 3.0% to 2015 dollars

J - Tapping Fee is based on current EESA Tapping Fee.

Projected User Base - 2019

Joint Act 537 Plan Detailed Cost Analysis: Wastewater Treatment Plant Capital and O&M Costs With Projected Development To 2019

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration	
Design Flow (MGD)	0.210	0.210	0.210	0.200	0.200	0.410	0.410	0.205	0.165	0.035	
WWTP Land Area Required (Acre)	0.5	2.0	0.5	3.5	2.5	4.0	3.2	0.5	2.0	1.0	
WWTP Land Costs (2015,\$) ^A	\$ -	\$ -	\$ -	\$ 402,500.00	\$ 287,500.00	\$ 460,000.00	\$ 368,000.00	\$ 12,500.00	\$ 230,000.00	\$ 25,000.00	
WWTP Capital Costs											
Equalization Tank	\$ 275,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,000.00	
Influent Pump Station	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 365,000.00	\$ 365,000.00	\$ 250,000.00	\$ 200,000.00	\$ 90,000.00	
Influent Screen	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 15,000.00	
Aeration Equipment	\$ 400,000.00	\$ 400,000.00	\$ 557,900.00	\$ 400,000.00	\$ 557,900.00	\$ 750,000.00	\$ 1,300,000.00	\$ 557,900.00	\$ 455,000.00	\$ 215,000.00	
Treatment Unit Tank	\$ 350,000.00	\$ 880,000.00	\$ 457,100.00	\$ 880,000.00	\$ 457,100.00	\$ 1,060,000.00	\$ 850,000.00	\$ 457,100.00	\$ 400,000.00	\$ 200,000.00	
Anoxic Selector	\$ 215,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Post Equalization ^B	\$ -	\$ 90,000.00	\$ -	\$ 90,000.00	\$ -	\$ 180,000.00	\$ -	\$ -	\$ -	\$ 35,000.00	
Secondary Clarifier Modifications	\$ 185,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Secondary Clarifier	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,000.00	
Cloth Filter	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 135,700.00	
UV Disinfection	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 220,000.00	\$ 220,000.00	\$ 110,000.00	\$ 110,000.00	\$ 55,000.00	
Septage Receiving Station ^C	\$ -	\$ -	\$ -	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ -	\$ 200,000.00	\$ -	
Control Building	\$ 100,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 800,000.00	\$ 800,000.00	\$ 550,000.00	\$ 470,000.00	\$ 190,000.00	
Potable Water System w/Onsite Well	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ -	\$ 20,000.00	\$ 20,000.00	
Anaerobic Digester Upgrades	\$ 450,000.00	\$ 450,000.00	\$ 450,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Sludge Holding - Aerobic ^B	\$ -	\$ -	\$ -	\$ 350,000.00	\$ -	\$ 350,000.00	\$ -	\$ -	\$ -	\$ 90,000.00	
Mobilization	\$ 130,000.00	\$ 130,000.00	\$ 125,000.00	\$ 130,000.00	\$ 125,000.00	\$ 200,000.00	\$ 200,000.00	\$ 125,000.00	\$ 110,000.00	\$ 40,000.00	
Sitework w/Excavation	\$ 250,000.00	\$ 400,000.00	\$ 200,000.00	\$ 400,000.00	\$ 200,000.00	\$ 620,000.00	\$ 310,000.00	\$ 200,000.00	\$ 200,000.00	\$ 125,000.00	
Electrical	\$ 195,000.00	\$ 190,000.00	\$ 126,730.00	\$ 190,000.00	\$ 125,000.00	\$ 315,000.00	\$ 130,000.00	\$ 125,000.00	\$ 115,000.00	\$ 55,000.00	
Controls & Instrumentation	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 80,000.00	\$ 80,000.00	\$ 140,000.00	\$ 140,000.00	\$ 80,000.00	\$ 70,000.00	\$ 20,500.00	
Piping	\$ 565,000.00	\$ 565,000.00	\$ 145,000.00	\$ 565,000.00	\$ 145,000.00	\$ 940,000.00	\$ 235,000.00	\$ 145,000.00	\$ 230,000.00	\$ 145,000.00	
HVAC	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 180,000.00	\$ 180,000.00	\$ 85,000.00	\$ 71,000.00	\$ 20,500.00	
Tapping Fee to Earl Township (appr. \$8700/EDU)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Construction Cost Subtotal	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ 1,591,700.00	
Total Construction Cost (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ 1,591,700.00	
WWTP Salvage Value (2015,\$)	\$ 1,130,183.33	\$ 1,115,183.33	\$ 758,615.83	\$ 1,516,433.33	\$ 1,044,433.33	\$ 2,128,516.67	\$ 1,607,266.67	\$ 769,433.33	\$ 956,266.67	\$ 372,300.00	
Present Worth WWTP Salvage Value (2015,\$) ^D	\$ 457,550.97	\$ 451,478.27	\$ 307,123.10	\$ 613,923.00	\$ 422,835.37	\$ 861,722.90	\$ 650,696.57	\$ 311,502.53	\$ 387,141.38	\$ 150,724.42	
N= 20 i= 0.04625											
WWTP Operation & Maintenance Costs											
Operator Wage & Benefit	\$ 135,000.00	\$ 140,000.00	\$ 110,000.00	\$ 140,000.00	\$ 110,000.00	\$ 175,000.00	\$ 150,000.00	\$ 60,000.00	\$ 90,000.00	\$ 30,000.00	
Administrative	\$ 10,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 17,000.00	\$ 17,000.00	\$ 11,000.00	\$ 9,500.00	\$ 3,400.00	
Insurance	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 4,500.00	\$ 1,500.00	
Electric	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 105,000.00	\$ 85,000.00	\$ 45,000.00	\$ 33,000.00	\$ 7,500.00	
Chemical	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 22,500.00	\$ 32,000.00	\$ 32,000.00	\$ 15,000.00	\$ 5,000.00	
Natural Gas or Diesel	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 2,000.00	\$ 2,000.00	\$ 1,500.00	\$ 1,000.00	\$ 500.00	
Materials & Equipment	\$ 24,500.00	\$ 24,500.00	\$ 20,000.00	\$ 24,500.00	\$ 20,000.00	\$ 32,000.00	\$ 25,500.00	\$ 25,500.00	\$ 21,500.00	\$ 6,500.00	
Constructural/Other	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 22,500.00	\$ 22,500.00	\$ 25,500.00	\$ 15,000.00	\$ 5,000.00	
Nutrient Credits (assumes TN & TP = \$2.50/credit)	\$ -	\$ -	\$ -	\$ 5,300.00	\$ 5,300.00	\$ -	\$ -	\$ 5,300.00	\$ 4,400.00	\$ 900.00	
Sludge Handling	\$ 20,000.00	\$ 20,000.00	\$ 25,000.00	\$ 20,000.00	\$ 25,000.00	\$ 30,000.00	\$ 35,000.00	\$ 29,500.00	\$ 30,000.00	\$ 10,000.00	
Annual PA DEP NPDES Permit Fee	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 250.00	
Vehicle Operation and Maintenance	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	
Professional Services - Software and Support	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	
Total WWTP O&M Costs (2015,\$)	\$ 280,000.00	\$ 295,500.00	\$ 258,500.00	\$ 300,800.00	\$ 263,800.00	\$ 419,000.00	\$ 382,000.00	\$ 248,300.00	\$ 228,900.00	\$ 75,050.00	
WWTP Operation & Maintenance Present Worth (2015,\$) ^D	\$ 3,603,090.38	\$ 3,802,547.17	\$ 3,326,424.51	\$ 3,870,748.52	\$ 3,394,625.87	\$ 5,391,767.39	\$ 4,915,644.74	\$ 3,195,169.08	\$ 2,945,526.39	\$ 965,756.90	
N= 20 i= 0.04625											

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems Capatial Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration	
Collection System Land Area (Acre)				1.0	1.0	1.0	1.0	1.0	1.0	0.0	
Collection System Land Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ -	
Collection System Capital Costs											
Gravity Sewer Main 8-Inch Dia PVC											
Conestoga View	\$ -	\$ -	\$ -	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ -	
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ -	
Union Grove Rd ^A	\$ -	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ -	
S.R.625/Reading Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,140,000.00	\$ -	\$ -	
Gravity Sewer Main 10-Inch Dia PVC											
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ -	\$ 1,437,500.00	\$ -	
Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 412,500.00	\$ 412,500.00	\$ -	\$ 412,500.00	\$ -	
S.R. 23/Main Street	\$ -	\$ -	\$ -	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ -	\$ 218,750.00	\$ -	
S.R. 897/Toddy Drive	\$ -	\$ -	\$ -	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ -	\$ 187,500.00	\$ -	
Sewer Main to WWTP	\$ -	\$ -	\$ -	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ -	\$ 150,000.00	\$ -	
Precast Manholes - Concrete	\$ -	\$ -	\$ -	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 290,000.00	\$ 310,000.00	\$ -	
Forcemain 2-Inch Dia PVC											
Ironstone Dr	\$ -	\$ -	\$ -	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ -	
Spring Grove Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	
Valley View Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	
Silver Road to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ -	\$ 12,500.00	
Forcemain 4-Inch Dia DI											
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ -	
S.R. 897 & E Main St to Union Grove Rd (high point)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,000.00	\$ 80,000.00	\$ -	\$ -	\$ -	
Forcemain 6-Inch Dia DI											
Frogtown Rd to S.R. 625	\$ -	\$ -	\$ -	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ -	\$ -	
S.R. 23 to Frogtown Rd	\$ -	\$ -	\$ -	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ -	\$ 592,000.00	
Forcemain 8-Inch Dia DI	\$ -	\$ -	\$ -	\$ -	\$ -						
Borough of Terre Hill (Existing WWTP Site) to Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 812,500.00	\$ 812,500.00	\$ -	\$ -	\$ -	
Pump Stations w/Backup Power & Controls											
Spring Grove Road (North of Conestoga River)	\$ -	\$ -	\$ -	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ -	
Village of Goodville (Frogtown Rd)	\$ -	\$ -	\$ -	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ -	\$ 443,200.00	
Borough of Terre Hill (Existing WWTP Site)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 831,000.00	\$ 831,000.00	\$ -	\$ -	\$ -	
S.R. 23/Main Street Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 720,150.00	\$ -	\$ -	
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	
State Route Mill & Overlay											
S.R. 625/Reading Rd (N. of Conestoga River)	\$ -	\$ -	\$ -	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ -	
S.R. 625/Reading Rd (S. of Conestoga River)	\$ -	\$ -	\$ -	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ -	
S.R. 23/Main Street (S.R. 897/Springville Rd to S.R. 625/Reading Rd)	\$ -	\$ -	\$ -	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ -	
S.R. 23/Main Street (S.R. 625 to Frogtown Rd)	\$ -	\$ -	\$ -	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ -	
S.R. 23/Main Street (Frogtown Rd to Bridgeville Rd)	\$ -	\$ -	\$ -	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ -	\$ 116,550.00	
S.R. 897/Springville Rd (Toddy Dr to S.R. 23/Main St)	\$ -	\$ -	\$ -	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ -	
S.R. 1044 (E Main St to S.R. 625)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 202,700.00	\$ 202,700.00	\$ -	\$ -	\$ -	
U.S. 322 (Ewell Rd to E Earl Rd)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,800.00	\$ 22,800.00	\$ -	
State Route Mill & Overlay Subtotal	\$ -	\$ -	\$ -	\$ 400,400.00	\$ 400,400.00	\$ 603,100.00	\$ 603,100.00	\$ 423,200.00	\$ 306,650.00	\$ 116,550.00	
Existing Forcemain & Low Pressure Sewer System Upgrades											
Low Pressure Main Increase to 10-Inch DI											
S.R. 23 & S.R. 625 to East Earl Road	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 936,250.00	\$ -	\$ -	
East Earl Road to Witmer Road Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	
Kinzer Avenue								\$ 1,802,500.00			
Pump Station Upgrades											
Witmer Road Pump Station Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	
Kinzer Avenue Pump Station Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	
Construction Cost Sub Total	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	
Total Construction Cost (2015,\$)	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	
Collection System Salvage Value (2015,\$)	\$ -	\$ -	\$ -	\$ 2,542,950.00	\$ 2,542,950.00	\$ 3,517,450.00	\$ 3,517,450.00	\$ 4,543,703.33	\$ 2,166,016.67	\$ 526,933.33	
Present Worth Salvage Value (2015,\$) ^D	\$ -	\$ -	\$ -	\$ 1,029,504.86	\$ 1,029,504.86	\$ 1,424,027.95	\$ 1,424,027.95	\$ 1,839,503.20	\$ 876,904.65	\$ 213,327.21	
N= 20 i= 0.04625											

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems O&M Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR		Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration
Collection System Operation & Maintenance Costs											
Operator Wage & Benefits	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00		\$ 30,000.00	\$ 30,000.00	\$ 40,000.00	\$ 25,000.00	\$ 10,000.00
Officer Compensation	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ -	\$ -
Advertising	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 500.00	\$ 500.00	\$ 500.00	\$ -	\$ -
Administrative	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 10,000.00	\$ 10,000.00	\$ 2,500.00
Insurance	\$ -	\$ -	\$ -	\$ 3,500.00	\$ 3,500.00		\$ 5,000.00	\$ 5,000.00	\$ 4,000.00	\$ 3,000.00	\$ 1,500.00
Electric	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 40,000.00	\$ 40,000.00	\$ 60,000.00	\$ 7,500.00	\$ 2,500.00
Natural Gas or Diesel	\$ -	\$ -	\$ -	\$ 5,000.00	\$ 5,000.00		\$ 5,500.00	\$ 5,500.00	\$ 7,000.00	\$ 3,500.00	\$ 1,500.00
Materials & Equipment	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 30,000.00	\$ 15,000.00	\$ 7,500.00
Constructural/Other	\$ -	\$ -	\$ -	\$ 10,000.00	\$ 10,000.00		\$ 15,000.00	\$ 15,000.00	\$ 20,000.00	\$ 10,000.00	\$ 5,000.00
Vehicle Operation and Maintenance	\$ -	\$ -	\$ -	\$ 2,500.00	\$ 2,500.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 2,500.00	\$ 2,500.00
Professional Services - Software and Support	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00
Professional Services - Engineering	\$ -	\$ -	\$ -	\$ 25,000.00	\$ 25,000.00		\$ 30,000.00	\$ 30,000.00	\$ 25,000.00	\$ 20,000.00	\$ 5,000.00
Communications	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 3,000.00	\$ 1,500.00
LS for O&M of Existing Borough System	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 25,000.00	\$ 25,000.00			
Collection System Operation & Maintenance Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 117,000.00	\$ 117,000.00		\$ 206,000.00	\$ 206,000.00	\$ 213,500.00	\$ 102,500.00	\$ 42,500.00
Collection System Operation & Maintenance Present Worth Cost (2015,\$) ^D	\$ -	\$ -	\$ -	\$ 1,505,577.05	\$ 1,505,577.05		\$ 2,650,845.07	\$ 2,650,845.07	\$ 2,747,356.42	\$ 1,318,988.44	\$ 546,897.65
N= 20 i= 0.04625											
WWTP & Collection System Sub Total (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 10,086,350.00	\$ 8,576,350.00		\$ 14,380,050.00	\$ 12,898,050.00	\$ 12,275,850.00	\$ 7,345,900.00	\$ 2,783,450.00
Construction Contingency (15%)	\$ 616,710.00	\$ 697,710.00	\$ 541,219.50	\$ 1,512,952.50	\$ 1,286,452.50		\$ 2,157,007.50	\$ 1,934,707.50	\$ 1,841,377.50	\$ 1,101,885.00	\$ 417,517.50
Construction Cost Subtotal	\$ 4,728,110.00	\$ 5,349,110.00	\$ 4,149,349.50	\$ 11,599,302.50	\$ 9,862,802.50		\$ 16,537,057.50	\$ 14,832,757.50	\$ 14,117,227.50	\$ 8,447,785.00	\$ 3,200,967.50
Admin, Engineering, Legal Services (20%)	\$ 945,622.00	\$ 1,069,822.00	\$ 829,869.90	\$ 2,319,860.50	\$ 1,972,560.50		\$ 3,307,411.50	\$ 2,966,551.50	\$ 2,823,445.50	\$ 1,689,557.00	\$ 640,193.50
WWTP & Collection System Present Worth (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00		\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00	\$ 3,841,161.00
Net Present Worth of Total Project (2015,\$) ^E	\$ 8,819,271.41	\$ 9,770,000.90	\$ 7,998,520.81	\$ 17,652,060.72	\$ 15,283,225.69		\$ 25,601,330.61	\$ 23,291,074.28	\$ 20,732,192.77	\$ 13,137,810.80	\$ 4,989,763.92

Joint Act 537 Plan Detailed Cost Analysis: Overall Cost Summary and User Rates

Description	Alternative 1					Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning SBR System	Village of Goodville Extended Aeration
EDU Count - Planning Area & Existing EESA										
Borough of Terre Hill (2013 Chap 94 Report)	629	629	629			629	629			
2014 Chapter 94 Report - Projected EDUs added by 2019^L	78	78	78			78	78			
Existing East Earl Sewer Authority (including Shady Maple Smorgasbord)				1437	1437	1437	1437	1437		1437
Village of Goodville										
Residential				106	106	106	106	106		106
Commercial				13	13	13	13	13		13
Future				5	5	5	5	5		5
Goodville Industrial Center				16	16	16	16	16		16
Conestoga Wood Specialty ^F				76	76	76	76	76		76
East Earl Sewer Authority Planning Area										
Residential & Commercial				140	140	140	140	140		140
4996 U.S. 322/Division Highway (45.6 Acres) ^M				235	235	235	235	235		235
2014 Chapter 94 Report To ETSA - Projected EDUs added by 2019 ^N				28	28	28	28	28		28
2014 Chapter 94 Report To NHB - Projected EDUs added by 2019 ^O				94	94	94	94	94		94
Total EDUs Served	707	707	707	2150	2150	2857	2857	2150		2150
Total Cost Per EDU (2015,\$)^G	\$ 12,474.22	\$ 13,818.95	\$ 11,313.33	\$ 8,210.26	\$ 7,108.48	\$ 8,960.91	\$ 8,152.28	\$ 9,642.88	\$ 8,431.43	
Projected EESA Debt for the Earl Sewer Authority WWTP Upgrades (2015,\$)	\$ -	\$ -	-	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	
Projected EESA Annual Debt Service for the Earl WWTP Upgrades (2015,\$) ^H N= 240 i= 0.172%	\$0.00	\$0.00	\$0.00	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$ 213,726.40	
WWTP & Collection System Projected Construction Costs (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00	\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00	\$ 3,841,161.00
Projected Intitial Tapping Fee Revenue ^J										
OLDS & CWS Tapping Fee	\$ -	\$ -	\$ -	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	
EELLC TAPPING FEE	\$ -	\$ -	\$ -	\$ 1,682,600.00	\$ 1,682,600.00	\$ 1,682,600.00	\$ 1,682,600.00	\$ 1,682,600.00	\$ 1,682,600.00	
2014 Chapter 94 Report To ETSA - Projected EDUs added by 2019	\$ -	\$ -	\$ -	\$ 200,480.00	\$ 200,480.00	\$ 200,480.00	\$ 200,480.00	\$ 200,480.00	\$ 200,480.00	
2014 Chapter 94 Report To NHB - Projected EDUs added by 2019	\$ -	\$ -	\$ -	\$ 673,040.00	\$ 673,040.00	\$ 673,040.00	\$ 673,040.00	\$ 673,040.00	\$ 673,040.00	
Tapping Fee= \$7,160										
Borough of Terre Hill Tapping - 2014 Chapter 94 Report - Projected EDUs added by 2019 ^K Tapping Fee = \$4,345	\$ 338,910.00	\$ 338,910.00	\$ 338,910.00			\$ 338,910.00	\$ 338,910.00			
Projected Alternative Initial Debt (2015,\$)	\$5,673,732.00	\$6,418,932.00	\$4,979,219.40	\$11,406,003.00	\$9,322,203.00	\$17,331,309.00	\$15,286,149.00	\$14,427,513.00	\$11,465,343.00	
Projected Alternative Annual Debt Service (2015,\$) ^H N= 240 i= 0.172%	\$346,464.67	\$391,970.07	\$304,054.47	\$696,504.00	\$569,257.41	\$1,058,330.95	\$933,443.90	\$881,011.56	\$700,127.58	
Exisiting O&M Costs ^I	\$174,070.00	\$174,070.00	\$174,070.00	\$1,005,047.22	\$1,005,047.22	\$1,184,339.32	\$1,184,339.32	\$1,005,047.22	\$1,005,047.22	
Projected O&M Costs for New Collection, Conveyance, and Treatement Systems	\$280,000.00	\$295,500.00	\$258,500.00	\$417,800.00	\$380,800.00	\$625,000.00	\$588,000.00	\$461,800.00	\$331,400.00	\$117,550.00
Projected User Fee (per quarter)	\$283.07	\$304.65	\$260.48	\$246.44	\$227.34	\$250.93	\$236.77	\$273.01	\$250.48	
Projected User Fee (per month)	\$94.36	\$101.55	\$86.83	\$82.15	\$75.78	\$83.64	\$78.92	\$91.00	\$83.49	

Footnotes

A - Land cost reflect \$115,000/Industrial Acre and \$25,000/Agricultural Acre and are based on land appraisal values obtained by East Earl Township for the S.R.897 re-alignment project

B - Manufacturer include post equalization equipment and tanks within quotes. No separate line items was provided for these treatment unit costs

C - Septage Receiving Stations, which receives hauled in septage from tanker trucks, allow municipalities to generate revenue. The WWTP O&M Cost do not reflect a potential revenue stream for this activity.

D - Interest (Discount) Rate is provided by the U.S. EPA for the water year from October 1, 2014 to September 30, 2015

E - Net Present Worth = WWTP & Collection Capital Costs + Present Worth WWTP O&M + Present Worth Collection Sys O&M - Present Worth WWTP Salvage Value - Present Worth Collection Sys Salvage Value + Mill & Overlay Costs

F - Conestoga Wood Specialties' Package WWTP NPDES Permit PA0083909 permits discharge up 19,000 gpd and is required under Part C of their NPDES Permit to connect to public sewer when it becomes available. Note: 19,000 gpd/250 gpd/EDU = 76 EDU:

G - The "Total Cost Per EDU" does not reflect individual homeowners costs to purchase and install a grinder pump system, and does not include costs to terminate septic system

H - Assumes 20 year loan term with 240 scheduled payments and a PENNVEST blended monthly intrtest rate of 2.063%/12

I - Existing 2014 Budgets for East Earl and Terre Hill O&M costs (minus Terre Hill's estimated WWTP costs), inflated by 3.0% to 2015 dollars

J - Tapping Fee is based on current EESA Tapping Fee.

K - Tapping Fee is based on current Borough of Terre Hill Tapping Fee.

L - The Borough's 2014 Chapter 94 Municipal Wasteload Report projects that 78 EDUs will be added to the Borough's system by 2019.

M - In April of 2015, the East Earl, LLC. Requested and received a capacity letter form the East Earl Sewer Authority for 235 EDUs. Please note, capacity has not been purchased at this time.

N - The East Earl Sewer Authority's 2014 Chapter 94 Municipal Wasteload Report for the wastewater sent to Earl Township Sewer Authority's wastewater system, projects 28 EDUs will be connected on top of the East Earl, LLC. Property connections. Note the 2014 Chapter 94 Report uses 160 EDUs instead of 235 EDUs for the East Earl, LLC. project. These users will provide Tapping Fees and increase the user base.

O - The East Earl Sewer Authority's 2014 Chapter 94 Municipal Wasteload Report for the wastewater sent to New Holland Borough's wastewater system, projects 94 EDUs will be connected. These users will provide Tapping Fees and increase the user base.

Appendix D
Pennsylvania Natural Diversity Inventory Receipt
Borough of Terre Hill

1. PROJECT INFORMATION

Project Name: **Borough of Terre Hill & East Earl Township Joint Act 537 Plan**

Date of review: **2/16/2015 8:04:50 AM**

Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewage module/Act 537 plan**

Project Length: **1478.1** feet

County: **Lancaster** Township/Municipality: **East Earl**

Quadrangle Name: **TERRE HILL** ~ ZIP Code: **17519**

Decimal Degrees: **40.164784 N, -76.043640 W**

Degrees Minutes Seconds: **40° 9' 53 N, W**



2. SEARCH RESULTS

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

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

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special

concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <http://www.naturalheritage.state.pa.us>.



5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA.
17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: Julian Mazero

Company/Business Name: ELA Group, Inc.

Address: 743 South Broad Street

City, State, Zip: Lititz, PA 17543

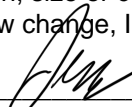
Phone: (717) 626.7271

Fax: (717) 626.7040

Email: jamazero@elagroup.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.


applicant/project proponent signature

02.16.2015

date

Appendix E
Pennsylvania Historical and Museum Commission
Review - Borough of Terre Hill



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

April 15, 2015

ELA Group, Inc.
743 South Broad Street
Lititz, PA 17543

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: File No. ER 2015-1058-071-A
DEP ACT 537 PROGRAM: Sewage
Facilities Plan, Construct, Own & Operate
Regional Wastewater Collection System &
Treatment Plant, East Earl Twp., Terre Hill
Borough, Lancaster Co.

Dear Sir:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Thank you for submitting information concerning the above referenced project. This project is a planning study; therefore this office cannot assess the effects on specific historic and archaeological resources until more detailed plans are developed. During the project planning stages, you should make provisions to identify historic and archaeological resources listed in or eligible for the National Register of Historic Places, as well as to assess the effects of the project on these resources. To assist you in your identification of known historic and archaeological resources, the Bureau for Historic Preservation maintains records of National Register listed and eligible resources as well as archaeological surveys (P.A.S.S. files) and historic resource survey files. Information on many of these resources is available on our web based Cultural Resources Geographic Information System (CRGIS) <http://crgis.state.pa.us>.

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April 15, 2015
ER No. 2015-1058-071-A

If you need further information regarding archaeological survey please contact Doug McLearn at (717) 772-0925. If you need further information concerning historic structures please consult Cheryl Nagle at (717) 772-4519.

Sincerely,



Douglas C. McLearn, Chief
Division of Archaeology &
Protection

cc: DEP, Southcentral Regional Office

DCM/tmw

Appendix F
2014 Consent Order and Agreement

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the Matter of:

East Earl Township	:	Sewage Facilities Planning
Lancaster County	:	
	:	
Terre Hill Borough	:	
Lancaster County	:	

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 22ND day of APRIL, 2014, by and among the Commonwealth of Pennsylvania, Department of Environmental Protection ("Department"), Terre Hill Borough ("Terre Hill"), and East Earl Township ("East Earl").

The Department has found and determined the following:

- A. The Department is the agency with the duty and authority to administer and enforce the Pennsylvania Sewage Facilities Act ("Act 537"), Act of January 24, 1966, P.L. (1965) 1535, as amended, 35 P.S. §750.1 et seq.; the Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. §691.1 et seq.; Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, as amended, 71 P.S. §510-17; and the Rules and Regulations promulgated pursuant thereto.
- B. East Earl is a municipality in Lancaster County, organized and existing under the laws of the Commonwealth of Pennsylvania, with an address of 4610 Division Highway, East Earl, PA 17519.
- C. Terre Hill is a municipality in Lancaster County, organized and existing under the laws of the Commonwealth of Pennsylvania, with an address of PO Box 250, 300 Broad Street, Terre Hill, PA 17581-0250.
- D. East Earl prepared and submitted an Act 537 Official Sewage Facilities Plan Update ("Plan Update") to the Department on July 10, 2002.
- E. The Department approved the Act 537 Plan by letter dated August 16, 2002.
- F. The approved plan addressed the sewage disposal needs of the Village of Goodville by providing for the construction of a sewage treatment plant and associated infrastructure, with a discharge to an unnamed tributary of Cedar Creek, a tributary to the Conestoga River.
- G. On May 10, 2002 East Earl Sewer Authority ("EESA") submitted an NPDES permit application to the Department for the discharge from the sewerage system referenced in paragraph E, above.
- H. On December 13, 2005 the Department denied the NPDES permit application.

- I. On January 29, 2008 the Department sent a Compliance Notice to East Earl relating to its failure to address the sewage disposal needs of Goodville.
- J. By letter dated February 14, 2008, East Earl responded to the Compliance Notice.
- K. By letter dated May 8, 2008, East Earl requested preliminary effluent limits for a different discharge point.
- L. By letter dated May 22, 2008, the Department provided the preliminary effluent limits for two potential discharge locations and requested a schedule from East Earl for developing a plan to serve the needs of Goodville.
- M. East Earl responded by letter dated July 21, 2008 indicating that it intended to engage in conversation with a neighboring municipality, but did not commit to submitting any planning by a certain date.
- N. The Department issued a second Compliance Notice on April 8, 2010 to East Earl for its failure to address the sewage disposal needs of Goodville.
- O. By letter dated June 16, 2010, the Department reminded East Earl of its obligation under the Sewage Facilities Act and the regulations to address the sewage disposal needs in Goodville.
- P. Terre Hill owns and operates a wastewater treatment facility under NPDES Permit No. PA0020222, issued on June 14, 2013, with an effective date of July 1, 2013 and an expiration date of June 30, 2018. The facility has a permitted design capacity of 0.210 MGD, and discharges to Black Creek, which is classified as High Quality - Warm Water Fishes under 25 Pa. Code Chapter 93.
- Q. The treatment plant serves Terre Hill and limited contiguous areas in East Earl Township. The plant design is a three-stage, high rate, modified activated sludge type plant. The original wastewater treatment plant was constructed in 1962, and modified various times over the years. The current facility will need to be upgraded to meet nutrient removal requirements under the Chesapeake Bay Tributary Strategy.
- R. Terre Hill wishes to pursue a new sewage treatment facility to replace the aging facility that currently serves its needs.
- S. Terre Hill is investigating a discharge location to the Conestoga River that is classified as Warm Water Fishes.
- T. Terre Hill and East Earl wish to cooperate in the planning, permitting, construction and utilization of a new sewage treatment facility to serve the joint needs of the municipalities.

After full and complete negotiation of all matters set forth in this Consent Order and Agreement and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by Terre Hill and East Earl as follows:

1. **Authority.** This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to: Section 5 of the Clean Streams Law, 35 P.S. §691.5, Section 10 of

the Sewage Facilities Act, 35 P.S. §750.10, and Section 1917-A of the Administrative Code, supra. Failure of Terre Hill, East Earl, or both to comply with any term or condition of this Consent Order and Agreement shall respectively subject Terre Hill, East Earl, or both to all penalties and remedies provided by those statutes for failing to comply with an order of the Department.

2. Findings.

(a) Terre Hill and East Earl agree that the findings in Paragraphs A through T are true and correct and, in any matter or proceeding involving Terre Hill or East Earl and the Department, Terre Hill and East Earl shall not challenge the accuracy or validity of these findings.

(b) The parties do not authorize any other persons to use the findings in this Consent Order and Agreement in any matter or proceeding.

3. Corrective Action.

(a) Within sixty (60) days of the date of this Consent Order and Agreement, Terre Hill and East Earl shall submit a Task Activity Reports ("TAR") for preparation of a joint Act 537 Official Sewage Facilities Plan Update revision ("Plan Update revision") that, at a minimum, addresses the sewage disposal needs of the Village of Goodville.

(b) In the event the Department requires more information from East Earl or Terre Hill to approve the TAR, Terre Hill and/or East Earl shall respectively submit such information to the Department within thirty (30) days of receiving a written request from the Department.

(c) Within three hundred sixty five (365) days of the Department's approval of the TAR, Terre Hill and East Earl shall submit to the Department an officially adopted Act 537 Plan Update revision that, among other things, addresses the sewage disposal needs of the Village of Goodville, that is consistent with the TAR, and meets the requirements of 25 Pa. Code §§71.21 and 71.31.

(d) In the event that the Department determines that additional information is necessary to complete administratively the Plan Update revision, Terre Hill and/or East Earl shall respectively submit such information requested from either municipality to the Department within thirty (30) days of receiving a written request for such additional information from the Department.

(e) In the event that the Department determines that any other additional information or analysis is necessary, Terre Hill and/or East Earl shall respectively submit such information or analysis requested from either municipality to the Department within sixty (60) days of receiving a written request for such additional information or analysis from the Department.

(f) Upon approval by the Department, Terre Hill and East Earl shall implement the Plan Update revision in accordance with the implementation schedule(s) contained therein.

4. Stipulated Civil Penalties.

(a) In the event Terre Hill and/or East Earl fail to comply in a timely manner with the provisions of Paragraph 3, each such municipality that fails to comply shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount determined under the following schedule:

(i) For any violation of Paragraphs 3(b), 3(d), or 3(e), \$50.00 per day for each violation;

(ii) For any violation of Paragraphs 3(a), 3(c), or 3(f), \$100.00 per day for the first 10 days of each violation, and \$300.00 per day for each violation extending beyond the first 10 days.

(b) Stipulated civil penalty payments shall be payable monthly on or before the fifteenth day of each succeeding month, and payment shall be made by corporate check, or the like, made payable to the Commonwealth of Pennsylvania and sent to the Department as indicated in Paragraph 8 below.

(c) Any payment under this paragraph shall neither waive Terre Hill's and/or East Earl's respective duties to meet its obligations under this Consent Order and Agreement, nor preclude the Department from commencing an action to compel Terre Hill's and/or East Earl's compliance with the terms and conditions of this Consent Order and Agreement. The payment resolves only Terre Hill's and/or East Earl's respective liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

(d) Stipulated civil penalties shall be due automatically and without notice.

5. Additional Remedies.

(a) In the event Terre Hill and/or East Earl fail to comply with any provision of this Consent Order and Agreement, the Department may, in addition to the remedies prescribed herein, respectively pursue any remedy available for a violation of an order of the Department, including an action to enforce this Consent Order and Agreement.

(b) The remedies provided by this paragraph and Paragraph 4 (Stipulated Civil Penalties) are cumulative, and the exercise of one does not preclude the exercise of any other. The failure of the Department to pursue any remedy shall not be deemed to be a waiver of that remedy. The payment of a stipulated civil penalty, however, shall preclude any further assessment of civil penalties for the violation for which the stipulated civil penalty is paid.

6. Reservation of Rights. The Department reserves the right to require additional measures to achieve compliance with applicable law. Terre Hill and East Earl each reserve the right to challenge any action that the Department may take to require those measures.

7. Liability of Terre Hill and East Earl. Terre Hill and East Earl each shall be respectively liable for any violations of the Consent Order and Agreement that either commits, including those caused by, contributed to, or allowed by their respective officers, agents, employees, or contractors. Neither municipality, however, shall be liable or responsible for the other municipality's (or its officers', agents', employees', or contractors') violations.

8. Correspondence with Department. All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

DEP – Clean Water Program
Timothy K. Wagner
Environmental Group Manager
909 Elmerton Ave
Harrisburg, PA 17110

9. Correspondence with Terre Hill and East Earl. All correspondence with Terre Hill and East Earl concerning this Consent Order and Agreement shall be addressed to:

East Earl Township Supervisors
4610 Division Hwy
East Earl, PA 17519

Terre Hill Borough
PO Box 250
Terre Hill, PA 17581-0250.

Each of Terre Hill and East Earl shall notify the Department whenever there is a change in their respective contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and Agreement, including its enforcement, may be made by mailing a copy by first class mail to the above address.

10. **Severability.** The paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

11. **Entire Agreement.** This Consent Order and Agreement shall constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

12. **Attorney Fees.** The parties shall bear their respective attorney fees, expenses and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

13. **Modifications.** No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the parties hereto.

14. **Titles.** A title used at the beginning of any paragraph of this Consent Order and Agreement may be used to aid in the construction of that paragraph, but shall not be treated as controlling.

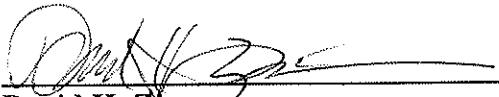
15. **Decisions under Consent Order.** Any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code §1021.2, nor an adjudication under 2 Pa. C.S. §101. Any objection, which Terre Hill or East Earl may have to the decision, will be preserved until the Department enforces this Consent Order and Agreement.

16. **Termination.** The obligations of this Consent Order and Agreement shall terminate when the Department determines that Terre Hill and East Earl has complied with the requirements of Paragraph 3.

17. **Resolution.** Attached hereto as Appendix A is a resolution of the Board of Supervisors of East Earl Township authorizing its signatories below to enter into this Consent Order and Agreement on its behalf. Also attached hereto as Appendix B is a resolution of the Borough Council of Terre Hill Borough authorizing its signatories below to enter into this Consent Order and Agreement on its behalf.

IN WITNESS WHEREOF, the parties hereto have caused this Consent Order and Agreement to be executed by their duly authorized representatives. The undersigned representatives of Terre Hill and East Earl certify under penalty of law, as provided by 18 Pa.C.S. §4904, that they are authorized to execute this Consent Order and Agreement on behalf of their respective municipality; that Terre Hill and East Earl consent to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that Terre Hill and East Earl hereby knowingly waive their rights to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, the Act of July 13, 1988, P.L. 530, No. 1988-94, 35 P.S. §7514; the Administrative Agency Law, 2 Pa.C.S. §103(a) and Chapters 5A and 7A; or any other provision of law. Signature by Terre Hill's and East Earl's attorneys certify only that the agreement has been signed after consulting with counsel.


FOR EAST EARL TOWNSHIP:



David H. Zimmerman
Board of Supervisors Chairman

Frank P. Mincarelli
Solicitor for East Earl Township

FOR TERRE HILL BOROUGH:


Jeffrey Cassel
Borough Council President


Bradford J. Harris, Esquire
Solicitor for Terre Hill Borough

**FOR THE COMMONWEALTH OF
PENNSYLVANIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION:**



Maria D. Bebenek, P.E.
Program Manager



Martin R. Siegel
Assistant Counsel

Appendix A

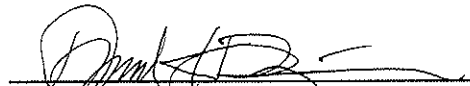
RESOLUTION #12-2014

BE IT RESOLVED, by the authority of the Board of Supervisors of the Township of East Earl, 4610 Division Highway, East Earl, Lancaster County, Pennsylvania, that the Chairman of the Board of Supervisors and the Solicitor of said Township be authorized to sign the Consent Order and Agreement between East Earl Township and the Department of Environmental Protection (DEP) on East Earl Township's behalf.

ATTEST:

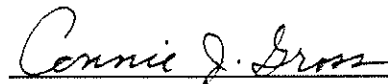
TOWNSHIP OF EAST EARL


Secretary-Treasurer


Chairman, Board of Supervisors

I, Connie J. Gross, Secretary-Treasurer of the Board of Supervisors of the Township of East Earl, do hereby certify that the foregoing is a true and correct copy of the Resolution adopted at a meeting of the Board of Supervisors of the Township of East Earl held the 3rd day of April, 2014.

(SEAL)


Secretary-Treasurer

Appendix B

RESOLUTION NO. 2014-8

A RESOLUTION OF THE COUNCIL FOR THE BOROUGH OF TERRE HILL AUTHORIZING ENTERING INTO A CONSENT ORDER AND AGREEMENT WITH THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND EAST EARL TOWNSHIP

WHEREAS, the Borough of Terre Hill (hereinafter "Borough") provides services for the collection of wastewater; and

WHEREAS, the Borough's wastewater treatment plant is at the end of its useful life; and

WHEREAS, the Borough desires to explore the options available for the future treatment of wastewater including the possibility of constructing a joint wastewater treatment plant to service the residents of the Borough and East Earl Township; and

WHEREAS, the Pennsylvania Department of Environmental Protection requires entering into a Consent Order and Agreement to complete a joint Act 537 Plan with East Earl Township to determine the best course of action for ratepayers within the service areas of the Borough and East Earl Township; and

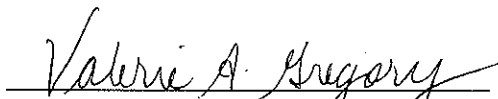
WHEREAS, it is the Borough's desire to enter into a Consent Order & Agreement with Pennsylvania Department of Environmental Protection substantially in the form attached hereto.

NOW, THEREFORE, BE IT RESOLVED that Terre Hill Borough Council hereby authorizes Jeffrey A. Cassel, Borough Council President, and Bradford J. Harris, Borough Solicitor, as signatory's to execute the Consent Order and Agreement.

ADOPTED this 8th day of April, 2014.

ATTEST:

BOROUGH OF TERRE HILL


Valerie A. Gregory, *Secretary*

By: 
Leonard E. Pierce, *Vice President*

Appendix G

Well Sampling Results and Surveys

WELL SAMPLING RESULTS AND PARTIAL SURVEY RESULTS FOR THE EXPANDED PLANNING AREA: 11/17/2014

LOCATION DATA/OWNER INFORMATION				SURVEY RESULTS			LAB RESULTS			
LIST NUMBER	HOUSE NO.	STREET NAME	STREET SUFFIX	WATER TREATMENT	WATER PREVIOUSLY TESTED	PREVIOUSLY TESTED CONTAMINATION	Total Coliform	E.Coli	Nitrate-Nitrogen	PASS-FAIL
1	1461	MAIN	ST	SOFTNER	Y		0.0	0.0	2.17	PASS
2	1463	MAIN	ST		N		2.0	0.0	11.60	FAIL
3	1445	MAIN	ST		Y	FC	0.0	0.0	9.05	PASS
4	147	READING	RD		Y	TC	0.0	0.0	1.65	PASS
5	156	READING	RD	SOFTNER	Y	NITRATES	53.1	9.9	11.00	FAIL
6	166	READING	RD	SOFTNER	N		0.0	0.0	9.29	PASS
7	184	READING	RD				83.1	2.0	12.60	FAIL
8	186	READING	RD	SOFTNER & RO	Y	NITRATES	16.4	0.0	9.92	FAIL
9	188	READING	RD				22.2	0.0	9.29	FAIL
10	190	READING	RD	SOFTNER	Y-2013	NONE	0.0	0.0	<1	PASS
11	200	READING	RD				0.0	0.0	15.90	FAIL
12	202	READING	RD				144.5	0.0	17.10	FAIL
13	204	READING	RD				5.3	0.0	13.30	FAIL
14	206	READING	RD				1.0	0.0	15.80	FAIL
15	208	READING	RD	SOFTNER	N		>200.5	22.2	8.47	FAIL
16	233	READING	RD				0.0	0.0	8.26	PASS
17	241	READING	RD				0.0	0.0	1.04	PASS
18	244	READING	RD				0.0	0.0	12.00	FAIL
19	245	READING	RD	SOFTNER	Y	QUARTERLY FOR PA DEP	0.0	0.0	1.24	PASS
20	290	READING	RD				1.0	0.0	2.85	FAIL
21	308	READING	RD				0.0	0.0	<1.00	PASS
22	310	READING	RD				>200.5	0.0	7.38	FAIL
23	327	READING	RD				16.4	5.3	9.17	FAIL
24	366	READING	RD				0.0	0.0	10.90	FAIL
25	370	READING	RD				3.1	0.0	9.40	FAIL
26	372	READING	RD				5.3	0.0	9.45	FAIL
27	376	READING	RD	SOFTNER	Y		0.0	0.0	9.01	PASS
28	391	READING	RD	SOFTNER			0.0	0.0	8.40	PASS
29	396	READING	RD				118.4	2.0	5.09	FAIL
30	387	READING	RD	UV & SOFTNER	N		0.0	0.0	4.75	PASS
31	397	SPRING GROVE	RD	SOFTNER	Y - 2103	TC, NITRATES	>200.5	94.5	8.21	FAIL
32	401	SPRING GROVE	RD				129.8	12.4	11.10	FAIL
33	434	SPRING GROVE	RD				1.0	0.0	9.81	FAIL
34	442	SPRING GROVE	RD				0.0	0.0	<1	PASS
35	1458	UNION GROVE	RD				0.0	0.0	<1	PASS
36	1462	UNION GROVE	RD				69.7	0.0	7.66	FAIL
37	1476	CONESTOGA VIEW	DR				7.5	0.0	14.60	FAIL
38	1484	CONESTOGA VIEW	DR				1.0	0.0	8.00	FAIL
39	1487	CONESTOGA VIEW	DR				0.0	0.0	7.93	PASS
40	237	GOODS STORE ROAD	DR				0.0	0.0	<1.0	PASS



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-01**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 07:10 Sampler: Rod Martin Source: Kitchen 1461 Main Street East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	2.17 mg/L	Pass	10.4 mg/L	11/11/2014	15:39	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample meets state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: East Earl CO.: Lanc. STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: Warm

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: John Hurst STREET: 1461 Main St CITY: East Earl Pa

ZIP: 17519 PHONE NO.: 445-9860 OWNER OR RENTER? NO. OF OCCUPANTS? 4

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? 100 ft (ft) Is well UP DOWNHILL?

Do you treat your water? Y / N How? CL/UV DISINFECTION SOFTNER ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1.24 Acre. No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 8 yr. Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? Twice Last time? 2014

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-02**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 07:20 Sampler: Rod Martin Source: Kitchen 1463 Main Street East Earl PA 17519								
Bacteria - Total Coliform	2.0 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	11.6 mg/L	Fail	10.4 mg/L	11/11/2014	15:41	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: _____ CO.: _____ STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: warm, dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Steve Jensen STREET: 1463 Main St. CITY: East Earl

ZIP: 17519 PHONE NO.: 717-445-6200 OWNER OR RENTER? _____ NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? DRILLED How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? 100 (ft) Is well UP/DOWNHILL? UP

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1.0 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 24 yrs Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 4 yrs Last time? 2010

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-03**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 07:35 Sampler: Rod Martin Source: Kitchen 1445 Main Street East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.05 mg/L	Pass	10.4 mg/L	11/11/2014	15:43	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: East Earl Twp CO.: Lancaster STUDY AREA: _____ DATE: 11-11-14
 General Weather Conditions: Cool, cloudy

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Dale Zimmerman STREET: 1445 Main St. CITY: East Earl
 ZIP: 17519 PHONE NO.: (717) 445-4680 OWNER OR RENTER? NO. OF OCCUPANTS? 4

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?
 If you have a well: Is it DUG or DRILLED? How DEEP? 30 (ft) Cased? Y N
 How far is the well or spring from the drain field? 200 (ft) Is well UP DOWNHILL?
 Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER
 Was the water ever tested? Y N When?
 Any contamination? Y N What? (TC, FC, N, etc..) FC
 How large is your lot? 73 No. of Dwelling Units? 3
 One or more sewage systems? 3 COMMERCIAL/ RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? _____ Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? NO

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y N How often? Every few year Last time? 2 years ago

If it was pumped, was it inspected for cracks or broken baffles? Y N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-04**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 07:55 Sampler: Rod Martin Source: Kitchen 147 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	1.65 mg/L	Pass	10.4 mg/L	11/11/2014	15:45	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: East Earl CO.: Lancaster STUDY AREA: _____ DATE: 11-11-

General Weather Conditions: _____

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

NAME: Hurst (CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED) STREET: 625 (147 Reading Rd) CITY: East Earl
ZIP: 17519 PHONE NO.: 445 6853 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER? _____

If you have a well: Is it DUG or DRILLED? DRILLED How DEEP? 300 (ft) Cased? Y / N

How far is the well or spring from the drain field? 100 FT (ft) Is well UP/DOWNHILL? UP

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y / N When? UP

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1 acre No. of Dwelling Units? _____

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? _____

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<input checked="" type="checkbox"/> SEPTIC TANK	<input checked="" type="checkbox"/> INGROUND BED	<input type="checkbox"/> COMMUNITY SEWER
<input type="checkbox"/> CESSPOOL	<input type="checkbox"/> INGROUND TRENCH	<input type="checkbox"/> STORM SEWER
<input type="checkbox"/> OLD WELL	<input type="checkbox"/> ELEVATED SAND MOUND	<input type="checkbox"/> PIPE TO DITCH
<input type="checkbox"/> HOLDING TANK	<input type="checkbox"/> SEEPAGE PIT	<input type="checkbox"/> PIPE TO STEAM
<input type="checkbox"/> PRIVY	<input type="checkbox"/> BOREHOLE	<input type="checkbox"/> PIPE TO SURFACE
<input type="checkbox"/> OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<input checked="" type="checkbox"/> SEPTIC TANK	<input checked="" type="checkbox"/> INGROUND BED	<input type="checkbox"/> COMMUNITY SEWER
<input type="checkbox"/> CESSPOOL	<input type="checkbox"/> INGROUND TRENCH	<input type="checkbox"/> STORM SEWER
<input type="checkbox"/> OLD WELL	<input type="checkbox"/> ELEVATED SAND MOUND	<input type="checkbox"/> PIPE TO DITCH
<input type="checkbox"/> HOLDING TANK	<input type="checkbox"/> SEEPAGE PIT	<input type="checkbox"/> PIPE TO STEAM
<input type="checkbox"/> PRIVY	<input type="checkbox"/> BOREHOLE	<input type="checkbox"/> PIPE TO SURFACE
<input type="checkbox"/> OTHER _____		

How old is your system? 30 years Was it permitted? ☒ Y ☐ N When? 1984

Have you ever noticed any of the following near your septic system? No

<input type="checkbox"/> GREEN LUSH GRASS	<input type="checkbox"/> WETNESS OR SPONGY AREAS	<input type="checkbox"/> ODORS
<input type="checkbox"/> WATER PONDING OR SURFACING	<input type="checkbox"/> SYSTEM OVERFLOW	
<input type="checkbox"/> SLUGGISH DRAINS	<input type="checkbox"/> WASTEWATER BACKING INTO THE HOME	
<input type="checkbox"/> OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? ☒ Y ☐ N How often? _____ Last time? 2014

If it was pumped, was it inspected for cracks or broken baffles? ☒ Y ☐ N What part? _____

Has the system ever been repaired? ☒ Y ☐ N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? ☒ Y ☐ N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-05**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 08:05 Sampler: Rod Martin Source: Kitchen 156 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	53.1 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	9.9 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	11.0 mg/L	Fail	10.4 mg/L	11/11/2014	15:48	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: EX CO.: Cane STUDY AREA: _____ DATE: 1/11/11

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Lichty Brothers Inc STREET: 156 Reading Rd CITY: East Earl

ZIP: 17519 PHONE NO.: 717-445-6733 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 0

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y/N

How far is the well or spring from the drain field? 30ft (ft) Is well UP/DOWNHILL? Downhill

Do you treat your water? Y/N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER Softner

Was the water ever tested? Y/N When? 10 years ago

Any contamination? Y/N What? (TC, FC, N, etc..) Nitrates

How large is your lot? 1 acre No. of Dwelling Units? 0

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? RESIDENTIAL

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

CESSPOOL

OLD WELL

HOLDING TANK

PRIVY

OTHER _____

INGROUND BED

INGROUND TRENCH

ELEVATED SAND MOUND

SEEPAGE PIT

BOREHOLE

COMMUNITY SEWER

STORM SEWER

PIPE TO DITCH

PIPE TO STREAM

PIPE TO SURFACE

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

CESSPOOL

OLD WELL

HOLDING TANK

PRIVY

OTHER _____

INGROUND BED

INGROUND TRENCH

ELEVATED SAND MOUND

SEEPAGE PIT

BOREHOLE

COMMUNITY SEWER

STORM SEWER

PIPE TO DITCH

PIPE TO STREAM

PIPE TO SURFACE

How old is your system? 1950 Was it permitted? Y/N When? _____

Have you ever noticed any of the following near your septic system? No

GREEN LUSH GRASS

WATER PONDING OR SURFACING

SLUGGISH DRAINS

OTHER _____

WETNESS OR SPONGY AREAS

SYSTEM OVERFLOW

WASTEWATER BACKING INTO THE HOME

ODORS

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y/N How often? 2 years Last time? 2013

If it was pumped, was it inspected for cracks or broken baffles? Y/N What part? _____

Has the system ever been repaired? Y/N When? _____ By permit? Y/N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y/N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-06**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 08:20 Sampler: Rod Martin Source: Kitchen 166 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.29 mg/L	Pass	10.4 mg/L	11/11/2014	15:51	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: _____ CO.: _____ STUDY AREA: _____ DATE: _____

General Weather Conditions: _____

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Mike Kilmer STREET: 1606 Reading Rd CITY: East Earl

ZIP: 17519 PHONE NO.: 717-466-4782 OWNER OR RENTER? NO. OF OCCUPANTS? 5

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? _____ (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1/2 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 797 44 approx. Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? _____ Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

mkilmer1969@yahoo.com



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-01**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 07:30 Sampler: Rod Martin Source: Sample Tap 184 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	83.1 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	2.0 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	12.6 mg/L	Fail	10.4 mg/L	11/18/2014	14:59	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-07**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 08:30 Sampler: Rod Martin Source: Kitchen 186 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	16.4 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.92 mg/L	Pass	10.4 mg/L	11/11/2014	15:52	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: _____ CO.: Lancaster STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: cloudy

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)
NAME: Carl Krings STREET: 186 Reading Rd CITY: East Earl
ZIP: 17519 PHONE NO.: 445-6679 OWNER OR RENTER? NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? _____ (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER RO

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1/4 acres No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 1966 Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? NO

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? _____ Last time? 20 yrs ago

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-02**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 07:35 Sampler: Rod Martin Source: Sample Tap 188 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	22.2 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.26 mg/L	Pass	10.4 mg/L	11/18/2014	15:03	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-08**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 08:40 Sampler: Rod Martin Source: Kitchen 190 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	<1 mg/L	Pass	10.4 mg/L	11/11/2014	15:55	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: ED CO.: Law STUDY AREA: _____ DATE: 11-11-19

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)
NAME: Todd Sindorf STREET: 190 Reading Rd. CITY: East Earl
ZIP: 17519 PHONE NO.: 717-486-0050 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? _____ (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER

Was the water ever tested? Y / N When? 2013

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? .25 No. of Dwelling Units? _____

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? RESIDENTIAL

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? 40 yrs Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? _____ Last time? Aug 14

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-03**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 07:45 Sampler: Rod Martin Source: Sample Tap 200 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	15.9 mg/L	Fail	10.4 mg/L	11/18/2014	15:31	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample **FAILS** to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-04**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 07:50 Sampler: Rod Martin Source: Sample Tap 202 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	144.5 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	17.1 mg/L	Fail	10.4 mg/L	11/18/2014	15:38	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-05**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 07:55 Sampler: Rod Martin Source: Sample Tap 204 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	5.3 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	13.3 mg/L	Fail	10.4 mg/L	11/18/2014	15:39	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-06**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:05 Sampler: Rod Martin Source: Sample Tap 206 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	1.0 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	15.8 mg/L	Fail	10.4 mg/L	11/18/2014	15:41	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-09**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 08:50 Sampler: Rod Martin Source: Kitchen 208 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	>200.5 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	22.2 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	8.47 mg/L	Pass	10.4 mg/L	11/11/2014	15:57	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: _____ CO.: _____ STUDY AREA: _____ DATE: _____

General Weather Conditions: _____

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Leroy Burkholtz STREET: 208 Reading Rd CITY: East Earl Pa

ZIP: 17519 PHONE NO.: 717-445-6950 OWNER OR RENTER? _____ NO. OF OCCUPANTS? _____

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? 360' (ft) Cased? Y / N

How far is the well or spring from the drain field? 80' (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? under half acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? _____

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	<u>INGROUND BED</u>	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? 1969 Was it permitted? Y / N When? 3

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 3 or 4 years Last time? 3

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? YY / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-08**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:30 Sampler: Rod Martin Source: Sample Tap 233 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	8.26 mg/L	Pass	10.4 mg/L	11/18/2014	15:45	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-07**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:15 Sampler: Rod Martin Source: Sample Tap 237 Goods Store Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	<1 mg/L	Pass	10.4 mg/L	11/18/2014	15:42	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-10**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:05 Sampler: Rod Martin Source: Tap 245 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	1.24 mg/L	Pass	10.4 mg/L	11/11/2014	15:59	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: ER CO.: Lanc STUDY AREA: _____ DATE: 11-11-11

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)
NAME: LWS STREET: 245 Ruby St CITY: ER
ZIP: 17570 PHONE NO.: 445 3360 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 600

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? 600 ft (ft) Cased? Y N

How far is the well or spring from the drain field? 100 (ft) Is well UP/DOWNHILL? UP

Do you treat your water? Y N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y N When? Quarterly DEP

Any contamination? Y N What? (TC, FC, N, etc..) _____

How large is your lot? 45 acres No. of Dwelling Units? N/A

One or more sewage systems? One NPDES COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER <u>NPDES</u>		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER <u>NPDES</u>		

How old is your system? 25 yrs Was it permitted? Y N When? _____

Have you ever noticed any of the following near your septic system? N/A

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y/N How often? Quarterly Last time? _____

If it was pumped, was it inspected for cracks or broken baffles? Y/N What part? NA

Has the system ever been repaired? Y/N When? NO By permit? Y/N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-10**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:40 Sampler: Rod Martin Source: Sample Tap 241 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	1.04 mg/L	Pass	10.4 mg/L	11/18/2014	15:47	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-09**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:35 Sampler: Rod Martin Source: Sample Tap 244 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	12.0 mg/L	Fail	10.4 mg/L	11/18/2014	15:46	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample **FAILS** to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-11**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:15 Sampler: Rod Martin Source: Outdoor Tap 290 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	1.0 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	2.85 mg/L	Pass	10.4 mg/L	11/11/2014	16:04	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-11**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 08:55 Sampler: Rod Martin Source: Sample Tap 308 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	<1 mg/L	Pass	10.4 mg/L	11/18/2014	16:08	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-12**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:00 Sampler: Rod Martin Source: Sample Tap 310 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	>200.5 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	7.38 mg/L	Pass	10.4 mg/L	11/18/2014	16:09	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-13**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:05 Sampler: Rod Martin Source: Sample Tap 327 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	16.4 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	5.3 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.17 mg/L	Pass	10.4 mg/L	11/18/2014	16:12	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-14**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:10 Sampler: Rod Martin Source: Sample Tap 366 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	10.9 mg/L	Fail	10.4 mg/L	11/18/2014	15:54	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample **FAILS** to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-15**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:15 Sampler: Rod Martin Source: Sample Tap 370 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	3.1 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.41 mg/L	Pass	10.4 mg/L	11/18/2014	15:56	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-16**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:20 Sampler: Rod Martin Source: Sample Tap 372 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	5.3 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.45 mg/L	Pass	10.4 mg/L	11/18/2014	16:02	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-12**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:30 Sampler: Rod Martin Source: Kitchen 376 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.01 mg/L	Pass	10.4 mg/L	11/11/2014	16:05	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: East Earl CO.: Lanc STUDY AREA: _____ DATE: 11/1/14

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: 4455422 STREET: 376 Reading Rd CITY: EE

ZIP: 17322 PHONE NO.: Edna Sensenig OWNER OR RENTER? NO. OF OCCUPANTS? 1

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y/N

How far is the well or spring from the drain field? 60 ft (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y/N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y/N When? _____

Any contamination? Y/N What? (TC, FC, N, etc..) _____

How large is your lot? 1 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? _____

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 1980's Was it permitted? Y/N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y/N How often? 3-4-5 Last time? 2011

If it was pumped, was it inspected for cracks or broken baffles? Y/N What part? _____

Has the system ever been repaired? Y/N When? _____ By permit? Y/N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y/N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-13**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:40 Sampler: Rod Martin Source: Kitchen 387 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	4.75 mg/L	Pass	10.4 mg/L	11/11/2014	16:07	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: East Earl CO.: Lancaster STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: Cloudy

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Earl Z Weaver STREET: 387 Reading Rd CITY: East Earl PA

ZIP: 17519 PHONE NO.: 717-445-7010 OWNER OR RENTER? _____ NO. OF OCCUPANTS? 2

What kind of water system do you have? (WELL? SPRING? CISTERN? PUBLIC? OTHER?)

If you have a well: Is it DUG or DRILLED? How DEEP? 75 (ft) Cased? Y / N

How far is the well or spring from the drain field? 100 (ft) Is well UP/DOWNHILL? DOWNHILL

Do you treat your water? Y / N How? UV DISINFECTION, SOFTNER, ION, OTHER _____

Was the water ever tested? Y / N When? 2000?

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1/2 A. No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? RESIDENTIAL

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? ? Was it permitted? Y / N When? ?

Have you ever noticed any of the following near your septic system? No

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 5 yr. Last time? 2012

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-14**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:45 Sampler: Rod Martin Source: Kitchen 391 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	8.40 mg/L	Pass	10.4 mg/L	11/11/2014	16:11	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: _____ CO.: _____ STUDY AREA: _____ DATE: _____

General Weather Conditions: _____

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Phyllis Ault STREET: 391 Reading Rd. CITY: EAST EARL

ZIP: 17519 PHONE NO.: 445-0751 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 6

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? 10 ft (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER

Was the water ever tested? Y / N When? _____

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1/2 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STREAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 20 yr Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? no

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 3-4 yr Last time? 2014

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? 2009 By permit? Y / N What part? pump

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-15**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 09:55 Sampler: Rod Martin Source: Kitchen 396 Reading Road East Earl PA 17519								
Bacteria - Total Coliform	118.4 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	2.0 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	5.09 mg/L	Pass	10.4 mg/L	11/11/2014	16:13	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: EE CO.: Lane STUDY AREA: _____ DATE: 11/1/14

General Weather Conditions: Day

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: W.J. Blackwell STREET: 396 Reading Rd CITY: East Earl

ZIP: 17519 PHONE NO.: _____ OWNER OR RENTER? (CIRCLE) NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL? SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? 91' (ft) Cased? (Y)/N

How far is the well or spring from the drain field? 90 ft (ft) Is well UP/DOWNHILL?

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER

Was the water ever tested? (Y)/N When? 1980

Any contamination? Y / N What? (TC, FC, N, etc..) _____

How large is your lot? 1.3 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? 40 + Was it permitted? (Y)/N When? _____

Have you ever noticed any of the following near your septic system? _____

GREEN LUSH GRASS	<u>WETNESS OR SPONGY AREAS</u>	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER <u>No problem after pumping</u>		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? (Y)/N How often? ONCE Last time? 2009

If it was pumped, was it inspected for cracks or broken baffles? (Y)/N What part? _____

Has the system ever been repaired? (Y)/N When? 2009 By permit? (Y)/N What part? Drain

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? (Y)/N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-21**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 11:00 Sampler: Rod Martin Source: Outdoor Tap 397 Spring Grove Road East Earl PA 17519								
Bacteria - Total Coliform	>200.5 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	94.5 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	8.21 mg/L	Pass	10.4 mg/L	11/11/2014	16:44	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: ER CO.: Lanc STUDY AREA: _____ DATE: 11-11-06

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: K. Daily STREET: 397 Spring Grove CITY: E. Earl

ZIP: 17519 PHONE NO.: 717 445 6731 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL SPRING? CISTERN? PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? _____ (ft) Cased? Y / N

How far is the well or spring from the drain field? 150 (ft) Is well UP/DOWNHILL? _____

Do you treat your water? Y / N How? CL/UV DISINFECTION, SOFTNER, ION, OTHER

Was the water ever tested? Y / N When? 1 yr ago

Any contamination? Y / N What? (TC, FC, N, etc..)

How large is your lot? 2 Ac No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL?

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

INGROUND BED

COMMUNITY SEWER

CESSPOOL

INGROUND TRENCH

STORM SEWER

OLD WELL

ELEVATED SAND MOUND

PIPE TO DITCH

HOLDING TANK

SEEPAGE PIT

PIPE TO STEAM

PRIVY

BOREHOLE

PIPE TO SURFACE

OTHER _____

How old is your system? 24 yrs Was it permitted? Y / N When? _____

Have you ever noticed any of the following near your septic system? No

GREEN LUSH GRASS

WETNESS OR SPONGY AREAS

ODORS

WATER PONDING OR SURFACING

SYSTEM OVERFLOW

SLUGGISH DRAINS

WASTEWATER BACKING INTO THE HOME

OTHER _____

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 2 yrs Last time? 10/14

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

with homeowner present



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-19**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:40 Sampler: Rod Martin Source: Sample Tap 401 Spring Grove Road East Earl PA 17519								
Bacteria - Total Coliform	129.8 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	12.4 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	11.1 mg/L	Fail	10.4 mg/L	11/18/2014	16:14	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-18**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:35 Sampler: Rod Martin Source: Sample Tap 434 Spring Grove Road East Earl PA 17519								
Bacteria - Total Coliform	1.0 MPN/100mL	Fail	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	9.81 mg/L	Pass	10.4 mg/L	11/18/2014	16:05	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216420-17**
Date Reported: 11/20/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/18/2014 09:30 Sampler: Rod Martin Source: Sample Tap 442 Spring Grove Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/18/2014	15:43	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	<1 mg/L	Pass	10.4 mg/L	11/18/2014	16:05	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-16**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 10:05 Sampler: Rod Martin Source: Kitchen 1458 Union Grove Road East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	<1 mg/L	Pass	10.4 mg/L	11/11/2014	16:16	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-17**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 10:15 Sampler: Rod Martin Source: Kitchen 1462 Union Grove Road East Earl PA 17519								
Bacteria - Total Coliform	69.7 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	7.66 mg/L	Pass	10.4 mg/L	11/11/2014	16:18	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: EE CO.: Lane STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)

NAME: Mary Jane Horning STREET: 1462 Union Grove Rd CITY: East Earl

ZIP: 17519 PHONE NO.: 717-445-5128 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 2

What kind of water system do you have? WELL SPRING CISTERN PUBLIC? OTHER?

If you have a well: Is it DUG or DRILLED? How DEEP? 200 (ft) Cased? Y N

How far is the well or spring from the drain field? 100 (ft) Is well UP DOWNHILL?

Do you treat your water? Y N How? CL/UV DISINFECTION SOFTNER ION, OTHER _____

Was the water ever tested? Y N When? _____

Any contamination? Y N What? (TC, FC, N, etc..) _____

How large is your lot? 1 acre No. of Dwelling Units? 1

One or more sewage systems? 1 COMMERCIAL/RESIDENTIAL? RESIDENTIAL

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

CESSPOOL

OLD WELL

HOLDING TANK

PRIVY

OTHER _____

INGROUND BED

INGROUND TRENCH

ELEVATED SAND MOUND

SEEPAGE PIT

BOREHOLE

COMMUNITY SEWER

STORM SEWER

PIPE TO DITCH

PIPE TO STREAM

PIPE TO SURFACE

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

SEPTIC TANK

CESSPOOL

OLD WELL

HOLDING TANK

PRIVY

OTHER _____

INGROUND BED

INGROUND TRENCH

ELEVATED SAND MOUND

SEEPAGE PIT

BOREHOLE

COMMUNITY SEWER

STORM SEWER

PIPE TO DITCH

PIPE TO STREAM

PIPE TO SURFACE

How old is your system? 1969 Was it permitted? Y N When? _____

Have you ever noticed any of the following near your septic system? _____

GREEN LUSH GRASS

WATER PONDING OR SURFACING

SLUGGISH DRAINS

OTHER _____

WETNESS OR SPONGY AREAS

SYSTEM OVERFLOW

WASTEWATER BACKING INTO THE HOME

ODORS

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y N How often? 3 Last time? 1996 2006

If it was pumped, was it inspected for cracks or broken baffles? Y N What part? _____

Has the system ever been repaired? Y N When? _____ By permit? Y N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y N



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-18**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 10:30 Sampler: Rod Martin Source: Outdoor Tap 1476 Conestoga View Drive East Earl PA 17519								
Bacteria - Total Coliform	7.5 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	14.6 mg/L	Fail	10.4 mg/L	11/11/2014	16:19	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-19**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 10:35 Sampler: Rod Martin Source: Outdoor Tap 1484 Conestoga View Drive East Earl PA 17519								
Bacteria - Total Coliform	1.0 MPN/100mL	Fail	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	8.00 mg/L	Pass	10.4 mg/L	11/11/2014	16:38	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

This sample FAILS to meet state and federal standards for Safe Drinking Water.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician



Pure-Test
WATER LABORATORY
21st Century Science

Report of Analysis

Mail to: ELA Group
743 South Broad Street
Lititz PA 17543

Lab Number: **216215-20**
Date Reported: 11/13/2014

Analyte	Result	Pass/Fail	Maximum Contaminant Level	Analysis		Analyst	Method	Reporting Limit
				Date	Time			
Sampled: 11/11/2014 10:45 Sampler: Rod Martin Source: Kitchen 1487 Conestoga View Drive East Earl PA 17519								
Bacteria - Total Coliform	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
Coliform bacteria are a large group of bacteria that are used as an indicator organism to indicate the potential for disease-causing bacteria to be present in water. Coliform bacteria occur frequently in private water systems, usually from contamination by surface runoff or from human or animal wastes. Consuming water with coliform bacteria present may cause gastrointestinal illnesses, fever, and other flu-like symptoms. Results from coliform bacteria tests are normally expressed as the number of bacteria colonies present per 100 milliliters (mL) of water.								
Bacteria - E.coli	0 MPN/100mL	Pass	0 MPN/100mL	11/11/2014	15:58	ath	SM9223	0
E. coli (short for Escherichia coli) is a more specific bacteria. This is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. A positive E. coli result is a strong indication that human sewage or animal waste has contaminated the water. E. coli can produce a powerful toxin that causes severe illness and even death.								
Nitrate-Nitrogen	7.93 mg/L	Pass	10.4 mg/L	11/11/2014	16:42	rwl	SM4500NO3D	1
Nitrate in drinking water usually originates from fertilizers or from animal or human wastes. Nitrate affects the most sensitive individuals in the population (infants under 6 months of age and a small component of the adult population with abnormal stomach enzymes). They are prone to methemoglobinemia (blue baby disease) when consuming water with high nitrates.								

This sample was collected by a lab-authorized sampler.

These sample results meet state and federal standards for safe drinking water, for the parameters reported.



The Maximum Contaminant Level (MCL) is the maximum permissible level of a contaminant in water per the SDWA. Some parameters have no established MCL. Pure-Test is certified #38-00338 by the Pennsylvania Department of Environmental Protection, #345 by the Maryland Department of the Environment.



Report Approved By:

Andrew T Heist, Lab Technician

Door To Door Sewage Needs Survey

MUNIC.: KE CO.: Lin STUDY AREA: _____ DATE: 11-11-14

General Weather Conditions: Dry

A survey is being conducted to determine if there are any sewage problems in this area. This is a general survey and the results are intended to be used in evaluating the need for community wide wastewater treatment solutions.

(CIRCLE OR FILL IN AS APPROPRIATE, ADD COMMENTS AS NEEDED)
NAME: RICHARD BROUSE STREET: 1487 CONESTOGA VIEW CITY: EAST EARL
ZIP: 17519 PHONE NO.: 445-5397 OWNER OR RENTER? OWNER NO. OF OCCUPANTS? 1

What kind of water system do you have? WELL SPRING CISTERN PUBLIC OTHER

If you have a well: Is it DUG or DRILLED? DRILLED How DEEP? approx 30 ft (ft) Cased? Y / N

How far is the well or spring from the drain field? 50 ft (ft) Is well UP/DOWNHILL? UP

Do you treat your water? Y / N How? CL/UV DISINFECTION SOFTNER ION OTHER OSMOSIS

Was the water ever tested? Y / N When? 5 YRS AGO

Any contamination? Y / N What? (TC, FC, N, etc.) 2.5 x 10⁶ CFU/100 ml

How large is your lot? 200 x 96 No. of Dwelling Units? 1

One or more sewage systems? Y COMMERCIAL/RESIDENTIAL? RESIDENTIAL

What kind of sewage system do you have? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

Where does your laundry and/or sink water go? (CIRCLE ALL THAT APPLY)

<u>SEPTIC TANK</u>	INGROUND BED	COMMUNITY SEWER
CESSPOOL	INGROUND TRENCH	STORM SEWER
OLD WELL	ELEVATED SAND MOUND	PIPE TO DITCH
HOLDING TANK	SEEPAGE PIT	PIPE TO STEAM
PRIVY	BOREHOLE	PIPE TO SURFACE
OTHER _____		

How old is your system? 1987-present Was it permitted? Y / N When? 1987

Have you ever noticed any of the following near your septic system? NO

GREEN LUSH GRASS	WETNESS OR SPONGY AREAS	ODORS
WATER PONDING OR SURFACING	SYSTEM OVERFLOW	
SLUGGISH DRAINS	WASTEWATER BACKING INTO THE HOME	
OTHER _____		

If you noticed any of the above, are they seasonal or year-round?

Have you ever had your system pumped out? Y / N How often? 2 TIMES Last time? 2010

If it was pumped, was it inspected for cracks or broken baffles? Y / N What part? _____

Has the system ever been repaired? Y / N When? _____ By permit? Y / N What part? _____

TANK: REPAIRED/REPLACED LINE: REPAIRED/REPLACED DRAIN FIELD: REPAIRED/REPLACED

COMMENTS: _____

DO I/WE HAVE PERMISSION TO CONFIRM THIS INFORMATION BY LOOKING AROUND? Y / N

Appendix H
Pennsylvania Natural Diversity Inventory Receipt
East Earl Township

1. PROJECT INFORMATION

Project Name: **Regional WWTP 1**

Date of review: **2/2/2015 6:32:07 PM**

Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewage module/Act 537 plan**

Project Area: **0.7 acres**

County: **Lancaster** Township/Municipality: **East Earl**

Quadrangle Name: **TERRE HILL** ~ ZIP Code: **17519**

Decimal Degrees: **40.139888 N, -76.035192 W**

Degrees Minutes Seconds: **40° 8' 23.6" N, -76° 2' 6.7" W**



2. SEARCH RESULTS

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

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

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

RESPONSE TO QUESTION(S) ASKED

Q1: How many acres of tree removal, tree cutting or forest clearing will be necessary to implement all aspects of this project? [Round acreages up to the nearest acre (e.g., 0.2 acres = 1 acre).]

Your answer is: **1. zero acres**

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to federally listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <http://www.naturalheritage.state.pa.us>.



5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA.
17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service

Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission

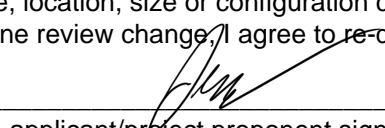
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: Julian Mazero
Company/Business Name: ELA Group, Inc.
Address: 743 South Broad Street
City, State, Zip: Lititz, PA 17543
Phone:(717) 626.7271 Fax:(717) 626.7040
Email: jamazero@elagroup.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.


applicant/project proponent signature

02.02.2015
date

Appendix I
Pennsylvania Historical and Museum Commission
Review - East Earl Township



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

April 15, 2015

ELA Group, Inc.
743 South Broad Street
Lititz, PA 17543

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: File No. ER 2015-1058-071-A
DEP ACT 537 PROGRAM: Sewage
Facilities Plan, Construct, Own & Operate
Regional Wastewater Collection System &
Treatment Plant, East Earl Twp., Terre Hill
Borough, Lancaster Co.

Dear Sir:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Thank you for submitting information concerning the above referenced project. This project is a planning study; therefore this office cannot assess the effects on specific historic and archaeological resources until more detailed plans are developed. During the project planning stages, you should make provisions to identify historic and archaeological resources listed in or eligible for the National Register of Historic Places, as well as to assess the effects of the project on these resources. To assist you in your identification of known historic and archaeological resources, the Bureau for Historic Preservation maintains records of National Register listed and eligible resources as well as archaeological surveys (P.A.S.S. files) and historic resource survey files. Information on many of these resources is available on our web based Cultural Resources Geographic Information System (CRGIS) <http://crgis.state.pa.us>.

Page 2
April 15, 2015
ER No. 2015-1058-071-A

If you need further information regarding archaeological survey please contact Doug McLearn at (717) 772-0925. If you need further information concerning historic structures please consult Cheryl Nagle at (717) 772-4519.

Sincerely,



Douglas C. McLearn, Chief
Division of Archaeology &
Protection

cc: DEP, Southcentral Regional Office

DCM/tmw

Appendix J
Proof of Public Notification

LNP MEDIA GROUP, Inc., P.O. Box 1328, Lancaster, PA 17608

Account: 248585	Ad ID: 3370762
Client Type: LT	Description: NOTICE OF PUBLIC COMMENT PERIOD
Name:	FOR
Company: ELA GROUP INC	Run Dates: 03/08/15 to 03/08/15
Address: 743 S BROAD ST	Class: 107
LITITZ, PA 17543	Orig User: AEU
Telephone: (717) 626-7271	Lines: 257
	Agate Lines: 399

Other Charges:	\$10.00	Gross:	\$1,176.78
Discount:	\$0.00		
Surcharge:	\$0.00	Paid Amount:	- \$0.00
Credits:	\$0.00		
Bill Depth:	28.556	Amount Due:	\$1,176.78

**NOTICE OF PUBLIC
COMMENT PERIOD
FOR JOINT ACT 537 OFFICIAL
SEWAGE FACILITIES PLAN**

East Earl Township and Terre Hill Borough is hereby giving notice of the 30-day public comment period for its Official Act 537 Plan Update (the Plan) starting March 11, 2015. In April of 2014, both municipalities jointly entered a Consent Order and Agreement with the Pennsylvania (PA) Department of Environmental Protection (DEP) to investigate the formation of a joint sewer authority and update their existing Act 537 Sewage Planning. The Plan proposes extension of public sewer to Areas of Need for sewage service within East Earl Township and construction of a new regional wastewater treatment plant (WWTP) and conveyance system to provide sewage disposal for all of Terre Hill Borough and portions of East Earl Township.

East Earl Township, located in north-eastern Lancaster County, Pennsylvania, surrounds the Borough of Terre Hill. The Planning Area for this Joint Plan generally consists of areas between Terre Hill Borough and the Village of Goodville, and within the Community of Blue Ball.

Terre Hill Borough owns, operates, and maintains approximately 6 miles of collection system that conveys raw sewage to their own WWTP located at the east end of Willow Street in East Earl Township. The Borough's WWTP discharges to an unnamed tributary to Black Creek, which is designated as a High Quality (HQ) Warm Water Fishery (WWF) by the Commonwealth of Pennsylvania. The Borough's WWTP was constructed in 1962 and has reached the end of its useful life. East Earl Township's East Earl Sewer Authority owns, operates, and maintains approximately 18 miles of collection and conveyance systems, which convey raw sewage to separate WWTPs owned, operated, and maintained by Earl Township and New Holland Borough.

The Pennsylvania Sewage Facilities Act, commonly referred to as Act 537, requires municipalities to prepare and maintain an up-to-date plan to assess current and future needs for waste-

water collection, conveyance, and treatment facilities; and to evaluate alternatives to meet future demand.

For the Joint Act 537 Sewage Facilities Plan, sewage needs within the municipalities were assessed based on the Lancaster County Planning Commission's population projections, the ELANCO Comprehensive Plan, potable well sampling results, the condition of existing infrastructure, and state and federal regulatory requirements. Several wastewater collection and treatment alternatives were evaluated based on a 20 year planning period. The recommended alternative requires the formation of a joint sewer authority to construct, operate, and maintain a new regional WWTP with stream discharge to the Conestoga River (WWF). Within the Joint Act 537 Sewage Facilities Plan draft report, the recommended alternative is Alternative 2. Domestic wastewater will be collected and conveyed to the proposed regional WWTP through a combination of gravity sewer system, low pressure sewer, and pressurized sewer. The Construction Cost Opinion estimates a total project cost of \$16,500,000. The estimated sewer user rate that will be required to cover future Joint Authority Budgets for operation and maintenance costs and projected debt service if no additional grant monies can be obtained is \$256.59 per Equivalent Dwelling Unit (EDU), in 2015 dollars.

The Joint Act 537 Sewage Facilities Plan draft report will be available for download as a PDF file from the Borough and Township websites on March 11, 2015. A hard copy will also be available for review during regular business hours at each of the municipal offices: East Earl Township Municipal Office located at 4610 Division Highway, East Earl, PA 17519 (8 a.m. to 4:30 p.m. Monday through Thursday, and 8 a.m. to noon Friday); Terre Hill Borough Municipal Office located at 300 Broad St, Terre Hill, PA 17581 (8 a.m. to noon and 1 p.m. to 5 p.m. Monday through Friday);

The 30-day public comment period will begin March 11, 2015 and end April 11, 2015. Written comments are invited from the public, and must be submitted or postmarked to the following address

by April 11, 2015 in order to be included in the Plan for the PA DEP's review:

ELA Group, Inc.
743 S. Broad Street
Lititz, PA 17543
Attn: Jeff Sweater

A special joint East Earl Township Board of Supervisors and Terre Hill Borough Council meeting will be held at 6:30 PM on Tuesday March 17, 2015 at the Garden Spot Fire Rescue Station 3, located at 4315 Division Highway in Blue Ball, PA. The purpose of this meeting is to allow the ELA Group, Inc. to make of formal presentation of their findings in preparation of the Joint 537 Plan draft report and to address any questions asked by the public. A signup sheet will be provided for all people that wish to ask questions or provide unofficial comments. The public must sign up on this sheet prior to approaching the microphone to ask questions or make comments. Questions and unofficial comments are to be limited to approximately 3 minutes in order to allow everyone an opportunity to speak. Verbal comments will NOT be included in the Joint 537 Plan final report.

Confidentiality Notice: This fax is intended for the use of the individual or entity to which it is addressed and may contain information that is privileged, proprietary, confidential or otherwise protected from disclosure. If you are not the intended recipient, you may not use, copy or disclose the message of any information contained in the message. If you have received this communication in error, please notify the sender by telephone and return the fax by mail.

Fax Opt-Out Notice: As required the Telephone Consumer Protection Act of 1991, if you do not wish to receive future unsolicited fax advertisements from Lancaster Newspapers, send your opt-out request to us by email at class@lnpnews.com, by fax at (717)291-8728, or by telephone at (717)291-8711. In order for your request to be effective, you must provide the fax number(s) at which you no longer wish to receive fax advertisements from us. As required by law we will comply within the shortest reasonable time established by the FCC.

Appendix K
Written Public Comments and Responses

112 Spring Grove Rd.
East Earl, PA 17519

April 6, 2015

ELA Group Inc.
743 South Broad Street
Lititz, PA 17543

To whom it may concern,

As a resident of Goodville, I would like to address a few concerns I have regarding the Joint Act 537 Regional sewer plan (alternative 2) for East Earl Township. I feel that certain aspects of this plan are unnecessary and will place a heavy financial burden not only on the residents of East Earl but on the township as a whole. I would ask that you take into consideration all aspects of this project before giving its approval.

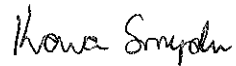
I would like to address the possibility of connecting Goodville's sewer to the existing Earl Township WWTP. Earl Township's sewer authority has stated there is enough capacity to cover the amount of flow that would come from Goodville. Also, East Earl Township has already paid, and still has yet to pay, Earl Township millions of dollars toward expansion that is currently underway. To not utilize this capacity would be a waste of taxpayer money. The expansion would create enough capacity to hold flow from Goodville and more, eliminating the need to build a new WWTP.

The Regional Plan (alt. 2) includes large areas of land surrounding route 625. I would like to suggest that these are not actual "needs" areas (residences that have failing sewer systems) and therefore are unnecessarily included in the plan. At our Joint Act 537 Sewage Facilities Plan meeting on March 17, 2015, Julian Mazero of ELA Group Inc. stated numerous times that a majority of the land adjacent to 625 was included simply due to the possibility of future development. If this area was eliminated from the plan, costs would be drastically reduced relieving a portion of the financial burden on East Earl Township residents.

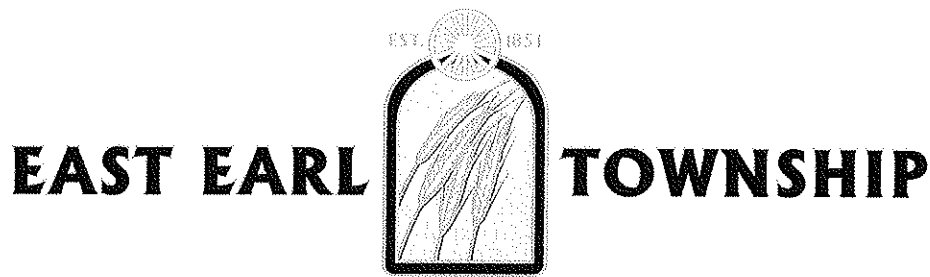
As previously stated, I believe the Joint Act 537 Regional sewer plan will put a heavy financial burden on East Earl Township's residents. Numerous residents from Goodville and surrounding areas have expressed concern as to how they will afford the high costs associated with hookup and quarterly fees. With an already unstable economy this extra burden could cause great distress to many families.

In closing I would ask that you please take into consideration the contents of my letter. Connecting to Earl Township's WWTP and eliminating areas adjacent to 625 from the Regional plan would save residents a significant amount of money. Should we be expected to pay the cost for "future development?" I urge you to take all available options into consideration before approving a plan that could take from so many of us what we have worked so hard to achieve.

Sincerely,

A handwritten signature in cursive script that reads "Kara Snyder".

Kara Snyder



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 • Phone 717-354-5593 • Fax 717-355-0426

June 9, 2015

Ms. Kara Snyder
112 Spring Grove Road
East Earl, PA 17519

Dear Ms. Snyder:

The Borough of Terre Hill and the East Earl Township have worked to develop the Joint Act 537 Plan with the ultimate intent of protecting public health and the environment. As municipalities of the Commonwealth of Pennsylvania we are obligated to help maintain and improve the Waters of the Commonwealth for all users in our communities and even those downstream of us. However, the Municipalities, in developing the Joint Act 537 Sewage Facilities Plan, understand your concern with the cost to implement the wastewater solutions. The East Earl Township and the Borough of Terre Hill, along with our engineers, will investigate all options for available grant funding and low interest loans to help reduce these costs for our communities.

The properties adjacent to the Pennsylvania State Route 625 (S.R. 625)/Reading Road were studied to determine whether the existing on-lot disposal systems are operating as intended. The Municipalities did not include the S.R.625/Reading Road area for future development purposes, but instead to determine if the existing on-lot disposal systems are properly functioning. On-lot disposal systems that do not function properly pose a public health risk and directly contaminate ground water. The current Township zoning does not allow for additional residential development within the S.R.625/Reading Road area. Also, as a member of the ELANCO Region, the Township has established growth boundaries within the 2008 *ELANCO Region Comprehensive Plan*, which limits growth to planned areas concentrated near Blue Ball.

The East Earl Township and the Borough of Terre Hill greatly appreciate your taking the time to review and comment on the draft Joint Act 537 Sewage Facilities Plan. The Municipalities will continue to work to protect public health and the environment, and to access all available funding to reduce the costs of implementing the selected wastewater solution.

Thank you again for your time and consideration of the draft Joint Act 537 Sewage Facilities Plan.

Sincerely,
EAST EARL TOWNSHIP
BOARD OF SUPERVISORS

Earl H. Kreider, Chairman

c: Terre Hill Borough
Frank P. Mincarelli, Esquire, Blakinger, Byler & Thomas, P.C.
Jeff Sweater, ELA Group, Inc.

Evelyn Messner
113, Frogtown Rd.
East Earl, Pa. 17519

March 24, 2015

ELA, Group, Inc.
743 South Board St.
Lititz, Pa. 17543

Re: Joint Act 537 Sewage Plan

Most residents are unaware of the consequences of this project. This project will have lasting affects and will change our area forever. I feel the supervisors at this point have not address the concerns of the residents. They have meant the legal requirement as far as notification ,but many residents do not receive the paper or have access to internet. I feel everyone should receive written notification and be given the opportunity to address the board of supervisors.

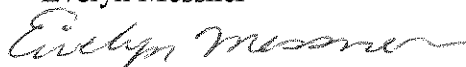
It has been brought up at various supervisors meeting concerning running sewer lines to Earl Township to resolve the current issue with Goodville. The township already paid Earl Township 4 or 5 million dollars to upgrade their sewer facility. We were informed at pervious water and sewer meetings there is capacity available to handle Goodville Sewer issue and EELLC possible future development.

Concerning the cost and the financial burden this will place on home owners. We have residents who are senior citizens ,young families, in our township. We have concerns the township will over extend our tax dollars due to the future projects they have committed too. The result will be tax increase Also what about the current sewer users. Will there be a rate increase to the existing customers to pay for the new sewer ?

A concern is future development of farm land. When there is sewer it opens up the area to development. We need to preserve farm land for the future.

There is a concern with one of the pumping stations that is proposed in Frogtown on the southwest corner off route 23 and Frogtown road . The propsed location is in a water way. We continually deal with flooding issues and with the possible development of EELLC will give more water runoff in the area .I understand pumping stations can be built in a flood plain ,but extra cost is involved. I am concern it could create a future issue.

Sincerely,
Evelyn Messner



Evelyn Messner
113, Frogtown Rd.
East Earl, Pa .17519

East Earl Township
4610, Division Hwy.
East Earl ,Pa.17519

Re: written notification

Board of Supervisors,

After attending the meeting at the Blue Ball Fire Hall on March 17, 2015 concerning the proposed regional sewer plan between East Earl Township and Terre Hill Borough.

In my opinion the township and the borough have made their decision to move ahead on this proposal.


I would like to bring this to the attention of the board of supervisors this proposal will have a great impact on this area and change this area forever. We are requesting a letter be sent to each resident of this township informing them their property would be involved in this project. People who would be required to hook into the sewer, the properties involved as far as a pumping station, land joiners to the proposed sewer facility. People have the right to know if their property is being considered. We are volunteering our time to help address and stuff envelopes. The cost that each resident would be required to pay quarterly, plus hook up fees and the time table of this project should be included in the letter. People have the right to know.

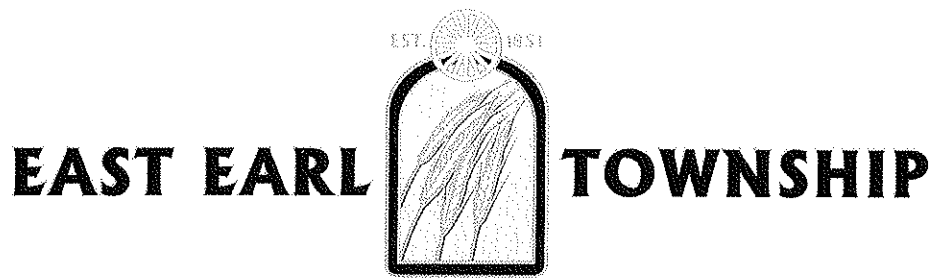
We realize the legal requirements have been met as far as advertising this proposal. But a project of this magnitude more effort should be put forth to include all residents.. After all it is the tax dollars that will be paying for this project.

We realize the project will be voted on at the June 2015 supervisors meeting . It is time to start considering the residents of this township.

Thank you for considering this request.

Sincerely,


Evelyn Messner



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 • Phone 717-354-5593 • Fax 717-355-0426

June 9, 2015

Ms. Evelyn Messner
113 Forgtown Road
East Earl, PA 17519

Dear Ms. Messner:

The East Earl Township and the Borough of Terre Hill (the Municipalities) greatly appreciate you taking the time to attend the public presentation of the draft Joint Act 537 Sewage Facilities Plan (Plan) in March, and taking your time to review the Plan and provide written comments. The East Earl Township has worked with the Borough of Terre Hill and our consulting engineers to explore feasible wastewater solutions to address existing sewer need, as well as provide the Township flexibility to address future sewer need. The Board of Supervisors for East Earl Township has discussed the Plan at their regular meetings since early to mid-2014. We have advertised the Plan and solicited public comments, as well as provided a public meeting in March of 2014 and requested our consulting engineers present at the May 12th Board of Supervisors' meeting to help address some of the public comments and questions we have received.

The Plan discusses connection of the existing wastewater needs areas to the existing East Earl Sewer Authority (EESA) collection system. The connection to the existing EESA system is explored in Alternative No. 3 of the Plan. Please see Section 4.6.4.3, which discusses connection to the existing low pressure sewer system. The Municipalities' consulting engineers for the Plan also provided a presentation at the Board of Supervisors' meeting on May 12th, which further discussed the problems with connecting to the Earl Township Sewer Authority's WWTP. Those problems include the cost to upgrade existing collection and conveyance infrastructure to accommodate greater flow, the size of the receiving stream the Earl Township Sewer Authority's WWTP discharges to, and the new infrastructure cost to convey wastewater over a greater distance.

User rates will change for existing customers connected to public sewer and are likely to increase based on the cost of constructing a regional collection system and treatment plant. Currently, the Municipalities do not know the extent to which grant funding may be available for this project to help reduce this cost. Unfortunately, the Municipalities cannot apply for grant funding until the Joint Act 537 Plan has been approved, and all the necessary permits have been received. Therefore the next step is for the Municipalities to submit the Joint Act 537 Plan to the Pennsylvania Department of Environmental Protection for their review and approval.

Ms. Evelyn Messner
Page 2
June 9, 2015

The Municipalities, along with our engineers, have worked to determine the most efficient layout of the proposed collection system and wastewater treatment plant for the selected wastewater solution, also known as Alternative No. 2 within the Joint Act 537 Plan. There are many steps must be taken before we can implement the Plan, including submission of the Joint Act 537 Plan to the PA DEP, formation of a joint sewer authority, detailed survey of the area to receive public sewer, engineering design of the system, funding applications and so forth. These next steps will take time, but the Municipalities will continue to provide updates to the public on the progress of the Plan at our Board of Supervisors' meetings.

Thank you again for taking the time to review and provide written comments on the Municipalities' Joint Act 537 Plan.

Sincerely,
EAST EARL TOWNSHIP
BOARD OF SUPERVISORS


Earl H. Kreider, Chairman

c: Terre Hill Borough
Frank P. Mincarelli, Esquire, Blakinger, Byler & Thomas, P.C.
Jeff Sweater, ELA Group, Inc.

EL-A Group-
attn. Jeff Sweater

RECEIVED
APR 13 2000
ELA GROUP, Inc.

My comments concerning the 537 project for Goodville,
East Earl, and Jerre Hill!

It seems to me, Goodville is of least concern. We hear about
urban growth but very little about Goodville. In my opinion, there
would be a much less costly way to fix the problems of our East Earl
Township since we have already paid to help upgrade Earl TWP &
New Holland. With this plan, we are paying double, when we are
told there is plenty of capacity at Earl TWP, even with growth.
Our responsibility is to Goodville, not Jerre Hill & developers and
that is what the TWP could handle financially.

We are seniors who were forced to hook up to sewer before - Now
we will have higher rates per quarter and expect higher taxes
because of this and other future projects. Our roads and schools
are full already, another reason to raise taxes.

We see several areas that will open up for development. The present
storm water issues have not been completed properly - How can we
be sure this will be completed properly? It seems like old projects
should be finished before adding more problems.

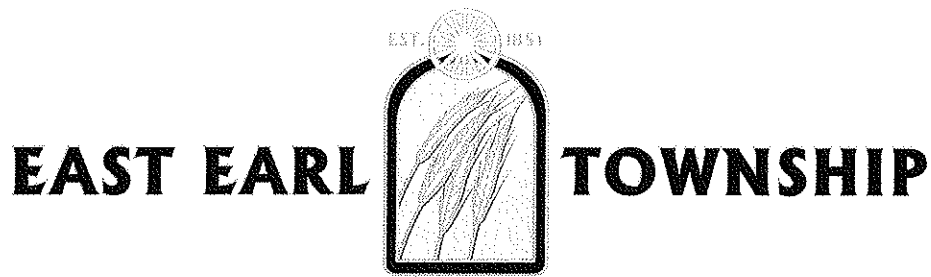
The supervisors have not addressed the concerns to our satisfaction.
Many residents know nothing about this plan that will take away our
rural way of life "plain" neighbors to move. They are the people
who deserve consideration too - They are what Lane Co. is about -
All residents should be notified of such a major issue before it is
agreed upon and have opportunity to express their opinion. In my
opinion, supervisors haven't taken into consideration anything the
public has voiced and still plan to move ahead.

Sincerely,

Linda Weaver

1290 Sheep Hill Rd

East Earl, Pa 17519



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 • Phone 717-354-5593 • Fax 717-355-0426

June 9, 2015

Mrs. Linda Weaver
1290 Sheep Hill Road
East Earl, PA 17519

Dear Mrs. Weaver:

Thank you for taking the time to review and provide written comments to the Borough of Terre Hill and East Earl Township's (the Municipalities) Joint Act 537 Sewage Facilities Plan (Plan). The Municipalities and our consulting engineers will work to obtain all available funding the Municipalities are eligible for, in order to reduce the cost to our residents.

Sincerely,

EAST EARL TOWNSHIP
BOARD OF SUPERVISORS

Earl H. Kreider, Chairman

c: Terre Hill Borough
Frank P. Mincarelli, Esquire, Blakinger, Byler & Thomas, P.C.
Jeff Sweater, ELA Group, Inc.

Comments on proposed 537 plan for East Earl Township/Terre Hill Borough as presented March 17, 2015

1. Regarding high nitrate levels found in water drawn from homes along 625, you have not proven that failed septic rather than general farming is the contributing cause. In order to do that you need to establish a baseline for nitrate levels in homes adjacent to farmland that already have public sewer. The intro to this 537 plan states that high nitrates can be the result of farming practices. These properties are surrounded by farms. You should test properties similarly situated adjacent to farmland with wells, but also with public sewer or non-failed septic systems to establish a baseline expectation for nitrate levels of homes surrounded by farmland where questionable fertilization rates may be causing high nitrates rather than just jumping to the conclusion that the high nitrate levels are solely attributable to failed septic systems.
2. Calculated Goodville EDU's are too low. You list 106 residential, 13 commercial, 16 industrial, and 5 future use. However, there are several residential properties that are actually subdivided into multi-family units with separate facilities. As these are all rentals, they should all have separate hookups for proper billing. Specifically, the most egregious of these are 1530 Main St. which is 7 separate rental units, 1600 Main St. with 4 separate units (note that 1598 Main St. may be currently using the same septic system), 1611 Main St. (4 separate rental units). There are many other properties that have only 1 rental unit associated with their home, but as they have separate facilities, they should have separate EDU's. Number should be reverified for residential EDU's since it should more likely be 113.
3. Alternative #3 should be broken into 3 sections like Alternative #4 in order to accurately compare costs.
4. Discussion of Alternative #3. Fetterville is out of scope for this project and any mention of it should be dropped as it could further delay implementing a solution to this safety issue by causing further study of the Fetterville area to be included in the plan.
5. It is disingenuous to say the need for public sewer in Goodville is a safety issue since the township has left this go for over 15 years. If this is truly felt to be a safety issue, then we should be getting public water in addition to public sewer and it should have been addressed in a timely fashion. As we are not getting public water, we will still be left with water sources that are possibly contaminated from the surrounding farms.
6. This plan ignores the requests of Goodville residents to provide an option of tying in just Goodville to the existing township system. It has been mentioned at several township meetings that there is adequate capacity to tie in the 350 unit development proposed by East Earl LLC to the existing sewer system. If there is enough capacity to accommodate this development, there is certainly enough capacity to accommodate existing homes in Goodville. It seems that this would likely be the least costly of all options, but as it is not in the plan, no one can determine that. Goodville residents should be given priority over new development since this is such a "safety issue". Also, these expanded capacity hookups have already been paid for so only additional lines would be required making this the most likely cost effective option, had it been proposed. Goodville is and continues to be the main concern. You are delaying a solution for Goodville residents by scope creep to include the 625 corridor and, now, it would appear Fetterville. Both should be removed from the plan. By including the 625 corridor you have more than doubled the size of the project and the cost of Alternative #3.
7. Alternative #3 is made more expensive by inclusion of East Earl LLC's proposed development and a currently non-existent unproposed development of the Zimmerman farm and other as yet unproposed and unapproved development and the 625 corridor. Again, scope creep.

8. The plan lists costs of \$20,000/acre to purchase 2 acres of land from Conestoga Wood. The money paid for these acres should be the same as that being paid to the property owners losing their land to eminent domain proceedings for the Conestoga Creek Rd. bridge replacement and the route 897 realignment. All compensation across the township should be the same. Original discussions at township meetings said that Conestoga Wood was donating this land to the township. It is disappointing to find that they are looking to make a profit for floodplain land that is otherwise worthless for development. We should pay farm acreage prices and not development prices.
9. There is a house currently for sale on Frogtown Rd., which has been discussed as a potential site for a pumping station location. Rather than take farmland for a pumping station, the township should consider purchasing this property for use for a pumping station which appears to be needed for several of the alternatives (1-4).
10. Alternative #2 relies on East Earl LLC tying in to the new plant (money from hookups used to calculate costs). What happens to costs in this plan if this development does not go through or if they hook in to the existing system or build their own system? It is doubtful that the developers want to wait 5 years for any proposed new plant to be built. Again, Goodville residents should be prioritized before any new developments are hooked into existing sewer system since this is a safety issue.
11. The preferred alternative opens up the township to development. Build a regional sewer system and we will see this area developed, every last foot of it. It seems as if existing homeowners will be paying to support future development and ensure infrastructure for every proposed development along route 625. This is not what residents of Goodville or East Earl Township want. We do not trust East Earl Supervisors to prevent overdevelopment of this fertile farmland. If we do not ensure farmland what do you plan to eat in the future?
12. Environmental consequences fail to take into consideration what will happen to the Conestoga River watershed if the 625 corridor becomes fully developed, which it will if public sewer is made available for its full length.
13. Appendix C states that Conestoga Wood may receive a price break for EDUs due to "providing" land for regional plant. This is inappropriate since the township will be purchasing the land and may even be illegal. It was asked at the public meeting whether developers could be charged more than current residents for their EDUs. The response was that it is illegal to charge different rates for EDUs. If you cannot give current residents a price break, then you cannot give Conestoga Wood, a large company who can certainly afford to pay for their EDUs, a price break.
14. Even the lowest proposed hookup cost will be exorbitant for Goodville households. The expected annual cost for sewer is outrageously high, no matter what the alternative. That said, the price difference between the various alternatives is not enough to favor one over another *simply because of cost*. There are other costs hidden in Alternative #2, larger infrastructure will lead to larger annual maintenance costs, further development will lead to larger municipal costs, etc. that are not adequately addressed. We also cannot do an accurate comparison of Alternative #3 to other alternatives as it includes things that should not be there and does not show a true price for the solution. The plan is slanted towards Alternative #2 which is slanted towards developing farmland in our community. Because of that we support Alternative #3, which in the long run, will be the best and most cost effective solution.

Lisa R. Garrett
1607 Main St.
East Earl (Goodville)



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 · Phone 717-354-5593 · Fax 717-355-0426

June 9, 2015

Ms. Lisa Garrett
1607 Main Street
East Earl, PA 17519

Dear Ms. Garrett:

Thank you for taking the time to review and provide written comments on the Borough of Terre Hill and East Earl Township's (the Municipalities) draft Joint Act 537 Sewage Facilities Plan (the Plan). Please find below the Municipalities' responses to address your questions as best we can.

Comment No. 1: Regarding high nitrate levels found in water drawn from homes along 625, you have not proven that failed septic rather than general farming is the contributing cause. In order to do that you need to establish a baseline for nitrate levels in homes adjacent to farmland that already have public sewer. The intro to this 537 plan states that high nitrates can be the result of farming practices. These properties are surrounded by farms. You should test properties similarly situated adjacent to farmland with wells, but also with public sewer or non-failed septic systems to establish a baseline expectation for nitrate levels of homes surrounded by farmland where questionable fertilization rates may be causing high nitrates rather than just jumping to the conclusion that the high nitrate levels are solely attributable to failed septic systems.

Municipal Response: Nitrate sampling plays an important role during the review of on-lot disposal systems; however, additional sampling for *Escherichia Coli* (E.Coli) and Total Coliforms was also conducted at each site. The presence of all three parameters is the most practical method we have for identifying on-lot disposal system failures. Please see page 49 of the Plan for the additional on-lot disposal system failures of the properties located along and near S.R.625/Reading Road. The Map 7 - *Well Water Sampling Locations and Results Map* of the Plan, documents the location of the on-lot disposal systems that were sampled along S.R.625/Reading Road. The results show the nitrate concentrations vary and that those variations can be quite large even for properties adjacent to one another. The spatial distribution of nitrate concentrations in the planning area helps the East Earl Township confirm that malfunctioning on-lot disposal systems exist in the S.R.625/Reading Road area.

Comment No. 2: Calculated Goodville EDU's are too low. You list 106 residential, 13 commercial, 16 industrial, and 5 future use. However, there are several residential properties that are actually subdivided into multi-family units with separate facilities. As these are all rentals, they should all have separate hookups for proper billing. Specifically, the most egregious of these are 1530 Main St. which is 7 separate rental units, 1600 Main St. with 4 separate units (note that 1598 Main St may be currently using the same septic system), 1611 Main St. (4 separate rental units). There are many other properties that have only 1 rental unit associated with their home, but as they have separate facilities, they should have separate EDU's. Number should be reverified for residential EDU's since it should more likely be 113.

Municipal Response: The Village of Goodville (the Village) residential units were evaluated as part of the 2013 Village of Goodville Act 537 Sewage Facilities Plan. During the evaluation of the Village, the Township and the consulting engineer reviewed the property types to determine the appropriate number of Equivalent Dwelling Units per property, this included apartment units too. The Township and consulting engineer determined that approximately twenty (20) percent of the properties within the Village Growth Boundary will be assessed more than one Equivalent Dwelling Unit.

Comment No. 3: Alternative #3 should be broken into 3 sections like Alternative #4 in order to accurately compare costs.

Municipal Response: The Municipalities note your concern regarding the cost of Alternative No. 3. Please see Appendix C - Detailed Cost Analysis, which may help when comparing cost.

Comment No. 4: Discussion of Alternative #3. Fetterville is out of scope for this project and any mention of it should be dropped as it could further delay implementing a solution to this safety issue by causing further study of the Fetterville area to be included in the plan.

Municipal Response: The Municipalities note your concern. The discussion of Fetterville is included by the Township because there are suspected on-lot disposal system failures and the Township considered how future need from this area may impact existing sewer capacity. By considering the impacts of providing public sewer to Fetterville, the Township is able to evaluate the flexibility of each proposed Alternative to address this potential future need.

Comment No. 5: It is disingenuous to say the need for public sewer in Goodville is a safety issue since the township has left this go for over 15 years. If this is truly felt to be a safety issue, then we should be getting public water in addition to public sewer and it should have been addressed in a timely fashion. As we are not getting public water, we will still be left with water sources that are possibly contaminated from the surrounding farms.

Municipal Response: The Municipalities understand your concern and we will work to implement the recommended sewer alternative, also known as Alternative No. 2 within the Plan, as quickly as possible to provide public sewer and eliminate the source of groundwater contamination in the Village.

Comment No. 6: This plan ignores the requests for Goodville residents to provide an option of tying in just Goodville to the existing township system. It has been mentioned at several township meetings that there is adequate capacity to tie in the 350 unit development proposed by East Earl LLC to the existing sewer system. If there is enough capacity to accommodate this development, there is certainly enough capacity to accommodate existing homes in Goodville. It seems that this would likely be the least costly of all options, but as it is not in the plan, no one can determine that. Goodville residents should be given priority over new development since this is such a "safety issue". Also, these expanded capacity hookups have already been paid for so only additional lines would be required making this the most likely cost effective option, had it been proposed. Goodville is and continues to be the main concern. You are delaying a solution for Goodville residents by scope creep to include the 625 corridor and, now it would appear Fetterville. Both should be removed from the plan. By including the 625 corridor you have more than doubled the size of the project and the cost of Alternative #3.

Municipal Response: When a municipality or municipalities develop an Act 537 Sewage Facilities Plan, they must comply with the statutory and regulatory requirements of the Act 537, which includes considering population projection, land use designations and zoning, growth potential, and assessing their impacts on sewage needs. As part of the Task Activity Report, the S.R. 625/Reading Road area was reviewed to determine whether the existing on-lot disposal systems are functioning as designed and whether this made sense when considering a regional wastewater system. The well water sampling results in the S.R.625/Reading road area confirm the existing systems are not functioning as intended and therefore the Township must consider a wastewater solution for these properties too. In an effort to plan for the long term wastewater needs of the Township, we included a discussion of Fetterville to determine how future sewer needs may impact the existing infrastructure. The Municipalities consider the inclusion of these areas into the Joint Act 537 Plan to be consistent with the Act 537 regulatory requirements and prudent sewage planning.

Comment No. 7: Alternative #3 is made more expensive by inclusion of East Earl LLC's proposed development and a currently non-existent unproposed development of the Zimmerman farm and other as yet unproposed and unapproved development and the 625 corridor. Again, scope creep.

Municipal Response: The Municipalities considered these properties because of their zoning and land use designation as high density growth areas, which is consistent with the 25 Pa Code § 71.21 requirements, as well the Pennsylvania Department of Environmental Protection's guidance documents and *Act 537 Plan Content and Environmental Assessment Checklist*. However, beyond the regulatory requirements, the Municipalities considered these areas to determine how future sewage flow from these areas would impact existing

infrastructure and sewer capacity. The Municipalities consider the inclusion of these areas into the Joint Act 537 Plan to be consistent with the Act 537 regulatory requirements and prudent sewage planning.

Comment No. 8: The plan lists costs of \$20,000/acre to purchase 2 acres of land from Conestoga Wood. The money paid for these acres should be the same as that being paid to the property owner losing their land to eminent domain proceedings for the Conestoga Creek Rd. bridge replacement and the route 897 realignment. All compensation across the township should be the same. Original discussions at township meetings said the Conestoga Wood was donating this land to the township. It is disappointing to find that they are looking to make a profit for floodplain land that is otherwise worthless for development. We should pay farm acreage prices and not development prices.

Municipal Response: The Municipalities note your concerns and have determined that the use of farmland cost is inconsistent with the current land use designation/zoning. The proposed location is for land zoned for industrial use and the construction of a wastewater treatment plant at this location would be constructed outside of the 100-year floodplain. An independent property assessment will be required prior to the purchase of any land, as was required for other projects within East Earl Township. Consequently, all land acquisition by the Township will inherently be consistent based on the results of these independent assessments.

Comment No. 9: There is a house currently for sale on Frogtown Rd., which has been discussed as a potential site for a pumping station location. Rather than take farmland for a pumping station, the township should consider purchasing the property for use for a pumping station which appears to be need for several of the alternatives (1-4).

Municipal Response: The Municipalities note your concerns with farmland and recommendation to purchase the home along Frogtown Road. However, the purchase of a home for demolition and construction of a pump station will significantly increase the cost of the proposed pump station. Also at this time, the Municipalities are unable to purchase land until the Pennsylvania Department of Environmental Protection has approved the Joint Act 537 Sewage Facilities Plan, and a detailed survey and engineering analysis has been completed to determine its suitability.

Comment No. 10: Alternative #2 relies on East Earl LLC tying in to the new plan (money from hookups used to calculate costs). What happens to costs in this plan if this development does not go through or if they hook in to the existing system or build their own system? It is doubtful that the developers want to wait 5 years for any proposed new plant to be built. Again, Goodville residents should be prioritized before any new developments are hooked into the existing sewer system since this is a safety issue.

Municipal Response: The recommended alternative, known as Alternative No. 2 within the draft Joint Act 537 Plan, does not rely on development of East Earl LLC. The money required for property owners to buy their shares into to the public sewer system, also known as a Tapping Fee, is based on the number of properties that currently used on-lot disposal systems, and the number of Equivalent Dwelling Units permitted for the Conestoga Wood Specialties package WWTP. The *Appendix C - Detailed Cost Analysis*, also includes the Earl Township Sewer Authority's WWTP expansion and upgrade cost the East Earl Sewer Authority is responsible for under the existing Inter-Municipal Agreement. However, should a developer, such as East Earl LLC, select to develop lots and connect to the existing system, their Tapping Fees would reduce the East Earl Sewer Authority's debt service for the Earl Township Sewer Authority's WWTP expansion and upgrade. Therefore, the estimated sewer user cost provided in the Joint Act 537 Plan could be lower than proposed depending on future development. A benefit of adding new users, such as through new development, is the payment of Tapping Fees and a larger user base, which can stabilize cost over the long term for an Authority.

Comment No. 11: The preferred alternative opens up the township to development. Build a regional sewer system and we will see this area developed, every last foot of it. It seems as if existing homeowners will be paying to support future development and ensure infrastructure for every proposed development along route 625. This is not what residents of Goodville or East Earl Township want. We do not trust East Earl Supervisors to prevent overdevelopment of this fertile farmland. If we do not ensure farmland what do you plan to eat in the future?

Municipal Response: The Municipalities note and understand your concern; however, the Township zoning in the S.R.625/Reading Road area is primarily Agricultural and does not support significant development.

Ms. Lisa Garrett
Page 4
June 9 2015

Comment No. 12: Environmental consequences fail to take into consideration what will happen to the Conestoga River watershed if the 625 corridor becomes fully developed, which it will if public sewer is made available for its full length.

Municipal Response: The Municipalities note and understand your concern; however, the Township zoning in the S.R.625/Reading Road area is primarily Agricultural and does not support significant development.

Comment No. 13: Appendix C states the Conestoga Wood may receive a price break for EDUs due to "providing" land for regional plant. It was asked at the public meeting whether developers could be charged more than current residents for their EDUs. The response was that it is illegal to charge different rates for EDUs. If you cannot give current residents a price break, then you cannot give Conestoga Wood, a large company who can certainly afford to pay for their EDUs, a price break.

Municipal Response: The referenced footnote is incorrect and has been removed from the *Appendix C - Detailed Cost Analysis*.

Comment No. 14: Even the lowest proposed hookup cost will be exorbitant for Goodville households. The expected annual cost for sewer is outrageously high, not matter what the alternative. That said, the price difference between the various alternatives is not enough to favor one over another *simply because of cost*. There are other costs hidden in Alternative #2, larger infrastructure will lead to larger annual maintenance costs, further development will lead to larger municipal costs, etc. that are not adequately addressed. We also cannot do an accurate comparison of Alternative #3 to other alternatives as it includes things that should not be there and does not show a true price for the solution. The plan is slanted towards Alternative #2 which is slanted towards developing farmland in our community. Because of that we support Alternative #3, which in the long run, will be the best and most cost effective solution.

Municipal Response: The Municipalities note your concerns with the cost analysis provided in the Joint Act 537 Sewage Facilities Plan. In an effort to address the public concerns, the Municipalities consulting engineers provided a presentation at the Board of Supervisor's meeting on May 12th to further discuss the review process, reasons for eliminating Alternative No. 3 and the recommendation of Alternative No. 2. Some of the reasons for eliminating Alternative No. 3 include the cost to upgrade existing collection and conveyance infrastructure to accommodate greater flow, the size of the receiving stream the Earl Township Sewer Authority's WWTP discharges to, and the new infrastructure cost to convey wastewater over a greater distance.

Thank you again for taking the time to review and provide written comments on the draft Joint Act 537 Sewage Facilities Plan.

Sincerely,

EAST EARL TOWNSHIP
BOARD OF SUPERVISORS


Earl H. Kreider, Chairman

c: Terre Hill Borough
Frank P. Mincarelli, Esquire, Blakinger, Byler & Thomas, P.C.
Jeff Sweater, ELA Group, Inc



SUMMERS NAGY LAW OFFICES

READING - YORK - JOHNSTOWN

SUMMERSNAGY.COM

April 10, 2015

(via fasmilie and first class mail)

East Earl Township
4610 Division Highway
East Earl, PA 17519

(via fasmilie and first class mail)

East Earl Township Authority
4610 Division Highway
East Earl, PA 17519

(via fasmilie and first class mail)

Terre Hill Borough
300 Broad Street
P.O. Box 250
Terre Hill, PA 17581

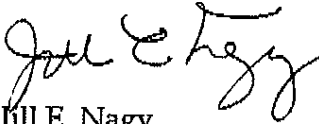
RE: Comments Regarding Proposed Act 537 Plan
Our Client - Creek Place Farms, LLC
286 Conestoga Creek Road
East Earl, PA 17519

Dear Municipal Officials:

Enclosed please find an Amended Letter with Comments Regarding the Proposed Act 537 Plan. Please note that there has been no substance change to the letter and the only thing that was amended is that we included our clients name.

Thank you for your attention to this matter.

Sincerely,


Jill E. Nagy

JEN:aje

CC: Frank Mincarelli, Esquire *(via electronic mail only)*



April 8, 2015

East Earl Township
4610 Division Highway
East Earl, PA 17519

East Earl Township Authority
4610 Division Highway
East Earl, PA 17519

Terre Hill Borough
300 Broad Street
P.O. Box 250
Terre Hill, PA 17581

RE: Comments Regarding Proposed Act 537 Plan

Dear Municipal Officials:

Thank you for the opportunity to comment on the Township's Act 537 Plan (the "Plan"). In response, my client has asked me to review the Plan and provide comments regarding various questions and potential deficiencies in the Plan. Please note that I have requested various documents that are either referenced in the Plan or purport to support the Plan. I am writing this letter without that information, and therefore, reserve the right to provide additional comments or provide comments directly to the Department of Environmental Protection (the "Department") upon receipt and review. Further, based upon the nature of the documentation, additional engineering review and analysis may be forthcoming.

1. The Official Plan provisions of the Clean Streams Law provides very specific requirements regarding what must be contained in an Official Plan, including an outline through mapping for developments within a specific time frame. 25 Pa. Code §§ 71.21, 71.32.

It appears that this Plan is geared toward unplanned and un-proposed development; forcing existing residents to bear costs for development not yet proposed or contemplated. Such a burden appears unreasonable. Further, the Plan does not propose a methodology to offset existing user's proposed fees in the event of future development. A financial component to address development must be included. Otherwise, my clients request that the Township provide a socio-economic justification in support of the Plan, and to the Department for its consideration.

The Department has long held that future development may not be the exclusive component of a sewage plan absent such a justification. It is believed that such a justification does not suit the needs of the region - even with the information set forth in the ELANCO plan - since such plan took place prior to the existing economic conditions and since the most current census data is not included within the ELANCO Plan.

2. Page 7 of the Plan discusses a primary objective of an update for the Terre Hill Borough ("Borough") Act 537 Plan. However, the Plan largely focuses on the impact and involvement of East Earl Township. Have individual and independent analyses been performed to demonstrate the benefits or flaws proposed by the Plan by the individual Municipalities?
3. Have the engineers and consultants from Terre Hill Borough and East Earl Township (the Municipalities") independently analyzed the Plan on their municipality's behalf?
4. Because the Plans are largely centered on growth as opposed to existing conditions, will PennVEST agree to provide any funding or grants? Have private loan alternatives and interest rates been explored as part of this process? I note that p. 4 talks about funding options, but no interest rates or other assumptions have been set forth in the cost proposal.

5. P. 9 and the documented population projections refer exclusively to the 2008 ELANCO Plan. Updated census data has been compiled in 2012 based upon official 2010 numbers. Why was updated census data not utilized for the assumptions in the Plan rather than the outdated data in the 2008 ELANCO plan?
6. The Plan does not address whether existing public sewer customers will be required to pay updated tapping fees for connection to the new system. Have tapping fees and/or connection fees been included for existing customers?
7. The Plan does not include a proposal for an OLDS management ordinance to properly evaluate and address actual malfunctions. Presently pending House legislation encourages rehabilitation and inspection of existing systems *prior* to the construction and planning of new wastewater treatment facilities and conveyance systems.

My client therefore requests, that an OLDS Management ordinance with cyclical pumping requirements with Sewage enforcement officer inspections be mandated, by ordinance, for a true analysis of malfunctions *prior* to any proposal that includes the construction of new infrastructure.

8. In keeping with the above comment, Page 2 of the Plan refers to "failures" as the references for suspected malfunctions, confirmed malfunctions or malfunctions that have been classified as existing merely due to lot size. Actual data should be included to provide information regarding the true nature of the "failures" that have been referenced.

The information provided concerning failures does not comply with the mapping and identification requirements of 25 Pa. Code § 71.21(a)(ii).

9. Page 11 of the Plan refers to a range of Terre Hill flows from .080 to a maximum flow of .284. Has a study been performed regarding impact of weather on flow discrepancies? Has data been included regarding I&I programs? Have the municipalities undertaken maintenance programs or manhole maintenance to correct such disparity in flows? Such information is not included within the Plan.

10. Pump stations appear to operate at 50% capacity. Are new pump stations proposed and/or included in cost estimates for the new facilities and/or collection system?
11. Because the Plan largely focuses on East Earl Township growth, will Borough residents be required to pay the same rates for any joint sewer alternative? Will the residents of the individual municipalities be asked to pay the same rate?
12. The Plan does not address billing protocol. It is assumed that the Borough is billed through public water. Does the Township have public water and attendant meters for an appropriate billing system? Will the Township be providing well meters if public water is not available? How will uniformity in billing rates be maintained as mandated by the Municipalities Authorities Act?
13. When the Plan analyzes the system's facilities it relies nearly exclusively on assumptions. The drafter admits that he is not familiar with the system and assumes sewer line depths, manhole repairs and line conditions. Why would actual repair, replacement and field data not be used for the Plan? It would appear that the information concerning the status of the system is unreliable and provides inappropriate assumptions throughout the report. Due to the nature of the proposal, a full analysis and study, through visual, technical or documentary inspection should occur. It would appear that as-built sewer infrastructure plans and data is available and provides the best evidence of existing circumstances.
14. Alternative No. 2 refers to a Joint Sewer Authority that is to be created by the Borough of Terre Hill and East Earl Township (the "Municipalities") the following questions arise:
 - a. Will the existing sewer facilities owned by the existing Municipalities be dedicated to the Joint Authority?
 - b. The alternative talks about construction of a collection system within the Township, will Borough residents be asked to contribute to that cost?
 - c. P. 3 refers to the Joint Authority only owning the WWTF, who will own any new conveyance lines?

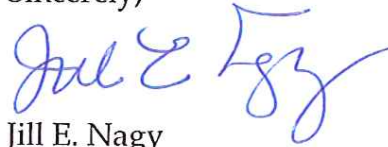
- d. P. 3 discusses an increase of users in order to maintain lower user rates. How many new users are projected for the system in the first year than are already utilizing public sewer in the Municipalities? No growth or user analysis has been included.
 - e. Will each Municipality be responsible for the conveyance system within the boundary of their Municipality? Will there be a separate bill and/or invoice component for line upgrades and maintenance from the individual municipalities?
 - f. Will each municipality be expected to have a bulk purchase agreement with the Joint Authority?
 - g. What will happen with the existing Municipal Authorities? Will they dissolve?
 - h. If the individual municipal authorities are not dissolved, has additional personnel, professional staff and overhead to operate multiple authorities been considered with in the costs of Alternative No. 4?
15. Alternative No. 4 refers to property that Conestoga Wood Specialties "ha[s] expressed an interest in selling land near their existing WWTP". Has the property been conveyed? Has a purchase price been established?
16. Nothing in the Plan discusses municipal commitments that are necessary to implement the plan or any discussion of the amendments of the participating municipality's Act 537 Plans as required by Departmental regulations. 25 Pa. Code § 71.21.
17. The Plan purports to have been written as a result of a COA. However, a "no action alternative" has been proposed. How can there be a no action alternative in the case of a COA?
18. Finally, the Plan has not set forth any discussion on economic impact and user costs and how those costs would impact existing property owners. The socio-economic component of this plan - which does not include any viable grant options or assistance for existing customers would appear to be a deficiency under the review criteria of the Clean Streams Law. See e.g., Noll and Clark v. Department of Environmental Protection, 2004 WL 2045363 (Pa. Env. Hrg. Bd. 2004).

March 6, 2015

Page No. 6

Thank you for your attention. I would reserve the right on behalf of my clients to provide additional comment to future drafts of this Plan and submit comments directly to the Department during their review of the Plan.

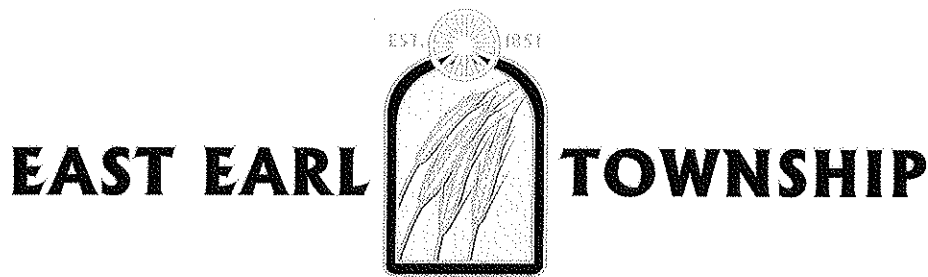
Sincerely,



Jill E. Nagy

JEN:aje

CC: Frank Mincarelli, Esquire



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 · Phone 717-354-5593 · Fax 717-355-0426

June 9, 2015

Mr. Donald Longenecker &
Ms. Maria Kawulich
Creek Place Farms, Inc.
286 Conestoga Creek Road
East Earl, PA 17519

Dear Mr. Longenecker and Ms. Kawulich:

Thank you for taking the time to review and provide written comments on the Joint Act 537 Sewage Facilities Plan between the Borough of Terre Hill and East Earl Township (the Municipalities). Please see the Municipalities' response to the comments you have provided.

Comment No. 1: The Official Plan provisions of the Clean Streams Law provides very specific requirements regarding what must be contained in an Official Plan, including an outline through mapping for developments within a specific time frame. 25 Pa. Code §§ 71.21, 71.32.

It appears that this Plan is geared toward unplanned and un-proposed development; forcing existing residents to bear costs for development not yet proposed or contemplated. Such a burden appears unreasonable. Further, the Plan does not propose a methodology to offset existing user's proposed fees in the event of future development. A financial component to address development must be included. Otherwise, my clients request that the Township provide a socio-economic justification in support of the Plan, and to the Department for its consideration.

The Department has long held that future development may not be the exclusive component of sewage plan absent such a justification. It is believed that such a justification does not suit the needs of the region - even with the information set forth in the ELANCO plan - since such plan took place prior to the existing economic conditions and since the most current census data is not included within the ELANCO Plan.

Municipal Response: The Draft Joint Act 537 Sewage Facilities Plan (Draft Plan) was developed to identify a wastewater solution to address on-lot disposal system failures in the Village of Goodville, aging wastewater infrastructure in the Borough of Terre Hill and any additional on-lot disposal system failures that were identified in East Earl Township as part of this planning study. In considering a wastewater solution, and as agreed upon by the Municipalities in a Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environment Protection in April of 2014, both municipalities agreed to review the sharing sewer resources under a joint sewer authority.

In preparing the Joint Act 537 Plan, the Municipalities considered several alternatives with the goals of protecting public health and the environment, including the water quality of the Conestoga River Watershed and the Chesapeake Bay. In order to identify a long term practical solution to implement and meet the requirements of the 2014 CO&A, the Municipalities also gave consideration to existing sewer needs and future sewer needs, and the impact future sewer needs may have on available and new wastewater infrastructure. Consideration of future need is required as part of the Act 537 Sewage Facilities Act (the Act) under section 5.b.2(d)(4) of the Act, which states:

"[t]ake into consideration all aspects of planning, zoning, population estimates, engineering and economics so as to delineate with all practicable precision those portions of the area which community systems may reasonably be expected to serve within ten years, after ten years, and any areas in which the provisions of such services is not reasonably foreseeable[;]"

The consideration of future sewer need when preparing an Act 537 Sewage Facilities Plan is also reiterated in the Pennsylvania Department of Environmental Protection's regulations under 25 Pa Code § 71.21(a)(3)(i)-(v) which requires the review of existing development, land use, future growth, population projections, zoning and so forth. In developing the Draft Plan, the Municipalities identified existing sewer need through well sampling of the properties within the planning area that are not already connected to public sewer or were not identified in previous Township Act 537 Update Revisions. The Municipalities considered future sewer need by reviewing the zoning in and surrounding the Borough of Terre Hill, the Village of Goodville, and the delineated planning areas east of the community of Blue Ball within the East Earl Township. The Municipalities also considered future sewer needs and impacts by reviewing the ELANCO Region's *2008 ELANCO Region Comprehensive Plan* and the Lancaster County Planning Commission's report titled, *2040 Population Projections for Lancaster County and Municipalities Description of Methodology* (the *2040 Projections Study*), as documented on page 9 and 45 of the Draft Plan. Please note that the *2040 Projections Study* does take into consideration the 2010 U.S. Department of Commerce Census Bureau's data for the region. Beyond the available planning studies, the Chapter 94 Municipal Wasteload Management Reports for both the Borough and Township were reviewed to survey reserved and planned future sewer capacity over the next five (5) years.

The Municipalities, as part of the Draft Plan, also reviewed the cost of each sewer alternative. The costs were discussed in Table 21 and Table 24 of the narrative and can be directly identified in the Table of Contents to the Draft Plan. Appendix C - *Detailed Cost Analysis*, of the Draft Plan, provides an analysis of the selected wastewater alternatives. Developing a methodology to offset future rates, as a result of new development, is not considered in this Plan and would be performed by a joint sewer authority under the statutory and regulatory requirements of the Pennsylvania Municipal Authorities Act.

Comment No. 2: Page 7 of the Plan discusses a primary objective of an update for the Terre Hill Borough ("Borough") Act 537 Plan. However, the Plan largely focuses on the impact and involvement of East Earl Township. Have individual and independent analyses been performed to demonstrate the benefits or flaws proposed by the Plan by the individual Municipalities?

Municipal Response: In Section 3.0 of the Draft Plan, the Borough of Terre Hill, independent of East Earl Township, analyzes the potential options for replacement of their existing aging wastewater treatment plant to compare to the formation of a joint sewer authority. The intent of the Borough's separate analysis is to provide an update to their Act 537 Plan, and to identify an environmentally protective and cost effective option to replace their wastewater treatment plant should the Borough and Township fail to negotiate a joint sewer authority. In Section 4.0 of the Draft Plan, the East Earl Township analyzes both independent and joint wastewater alternatives. The Municipalities' public works department, sewer authority and planning commissions were encouraged to review the Draft Plan and provide comments. The East Earl Township Planning Commission concluded the selected alternative, also known as Alternative No. 2, which recommends the formation of a joint sewer authority to own and operate a regional wastewater treatment plant, did not have any inconsistency with the *ELANCO Region Comprehensive Plan* or the Township's Zoning and Subdivision/Land Development Ordinances. The East Earl Sewer Authority provided a letter of support for the Draft Plan and the recommended alternative.

Comment No. 3: Have the engineers and consultants from Terre Hill Borough and East Earl Township (the Municipalities") independently analyzed the Plan on their municipality's behalf?

Municipal Response: The consulting engineers for the Borough of Terre Hill and East Earl Township were provided an opportunity and encouraged to review the Draft Plan. The Borough of Terre Hill's engineer provided comments, which have been included in the Joint Act 537 Plan.

Comment No. 4: Because the Plans are largely centered on growth as opposed to existing conditions, will PennVEST agree to provide funding or grants? Have private loan alternatives and interest rates been explored as part of this process? I note that p. 4 talks about funding options, but no interest rates or other assumptions have been set forth in the cost proposal.

Municipal Response: The Draft Plan focuses on independent and joint municipal sewer alternatives to address the aging wastewater treatment infrastructure in the Borough of Terre Hill, and the failing on-lot disposal systems in East Earl Township within the sewage planning area. The Draft Plan, as mentioned under Comment No. 1 above,

reviews growth potential to determine impacts to existing and future sewer infrastructure as part of sewage planning.

The Pennsylvania Infrastructure Investment Authority (PENNVEST) does not agree to funding of wastewater facilities during the draft Act 537 Planning process. Based on our engineers' meeting with PENNVEST, in order to secure funding from the agency in the form of grant and/or low interest loans, the Pennsylvania Department of Environmental Protection must first approve the Joint Act 537 Sewage Facilities Plan. Following approval of the Joint Act 537 Sewage Facilities Plan, the municipalities must apply for all pertinent permits, including: National Pollution Discharge Elimination System (NPDES) Permits, Water Quality Management (WQM) Permits, Chapter 105 Stream Encroachment Permits, and Chapter 102 Erosion and Sediment Control NPDES Stormwater Permits. Once the municipalities have obtained all Pennsylvania DEP permits, a PENNVEST application can be submitted for review and consideration. The Municipalities may be eligible for greater funding in form of low interest loans for the proposed alternative, also known as Alternative No. 2 in the draft Plan, because of the effort to form a joint sewer authority. As provided in Section 4.8 *Institutional Evaluation and Recommended Alternative*, in reference to PENNVEST, a multi-municipal project funding eligibility increases to \$20,000,000.00. Also, the Municipalities entered into a joint CO&A with the DEP, which may help the Municipalities achieve a greater score on a PENNVEST funding application and therefore increase our funding opportunity through the agency. The Appendix C - Detailed Cost Analysis assumes a PENNVEST blended monthly interest rate of 2.063% for Lancaster County per the PENNVEST website. Please see Footnote I. of the Detailed Cost Analysis.

Comment No. 5: P.9 and the documented population projections refer exclusively to the 2008 ELANCO Plan. Updated census data has been compiled in 2012 based on official 2010 numbers. Why was updated census data not utilized for the assumptions in the Plan rather than the outdated data in the 2008 ELANCO plan?

Municipal Response: The Draft Plan (see page 9 and 45) also refers to the Lancaster County Planning Commission's report titled, *2040 Population Projections for Lancaster County and Municipalities Description of Methodology*. Please note the 2040 Projections Study does take into consideration the 2010 U.S. Department of Commerce Census Bureau's data for the region.

Comment No. 6: The Plan does not address whether existing public sewer customers will be required to pay updated tapping fees for connection to the new system. Have tapping fees and/or connection fees been included for existing customers?

Municipal Response: The Pennsylvania Municipal Authorities Act, under Subsection 5607(d)(24)(i)(C)(V)(b) prohibits an Authority from charging tapping fees to existing customers. The existing Borough of Terre Hill and East Earl Township customers connected to public sewer are not required to pay tapping fees for connection to a new sewer system. However, users currently served by on-lot disposal systems and private package wastewater treatment plants, are required to pay tapping fees and these users have been included within the Appendix C - *Detailed Cost Analysis*, under "Projected Initial Tapping Fee Revenue." The Tapping Fees used in this analysis are based on existing fees to provide a conservative user rate; however, new customer user fees will be developed in accordance with the Municipal Authorities Act.

Comment No. 7: The Plan does not include a proposal for an OLDS management ordinance to properly evaluate and address actual malfunctions. Presently pending House legislation encourages rehabilitation and inspection of existing systems prior to the construction and planning of new wastewater treatment facilities and conveyance systems.

My client therefore requests, that an OLDS Management ordinance with cyclical pumping requirements with Sewerage enforcement officer inspections be mandated, by ordinance, for a true analysis of malfunctions prior to any proposal that includes the construction of new infrastructure.

Municipal Response: The East Earl Township OLDS Management Ordinance, as set forth in Ordinance #92 of 1998, requires cyclical pumping. The Sewage Enforcement Officer inspections only uncover surface malfunctions and therefore does not analyze for sub-surface malfunctions or their impacts to groundwater. However, well sampling is performed to determine whether an on-lot disposal system is malfunctioning.

Comment No. 8: In keeping with the above comment, Page 2 of the Plan refers to "failures" as the references for suspected malfunctions, confirmed malfunctions or malfunctions that have been classified as existing merely due to lot size. Actual data should be included to provide information regarding the nature of the "failures" that have been referenced.

The information provided concerning failures does not comply with the mapping and identification requirements of 25 Pa. Code § 71.21(a)(ii).

Municipal Response: The 2002 Act 537 Official Sewage Facilities Plan Update Revision for the Village of Goodville documented on-lot disposal system failures within the Village. The 2013 Official Sewage Facilities Plan Update Revision for the Village of Goodville documented further on-lot disposal system failures. The draft 2015 Joint Act 537 Sewage Facilities Plan incorporates those failures by reference, as well as documents additional on-lot disposal system failures along the S.R. 625/Reading Road planning area. Please see page 48 of the Draft Plan and Map 7 - *Well Water Sampling Locations and Results*.

Comment No. 9: Page 11 of the Plan refers to a range of Terre Hill flows from 0.080 [MGD] to a maximum flow of 0.284 [MGD]. Has a study been performed regarding impact of weather on flow discrepancies? Has data been included regarding I&I programs? Have the municipalities undertaken maintenance programs or manhole maintenance to correct such disparity in flows? Such information is not included within the Plan.

Municipal Response: Flows to wastewater treatment plants do not remain at a consistent level, but rather fluctuate on a continual basis. Wastewater treatment plants, pump stations and collection systems are not designed for an average use, but are instead designed based on peak flows. Higher flows to municipal wastewater systems are the result of increased use from residential and commercial entities, as well as illegal connection of sump pumps and roof leaders, broken sewer vents and cleanouts, and other forms of Inflow and Infiltration (I&I). Elevated flows to wastewater treatment plants are also on occasion the result of prolonged periods of precipitation. This occurs because most gravity collection systems are not pressurized and therefore I&I can enter the system at pipe joints and manholes. As noted on page 14 of the Draft Plan, the Borough of Terre Hill's operators have performed inspections of the system to locate broken sewer vents and cleanouts that allow for Inflow. Also noted on page 17 of the Draft Plan, are the efforts of the Borough's operators to evaluate the existing collection system through closed circuit television practices.

Comment No. 10: Pump stations appear to operate at 50% capacity. Are new pump stations proposed and/or included in cost estimates for the new facilities and/or collection system?

Municipal Response: Yes, new pump stations are included in the proposed alternatives and their respective cost estimates. Please Appendix C - *Detailed Cost Analysis*, as well as Maps No. 8 - 11.

Comment No. 11: Because the Plan largely focuses on East Earl Township growth, will Borough residents be required to pay the same rates for any joint sewer alternative? Will the residents of the individual municipalities be asked to pay the same rate?

Municipal Response: The existing and new sewer users will be within a single user rate district.

Comment No. 12: The Plan does not address billing protocol. It is assumed that the Borough is billed through public water. Does the Township have public water and attendant meters for an appropriate billing system? Will the Township be providing well meters if public water is not available? How will uniformity in billing rates be maintained as mandated by the Municipalities Authorities Act?

Municipal Response: The Borough of Terre Hill bills their customers within the Borough and East Earl Township for sewer use based on individual water meters, as stated in Section 3.4.2 of the Draft Plan. The East Earl Sewer Authority currently bills their customers for sewer use based on a flat rate per Equivalent Dwelling Unit, despite having many customers connected to public water. The uniformity in billing must be determined by a joint sewer authority, which the Draft Plan recommends the Borough of Terre Hill and East Earl Township form. Following approval of the Joint Act 537 Plan by the Pennsylvania Department of Environmental Protection, and during the negotiations of a joint sewer authority, the municipalities will determine the appropriate billing method and acquire the necessary approvals as required by the Municipal Authorities Act.

Comment No. 13: When the Plan analyzes the system's facilities it relies nearly exclusively on assumptions. The drafter admits that he is not familiar with the system and assumes sewer line depths, manhole repairs and line conditions. Why would actual repair, replacement and field data not be used for the Plan? It would appear that the information concerning the status of the system is unreliable and provides inappropriate assumptions through the report. Due to the nature of the proposal, a full analysis and study, through visual, technical or documentary inspection should occur. It would appear that as-built sewer infrastructure plans and data is available and provides the best evidence of existing circumstances.

Municipal Response: The Draft Plan relies on existing facility data and operator knowledge. For example, the Municipalities' engineers, who helped prepare the Draft Plan, reviewed the available Chapter 94 Municipal Wasteload Reports, which is subsequently how they knew that pump stations within the Borough currently operate at 50% capacity, as the commenter stated in Comment No. 10. Their review included the location and capacity of existing infrastructure, too. The Municipalities' engineers for this sewage plan also reviewed other documentation, such as previous Act 537 Plans, Daily Monitoring Reports, and consulted with the East Earl Sewer Authority's engineer and the Borough of Terre Hill's wastewater treatment plant operator as needed. The Draft Plan relies on engineering experience and engineering heuristics to develop cost analysis, such as the relation of pipe depth to repair/install cost. The Municipalities' engineers also used as-built plans for the existing East Earl Sewer Authority's low pressure sewer system to develop a model within SewerCad to determine available capacity. Geographic Information System data was also obtained and used as part of the modeling of the low pressure sewer system.

Comment No. 14: Alternative No. 2 refers to a Joint Sewer Authority that is to be created by the Borough of Terre Hill and East Earl Township (the "Municipalities") the following questions arise:

- a. Will the existing sewer facilities owned by the existing Municipalities be dedicated to the Joint Authority?

Municipal Response: Yes, the existing sewer facilities will be owned by the Joint Sewer Authority.

- b. The alternative talks about construction of a collection system within the Township, will Borough residents be asked to contribute to that cost?

Municipal Response: The debt service for the new system would be included in the quarterly rates for all users. The construction of a new collection system is required to convey sewage from the Borough and the Township to the proposed regional wastewater treatment plant.

- c. P.3 refers to the Joint Authority only owning the WWTF, who will own any new conveyance lines?

Municipal Response: The Draft Plan proposes a joint sewer authority to own a regional collection system and wastewater treatment. Please see Section 4.8 for the Institutional Evaluation.

- d. P.3 discusses an increase of users in order to maintain lower user rates. How many new users are projected for the system in the first year than are already utilizing public sewer in the Municipalities? No growth or user analysis has been included.

Municipal Response: The new users to the regional system, which includes those within the planning area that currently use on-lot disposal systems and package wastewater treatment plants, totals 356 Equivalent Dwelling Units.

- e. Will each Municipality be responsible for the conveyance system within the boundary of their Municipality? Will there be a separate bill and/or invoice component for line upgrades and maintenance from the individual municipalities?

Municipal Response: As previously stated, the existing and new conveyance system would be owned and operated by a joint sewer authority. Sewer funds for an authority will exist under one joint sewer authority account and will not distinguish between municipalities.

- f. Will each municipality be expected to have a bulk purchase agreement with the Joint Authority?

Municipal Response: No, the Municipalities will not be expected to have a bulk purchase agreement and the Draft Plan only documents the capacity each municipality needs in order to develop and evaluate the feasibility of the joint and independent wastewater alternatives.

- g. What will happen with the existing Municipal Authorities? Will they dissolve?

Municipal Response: Yes, the existing Municipal Authorities will dissolve.

- h. If the individual municipal authorities are not dissolved, has additional personnel, professional staff and overhead to operate multiple authorities been considered within the costs of Alternative No. 4?

Municipal Response: As indicated above, the existing Municipal Authorities will be dissolved.

Mr. Donald Longenecker & Ms. Maria Kawulich

Page 6

June 9, 2015

Comment No. 15: Alternative No. 4 refers to property that Conestoga Wood Specialties "ha[s] expressed an interest in selling land near their existing WWTP". Has the property been conveyed? Has a purchase price been established?

Municipal Response: At this time there has been no sale of property and a purchase price has not been established.

Comment No. 16: Nothing in the Plan discusses municipal commitments that are necessary to implement the plan or any discussion of the amendments of the participating municipality's Act 537 Plans as required by Departmental regulations. 25 Pa. Code § 71.21.

Municipal Response: The East Earl Township has adopted a Mandatory Connection Ordinance, which enables the implementation of the Draft Plan. The Draft Plan discusses the financial commitments, permitting commitments, joint sewer authority formation commitments and funding options necessary to implement the recommendation through the proposed Implementation Schedule. Please refer to pages 66 through 83.

Comment No. 17: The Plan purports to have been written as a result of a COA. However, a "no action alternative" has been proposed. How can there be a no action alternative in the case of a COA?

Municipal Response: A Consent Order and Agreement does not prohibit an evaluation of the "no action alternative". Since the Municipalities entered into a joint CO&A with the DEP and public health concerns and groundwater contamination are identified in the Draft Plan and if the Municipalities selected to do nothing to mitigate the public health concerns and groundwater contamination, they would be subject to penalties for violating the CO&A and potential further legal action from the Pennsylvania DEP.

Comment No. 18: Finally, the Plan has not set forth any discussion on economic impact and user costs and how those costs would impact existing property owners. The socio-economic component of this plan - which does not include any viable grant options or assistance for existing customers would appear to be a deficiency under the review criteria of the Clean Streams Law. See e.g., Noll and Clark v. Department of Environmental Protection, 2004 WL 2045363 (Pa. Env. Hrg. Bd. 2004).

Municipal Response: Section 4.8, *Institutional Evaluation and Recommended Alternative*, of the Draft Plan briefly discusses PENNVEST and the United States Department of Agriculture's grant programs. The Appendix C- *Detailed Cost Analysis* does provide user costs for the various wastewater alternatives based on the PENNVEST blended rate for Lancaster County. Section 4.8 of the Draft Plan discusses user rates, which can be located in Table 24. The Draft Plan recommends the Municipalities and their design engineer for the regional wastewater system continue to review additional grant funding options, which may become available after the preparation of the Draft Plan. Thank you again for taking the time to provide written public comments on the draft Joint Act 537 Sewage Facilities Plan.

Sincerely,

EAST EARL TOWNSHIP
BOARD OF SUPERVISORS


Earl H. Kreider, Chairman

c - Terre Hill Borough
Frank P. Mincarelli, Esquire, Blakinger, Byler & Thomas, P.C.
Jeff Sweater, ELA Group, Inc.

Municipal Comments

East Earl Sewer Authority

P. O. Box 339
Blue Ball, PA 17506
(717)354-5593 ext. 25

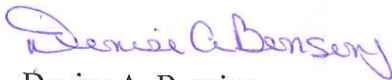
April 21, 2015

ELA Group, Inc.
743 S. Broad St.
Lititz, PA 17543
Attn: Jeff Sweater

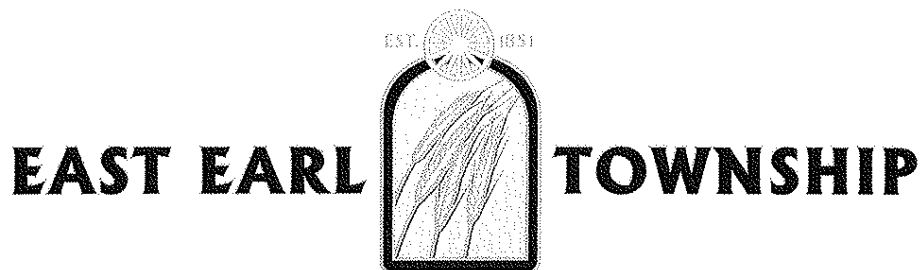
Dear Mr. Sweater,

At the April 13, 2015 meeting of the East Earl Sewer Authority, the board discussed the alternatives presented in the East Earl Township draft Act 537 plan. The board agreed that Alternative 2, a joint Authority and treatment plant with Terre Hill Borough, is the alternative they recommend for the future sewer needs.

Regards,



Denise A. Bensing
Administrative Assistant
East Earl Sewer Authority



Board of Supervisors

4610 Division Highway, East Earl, PA 17519 · Phone 717-354-5593 · Fax 717-355-0426

May 6, 2015

East Earl Township Board of Supervisors
4610 Division Highway
East Earl, PA 17519

RE: Draft of Joint Act 537 Plan Comments

Gentlemen:

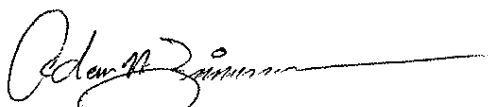
The East Earl Township Planning Commission members reviewed the draft of the Joint Act 537 Official Sewage Facilities Plan for East Earl Township and Terre Hill Borough. In support of Alternative No. 2, the plan for a joint Township and Borough collection system and treatment plant, the Planning Commission offers the following comments.

- Land is available for building the treatment plant.
- The available land is at a central location.
- Sending affluent to the Conestoga River is a good option.
- Alternative No. 2 addresses long-term planning which is an important factor.
- Though we believe Alternative No. 2 is feasible for development, the Planning Commission would like to see farmland in the proposed service area protected.
- Consideration should be given to including areas to the east of the Township in the future.
- The projected user fee does not include any continuing costs relative to the agreements with Earl Township and New Holland Borough. There is concern as to what the obligations are to Earl Township and New Holland Borough for use of their treatment facilities and for how long?

It appears the regional treatment plant option has no inconsistencies with ELANCO Regional Comprehensive Plan or the Township's Zoning and Subdivision/Land Development Ordinances.

Sincerely

EAST EARL TOWNSHIP
PLANNING COMMISSION



Adam N. Zimmerman, Chairman

Borough of Terre Hill & East Earl Township
Joint Act 537 Official Sewage Facilities Act
REVIEW COMMENTS

1. Page 2 It is suggested that ELANCO be defined where it first appears in the report.
2. Pages 4 Comment on Perception from the customer's point-of-view
The user fee for the recommended joint alternative is \$256.59. The user fee for the recommended Terre Hill individual alternative is \$300.56. The user fee for the recommended East Earl individual alternative is \$244.71. Why would an East Earl customer want to incur a higher user fee in order to include Terre Hill customers in a joint project?

The capital cost of the recommended joint alternative is \$16,458,984. The sum of the capital costs for the recommended Terre Hill individual alternative (\$4,979,219) and the recommended East Earl individual alternative (\$10,864,878) is \$15,844,097. Why would you want to pursue a joint project that has a higher capital cost than the two recommended individual projects?

From Appendix C – Detailed Cost Analysis, the net present worth of the recommended joint alternative is \$22,286,094. The sum of the net present worths for the recommended Terre Hill individual alternative (\$7,998,521) and the recommended East Earl individual alternative (\$14,453,961) is \$22,452,482. The net present worth of the recommended joint alternative is less than the sum of the net present worths for the two recommended individual alternatives. It would be appropriate to include the present worth information in the Executive Summary because it is the basis for recommending the joint alternative.

The user fees shown in the Executive Summary do not agree with the user fees shown in the Overall Cost Summary and User Rates table of Appendix C. For example, the \$300.56 user fee for the recommended Terre Hill individual alternative shown in the Executive Summary (and above) is shown as \$299.44 in the Overall Cost Summary and User Rates table of Appendix C.

3. Page 15&16 [first bullet item] Although it may be appropriate for making fair comparisons, it is not realistic to assume that 100% of all sewers and manholes need replacement or repair.
4. Page 18 The flow schematic for the existing Terre Hill WWTP does not look right
5. Page 32 In Table 13, first line, the Collection System Capital Cost for Alternative 4 – Regional WWTF is shown as \$6,710,400. Looking at Appendix C - Detailed Cost Analysis, in the Collection and Conveyance Systems Capital Costs table, under Alternative 2 - Regional WWTP SBR (or Regional WWTP Oxidation Ditch - they are both the same), it can be seen that the \$6,710,400 figure includes Collection System Capital Costs for the Township System (in the amount of \$4,701,700) and Conveyance System Capital Costs for conveying wastewater from the existing Borough WWTP site to the proposed regional WWTP site (in the amount of \$2,008,700 - the difference between \$6,710,400 and 4,701,700). The \$6,710,400 figure does not include any Collection System Capital (Repair/Replacement) Costs for the Borough System. In summary, The Borough pays a portion of the Township Collection System Capital Costs, but the Township does not pay any portion of the Borough Collection System Capital (Repair/Replacement) Costs. If you look further into the Detailed Cost Analysis, you will see that the same is true of the Operation and Maintenance Costs. The Borough pays a portion of the Township Collection System O&M Costs, but the Township does not pay any portion of the Borough Collection System O&M Costs. This does not appear to be an equitable sharing of the costs.
6. Page 32 In Table 13, second line, the values listed for WWTP Capital Cost (for all alternatives) correspond to the WWTP & Collection System Present Worth shown in the Collection and Conveyance Systems O&M Costs table in Appendix C. These values already have the Construction Contingency and the Admin., Engineering, & Legal Services included. In Table 13, third and fourth lines, these costs are added again. The values listed for WWTP Capital Cost (for all alternatives) in Table 13 should correspond to the Total Construction Cost in the Wastewater Treatment Plant Capital & O&M Costs table in Appendix C. For example, the WWTP Capital Cost for Alternative 1 – Upgrade Existing Borough WWTP should be \$4,111,400 instead of \$5,637,732.

7. Page 32 In Table 13, third and fourth lines, the values listed are not equal to the indicated percentage (15 or 20%) times the WWTP Capital Cost (second line). Since the WWTP Capital Cost (second line) will change based on the above comment, these values (third and fourth lines) will also change. In Appendix C, in the Collection and Conveyance Systems O&M Costs table, the values for Admin., Engineering, & Legal Services are mathematically correct based on 23%, not the 20% shown in the Description column.
8. Page 32 In Table 13, fifth line, the \$280,000 value shown for O&M Cost is missing the last zero.
9. Page 32 In Table 13, sixth line, based on making the changes described in the previous three comments, the calculated Net Present Worth Cost is correct as shown.
10. Page 35 Under the Antidegradation paragraph, what are the DEP proposed preliminary effluent limits for the proposed discharge point from a regional WWTP?
11. Page 57 In Article 4.6.4.2, second paragraph, second sentence, the plan states “The joint sewer authority would also replace or install liners on any portion of the existing Borough collection and conveyance system found to be in disrepair.”; however, there are no capital costs for replacement/repair of Borough collection and conveyance systems included in Appendix C. Any calculation of Present Worth or user rates is sure to be low if a known expense is not included in the calculation. An inaccurate estimate of replacement/repair capital costs would be better than no estimate at all. Similarly, there are no O&M costs for Borough collection and conveyance systems included in Appendix C.
12. Page 58 Table 21 – Planning Area Estimated Wastewater Flow to Regional WWTP shows a total of 1397 EDUs and a wastewater flow of 0.4055 MGD (use 0.410 MGD for calculations). The overall flow per EDU is 293.5 gpd/EDU. Table 21 shows 615 EDUs and a wastewater flow of 0.210 MGD for the Borough. The flow per EDU for the Borough is 341.5 gpd/EDU. That leaves 782 EDUs and a wastewater flow of 0.200 MGD for the Township. The flow per EDU for the Township is 255.75gpd/EDU. Page 51 of the report indicates that wastewater flows for the Township are based on a unit flow of 250 gpd/EDU. The EDUs described in this paragraph are the basis for determining the size (and the cost) of the WWTPs.

In Appendix C, the Overall Cost Summary and User Rates table shows 615 EDUs for the Borough, 1987 EDUs for the Township, for a total of 2602 EDUs. Based on the proposed regional WWTP capacity of 0.410 MGD, the unit flow would be 157.6 gpd/EDU. This is significantly less than the 250 gpd/EDU value proposed for planning purposes. The EDUs described in this paragraph are the basis for determining the user rates. If the 1987 EDUs for the Township includes potential future customers of the sewer system, it would be appropriate to calculate the user rates based only on paying sewer customers anticipated at the time that the proposed facilities will be placed in service.

13. Page 74 In Table 24, eighth line, the values shown for Present Worth WWTP O&M Cost (for all alternatives) do not agree with the WWTP O&M Present Worth values shown in the Wastewater Treatment Plant Capital and O&M Costs table in Appendix C. The values in Table 24 for Present Worth WWTP O&M Cost (eighth line) are the same as the values for Net Present Worth Cost (thirteenth line) which is not correct.
14. Page 74 In Table 24, eleventh line, the value shown for the WWTP Salvage Value under Alternative 1 – Borough SBR WWTP (\$758,815) does not agree with the WWTP Salvage Value shown in Appendix C, in the Wastewater Treatment Plant Capital and O&M Costs table under Alternative 1 – Borough WWTP SBR (\$758,615.83).
15. Page 74 In Table 24, last line, the projected user fees (for all alternatives) do not agree with the user fees shown in the Overall Cost Summary and User Rates table of Appendix C. They do agree with the user fees shown in the Executive Summary (on page 4).
16. Appendix C In the Wastewater Treatment Plant Capital and O&M Costs table, under Alternative 1 – Borough WWTP Oxidation Ditch and under Township WWTP Oxidation Ditch, there is a \$90,000 item for Post Equalization. Similarly, under Regional WWTP Oxidation Ditch, there is a \$180,000 item for Post Equalization. The oxidation ditch process is a continuous flow process and there should be no need for post equalization.
In the Wastewater Treatment Plant Capital and O&M Costs table, under Alternative 1 – Borough WWTP SBR and under Township WWTP SBR, there is no item for Post Equalization. Similarly, under Regional WWTP SBR, there is no item for Post Equalization. The SBR process is a batch flow process with high intermittent flow

discharges. Post equalization is necessary for this process, particularly if UV disinfection is provided downstream.

17. Appendix C In the Wastewater Treatment Plant Capital and O&M Costs table, under Alternative 1 – Township WWTP SBR and under Regional WWTP SBR, there is no item Sludge Holding - Aerobic. Sludge digestion or holding is necessary for this process.
18. Appendix C In the Collection and Conveyance Systems O&M Costs table (for all alternatives), the values shown for Admin, Engineering, Legal Services (20%) are correct based on 23% of the WWTP & Collection System Sub Total amount, not the 20% shown in the Description column.
19. Appendix C In the Overall Cost Summary and User Rates table, under Alternative 1 – Borough WWTP SBR, there is a \$3,500,000 item for Projected EESA Debt for the Earl Sewer Authority WWTP Upgrade and a \$213,726.40 item for Projected EESA Annual Debt Service for the Earl Sewer Authority WWTP Upgrade. There should not be any EESA Debt for a Borough only alternative.

Public Presentations

**Borough of Terre Hill & East Earl Township
Joint Act 537 Sewage Facilities Plan Agenda**

March 17, 2015 at 6:30pm

At the

Garden Spot Fire Rescue Station 3

Borough of Terre Hill - 300 Broad Street, P.O. Box 250, Terre Hill, PA 17581

East Earl Township - 4610 Division Highway, East Earl, PA 17519

ELA Group, Inc. - 743 South Broad Street, Lititz, PA 17543

Please sign in, if you would like to ask questions regarding the Joint Act 537 Sewage Facilities Plan. Following the presentation, the ELA Group representatives will take questions pertaining to the Act 537 Plan findings. When asking a question, please limit your time to less than three (3) minutes, so that we can provide everyone an opportunity to participate.

Agenda Item

- Attendance
- Call to Order
- ELA Group Introduction
- ELA Group Presentation - Joint Act 537 Sewage Facilities Plan
- Questions
- Adjournment

Please remember per the Pennsylvania Department of Environmental Protection regulations under Pa Code § 71.31(c), all comments pertaining to the Joint Act 537 Sewage Facilities Plan must be submitted in writing, if the individual would like his or her comments officially entered into the record. All comments can be forwarded to the ELA Group, Inc at 743 South Broad Street, Lititz, PA 17543.

Borough of Terre Hill & East Earl Township Joint Act 537 Sewage Facilities Plan

March 17, 2015

Garden Spot Fire Rescue Station 3 at 6:30pm

Jeffrey W. Sweater, P.E.

and

Julian A. Mazero

of the



What is Act 537 Sewage Facilities Planning?

- PA Sewage Facilities Act established on January 24, 1966
- Every municipality **must** develop and maintain a Sewage Facilities Plan to:
 - Construct infrastructure to fix sewage problems
 - Protect public health

What is Act 537 Sewage Facilities Planning?

- Sewage Facilities Plans are also to:
 - Prevent future sewage disposal problems from occurring
 - Protect groundwater and streams to ensure clean water is available
- U.S Clean Water Act (33 U.S.C. §1251 et seq. (1972))
- PA Clean Streams Law (Act of 1937, P.L. 1987, No. 394)

Who develops Act 537 Sewage Facilities Plans?

- Large municipalities with the technical expertise
- Municipal sewer authorities
- Engineering and/or Planning Consulting Firms

History of Act 537 Planning in the Borough of Terre Hill

- The Borough of Terre Hill last updated their sewage facilities in planning in 1986
- The Borough's 1986 Act 537 Plan recommended upgrade to the existing WWTP
- The Borough has experienced limited growth and is entirely served by public sewer

History of Act 537 Planning in East Earl Township

- East Earl Township current Sewage Facilities Plan was approved by the PA DEP in 1994 and amended in 1998
- 2002 Act 537 Sewage Facilities Plan Update identified failing on-lot septic systems in the Village of Goodville

History of Act 537 Planning in East Earl Township

- Efforts to implement the 2002 approved Act 537 Sewage Facilities Plan Update have been delayed due to a lack of funding and NPDES permitting issues
- East Earl Township entered into a Consent Order & Agreement with the PA DEP in 2012 to study the Village of Goodville to verify on-lot disposal system failure and provide a corrective action

History of Act 537 Planning in East Earl Township

- The 2013 Village of Goodville Act 537 Study confirmed on-lot disposal system failure and recommended construction of a WWTP
- In late 2013, Terre Hill Borough approached East Earl Township about sharing services

History of Act 537 Planning in East Earl Township

- PA DEP was amenable to the municipalities investigating the sharing of services through the Act 537 Sewage Facilities Planning process
- PA DEP required a Joint Consent Order & Agreement between the Borough and Township
 - The CO&A was finalized in April of 2014

Joint Act 537 Sewage Facilities Plan

- In July of 2014, the ELA Group submitted on behalf of the municipalities, a Task Activity Report
- A Task Activity Report outlines the steps and cost necessary to perform an Act 537 Plan
- [A Task Activity Report also outlines the study area](#)

Joint Act 537 Sewage Facilities Plan

- In July of 2014, the PA DEP approved the Joint Task Activity Report and therefore the review process could begin
- The Joint Act 537 includes individual options for the Borough of Terre Hill and East Earl Township, as well as a regional sewer alternative

Joint Act 537 Sewage Facilities Plan

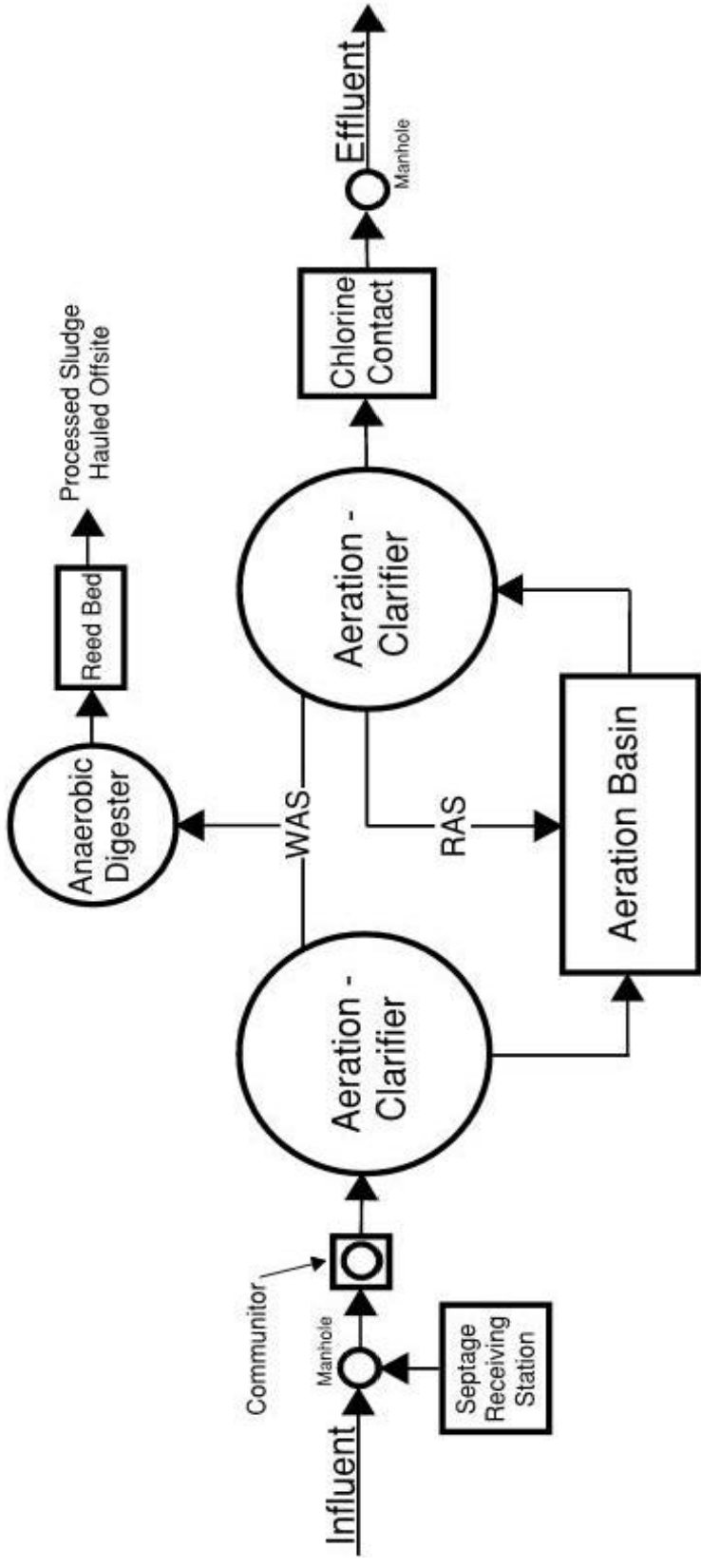
- The Borough's existing collection system and WWTP was originally constructed in 1962 and modified as needed over the decades
- The Borough's existing wastewater system serves both Borough and East Earl Township residence
- The Borough's WWTP is in need of upgrade to meet more advanced treatment standards
 - This includes likely future Chesapeake Bay nutrient standards

Joint Act 537 Sewage Facilities Plan

- Several WWTP upgrade or replacement options were reviewed
 - Rehabilitate the existing WWTP (Modified Ludzack-Ettinger Process)
 - Construction of a new Oxidation Ditch WWTP
 - Construction of a new Sequencing Batch Reactor WWTP

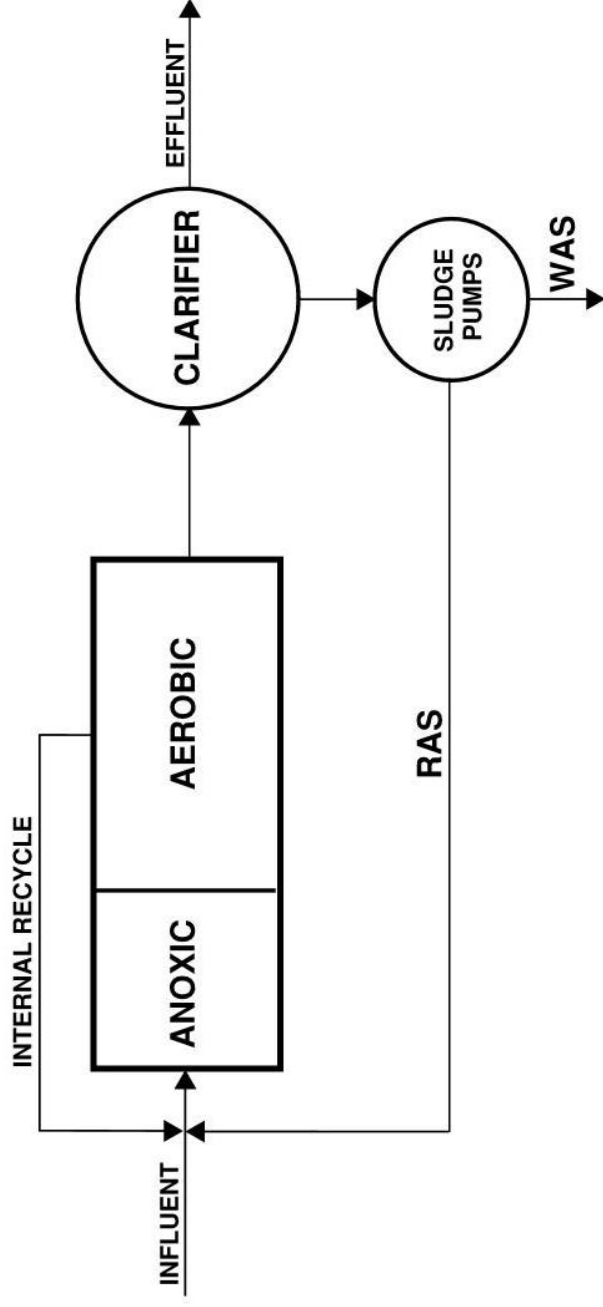
Joint Act 537 Sewage Facilities Plan

- Existing Borough WWTP Process



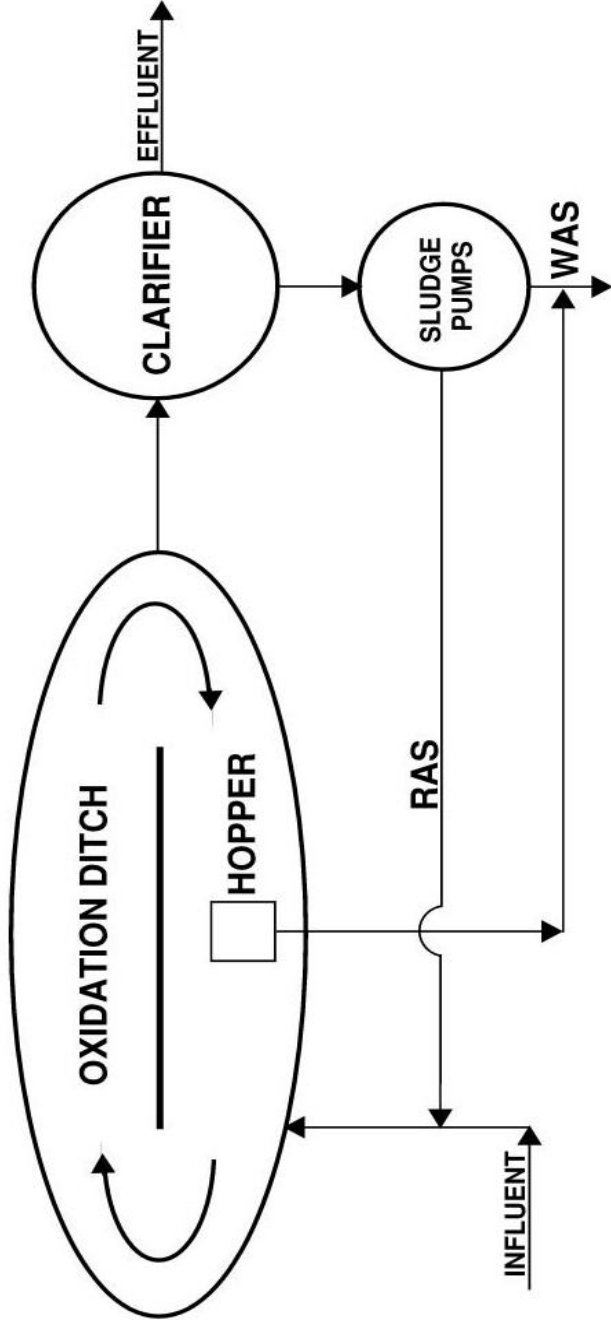
Joint Act 537 Sewage Facilities Plan

- Rehabilitate to Modified Ludzack-Ettinger



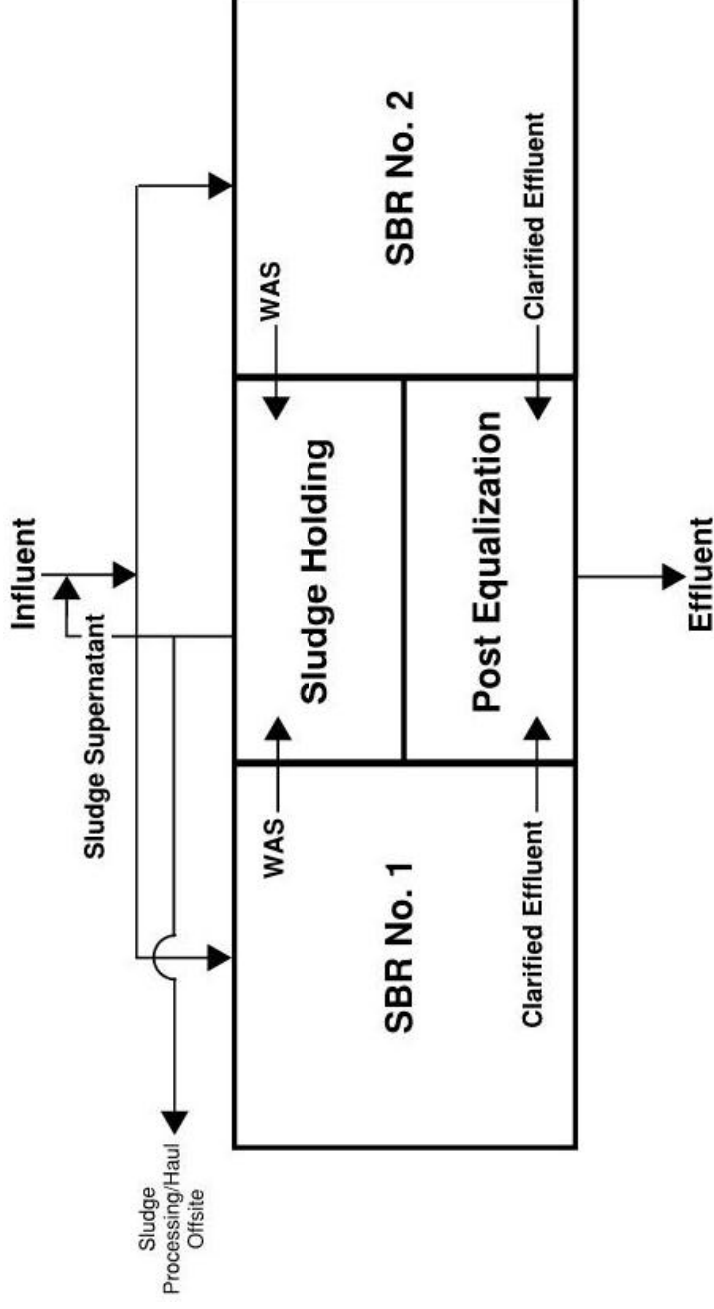
Joint Act 537 Sewage Facilities Plan

- Oxidation Ditch WWTP



Joint Act 537 Sewage Facilities Plan

- Sequencing Batch Reactor WWTP



Joint Act 537 Sewage Facilities Plan

- East Earl Township operates gravity and low pressure sewer systems
 - Wastewater is conveyed to the Earl Township Sewer Authority's WWTP and the New Holland Borough's WWTP
- The Township is largely served by on-lot disposal systems

Joint Act 537 Sewage Facilities Plan

- Per the ELANCO Comprehensive Plan - population growth is expected to occur within the Township
 - [This is expected to primarily occur in and around Blue Ball](#)
 - Existing wastewater infrastructure requires upgrades to serve previously planned growth areas
 - Low Pressure Sewer System
 - Earl Township WWTP Capacity

Joint Act 537 Sewage Facilities Plan

- Additional Well Sampling
 - Sampled for Total Nitrogen, E.Coliform and Total Coliform
 - 28 % of wells were above 10.0 mg/L Total Nitrogen limit
 - 59 % of wells were above E.Coli and T. Coliform limit
 - Village of Goodville was previously identified as a sewage needs area
- [Additional sewage needs along S.R. 625/Reading Road](#)

Joint Act 537 Sewage Facilities Plan

- Expanded sewage needs area increases scope of mitigation of on-lot disposal system failures
- Need to provide wastewater facilities to previously planned growth areas
- How do we balance existing wastewater needs with future wastewater needs?

Joint Act 537 Sewage Facilities Plan

- East Earl Township wastewater alternatives
 - Construct separate Borough and Township SBR WWTP
 - Construct a regional collection system and WWTP to serve the Borough and Township
 - Construct a sewer extension to the existing East Earl Township collection system to serve the Township only
 - Construct a new Borough WWTP and multiple Township WWTPs

Alternative No. 1

Separate Municipal WWTPs

- [Construct separate Borough and Township WWTPs](#)

- Borough would construct a new SBR WWTP at existing site
- Township would construct a new SBR WWTP near the Conestoga Woods Specialties' existing package WWTP

Alternative No. 1

Separate Municipal WWTPs

- Why locate a Township WWTP near the existing Conestoga Wood Specialties package WWTP?
 - Maximizes use of gravity sewer
 - Receiving stream – Conestoga River
 - Availability of three phase power
 - Land availability
 - Eliminates multiple discharge points

Alternative No. 1

Separate Municipal WWTPs

- Borough already has an NPDES Permit for discharge to Black Creek
 - Construction on existing site requires only a Water Quality Management Permit issued by the PA DEP
 - Existing WWTP would be allocated nutrient loading for Total Nitrogen and Total Phosphorus to protect the Chesapeake Bay
 - No stream impairment, but HQ-WWF stream

Alternative No. 1

Separate Municipal WWTPs

- Township is required to obtain NPDES and WQM Permits
 - Must be a net zero discharger of nutrients under Chesapeake Bay Requirements
 - Receive offsets for Total Nitrogen for each on-lot disposal system connected

Alternative No. 1

Separate Municipal WWTPs

- Does not allow for combining total users
- Costs remain separate
 - Project Costs
 - Operation and Maintenance
- Does not allow for combining nutrient loads
- Maintains separate discharge points
- Eliminates malfunctioning on-lot disposal systems

Alternative No. 2

Regional WWTP

- Borough and Township form a joint sewer authority
 - [Construct, own and operate a regional WWTP](#)
 - Locate a regional WWTP in the same location as proposed in Alternative No. 1
 - Construct pump station at existing Borough WWTP to convey wastewater to regional collection system

Alternative No. 2

Regional WWTP

- A joint sewer authority must obtain NPDES and WQM Permits for a regional WWTP
- Distributes cost over a large user base
 - Project cost
 - Operation and Maintenance costs
 - Costs beyond the sewage planning period
- Cost savings

Alternative 2

Regional WWTP

- Eliminates malfunctioning on-lot disposal systems
- Eliminates multiple discharges
- Combines nutrient loading
- Treatment efficiency benefits
- Takes pressure off of existing East Earl Township sewer infrastructure to meet planned growth
- Flexibility to connect other malfunctioning on-lot disposal systems

Alternative No. 3

New Borough WWTP

East Earl Township Sewer Extension

- Borough constructs a new SBR WWTP as suggested in Alternative No. 1 and East Earl Township constructs a new collection system
 - Requires multiple pump stations
 - Requires upgrade to existing low pressure sewer system

Alternative No. 3

New Borough WWTP

East Earl Township Sewer Extension

- Requires additional costs to upgrade existing infrastructure
- Requires additional costs to purchase WWTP capacity from Earl Township Sewer Authority
- Eliminates malfunctioning on-lot disposal system failures
- Eliminates multiple discharge points

Alternative No. 3

New Borough WWTP

East Earl Township Sewer Extension

- Costly for residents connected to Borough public sewer
- Costly for residents connected to Township collection system

Alternative No. 4

New Borough WWTP & Multiple Township WWTPs

- Borough constructs new SBR WWTP as recommended in Alternative No. 1 and Township constructs multiple WWTPs
 - Conestoga Wood Specialties
 - Site west of Village of Goodville
- Costly to construct new collection system, upgrade existing system and purchase capacity at ETSA's WWTP

Alternatives No. 5-7

- Alternative No. 5 – Repair and Replace on-lot disposal system
- Alternative No. 6 – Construct Spray Irrigation
- Alternative No. 7 – Drip Irrigation System
- Costly to construct new collection system, upgrade existing system and purchase capacity at ETSA's WWTP

Alternative No. 8 – No Action Alternative

- Borough continue to use existing WWTP without upgrade
 - Will not meet future Chesapeake Bay limitations
 - Likely to result in treatment failure and disrupt public service

Alternative No. 8 – No Action Alternative

- Township continues to use on-lot disposal systems without public sewer
 - Continues impact groundwater
 - Public health concern
- Consent Order & Agreements require corrective action – penalties
- Alternative No. 8 is not considered feasible

Alternatives Evaluation

- Evaluation of Alternatives No. 1 – 4
 - Meet sewage need (existing & future)
 - Protect public health
 - Mitigate existing water quality
 - Protect water quality
 - Project Costs
 - Operation and Maintenance Costs

Alternatives Evaluation

- Eliminate Alternative No. 3 & No. 4
 - Project Costs
 - Operation and Maintenance Costs
- Recommend Alternative No. 2
 - Form a joint sewer authority
 - Construct a regional WWTP

Alternatives Evaluation

- Regional WWTP
 - Increases number of sewer users
 - Provides stability from larger user base
 - Eliminates multiple discharge points and discharge on an HQ-WWF
 - May help with funding opportunities
 - Future upgrade costs & regulatory requirements

Alternatives Evaluation

- Alternative No. 1
 - Remains a contingency in the event the municipalities cannot negotiate a joint sewer authority

What do these facilities look like?

- Pump stations



What do these facilities look like?

- Pump Station



What do these facilities look like?

- SBR – 0.400 MGD



What do these facilities look like?

- SBR



What are the next steps?

- Submit Act 537 to PA DEP in June of 2015
 - Following public comment period
 - Following agency comments
 - Municipal adoption of the Joint Act 537 Sewage Facilities Plan

What are the next steps?

- Begin preliminary negotiations for a joint sewer authority
- Await PA DEP approval of the Joint Act 537 Sewage Facilities Plan
- Implement Selected Alternatives according to approved schedule

What are the next steps?

- Joint Sewer Authority
 - Comply with the Municipal Authorities Act
 - Engineering design of wastewater systems
 - Permitting of regional facilities
 - Select funding source(s)
 - Bank Loan
 - Direct Capital Financing
 - PENNVEST
 - USDA Rural Development Program
 - Municipal Bond

What are the next steps?

- Implement separate municipal alternatives
 - Engineering design of separate facilities
 - Permitting of separate facilities
 - Select funding source(s)
 - Bank Loan
 - Direct Capital Financing
 - PENNVEST
 - USDA Rural Development Program
 - Municipal Bond

What are next steps?

- Submit funding application(s)
- Bid selected alternative
- Award construction
- Begin construction
- Schedule
 - Alternative No. 1 up to 4 years
 - Alternative No. 2 up to 5 years

Joint Act 537 Sewage Facilities Plan

- Questions?

**EAST EARL TOWNSHIP BOARD OF SUPERVISORS MEETING
AGENDA FOR MAY 12, 2015
7:30 P.M.**

WELCOME AND OPENING REMARKS

PLEDGE OF ALLEGIANCE

PUBLIC COMMENTS

APPROVAL OF MINUTES: April 14, 2015

TREASURER'S REPORT/APPROVAL OF BILL PAYMENT

PUBLIC HEARING: Byway Ordinance Amendment #193-2015

BID OPENING: Asphalt & Aggregate

STORM WATER MANAGEMENT:

Nancy Strause
Jodie Hamrick
Alvin Stauffer
Elam Nolt
Jerry & Judy Weaver
Lynn Good

SUBDIVISIONS/LAND DEVELOPMENT:

Conestoga Wood Products Specialties – Reviews/Escrow Approval/Storm Water Agreement/Time Extension
Groff/Black – Non-Building Waiver
Elam Sauder Land Development Plan Waiver Request
NEW SUBMISSION—Churchtown Woodcrafts

REPORTS:

Police Chief
Road Department
Zoning Officer
Sewage Enforcement Officer
Safety Committee
Emergency Management Coordinator
Eastern Lancaster County Library
Lancaster County Conservancy
ELANCO Social Services Network

OLD BUSINESS:

Act 537 Plan

Brandywine Subscribers Fee
Update on Revised/Amended Zoning Ordinance
Update on 897/322 Realignment

NEW BUSINESS:

Zoning Hearing Cases
Third Party Inspectors Resolution #15-2015
General Fee Resolution #16-2015 (Repealing Resolution #09-2015)
Appointment of New Zoning Officer
Police Professional Policy Renewal & Appointment of Risk Manager
C. M. High Maintenance Estimates
Request from Property Owners Association Executive Board for Cheltenham Modifications

Correspondence: DEP Petition for Reduction of Attainment Sampling for Doughty/Garrett Property
Rettew Notification for Lancaster County Bridge Scour Protection General Permit
Notice of Annual Benefit Ride
Lancaster County Drug Task Force 1st Quarter 2015 Report

ADJOURNMENT

NEXT MEETING SCHEDULED FOR: June 9, 2015 regular (morning of June 4, if needed)

East Earl Township & Borough Of Terre Hill Joint Act 537 Sewage Facilities Plan

May 12, 2015

East Earl Township Municipal Office At 7:30pm

Present By

Jeffrey W. Sweater, P.E.
and Julian A. Mazero

of the



Presentation Objectives

- Previous Sewage Planning
- Current Sewage Planning
- Wastewater System Design
- Existing Infrastructure
- Cost
- Project Funding
- Next Steps

Sewage Planning

- Why Is Sewage Planning Needed?
 - Regulatory Requirements
 - Existing Sewage Problems
 - Future Sewage Needs

Previous Sewage Planning

- 1998 Act 537 Sewage Facilities Plan Amendment
 - Performed by the Authority Engineer
 - Identified Areas of Need
 - Well Testing
 - Identified Future Growth
 - 1993 Lancaster County Growth Management Plan
 - 1996 ELANCO Comprehensive Plan
 - Existing Zoning
 - Projected Population Growth of 830 Persons

Previous Sewage Planning

- 1998 Act 537 Sewage Facilities Plan Amendment
 - Accommodate Growth East Of Blue Ball
 - Identified Public Sewer Needs Area
 - Sheep Hill Road
 - S.R. 897/Springville Road
 - Ranck Road
 - Overlays Road

Previous Sewage Planning

- 1998 Act 537 Sewage Facilities Plan Amendment

- Identified Wastewater Capacity Need

- Existing Need – 227 EDUs
 - Future Growth – 399 Potential EDUs

- Purchased 250,000 GPD Capacity

Previous Sewage Planning

- 2002 Act 537 Sewage Facilities Plan Update
Revision – Village Of Goodville
 - Performed By Authority Engineer
 - Focused On The Village Of Goodville
 - Block Grant Funding Application
 - Initiated by Township To Seek PENNVEST Funds

Previous Sewage Planning

- 2002 Act 537 Sewage Facilities Plan Update Revision – Village Of Goodville
 - Identified On-Lot Disposal System Failures
 - Collection System And WWTP
 - Connection To Existing Public Sewer Was Too Costly
 - PA DEP Denied NPDES Permit Application

Previous Sewage Planning

- PA DEP & Township 2012 Consent Order & Agreement
 - Confirm 2002 Update Revision
 - Implement Recommendation
- Consent Order & Agreement In 2014

Sewage Planning

- Areas of Review:
 - Existing Infrastructure
 - Land Use Designations
 - Population Projections

Existing Infrastructure

- On-Lot Disposal Systems
 - Tested For:
 - Nitrates
 - E.Coli
 - Total Coliform

Existing Infrastructure

- Municipal Infrastructure
 - Collection System
 - Pump Stations
 - Wastewater Treatment Plants

Existing Infrastructure

- Review Factors
 - Capacity
 - Age
 - Costs

Land Use Designations

- Designations
 - Commercial
 - Industrial
 - Residential

Land Use Designations

- Future Capacity
 - Method From 1995 Sewer Feasibility Study
 - Incorporated Into 1998 Act 537 Amendment

Population Projections

- Planning Studies
 - 2008 ELANCO Comprehensive Plan
 - 2012 LCPC's 2040 Population Projection Study
- Chapter 94 Reports

Population Projections

- Chapter 94 Reports
 - Volume & Organic Strength
 - Existing Or Projected Overload
 - Upgrade

Population Projections

- Land Use Designations
 - Estimated 740 EDUs Or 185,000 GPD
- LCPC Population Projections
 - Projected 1,030 New Persons Or 103,000 GPD

Estimated Flow

Area	Flow (gpd)
Planned Land Use/Future Growth Areas	185,000
Village of Goodville	35,000
S.R. 625/Reading Road with CWS	52,570
Est. Reserve	37,500
Est. Inflow & Infiltration (5%)	15,500
Total	325,570

Wastewater System Capacity

- Hydraulic Capacity
- Organic Capacity
- Assimilative Capacity

Wastewater System Capacity

- Wastewater Collection System
 - Hydraulic Capacity
 - Maximum Flow Through A System
 - Inter-Municipal Agreement Limitation

Wastewater System Capacity

- Wastewater Treatment Plant
 - Hydraulic Capacity
 - Maximum Flow Through A System
 - NPDES Permitted Flow
 - Inter-Municipal Agreement
 - Organic Capacity
 - Biochemical Oxygen Demand

Wastewater System Design

- Wastewater Design
 - Average Daily Flow
 - Peak Hourly Flow
 - Peak Instantaneous Flow
 - Inflow & Infiltration
 - Permitted Flows
 - Organic Strength

Wastewater System Design



Wastewater System Design

- Why Do Engineers Use So Many Different Flows And Loadings?
 - Flows And Organic Loadings Vary
 - Design Requirements Vary

Wastewater System Design

- What Factors Impact Collection System Costs?
 - Distance Wastewater Is Conveyed
 - Density Of Population Served

Wastewater System Design

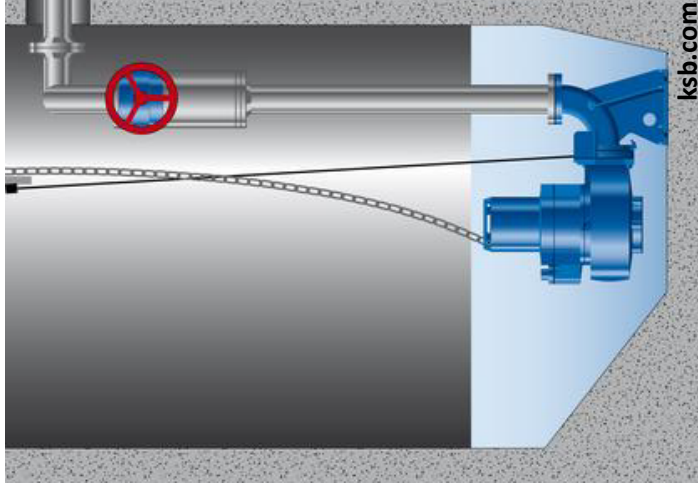
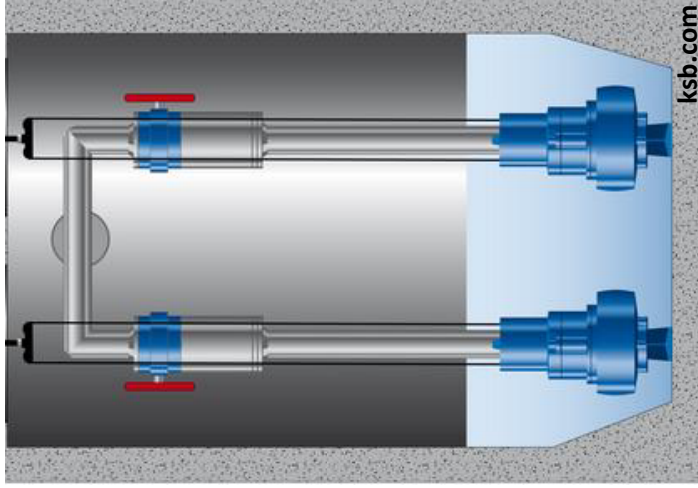
- Distance Wastewater Is Conveyed
 - Pump Station Design
 - Design Capacity – Peak Hourly Flow
 - Static Head
 - Force Main Length
 - Minor System Losses

Wastewater System Components

- Pump Stations
 - Controls and Hardware
 - Utilities Needed
 - Force Main
- Gravity
 - Pipe
 - Manhole

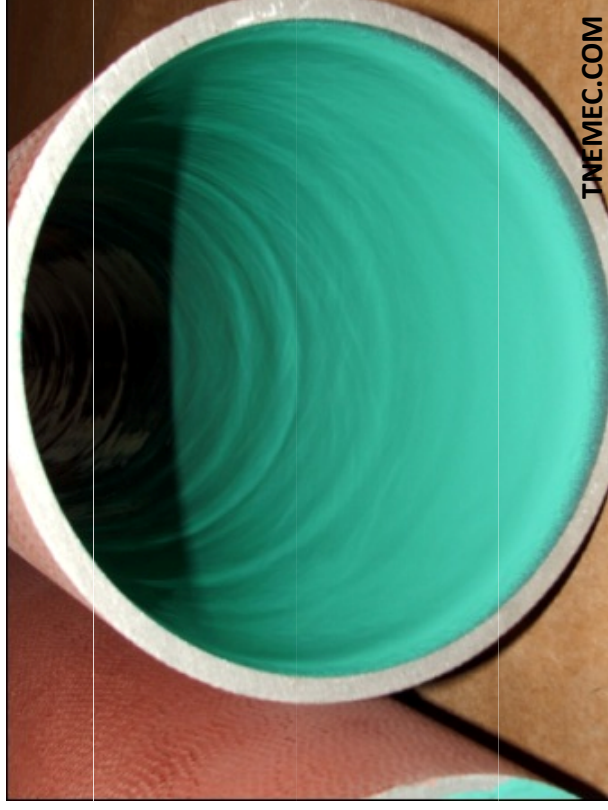
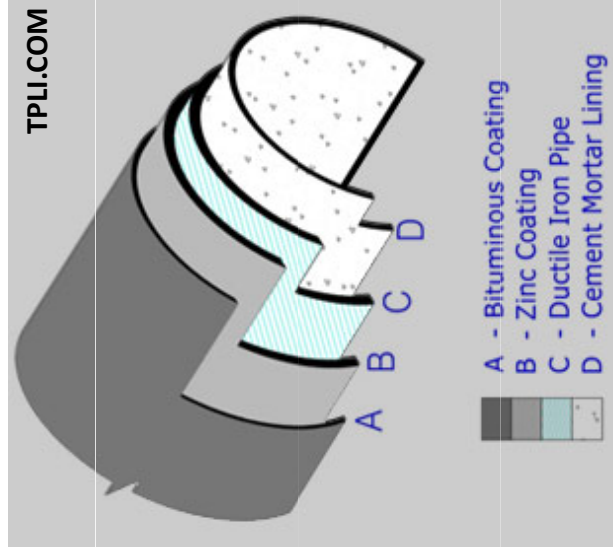
Wastewater System Components

- Pump Station



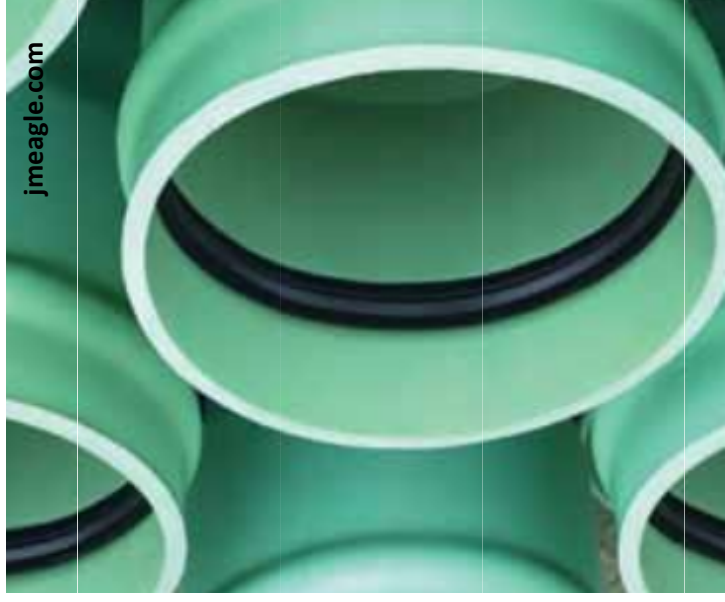
Wastewater System Components

- Force Mains

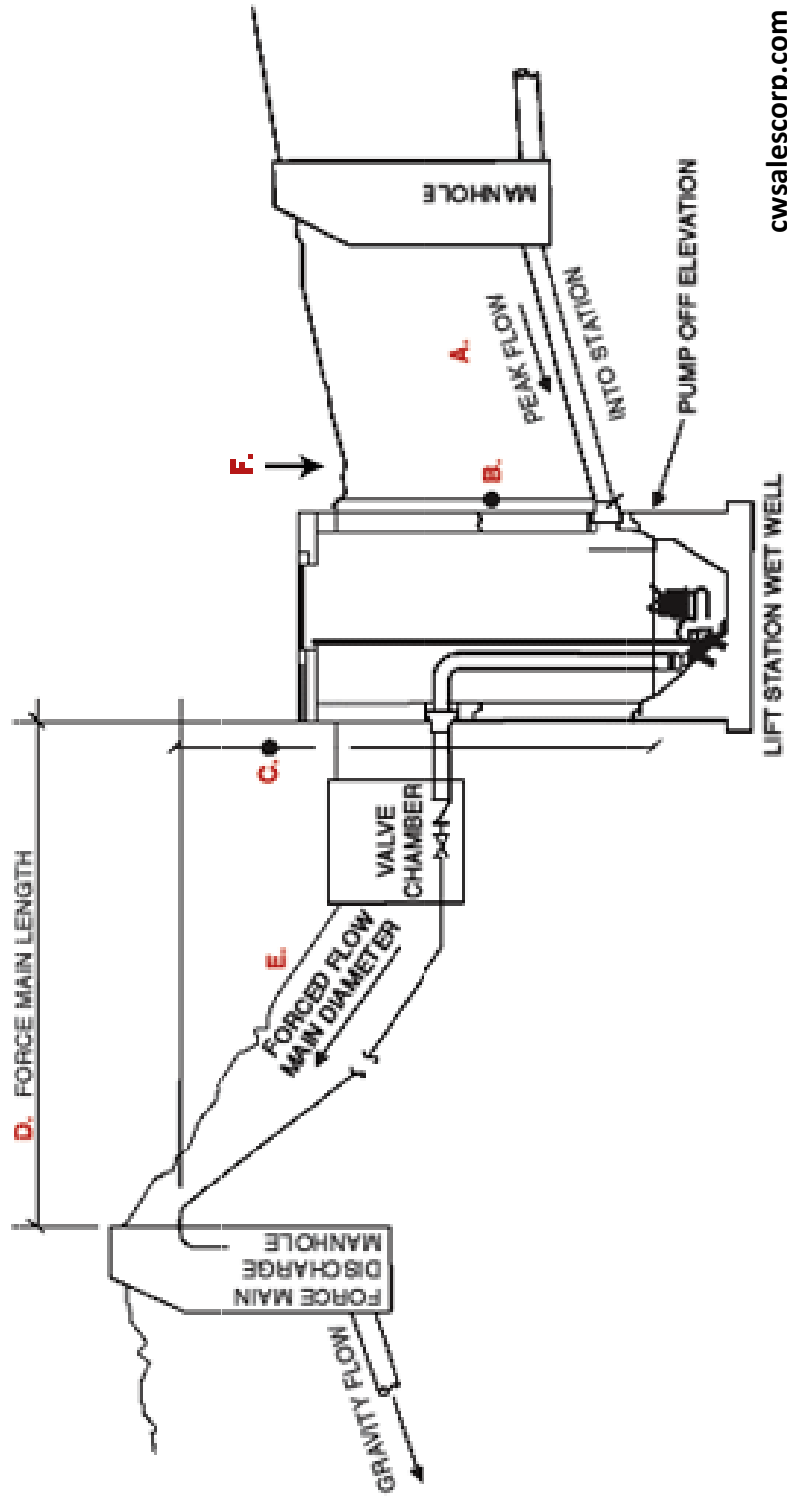


Wastewater System Components

- Gravity Pipe

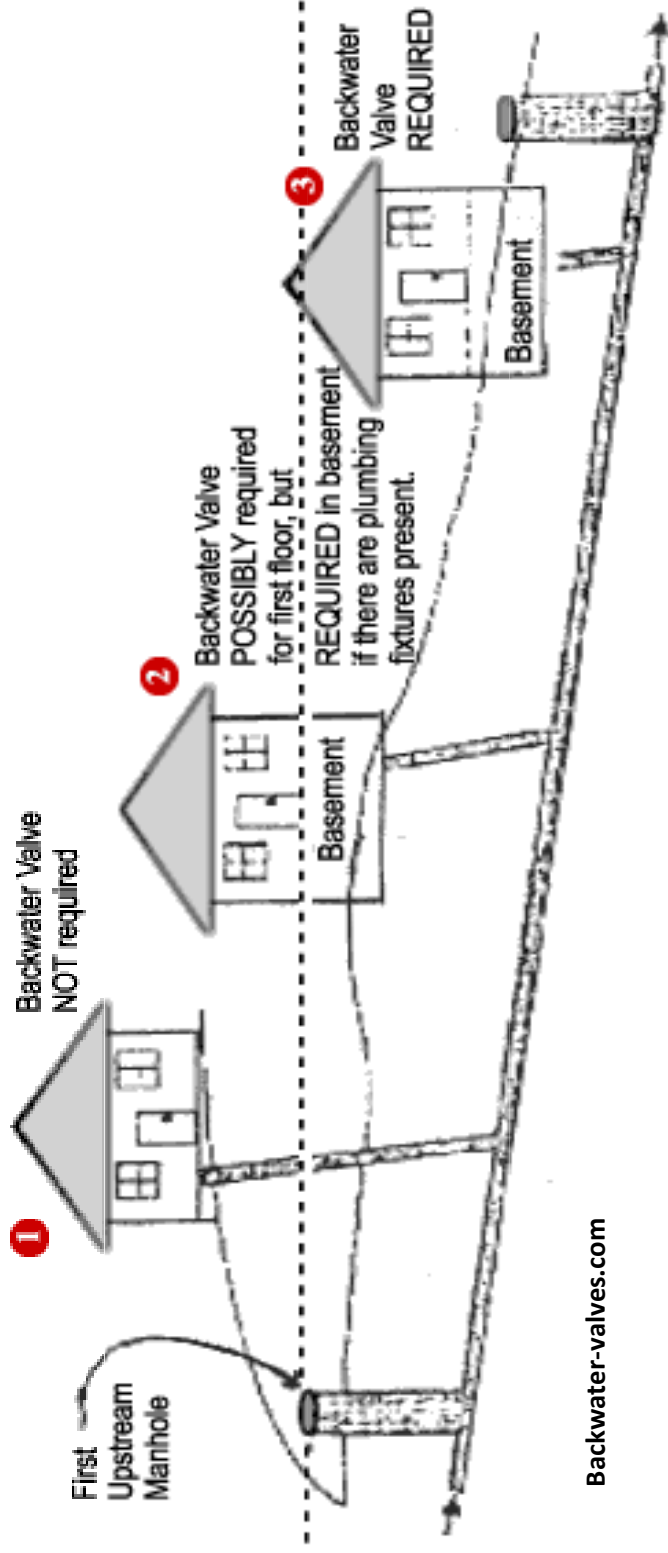


Wastewater System Components



Wastewater System Components

Gravity Collection System



Existing System Concerns

- East Earl Township
 - Witmer Road Pump Station
 - Gravity Sewer Downstream Of Witmer Road And Blue Ball Pump Station
 - Low Pressure Sewer System
 - Equalization Pump Station To NHB

Existing System Concerns

- Earl Township
 - Kinzer Avenue Pump Station & Force Main
 - Single Phase Power
 - Force Main Diameter

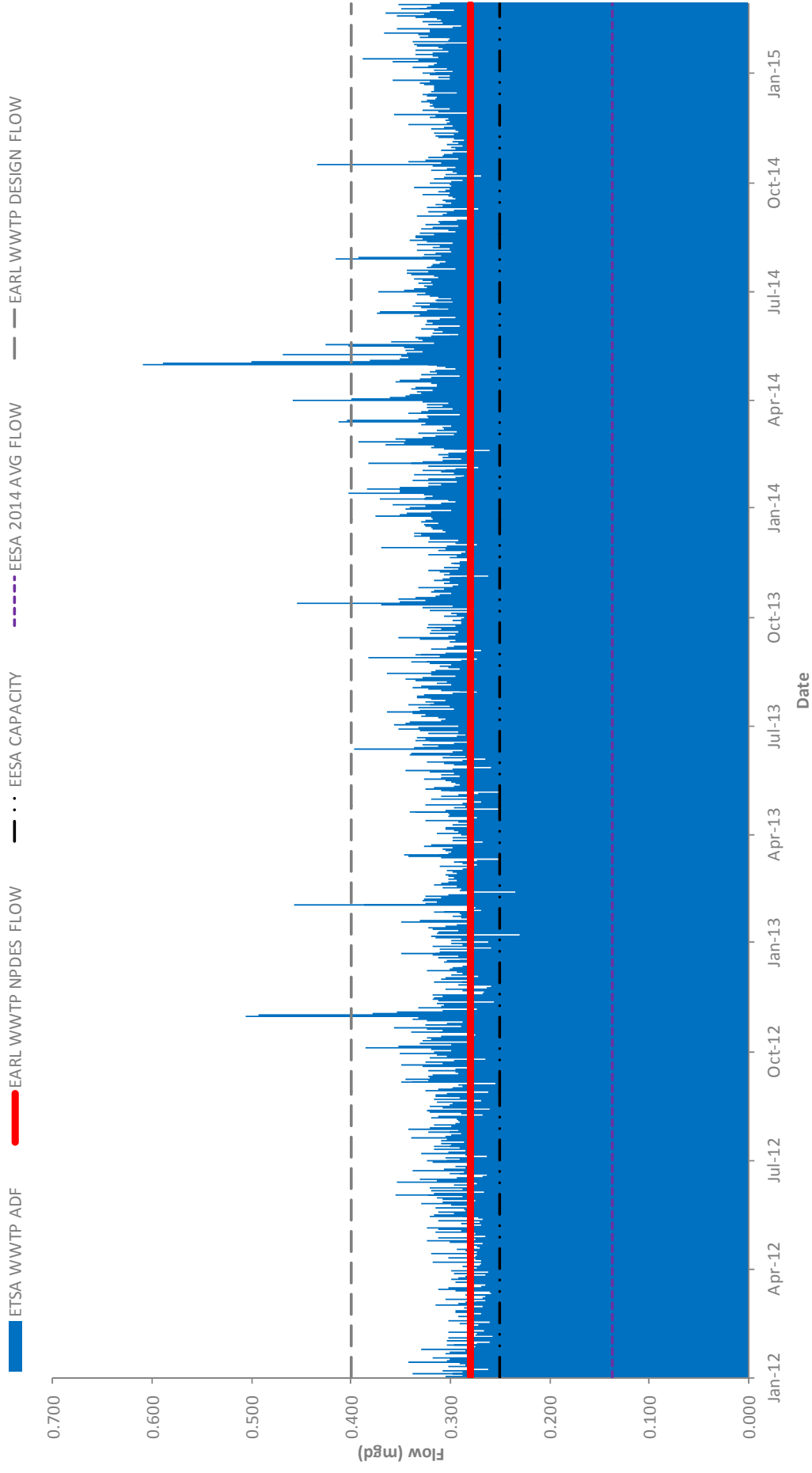
Existing System Concerns

- Earl Township
 - Wastewater Treatment Plant
 - Hydraulic Design Capacity Of: 0.400 MGD
 - NPDES Permitted Flow Of: 0.280 MGD

ETSA WWTP Hydraulic Capacity



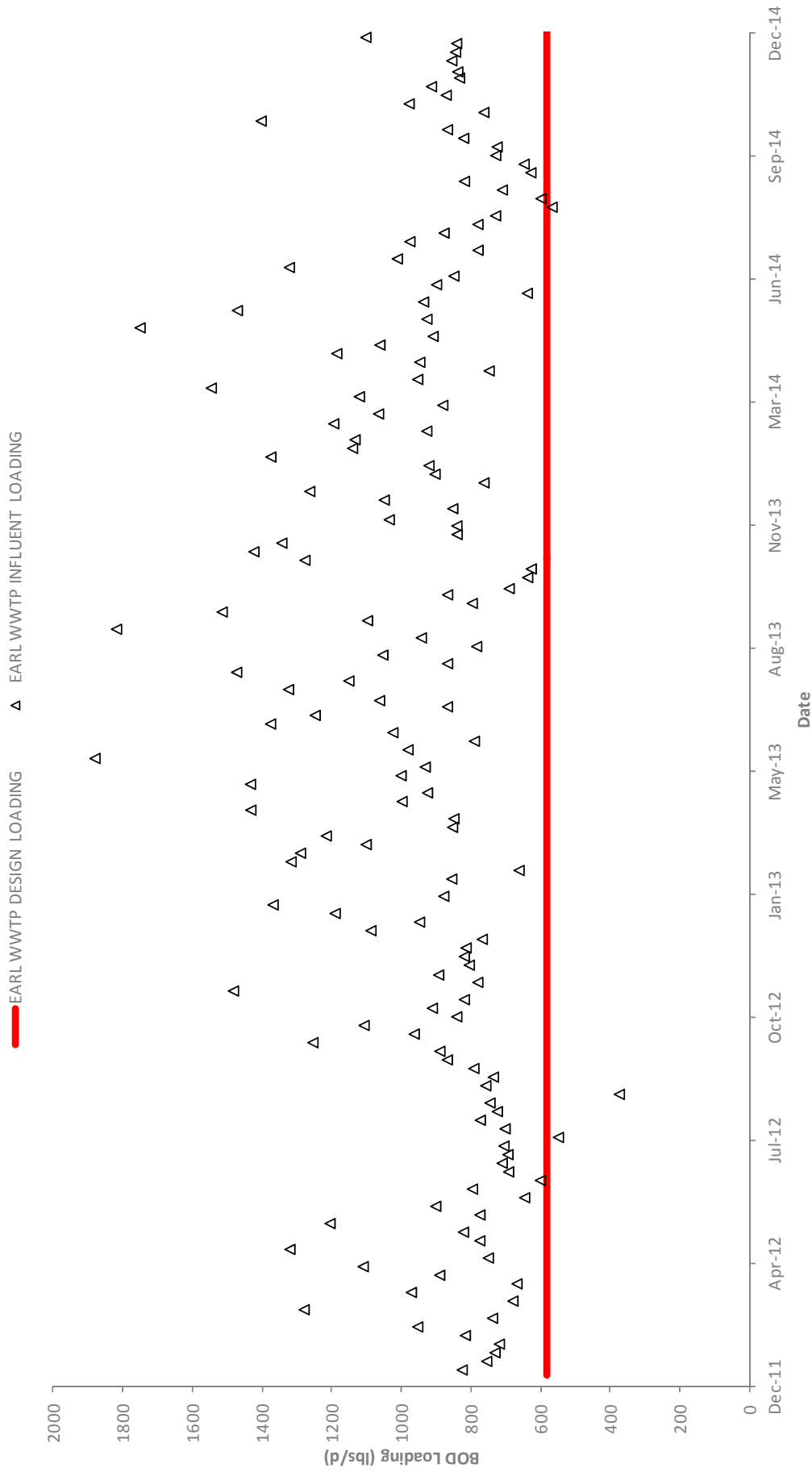
ETSA WWTP Hydraulic Capacity



ETSA WWTP Organic Strength



ETSA WWTP Organic Strength



Existing System Concerns

- Earl Township WWTP
 - Projected Overload
 - Requires Expansion & Upgrade
- Upgrading to 0.650 MGD
 - Pending Permit Approvals

Capacity Needed

- East Earl Township
 - Existing Need
 - Future Growth
 - Inflow & Infiltration
- Purchase Capacity

Summary of Findings

- Cost To Convey Sewage From Planning Area
 - Distance
 - Density

Summary of Findings

- WWTP Capacity Costs
 - Current Earl Township WWTP Cost: \$17.26/gal
 - Does not include WWTP Expansion Costs
 - Does not include Chesapeake Bay Upgrade Costs
 - Proposed Regional WWTP Cost: \$17.18/gal
 - Includes Chesapeake Bay Nutrient Removal

EESA To NHB

- What About Flow To New Holland Borough?
 - 2002 Act 537 Update Revision
 - Authority Engineer's Estimated Costs
 - \$3,120,000.00 (2002,\$)
 - \$4,760,000.00 (2015,\$)
 - NHB System Upgrade Costs
 - 2002 Act 537 Eliminated Connection to NHB

EESA To NHB

- EESA Capacity At NHB
 - NHB Infrastructure Limits Flow To 100,000 gpd
 - EESA Owns 92,500 gpd
 - ETSA Owns 7,500 gpd

EESA To NHB

- EESA 2014 Chapter 94 Report ADF
 - 2010 – 50,340 gpd
 - 2011 – 51,280 gpd
 - 2012 – 47,270 gpd
 - 2013 – 47,610 gpd
 - 2014 – 46,690 gpd

EESA To NHB

- EESA 2014 Chapter 94 Report ADF
 - Reserved or Planned Residential & Commercial
 - 2015 – 49,690 gpd
 - 2016 – 51,690 gpd
 - 2017 – 53,690 gpd
 - 2018 – 61,940 gpd
 - **2019 – 70,190 gpd**

EESA To NHB

- EESA 2014 Chapter 94 Report
 - Beyond 2019 East Earl Township Is Expected To Contribute An Additional 7,500 GPD
 - $70,190 \text{ GPD} + 7,500 \text{ GPD} = 77,690 \text{ GPD}$
 - 14,810 GPD Remaining Capacity

EESA To NHB

- Additional Flow To NHB Requires:
 - Infrastructure Upgrades
 - Inter-Municipal Agreement
 - Purchase Of Additional Capacity
- Assimilative Capacity

Assimilative Capacity

- The Ability Of A Stream To Accept WWTP Effluent
- Increased WWTP effluent means more stringent limits
 - Increased O&M Cost
 - Increased Treatment Technology Cost

Assimilative Capacity

Mill Creek					
Facility	Permitted Flow (MGD)	Distance (mi)	Drainage Area (mi ²)	Low Flow (cfs)	
New Holland Borough WWTP	1.34	-	7.60	1.44	
Tyson Foods IWTP	1.50	0.30	9.70	1.71	
Earl Township WWTP	0.65	0.87	12.70	2.10	
Conestoga River					
Facility	Permitted Flow (MGD)	Distance (mi)	Drainage Area (mi ²)	Low Flow (cfs)	
Proposed Regional WWTP	0.41	-	43.5	6.31	

Assimilative Capacity

DISCHARGE CONCENTRATION LIMITS			
Parameter	Unit	EARL TWP WWTP @ 0.650 MGD	REGIONAL WWTP @ 0.410 MGD
NH₃-N (summer)	mg/L	3.5	19.0
NH ₃ -N (winter)	mg/L	10.0	Report
CHESAPEAKE BAY MASS LOADING LIMITS			
Total Nitrogen	lbs/yr	7,306.0	7,306.0
Total Phosphorus	lbs/yr	974.0	974.0

- East Earl Township has 6,250 lbs/yr of TN Offsets

Assimilative Capacity Summary

- NPDES Permits
- Stream Flow Data
- Less Stream Flow = Stringent Effluent Limits
- Stringent Effluent Limits = Increased Capital & O&M Costs

Additional Considerations

- Municipal Agreements
 - Inter-municipal Agreement
 - Joint Sewer Authority

EESA – ETSA Inter-municipal Agreement

- Surcharge (Article IV, Paragraph 3)
- System Ownership (Article V, Paragraph 1)
- Operation (Article V, Paragraph 2)
- Capital Additions to WWTP (Article VI, Paragraph 1)
- Notice (Article VI, Paragraph 3)

Joint Sewer Authority

- Joint Sewer Authority
 - Municipal Representatives
 - Joint Investigation of Users
 - Improvement Decisions
 - User Base

Costs

- Cost Data Sources
 - Manufacturer Quotes
 - U.S. EPA Data
 - Other Federal & State Agency Data
 - Engineering Text & Studies
 - Project Experience (e.g. Project Bids)
 - Previous Act 537 Planning Studies
 - Municipal Documentation - bUDG
 - Engineering & Construction Indices – ENR CCI

Costs

- Individual Costs Items
 - Estimated Project Costs
 - Estimated O&M Costs
 - Existing & Future Debt Service
 - Tapping Fees
 - Estimated Salvage Value

Grant Funding

- Federal funding options:
 - USDA Rural Community Programs
- State funding options
 - PENNVEST
 - Department of Community & Economic Development (DCED)

Financing Instruments

- Some additional options:
 - Municipal Bond
 - Private Bank Loan
 - PENNVEST Low Interest Loan

Funding

- Funding steps:
 - Obtain Act 537 Approval
 - Obtain required permits:
 - National Pollution Discharge Elimination System Permit
 - Water Quality Management Permit
 - Chapter 102 Permit
 - Chapter 105 Permit
 - Submit grant funding application

Act 537 Sewage Facilities Plan

- Summary
 - Sewage Facilities Plan
 - Existing Need
 - Future Need
 - Regulatory Requirements
 - Consent Order & Agreement

Act 537 Sewage Facilities Plan

- Evaluate
 - Previous Act 537 Sewage Facilities Plan
 - Available Planning Studies
 - Sewer Infrastructure Alternatives
 - Required & Other Alternatives
 - Engineering Feasibility
 - Costs

Act 537 Sewage Facilities Plan

- Recommend
 - Protect Public Health
 - Protect Environment & Water Quality
 - Costs
- Collection System Economics
 - Distance
 - Density

Act 537 Sewage Facilities Plan

- Recommend
 - Existing Need
 - Future Need

Act 537 Sewage Facilities Plan

Diurnal Flow



Act 537 Sewage Facilities Plan

- Next Steps
 - Submit Act 537 Sewage Facilities Plan by mid-June
 - PA DEP Approval
 - Form Joint Sewer Authority
 - Design Systems

Act 537 Sewage Facilities Plan

- Next Steps
 - Submit Permit Applications
 - Submit Funding Applications – Federal & State
 - Submit Additional Funding Applications

Act 537 Sewage Facilities Plan

- Next Steps
 - Solicit & Accept Bids
 - Begin Construction
 - Connect Users & Begin WWTP Operations

Act 537 Sewage Facilities Plan



Act 537 Sewage Facilities Plan

Thank you!

Appendix L
Lancaster County Planning Commission Comments



Planning Commission

150 North Queen Street
Suite #320

Lancaster, PA 17603

Phone: 717-299-8333

Fax: 717-295-3659

www.lancastercountypanning.org

County Commissioners

Dennis P. Stuckey, Chairman

Scott F. Martin, Vice-Chairman

Craig E. Lehman

Executive Director

James R. Cowhey, AICP

MEMORANDUM

15LU

To: Valerie A. Gregory, Secretary
Terre Hill Borough

From: Randall L. Heilman, AICP *RLH*
Senior Community Planner

Thru: Frank P. Behlau, AICP
Director for Community Planning

Date: May 12, 2015

Re: CPF #: 20-53B & 59-22, Joint Act 537 Plan
East Earl Township & Terre Hill Borough
LCPC Meeting of May 11, 2015

The Lancaster County Planning Commission (LCPC) has reviewed the above-referenced Joint Act 537 Official Sewage Facilities Plan for East Earl Township and Terre Hill Borough. The effect of the proposal would be to provide an updated plan that meets the existing and future wastewater collection and treatment needs of both East Earl Township and Terre Hill Borough.

PROPOSAL

On December 17, 2012 East Earl Township entered into a Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environmental Protection (DEP) to investigate wastewater disposal alternatives and determine if the original recommendations contained in the July 2002 Act 537 Sewage Facilities Plan Update Revision remained feasible. The Township investigated several wastewater disposal methods in the 2013 Act 537 Update Study for the Village of Goodville; however, in mid-2013, the Borough of Terre Hill approached the East Earl Township BOS about investigating the formation of a joint sewer authority and the sharing of wastewater services. Subsequently, on April 22, 2014, the Borough of Terre Hill and East Earl Township entered into a CO&A with Pennsylvania DEP to review the formation of a joint sewer authority to own and operate a regional wastewater treatment plant. The approved Task Activity Report required both municipalities to submit a final joint Act 537 Sewage Facilities Plan by June 23, 2015.



The planning areas reviewed, and outlined within the Task Activity Report, includes the Borough of Terre Hill, East Earl Township along Reading Road (SR 0625) corridor and the Village of Goodville, as well as areas west of the Village of Goodville.

The centralized regional WWTP (Wastewater Treatment Plant) would be located along Reading Road (SR 0625) near the existing Conestoga Wood Specialties' current 19,000 gpd WWTP.

COMMENTARY

East Earl Township and Terre Hill Borough has prepared a Joint Act 537 Plan in response to a Consent Order and Agreement between the two municipalities and the Department of Environmental Protection (DEP) to address the public sewer needs for both municipalities that outlines and compares individual and joint wastewater treatment options for each municipality. This has been an arduous task for East Earl Township that has taken over 12 years to complete due to financial, environmental, and administrative constraints. The Township and Borough should be commended for their efforts, and willingness to work with DEP to find an alternative that will serve each municipality through the planning period of 2015 to 2035 and particularly address the long-standing issues that exist in the Village of Goodville,

To provide context, Terre Hill Borough's planning area is entirely served by public sewer (615 EDUs as per the Chapter 94 Report) and the wastewater treatment plant is located on Willow Road. Several residential properties adjacent to the Borough, but located in East Earl Township, are also served by the Borough's public sewer system. The additional planning area within East Earl Township consists of a mix of land uses, including agricultural, low-density residential, commercial, and light industrial land use. Most of the properties within East Earl Township sewage planning area rely on individual wells for potable water and on-lot disposal systems for domestic wastewater treatment, with the exception of the Borough of Terre Hill and areas near the Village of Blue Ball. The number of EDUs that would be captured as part of this Plan for East Earl Township would include 140 for the Village of Goodville and 887 for the 2014/2015 Sewage Planning Area that would include Shady Maple Smorgasbord and Conestoga Wood Specialties.

A synopsis of the Joint Act 537 Sewage Facilities Plan Wastewater Treatment Alternatives is offered below to indicate what is being considered by the two municipalities and DEP for sewage facilities planning:

1. Municipalities own and operate separate wastewater treatment facilities – construct a collection system and WWTP to serve residents and businesses along Reading Road (SR 0625) and within the Village of Goodville. The WWTP would be located near the existing Conestoga Woods Specialty WWTP. Terre Hill Borough – construct new WWTP.

2. Municipalities form joint sewer authority and construct a centralized WWTP – the Township works with the Borough to create a joint sewer authority to construct, own and operate a regional WWTP.
3. Connect residents along Reading Road (SR 0625) and in the Village of Goodville to the East Earl Township's existing low pressure sewer system – construct a sewer collection system with pump stations and force main with connection to the existing Low Pressure System (LPS) at the intersection of SR 0897 and U.S. 322. Terre Hill Borough – construct new WWTP.
4. Repair and/or replace existing OLDS in East Earl Township – the Township requires residents to construct new on-lot disposal systems (OLDS). Terre Hill Borough – construct new WWTP.
5. East Earl Township constructs separate wastewater treatment facilities for the residents along Reading Road (SR 0625) and the Village of Goodville – construct a collection system and WWTP with stream discharge near the Conestoga River and Reading Road (SR 0625) river crossing to serve only the residents near Reading Road (SR 0625), and separately construct a collection system and WWTP to serve the Village of Goodville. Terre Hill Borough – construct new WWTP.
6. East Earl Township constructs a spray irrigation system – construct a collection system and spray irrigation treatment and disposal system to serve the Township's domestic wastewater needs only. Terre Hill Borough – construct new WWTP.
7. East Earl Township constructs a drip irrigation system – construct a collection system and a drip irrigation treatment and disposal system to serve the Township's domestic wastewater needs only. Terre Hill Borough – construct new WWTP.
8. No action

After thorough analysis of the alternatives provided, the Plan recommends on be-half of the two municipalities to select Alternative #2 as the preferred option and Alternative #1 as the second choice if the municipalities are unable to agree upon the details of a joint sewer authority to operate a centralized WWTP.

The formation of a joint sewer authority between the Borough of Terre Hill and East Earl Township, to own, operate and maintain a regional WWTP to serve the Township and all of the Borough is consistent with the *Elanco Region Comprehensive Plan* (2008). The formation of a joint sewer authority and the construction of a regional WWTP is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTP's. The plans also recommended future wastewater disposal needs within UGAs be considered as part of the Act 537 process.

The Staff of the Lancaster County Planning Commission is in agreement with that Alternative selections and recommends adoption of the proposed Joint Act 537 Plan by the two municipalities and DEP subject to the following actions per the Act 537 Plan Content and Environmental Assessment Checklist and sound planning practices:

1. The Topography, Floodplains, & Wetlands - Map 2, should include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L (Section II.D., Reference Title 25, §71.21a.1.iii.).
2. The Topography, Floodplains, & Wetlands - Map 2, should depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for on-lot systems (Section II.E., Reference Title 25, §71.21a.1.ii).
3. The Topography, Floodplains, & Wetlands - Map 2, should identify wetlands as defined in Title 25, Chapter 105. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map (Section II.G., Reference Title 25, §71.21.a.1.v).
4. The Plan should reference potential wetland areas per USDA and SCS mapped hydric soils as part of the narrative within the document (Reference Title 25, §71.21a.1.v).
5. The Plan should more adequately address the types of on-lot systems in use in the Township. Additionally, it is suggested that the alternative systems and holding tanks be shown on one of the maps (Reference Title 25, §71.21.a.2.ii.A).
6. Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. The proposed sewage facilities planning areas extend into agricultural zoning districts as well as into future agricultural areas depicted in the East Earl Township Future Land Use Map per the *Elanco Region Comprehensive Plan (2008)*. The Plan identifies additional OLDS failures along the Reading Road corridor (SR 0625) which includes agriculturally zoned lands. The Sewer Facilities Planning Area will need to be managed very closely so not to extend into agricultural areas that are not intended for future development or to remedy OLDS failures. (Section IV.B.2. Reference Title 25, §71.21.a.3.iv).

CONSISTENCY WITH COMPREHENSIVE PLANS

Lancaster County Comprehensive Plan

The current Lancaster County Comprehensive Plan Growth Management Element, *Balance*, considers East Earl Township to be both an urban and rural municipality, thus the urban/rural strategies of this element apply. The Rural Goal is to minimize scattered development in rural areas by focusing growth in **Rural Centers: Village Growth Areas, Crossroads Communities, Rural Business Areas and Rural Neighborhoods.**

Terre Hill Borough is small borough totally surrounded by East Earl Township and is considered to be part of the Urban Strategy as well as the Elanco North Urban Growth Area. The Urban Strategy supports a new emphasis on compatible reinvestment, infill, and redevelopment in our boroughs.

East Earl Township has one adopted Village Growth Area (Goodville) that is intended to take very limited development in East Earl Township. A Village Growth Area (VGA) is an area appropriate for future development that includes a traditional village at its center, adjacent developed portions of a township, and additional capacity to absorb a portion of the township's future land use needs through reinvestment or new development over a 25-year period. Key criteria to guide planning for Village Growth Areas include:

- Development should be provided with public sewer and/or public water service where appropriate and feasible to support existing and projected levels of development.
- Residential development should occur in Village Growth Areas at an average density of 2.5 units per net acre.
- Non-residential development should occur at intensities which are compatible with the character of the village and the capacity of infrastructure and services to support the development.

Wastewater disposal is a critical issue for the Rural Strategy because of 1) the role played by public collection and disposal systems in shaping development patterns and 2) the environmental and planning implications of on-lot systems. Act 537 planning can be a powerful tool to promote implementation of local and county planning programs if it supports the future land use intent defined in planning policy documents.

Finally, *Balance* states development in Designated Rural Areas must be supported by OLDS (On-Lot Disposal Systems). From a planning perspective, development served by on-lot systems can consume extensive amounts of land in rural areas in order to meet DEP requirements for drainage fields. From a public health and safety and natural resource protection perspective, on-lot systems that are failing because they are poorly maintained or have reached their useful life must be addressed. On-lot system failure is a major contributor to water quality problems. Municipalities should enact OLDS ordinances that mandate maintenance and inspection of on-lot systems. East Earl Township has an existing OLDS Management Program that was adopted in 1998 and amended in 2010 that requires that homeowners have their systems pumped out every three years and provide a receipt to the Township as verification.

Municipal Comprehensive Plan

The *Elanco Region Comprehensive Plan (2008)* has a Community Facilities Plan that addresses strengths and issues, goals, and strategies for both the region and individual municipalities for community facilities planning. The plan states that on-site sewage disposal systems are also a

problem in the Village of Goodville in East Earl Township. While there is an existing package treatment plant serving an industrial complex, it is not feasible to expand it to serve the entire village due to cost and environmental issues.

One of the strategies in this Plan is to review municipal land development regulations and 537 plans for consistency with the land use and community facilities goals of this Plan, especially related to restricting centralized sewer and water facilities outside of the region's Designated Growth Areas (DGAs). Ensure that DGAs, zoning designations, and sewer and water service areas are as consistent as possible. The proposed joint Act 537 Plan between East Earl Township and Terre Hill Borough does a thorough job in analyzing the planning goals and policy statements that are applicable for this joint Act 537 Plan.

* * *

FPB\RLH\fe

Copy: Merle Good, Terre Hill Borough Planning Commission Secretary
Good & Harris, LLP, Terre Hill Borough Solicitor
Connie J. Gross, East Earl Township Municipal Secretary
Julian Mazero, ELA Group, Inc.

Appendix M
Joint Act 537 Sewage Facilities Plan Revisions

Joint Act 537 Sewage Facilities Revisions Summary

The draft Joint Act 537 Sewage Facilities Plan was revised to correct grammatical and spelling errors not discovered prior to public comment, as well as to more clearly articulate the Joint Act 537 information. Based on the public comments, as well as questions posed by the public during public municipal meetings, additional information was added to help answer and explain the Joint Act 537 Plan. A copy of the draft, with Microsoft Word (MS Word) Track Changes, is included to show the language added to answer public comments and clarify the Joint Act 537 Plan recommendation. The MS Word Track Changes also includes minor revisions for grammar, spelling and sentence structure.

The draft Detailed Cost Analysis, located in Appendix C, was modified in response to public comments, municipal input and updated documentation, such as the 2014 Chapter 94 Reports and land costs. Additional revisions were performed by the consulting engineers to correct any data entry errors in Microsoft Excel. The land costs were updated to reflect recent estimates the East Earl Township received for an unrelated project. A septage station was added into the wastewater treatment plant costs; however, a revenue stream for the septage station for receiving and treatment of hauled in waste was not estimated. The Detailed Cost Analysis also reflects current Operation & Maintenance costs for the Borough and the Township systems. These Operation & Maintenance costs do not reflect changes, such as the Township turning over individual grinder pumps to property owners.

The maps provided in the draft Joint Act 537 Plan were revised to better reflect the proposed infrastructure required to complete each alternative. The revised maps are located in at the end of the Joint Act 537 Plan. The maps contained within Appendix M reflect the original maps provided during public comment.

Style Definition: Heading 5: Space After: 1 pt

**BOROUGH OF TERRE HILL
&
EAST EARL TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA**

JOINT ACT 537 OFFICIAL SEWAGE FACILITIES PLAN

JUNE~~MARCH~~ 2015



743 S. Broad Street
Lititz, PA 17543
(717) 626-7271

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**BOROUGH OF TERRE HILL
& EAST EARL TOWNSHIP
ACT 537 REGIONAL
SEWAGE FACILITIES PLAN**

1.0 Executive Summary

The Borough of Terre Hill (Borough) and East Earl Township (Township) have prepared this Joint Act 537 Sewage Facilities Plan (Act 537 Plan) in compliance with the Pennsylvania Sewage Facilities Act and the Pennsylvania Department of Environmental Protection's (~~Pa~~-DEP) Act 537 regulations. The objective of the Joint Act 537 Plan is to identify additional sewage needs areas, as well as provide a solution to address existing sewage needs areas within five years of the ~~Pa~~-DEP's approval of the Joint Act 537 Plan. The Act 537 Plan outlines and compares individual and joint wastewater treatment options for the Borough of Terre Hill and East Earl Township.

The service area identified for investigation includes the Borough of Terre Hill, the Village of Goodville (Village) and connecting properties between the Borough and Village. Additional service areas include properties west of the Village of Goodville that are within the Urban Growth Area, as identified in the Eastern Lancaster County (ELANCO) Comprehensive Plan. ~~The ELANCO Region consists of Brecknock, Caernarvon, Earl and East Earl Townships, and the Borough of Terre Hill.~~

These areas were evaluated for sewage planning based on documented on-lot disposal system (OLDS) failures, such as in the Village of Goodville, and the need to plan for existing sewage facilities updates, such as in the Borough of Terre Hill. Since the Borough and ~~East Earl~~the Township have expressed interest in ~~investigating-reviewing~~ the formation of a joint sewer authority to share sewer services and cost, the selection and investigation of connecting properties between the Borough and the Village were determined to be the most logical areas to ~~investigate for~~consider additional OLDS failures.

The Borough operates an activated sludge wastewater treatment plant (WWTP) with a permitted capacity of 0.210 MGD and stream discharge to Black Creek (HQ-WWF). The original WWTP was constructed in 1962, followed by the addition of an extended aeration basin in 1988. The facility has reached the end of its useful life and is not able to adequately remove total nitrogen, as confirmed by monthly average results in DMRs and a draft 2012 ~~Pa~~-DEP Wastewater Plant Performance Evaluation. Therefore, the existing facility is recommended for

~~replacement~~; in order to comply with future effluent limits, such as the Chesapeake Bay annual mass loading limits, ~~is recommended for replacement~~.

The East Earl Township's sewage planning area includes the Village of Goodville and residential and ~~community-commercial~~ properties along Union Grove Road, S.R. 625/Reading Road and S.R. 23/Main Street. The majority of the residential and commercial properties within the sewage planning area are served by individual OLDS. In 2002, the Township's Update Revision to their original 1994 Act 537 Sewage Facilities Plan; ~~documented-identified~~ a majority of the OLDS within the Village of Goodville ~~were as~~ failing. In 2013, the Township performed a second Update Study to confirm the results of the 2002 Update Revision and selected an alternative to address OLDS failures. The 2013 Update Study confirmed the ~~original OLDS failures~~ 2002 Update Revision findings, as well as ~~confirmed-documented~~ new OLDS failures within the Village ~~of Goodville~~. The 2013 Update ~~Study~~ Study also confirmed the 2002 Update Revision recommendations ~~for that~~ the Township ~~to~~ construct a sewage collection and conveyance system, and an extended aeration wastewater treatment plant (WWTP) with discharge to surface water. This Joint Act 537 Sewage Facilities Plan identifies additional OLDS failures within East Earl Township along S.R. 625/Reading Road and other Township roads. Please see Map 1 for an outline of the sewage planning area.

Comment [JM3]: MAP NO 1 REFERENCE

To address the sewage needs for both existing aging wastewater infrastructure in the Borough, and OLDS failures within the Township, several sewage treatment alternatives were evaluated. These ~~se~~ alternatives reviewed included ~~d~~ each municipality separately pursuing ~~their own~~ separate wastewater treatment systems, as well as the municipalities forming a joint sewer authority to own and operate a regional wastewater collection system and treatment plant. Consistent with 25 Pa Code § 71.21 ~~(-b)~~, and based on existing aging infrastructure evaluations, and previous sewage planning studies ~~and Joint Act 537 Plan~~, the sewage planning areas reviewed need improved sewage facilities within five (5) years from the submission of the Joint Act 537 Plan to the ~~PA-DEP~~.

The recommended alternative within the Joint Act 537 Plan is Alternative 2. Under Alternative 2, ~~recommends~~ the Borough and ~~East Earl~~ the Township form a joint sewer authority to construct own and operate a wastewater collection system and treatment plant ~~with East Earl Township located in East Earl Township~~. A joint sewer authority ~~to construct, own and operate a~~

~~regional WWTP~~ allows the municipalities to increase the number of users and therefore maintain lower user rates ~~when as~~ compared to separate wastewater treatment. A joint sewer authority, which operates ~~ing~~ a regional WWTP, allows the municipalities to eliminate multiple discharge points, such as the Borough's discharge to a high quality stream, and malfunctioning OLDS, which contaminates groundwater. The elimination of multiple discharge points allows for more effective and efficient wastewater treatment ~~by producing more consistent~~ through consistent influent flows and loadings, and the sharing of nutrient ~~resources~~ loadings and offsets. ~~A regional WWTP also eliminates the Borough's discharge to a high quality stream, and allows the connection of malfunctioning OLDS, which eliminates direct sources of groundwater contamination.~~ A joint sewer authority will also allow the municipalities to ~~better~~ meet the projected growth for the Township and ~~the subsequent~~ the overall ELANCO Region. Please see Section 4.8 for more information regarding the recommended alternative.

The estimated project cost to construct a regional collection system and treatment plant is ~~\$16,458,984.17~~ \$17,799,309.00 and the ~~subsequent estimated~~ user fee is approximately ~~\$256,592.79~~ \$279.00 per quarter. ~~The quarterly user rate, including includes EESA's estimated all EESA debt~~ for the Earl WWTP expansion and upgrade, as well as the ~~and existing collection system O&M costs for both municipalities, - and the proposed O&M costs for Alternative 2.~~

However, if the Borough and ~~East Earl~~ the Township cannot agree ~~to on the formation of~~ a joint sewer authority, a contingency alternative, known as Alternative 1 within the Joint Act 537 Plan, recommends the Borough ~~is recommended to pursue upgrading~~ upgrade their existing WWTP, and the Township ~~is recommended to pursue construction of their own a separate~~ WWTP to serve the Village of Goodville and the S.R.625/Reading Road planning areas reviewed as part of this Joint Act 537 Plan. The estimated project cost for the Borough to construct a new sequencing batch reactor WWTP is \$4,979,219.00 with an estimated user fee of ~~\$300,562.93~~ \$293.00 per quarter. The estimated project cost for the Township ~~to construct a collection system and new~~ sequencing batch reactor WWTP, independent of the Borough, is ~~\$10,864,878.00~~ \$11,835,000.00 and the ~~calculated user~~ with an estimated user fee ~~of is~~ is ~~\$244,712.72~~ \$272.00 per quarter. Please see the table of contents to locate the proposed individual and joint implementation schedules.

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The municipalities ~~would intend to~~ seek both grant and low interest loan funding from PENNVEST, and other applicable programs, to cover all or part of the recommended sewage alternative. If PENNVEST or ~~other~~ United States Department of Agriculture program funding is unavailable in the form of grants and/or low interest loans, ~~or then~~ the municipalities ~~ewould likely obtain use a combination of~~ private loans and municipal bond to fund the recommend ~~alternative with lower interest rates, then the municipalities would pursue private loans, bonds or a combination of both.~~

This Act 537 Plan serves as an update to the Borough of Terre Hill's 1986 Act 537 Sewage Facilities Plan, as well as East Earl Township's original 1994 and 2002 Act 537 Sewage Facilities Plans.

2.0 Sewage Facilities Planning Act

Originally enacted in 1966 by the Pennsylvania State Legislature, the Pennsylvania Sewage Facilities Act (Act 537) provides a legal mechanism for municipalities to identify and address existing and future wastewater needs, as well as to prevent future sewage disposal problems. The Act 537 statute delegates authority to the Pennsylvania Department of Environmental Protection (DEP) to promulgate regulations under 25 Pa. Code ~~§~~ 71, 72 and 73 (see www.pacode.com for complete ~~statutes~~regulations) and subsequently enforce those regulations.

Act 537 requires each municipality to develop and maintain an up-to-date Sewage Facilities Plan (Act 537 Plan), which is submitted to the DEP for their review, comment and approval. The Act 537 Sewage Facilities Plan must be reviewed every five years by the municipality to determine the need for a revision; however, an Act 537 Plan revision is also needed when construction of new wastewater facilities (pump stations, certain sewer main extensions, treatment facilities) are proposed or existing sewage disposal methods are determined to be inadequate.

This Joint Act 537 Sewage Facilities Plan, separately and combined, addresses sewage treatment for the Borough of Terre Hill and East Earl Township. The Borough of Terre Hill and East Earl Township, in April of 2014, entered into a joint Consent Order & Agreement (CO&A) to investigate the formation of a joint sewer authority to own and operate a regional wastewater treatment plant (WWTP). A separate Act 537 Plan was prepared for the Borough of Terre Hill in 1986, and the 2013 Act 537 Update Study for the Village of Goodville, originally performed by the ELA Group, Inc., but not approved by the ~~Pa~~-DEP, is included as an attachment to this Joint Act 537 Sewage Facilities Plan. Please see Appendix B for the 2013 Village of Goodville Act 537 Sewage Facilities Study.

Comment [J4]: APPENDIX REFERENCE

3.0 Borough OF Terre Hill

Sewage Facility Review

3.1 Introduction

The Borough of Terre Hill (Borough), located in northeastern Lancaster County, last updated their Act 537 Sewage Facilities Plan in 1986. Currently, the Borough operates a wastewater collection system and wastewater treatment plant (WWTP), and in June of 2013 the Borough received a renewed National Pollution Discharge Elimination System (NPDES) permit with monitoring and reporting requirements for the Chesapeake Bay.

Based on the Borough's 2013 Municipal Wasteload Management Report (Chapter 94 Report) maintained and provided by the Borough's wastewater facilities operator, the Borough provided 1,449 persons with domestic wastewater services in both the Borough and East Earl Township. The 2014 Chapter 94 Report, completed in March of 2015, shows the Borough's sewer system now serves 1,477 persons within the Borough and East Earl Township.

The Borough obtains revenue for the operation of the domestic wastewater collection and treatment system, as well as a maintenance reserve fund, through direct customer billing based on metered water consumption.

3.2 Updated Revision Objective

The purpose of this section of the joint study is to update the Borough's existing Act 537 Sewage Facilities Plan, and determine if the Borough should continue to independently ~~separately~~ treat ~~its~~~~their~~ domestic wastewater, or form a joint sewer authority to own and operate a regional collection system and WWTP with East Earl Township. The Sewage Facilities Plan objectives identify wastewater treatment alternatives for the Borough and the recommendation is intended to serve as an update revision to ~~their~~~~its~~ existing November 1986 Act 537 Sewage Facilities Plan. The 2015 Joint Act 537 Plan provides a recommended sewage alternative that is consistent with the Borough's July 1, 2013 NPDES Permit.

The Borough's 1986 Act 537 Update Revision projected a population in 2010 of 1,450 persons and recommended the expansion of the ~~existing~~ existing wastewater treatment facilities to achieve nitrification.

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3.3 Planning Area Physical Description and Demographics

3.3.1 Introduction

The Borough of Terre Hill is located approximately 15 miles northeast of the City of Lancaster and 3.0 miles northwest of the Village of Goodville. The Borough's planning area is entirely served by public sewer and the wastewater treatment plant is accessible by S.R. 897 to Linden ~~Road~~ Street to Willow Road. See Map No. 1 for the Borough's sewage planning area.

Comment [JM5]: MAP 1

Several residential properties directly neighboring the Borough, but located in East Earl Township, are also served by the Borough's public sewer system. Table No. 1 below list the roads within East Earl Township that are served by the Borough's public sewer.

Table 1. Location of Borough Public Sewer Provided in East Earl Township

Comment [JM6]: TABLE 1

Camp Meeting Drive
Fairview Street
Gentle Drive
Red Run Road
Wide Hollow Road

3.3.2 Borough Planning Area Physical Conditions

The Borough of Terre Hill is elevated above the surrounding farmland and is accessible by S.R. 897 and S.R. 1044. Please see Map No. 2 for topography of the Borough and surrounding area. The planning area for the Borough mostly consists of residential properties with some commercial and light industrial sites present. Limited acreage remains available for development within the Borough. The Borough is entirely served by public sewer, which is collected and sent to the Borough's WWTP by a combination of gravity sewer mains, and pump stations with force mains. Please see Map No. 3 for public water and sewer service area.

Comment [JM7]: MAP 2

Comment [JM8]: MAP 3

The Borough's 2013 Chapter 94 Report states there are currently 615 EDUs connected to the Terre Hill system with the following additions planned: fourteen (14) EDUs in 2014,

seventeen (17) EDUs in 2015, seventeen (17) EDUs in 2016, eighteen (18) EDUs in 2017, and twelve (12) EDUs in 2018. Based on the Borough's 2014 Chapter 94 Report, completed in March of 2015, there are 629 EDUs connected to the Borough's sewer system and seventy-eight (78) total EDUs are projected for connection to the system by 2019.

3.3.3 Population and Future Growth

The Borough of Terre Hill is located within the Eastern Lancaster County (ELANCO) Region, which consists of Brecknock, Caernarvon, Earl and East Earl Townships, and ~~Terre Hill~~the Borough of Terre Hill. For the Borough, population statistics from the 2008 ELANCO Comprehensive Plan, Borough's 2013 Chapter 94 Report and the Lancaster County Planning Commission's (LCPC) June 2012 report titled, *2040 Population Projections for Lancaster County and Municipalities*, were reviewed. Data from the U.S. Department of Commerce Census Bureau's website also was ~~also~~ reviewed for population data regarding the Borough. The ELANCO Comprehensive Plan and LCPC's *2040 Population Projections for Lancaster County and Municipalities*, can be retrieved from the Lancaster County Planning Commission's website (lanastercountyp planning.org).

The Borough has experienced minimal population growth since the 1986 Act 537 Sewage Facilities Plan Update Revision, which listed a population of 1,240 persons (1985) within the Borough. The 2010 U.S. Census lists a population of 1,295 persons within the Borough and the 2013 Chapter 94 Report provides a population of 1,313 persons. The populations for the years 2015 and beyond were obtained from the Lancaster County Planning Commission's *2040 Population Projections for Lancaster County and Municipalities*, which is more recent than the 2008 ELANCO Comprehensive Plan. Table 2 below on the subsequent page shows the population information retrieved from the various sources consulted.

Table 2. Terre Hill Historic and Projected Population Growth

Year	Population (persons)
1910	882
1980	1,217
1985	1,240
1990	1,282
2000	1,237
2010	1,295
2015	1,312
2020	1,328
2025	1,338
2030	1,347
2035	1,351
2040	1,354

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Comment [JM9]: TABLE 2

_____ Developable land within the Borough is limited and therefore so is ~~the~~ population growth ~~and new residential and commercial construction~~. The 2008 ELANCO Comprehensive Plan projects that by 2030, the Borough of Terre Hill will add 31 additional dwelling units. The Borough's 2013 Chapter 94 Report states that a total of 78 equivalent dwelling units (EDUs) will be connected to the public sewer by 2018; however, the majority of these dwelling units will be located in East Earl Township. The contiguous areas within East Earl Township, which are served by public sewer, are not considered part of the Borough's official planning area. However, for the purpose of analyzing the existing wastewater facilities infrastructure, the domestic wastewater flows from East Earl Township are included.

3.4 Evaluation of Wastewater Flows and Characteristics

3.4.1 Introduction

Based on the information contained in the 2008 ELANCO Comprehensive Plan and the 2013 Chapter 94 Report, developable land in the Borough is limited and therefore the connection of new dwelling units is limited, too. Wastewater flow and waste load projections for the planning period are expected to remain largely unchanged and ~~within~~ below the permitted hydraulic wastewater capacity.

3.4.2 Wastewater Flows and Characteristics

The existing domestic wastewater flows and characteristics for the Borough of Terre Hill were developed from average monthly DMR data for the period from June ~~of~~ 2011 through July 2014. The major contributors of wastewater flow to the collection and treatment facilities are residential and commercial properties.

The Borough of Terre Hill estimates and bills for wastewater flow from residential and commercial users based on water meter data. Wastewater estimates within the sewer bills are based on EDU counts and is conventionally defined as a single family home. According to the 2013 Chapter 94 Report, the Borough equates an EDU to 215 gallons per day (gpd), which has a population equivalent of 2.35 persons at 90 gpd/capita. The Borough also lists a total of 615 EDUs connected to ~~their~~ its sewer system with a total population of 1,449 persons served by public sewer (1,449 persons / 615 EDUs \approx 2.35 persons/EDU). The Borough's 2014 Chapter 94 Report provides a total of 629 EDUs connected to their sewer system and serves a total population of 1,477 persons.

Table 3 below represents the flow statistics for the Borough's WWTP for the DMR period from June 2011 through July 2014.

Table 3. Terre Hill WWTP Flow Statistics¹

Statistical Parameter	Flow (MGD)
-----------------------	------------

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Comment [JM10]: TABLE 3

Mean	0.142
Median	0.139
Minimum	0.080
Maximum	0.284

Note 1 - The flow data used to calculate the above statistics was obtained from the monthly average results as reported in DMRs from June of 2011 through July 2014.

From June 2011 through July 2014, the three highest consecutive average monthly flows of 0.2040 MGD, 0.1862 MGD ~~and~~ 0.1951 MGD occurred during March, April and May of 2014, respectively. Based on the DMR flow data from March through May of 2014, the three month maximum average flow is 0.195 MGD.

Influent wastewater data was obtained from the Borough of Terre Hill's DMRs for the period from June ~~of~~ 2011 through July ~~of~~ 2014. The average monthly operating data was used to determine influent BOD₅ and TSS loads to the WWTP. Table 4 below summarizes the average influent concentrations and loads for BOD₅ and TSS.

Table 4. ~~Terre~~ Hill WWTP Average Influent BOD and TSS Loads

Comment [JM11]: TABLE 4

Parameter	Average Concentration (mg/L)	Average Loading (lbs/day)
Biochemical Oxygen Demand (BOD ₅)	124.9	148.2
Total Suspended Solids (TSS)	113.7	135.0

Note 1 - The flow data used to calculate the above values were obtained from the monthly average results as reported in DMRs from June ~~of~~ 2011 through July 2014.

Based on influent DMR data, the Borough's influent wastewater is relatively weak in strength and remains well below the WWTP's design organic capacity of 357 lbs per day (lbs/day). Developable land is limited within the Borough, but the 2008 ELANCO Comprehensive Plan depicts an urban growth area outside of the Borough's boundary. The urban growth areas, which abut the Borough's boundary, are limited in acreage and therefore new development is not expected to significantly increase the influent wastewater flows and

characteristics observed at the WWTP during the planning period. See Map ~~4~~ for zoning and designated urban growth area.

Comment [JM12]: MAP NO 4

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3.5 Wastewater Conveyance and Treatment Alternatives

3.5.1 Introduction

The Borough of Terre Hill owns and operates ~~a~~ wastewater collection system and ~~a~~ treatment plant originally installed in 1962 and modified as needed over the decades ~~since~~. The Borough also operates and maintains five pump stations within the collection system. All ~~the~~ pump stations have been ~~recently~~ upgraded recently and the maximum load to each station is less than 50% of ~~each-its respective station's~~ capacity. The majority of the collection system consists of 8 inch diameter gravity sewer.

The Borough's WWTP consists of two Eimco units, an extended aeration basin, chlorine disinfection and an anaerobic digester with reed bed system. The Eimco units are consolidated activated sludge-clarifiers that combine activated sludge and clarification into a single unit, as opposed ~~d~~ to conventional secondary treatment that requires separate aeration basins and clarifiers. The Borough has investigated several alternatives as part of this Joint Act 537 Sewage Facilities Plan, including the replacement or use of cured-in-place pipe lining of the existing gravity collection system, and replacement of the existing WWTP. Table 5 on the subsequent page provides the wastewater alternatives reviewed.

Table 5. Borough of Terre Hill Sewage Facilities Plan WWTP Alternatives

Alt. No.	Description	Borough of Terre Hill Required Action	Treatment Method
1	Replace or line existing collection system	Install new sewer mains or reline the existing collection system with cured-in-place pipe liner	Upgrade Collection System
2	Rehabilitate existing WWTP	Constructs additional treatment units and upgrades existing treatment units	Upgrade WWTP
3	Oxidation Ditch	Constructs new oxidation ditch treatment system to meet future nutrient limits	New WWTP
4	Sequencing Batch Reactor	Constructs new sequencing batch reactor system to meet future nutrient limits	New WWTP
5	Joint Sewer Authority	Form a joint sewer authority with East Earl Township and construct a regional WWTP	New WWTP
6	No Action Alternative	Continue to use existing wastewater facilities as is	Existing Collection and Treatment Plant

3.5.2 Existing Collection and Conveyance System

The Borough of Terre Hill operates approximately 24,000 ft of 8-inch and 1,200 ft of 10-inch diameter gravity sewer main, as well as 4,171 ft of 4-inch force main. Most of the existing gravity sewer mains consist of vitrified clay; however, more recently installed sewer mains are constructed of PVC pipe. Table 6 below lists the pump stations within the wastewater collection system. The Borough's operation ~~staff inspeet~~ staff inspects the pump stations daily and twice per year the collection system mains are flushed. However, since the Borough's 2013 Chapter 94 report indicates that all pumps have recently been replaced or upgraded, these wastewater facilities were not evaluated as part of the Joint Act 537 Plan.

Table 6. Borough of Terre Hill Pump Stations

Station Number	Location	Pump Station Capacity (single pump)	Station Type
1	Fairview Street	70 gpm	Submersible grinder
2	College Avenue	50 gpm	Submersible grinder
3	Lancaster Avenue	50 gpm	Submersible grinder
4	Earl Street	10 gpm (1 unit)	Submersible grinder
5	Linden Street	40 gpm	Submersible grinder

Comment [JM14]: TABLE 6

3.5.3 Replacement of Existing Sewer Mains

Since the Borough's original collection system was installed in 1962, sewer main replacement or lining was reviewed as part of this Act 537 Plan. Average monthly and maximum daily flow data obtained from DMRs, from June ~~of~~ 2011 through July ~~of~~ 2014, are mostly unremarkable and suggests there is minimal inflow and infiltration (I&I). During the same DMR period, three exceptional maximum daily flows occurred, most notably the DMR for October 2012 reported a maximum daily flow of 0.880 MGD; however, the Borough operator had found that some sewer vents were located in areas where water ponded during storm events or were broken and below grade. The operator and Borough ~~staff have~~ staff has worked, and continues to work, to locate sewer vents and cleanouts, which are broken or below grade and therefore need to be repaired. However, the gravity sewer mains were evaluated for replacement

for planning and cost to determine if an immediate need for replacement of the existing infrastructure is required. The following engineering assumptions were used to evaluate the replacement system costs:

- All sewer mains and manholes are assumed to need replacement for the purpose of the Joint Act 537 Plan analysis.
- An average of \$100.00 per foot was assumed for installation of 8-Inch sewer mains to provide a conservative estimate for replacement of the collection system.
- An average of \$125.00 per foot was assumed for installation of 10-Inch sewer mains to provide a conservative estimate for replacement of the interceptor from the collection system to the WWTP.
- Sewer mains are assumed to be buried at 15 ~~feet~~ or less.
- Current Borough GIS data is assumed to accurately reflect the number of manholes, pipe lengths and diameters within the Borough's boundary.
- Based on aerial images, sewer mains along Randall Road and Gentle Drive are assumed to be recently installed and not likely to require lining.
- An estimated total of 105 manholes are likely eligible for manhole lining within the Borough's boundary.
- An average of \$5,000.00 for replacement or lining of manholes is assumed.
- A costs of \$9.50 per square- yard for mill and overlay work in all PennDOT roadways.

Table ~~7~~ on the subsequent page provides estimated costs for replacement of sewer mains within the Borough. Of the Borough's 24,000 ft of gravity sewer mains, approximately 8,500 ~~feet is-are~~ operated beneath PennDOT roadways. Performing sewer main replacement within the PennDOT right-of-way can increase the time and costs to replace sewer mains. This is largely a result of PennDOT's paving schedule and road restoration requirements. However, to lower capital costs and extend the life of the existing collection system, the Borough can insert liners within the existing infrastructure using either Felt or UV cured-in-place pipe (CIPP) liners.

Comment [JM15]: TABLE REFERENCE

Table 7. Borough of Terre Hill Sewer Main Replacement and Manhole Lining Costs

Liner Type	Est. Unit Price ¹	Est. Length or Total Count ²	Total Costs
8-Inch Dia. PVC	\$100.00/ft.	24,000 ft.	\$2,400,000.00
10-Inch Dia. PVC ³	\$125.00/ft.	1,200 ft.	\$150,000.00
Manhole	\$5,000/manhole	105	\$525,000.00
Mill & Overlay	\$9.50/sq. yd.	42,700 sq. yd.	\$405,650.00
Total			\$3,480,650.00
Budgetary Costs⁴			\$4,524,845.00
1. The unit costs are estimated based on recent sewer authority projects within the Lancaster, PA area. 2. The estimated total sewer main length within the Borough is used to evaluate costs. Randall Road and Gentle Drive are excluded from the total 8-Inch diameter sewer main length because it was more recently installed. 3. The ELA Group estimated 10-Inch CIPP liner costs based on pipe UV costs increase from 8-Inch to 12-Inch diameter liner. 4. The Budgetary Costs includes a 20% construction contingency cost, and 10% engineering and construction administration costs.			

Comment [JM16]: TABLE 7

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3.5.4 Lining Existing Collection System and Manholes

Lining the existing sewer mains with a Felt or UV cured in-place pipe liner has the primary advantages of eliminating excavation and pavement restoration costs. Experienced CIPP installers can install up to two 400 foot sections of Felt or UV liners per day, where laterals are limited, or up to one 400 foot section of CIPP liner per day, where lateral density is substantial.

The Borough's existing wastewater collection system was evaluated for CIPP lining based on the following engineering assumptions:

- All sewer mains and manholes are assumed to need lined for the purpose of the Act 537 Revision Update.
- Sewer mains are assumed to be buried to a maximum depth of 15 feet.
- Current Borough GIS data is assumed to accurately reflect the number of manholes, pipe lengths and diameters within the Borough's boundary.
- Recent Felt and UV liner bid costs were used to develop an average unit price for each liner type.

- Recent manhole lining projects were used to estimate the average unit price for manhole lining.
- An estimated total of 105 manholes are likely eligible for manhole lining.
- Based on aerial images, sewer mains along Randall Road and Gentle Drive are assumed to be recently installed and not likely to require lining.

Table 8 below provides an estimate of the costs to line the entire Borough collection system.

Table 8. Borough of Terre Hill Sewer Main and Manhole Lining Costs

Liner Type	Est. Unit Price ¹	Est. Length or Total Count ²	Total Costs
8-Inch Dia. Felt CIPP	\$27.00	24,000 ft.	\$648,000.00
10-Inch Dia. Felt CIPP ³	\$37.00	1,200 ft.	\$44,400.00
Manhole Liner	\$5,000	105	\$525,000.00
Total			\$1,217,400.00
Felt CIPP Budgetary Costs⁴			\$1,582,620.00
8-Inch Dia. UV CIPP	\$38.00	24,000 ft.	\$912,000.00
10-Inch Dia. UV CIPP	\$55.00	1,200 ft.	\$66,000.00
Manhole Liner	\$5,000	105	\$525,000.00
Total			\$1,503,000.00
UV CIPP Budgetary Costs⁴			\$1,953,900.00
1. The unit costs includes include mobilization, CCTV, debris removal and post installation inspection. 2. The estimated total sewer main length within the Borough is used to evaluate costs. Randall Road and Gentle Drive are excluded from the total 8-Inch diameter sewer main length because it was more recently installed. 3. Bid cost for 10-Inch CIPP liner were unavailable and therefore estimates for felt liner were based on the percentage increase in UV CIPP liner from 8-Inch to 10-Inch diameter liner. 4. The Budgetary Costs includes a 20% contingency cost, and 10% engineering and construction administration costs.			

The Felt and UV CIPP liner costs provided in Table 8 provide an estimate for lining of the entire collection system and manholes within the Borough. The Borough's operators regularly inspect the sewer system and have performed some closed circuit television (CCTV) review of the system. The Borough's operations staff perform regular inspections of the collection system to eliminate connection of residential spouts and sump pumps, as well as locate

Comment [JM17]: TABLE REFERENCE

Comment [JM18]: TABLE 8

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Comment [JM19]: TABLE REFERENCE

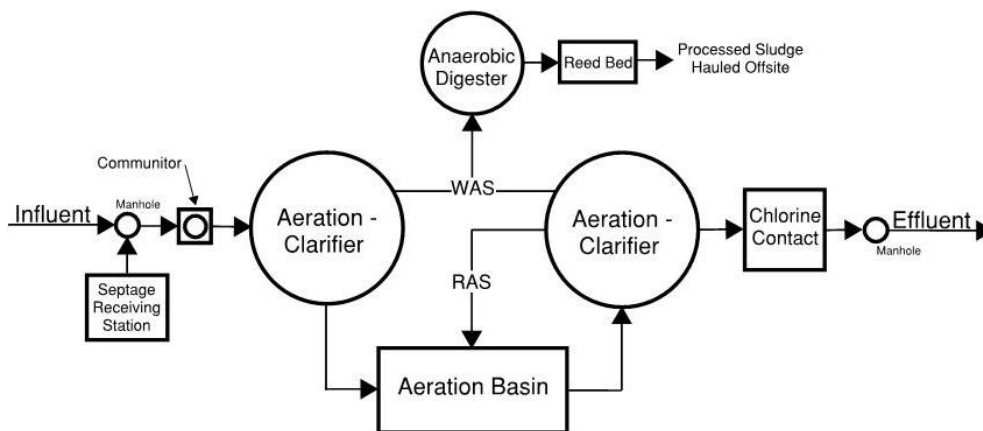
other sources of inflow and infiltration, such as below grade or broken building sewer vents. Based on recent DMR data, overall strength of wastewater and lack of required sewer main repairs, the Borough operator can continue to inspect sewer mains and manholes using methods, such as CCTV, sonar or smoke testing to identify critical repair needs. This will allow the Borough to target replacement of system components on an as needed basis and control cost, as opposed to replacement or lining of the entire system.

3.5.5 Wastewater Treatment

The Borough's original wastewater treatment plant was constructed in 1962 with additional activated sludge treatment (an extended aeration basin) added in the 1980s. The WWTP is designed to treat 0.210 MGD and remove 357 lbs of BOD/day. In 2013, the average flow to the WWTP was 131,700 gpd and the average organic load was 142 lbs of BOD/day.

Figure 1 below shows the current flow schematic of the Borough's WWTP.

Figure 1. Existing Borough WWTP Flow Diagram.



Comment [JM20]: FIGURE REFERENCE

Comment [JM21]: FIGURE NO 1

Sludge is wasted from the clarifiers and conveyed to a moderately mixed anaerobic digester and reed bed system for drying. In 2013, the Borough also accepted 30,000 gallons of septage. The WWTP generated 2,160 wet tons of sludge, and hauled 28.6 tons of dry sludge offsite for disposal.

The DMR average monthly data from June 1, 2011 to July 31, 2014, produce a median influent TSS and BOD₅ concentration of 103.5 mg/L and 118.50 mg/L, respectively. Data from

the same DMR period showed the existing WWTP produced a median effluent TSS and CBOD₅ concentration of 12.0 mg/L and 6.5 mg/L, respectively. The median WWTP flow during this period was 0.1387 MGD. Total Nitrogen and Total Phosphorus median effluent concentrations for the same DMR period were 18.44- mg/L and 1.0 mg/L, respectively.

The influent TSS and BOD concentration data suggests the Borough's domestic wastewater is of medium to low strength. The existing WWTP is not designed for advanced nutrient removal, but effluent total phosphorus data indicate that the influent total phosphorus concentrations may remain low.

The DMR data from the same period suggests the existing WWTP meets the NPDES effluent limitations most of the time, but based on the age and current condition of the wastewater components, the system would not meet Chesapeake Bay total nitrogen and total phosphorus mass loading or lower conventional effluent limits. As Pennsylvania continues ~~their~~ its efforts to reduce nutrient and sediment loadings to the Chesapeake Bay and meet the U.S. EPA's Chesapeake Bay Total Maximum Daily Load (TMDL), Phase 4 facilities may require nutrient reductions. The Pennsylvania DEP's Watershed Implementation Plan, ~~last updated on~~ last updated on March 6, 2014, explicitly states in regards to Phase 4 and 5 facilities that "a future decision may be made to the establishment of Cap Loads in permits." The U.S. EPA reviews the progress of each state in meeting their Chesapeake Bay TMDL requirements. According to the U.S. EPA's June 26, 2014 evaluation of Pennsylvania's progress, the state failed to meet its nitrogen and sediment reduction targets. It is likely that in order to meet future Bay milestones, the PA DEP could make a decision to implement nutrient cap loads within Phase 4 and Phase 5 NPDES permits.

According to the DEP's Chesapeake Bay Watershed Implementation Plan, there are 900 Phase 4 and Phase 5 facilities within Pennsylvania's portion of the Chesapeake Bay Watershed. Therefore, implementing future nutrient cap loads within Phase 4 and Phase 5 NPDES permits could provide a significant aggregated nutrient load reduction to the Chesapeake Bay. The Borough's most recent NPDES permit, renewed in July of 2013, requires monitoring of total nitrogen and total phosphorus. Table 9 and 10 on the subsequent pages, provide the 2013 renewed NPDES permit discharge effluent limitations.

Comment [JM22]: TABLE REFERENCE

Table 9. Borough of Terre Hill 2013 NPDES Final Effluent Limits

Parameter	Effluent Limitations					
	Mass Units (lbs/day)		Concentrations (mg/L)			
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX
Total Residual Chlorine	XXX	XXX	XXX	0.26	XXX	0.85
CBOD ₅ May 1 - Oct 31	35.0	53.0	XXX	20.0	30.0	40.0
CBOD ₅ Nov 1 - Apr 30	44.0	70.0	XXX	25.0	40.0	50.0
Total Suspended Solids	53.0	79.0	XXX	30.0	45.0	60.0
Fecal Coliform (CFU/100 mL) May 1 - Oct 31	XXX	XXX	XXX	200.0 Geo Mean	XXX	1,000.0
Fecal Coliform (CFU/100 mL) Nov 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000.0
Ammonia-Nitrogen May 1 - Oct 31	5.3	XXX	XXX	3.0	XXX	6.0
Ammonia-Nitrogen Nov 1 - Apr 30	16.0	XXX	XXX	9.0	XXX	18.0
Total Phosphorus	3.5	XXX	XXX	2.0	XXX	4.0

Table 10. Borough of Terre Hill 2013 NPDES Chesapeake Bay Effluent Limits

Parameter	Effluent Limitations ³				
	Mass Units (lbs)		Concentrations (mg/L)		
	Monthly	Annual	Minimum	Monthly Average	Maximum
Ammonia--N	Report	Report	XXX	Report	XXX
Kjeldahl--N	Report	XXX	XXX	Report	XXX
Nitrate-Nitrite--N	Report	XXX	XXX	Report	XXX
Total Nitrogen	Report	Report	XXX	Report	XXX
Total Phosphorus	Report	Report	XXX	Report	XXX

As the Borough's WWTP equipment ages, and if NPDES limits require the Borough to meet lower effluent concentrations or Chesapeake Bay loading limits, the Borough is likely to see higher operation costs. Based on the DMR results, and ~~Pennsylvania~~ DEP's 2012 performance evaluation of the WWTP, the system cannot denitrify and therefore could not meet future NPDES total nitrogen limits. See Table 11 for current WWTP nutrient performance results. The existing WWTP equipment has surpassed its useful planning life and the existing concrete tanks are approaching or have surpassed their useful planning life as well. Several sewage treatment options were evaluated by the Borough including upgrading the existing WWTP, construction of an oxidation ditch system, construction of a sequencing batch reactor (SBR) and shared construction of a regional WWTP. The oxidation ditch and SBR systems were selected for their ability to remove nutrients and accept increased flow rates without disrupting treatment. These systems also provide a comparison of treatment footprint size and costs. Both treatment system technologies are also frequently employed by neighboring municipalities; therefore, providing a network of experienced operators in the event Borough operations ~~staff~~ needstaff needs additional support.

Comment [JM23]: TABLE REFERENCE

3.5.6 Chesapeake Bay Nutrient Requirements

Under the Pennsylvania DEP's Chesapeake Bay Watershed Implementation Plan, the Borough of Terre Hill's WWTP is considered a Phase 4 Sewage Facility ($0.2 \text{ MGD} \leq X < 0.4 \text{ MGD}$) and is required to monitor and report Total Nitrogen and Total Phosphorus concentrations, and annual mass loadings discharged to the Bay. Currently, the DEP does not require nutrient cap loads within existing Phase 4 NPDES permits, unless the discharger proposes to expand the discharge. If a facility does propose to expand the discharge, nutrient cap loads are established based on the existing, non-expanded WWTP design average annual flow, or a Department standard 7,306 lbs per yr (lbs/yr) total nitrogen and 974 lbs/yr total phosphorus, whichever is more stringent. A facility that is assigned Nutrient Cap Loads, must adequately treat wastewater or purchase nutrient credits to remain below the annual mass loading limit. For example, if the Borough of Terre Hill is assigned a nutrient cap load of 7,306 lbs/yr of total nitrogen, the standard total nitrogen nutrient cap load for Phase 4 facilities, they must discharge 7,306 lbs or less. The Borough could select to purchase nutrient credits in lieu of installing biological nutrient removal technology to meet their assigned nutrient cap loads. Nutrient credits can be purchased from a nutrient broker under a long term contract or from a nutrient credit auction. The primary advantage of entering into a long term contract is the set price of nutrient credits for the life of the contract. However, the primary disadvantage of a long term contract is that the Borough is unable to take advantage of lower nutrient credit prices, if dictated by the market. Purchasing credits from an auction is subject to the price fluctuations that result from supply and demand, which can make annual budgeting and user rate determinations more cumbersome. Nutrient credits cannot be purchased to meet any technology based effluent limitations required by a WWTP's NPDES permit.

The Borough's WWTP is currently designed and permitted for a design annual average flow of 0.210 MGD. Based on average monthly effluent DMR data from July 1, 2013 to June 30, 2014, the average total nitrogen and total phosphorus concentration for the Borough's WWTP is 19.6 mg/L and 1.3 mg/L, respectively. Table 11 on the subsequent page displays the calculated mass loadings from the Borough's WWTP.

Comment [JM24]: TABLE REFERENCE

Table 11. Monthly Nutrient Mass Loadings from July 2013 through June 2014

Monthly DMR	Flow (MGD)	TN (mg/L)	TN Mass Loading (lbs/Mon)	TP (mg/L)	TP Mass Loading (lbs/Mon)
Jul-13	0.1140	24.74	729.18	1.00	29.47
Aug-13	0.1020	26.46	697.78	2.00	52.74
Sep-13	0.1186	25.4	753.71	2.00	59.35
Oct-13	0.1017	25.19	662.33	1.00	26.29
Nov-13	0.1480	22.4	829.46	1.00	37.03
Dec-13	0.1876	17.51	849.27	1.00	48.50
Jan-14	0.1903	15.84	779.33	1.00	49.20
Feb-14	0.2040	16.87	803.65	1.00	47.64
Mar-14	0.1862	13.08	629.67	1.00	48.14
Apr-14	0.1951	13.99	682.91	1.00	48.81
May-14	0.1482	18.44	706.54	1.00	38.32
Jun-14	0.1443	15.22	549.50	2.00	72.21
Total			8,673.34		557.70

The existing performance for total nitrogen is greater than the total nitrogen standard cap load of 7,306 lbs per year and therefore the Borough would likely receive the more stringent nutrient cap load of 7,306 lbs/year of TN. Based on the total phosphorus discharged in Table 11, which is less than the standard total phosphorus cap load of 974 lbs per year, the Borough would receive the more stringent total phosphorus nutrient cap load of 557.70 lbs per year. These results show that the existing system is not capable of effective total nitrogen removal and would likely receive a stringent phosphorus cap load. Consistently achieving nutrient removal would require the installation of new wastewater equipment and/or systems. The Borough could construct a new WWTP to meet future nutrient credit requirements or purchase nutrient credits through a credit broker or on a spot auction.

As of October 2014, the PENNVEST Nutrient Credit Trading results, as posted on the PENNVEST MARKIT[®] website, showed that the average nutrient credit on the spot and forward auction costs between \$2.00 ~~to~~ and \$2.50 per nutrient credit. As an example, if the

Borough were assigned the Department's standard Phase 4 TN cap load of 7,306 lbs/yr, and using the calculated TN mass loading of 8,673 lbs from Table 11, the Borough would purchase the difference between the cap load and the TN mass loading discharged, or 1,367 lbs of TN. Based on the October 2014 nutrient credit market results, the Borough would pay either \$2,734.00 or \$3,417.50, depending on the auction results. This calculation does not account for the delivery ratio contained within NPDES permits and future nutrient credit costs are likely to vary.

The purchase of nutrient credits is a feasible option for the Borough when considering planning for sewage facilities upgrades; the Borough's future NPDES permit is likely to contain nutrient effluent limits. The Borough's discharge to Black Creek, which is not currently impaired or does not have a TMDL, flows into the Conestoga River, which is impaired. The Department may limit the discharge of nutrients from the Borough to prevent further impairment of the Conestoga River. The Borough's existing wastewater treatment infrastructure is severely aged and therefore nutrient removal technology was given significant consideration in the review of wastewater treatment technology. Since the Borough must plan for replacement of the treatment technology, biological nutrient removal capabilities are likely to increase treatment efficiency and reduce cost. Planning for the Borough's ability to treat for nutrients would also eliminate credit budgeting uncertainty.

3.5.7 Alternative No. 1 - Rehabilitate Existing WWTP

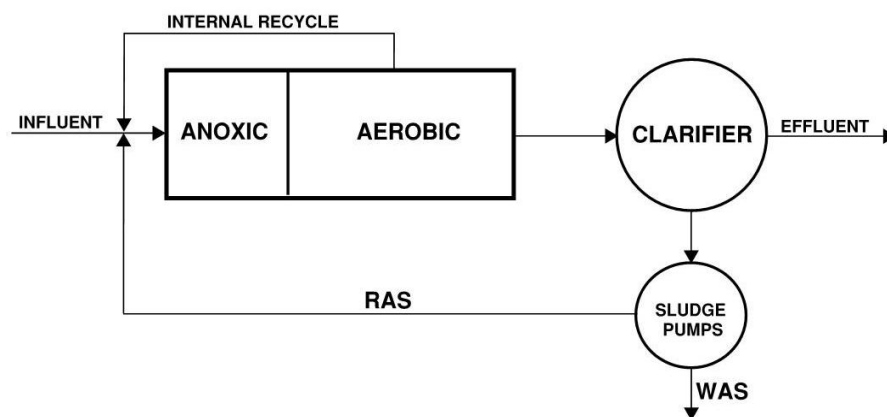
Rehabilitating the Borough's existing WWTP to effectively treat for nutrient removal, as well as meet potentially lower conventional effluent limits requires major modification of the existing system. In order to achieve efficient nitrification and denitrification, the system could be converted to a Modified Ludzack Ettinger or MLE process. Please see Figure 2 for a basic MLE flow diagram. This would involve constructing an additional aeration basin to provide redundancy, conversion of the existing Eimco units into secondary clarifiers and adding anoxic selectors to the front end of the system. The existing aeration basin, as well as a new aeration basin, requires fine bubble diffusers to provide a greater oxygen transfer efficiency. The use of anoxic selectors prior to the aeration basins would likely allow the Borough to install smaller blower motors and therefore reduce annual operation and maintenance costs. Replacement of the existing communitor with a fine mesh influent screen is recommended to prevent large or stringy

Comment [JM25]: FIGURE 2 REF

materials from creating downstream operation problems, such as clogged pumps or accumulation on fine bubble aerators. The installation of UV disinfection is recommended to reduce the handling and discharge of chlorine, needed to dechlorinate to meet effluent limits, and reduce the treatment system footprint. Current DMR effluent phosphorus data suggest the Borough's influent domestic wastewater phosphorus concentration is relatively low; however, system upgrades should include or consider future use of tertiary filtration for effluent polishing and consistent removal of total phosphorus. For the purpose of this study, cloth media filtration is included for phosphorus removal.

Figure 2. Basic Modified Ludzack-Ettinger Treatment Plant Flow Diagram

Comment [JM26]: FIGURE 2



The original Eimco concrete tanks were constructed in the 1960s, and the extended aeration tank dates to the late 1980s. Although the current wastewater treatment tanks are intact, reinvesting in the existing units is not recommended because the structures may not last the life of the additional treatment upgrades. Rehabilitating the existing WWTP requires treatment and flow diversion logistics to maintain uninterrupted wastewater service for the residents of the Borough and East Earl Township. During the construction process, the Borough is still required to meet all NPDES permit limits. Although not recommended, rehabilitating the existing WWTP to provide for nutrient removal is estimated to have a capital costs of approximately \$5,673,732.00 with an estimated annual operation and maintenance (O&M) cost of \$280,000.00.

3.5.8 Alternative No. 2 - Construct Oxidation Ditch WWTP

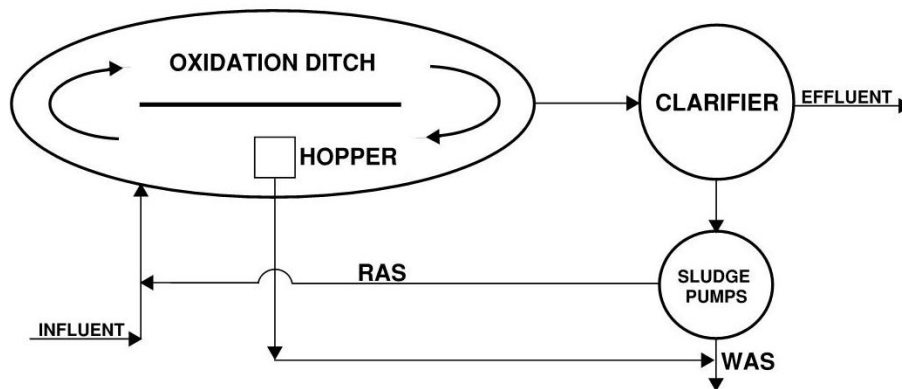
Oxidation ditch systems can be designed and operated to reduce BOD, TSS, TN and TP to low effluent concentrations, and several large municipal systems within Lancaster County employ the oxidation ditch concept for treatment of municipal wastewater. The general system layout consists of an oval basin with a secondary clarifier. Please see Figure 3 for a basic process diagram.

Comment [JM27]: FIGURE 3 REF

The oxidation ditch treatment process can be modified to include an anoxic zone within the aeration ditch for enhanced nitrogen removal and an external anaerobic basin can be added to enhance microbiological uptake of phosphorus. The oxidation ditch system is a reliable wastewater treatment technology, and most manufacturers offer a variety of configurations and aeration equipment. However, the systems tend to have larger footprints than other treatment technologies and ~~therefore~~ can have higher capital costs. In order to effectively and consistently achieve the effluent limitations required under the Pa-DEP's Chesapeake Bay Watershed Implementation Plan, the oxidation ditch treatment system would require the use of an anoxic zone. Incorporating an anoxic zone within the oxidation ditch could increase the footprint. Also, in order to consistently achieve low effluent total phosphorus concentrations and mass loadings to Black Creek, and depending on the BOD to TP ratio, a separate anaerobic tank and/or filter units may be required. The addition of a separate anaerobic tank, which includes the construction of a concrete tank and recirculation pumps, would increase the footprint and capital costs.

Figure 3. Basic Oxidation Ditch Treatment Plant Flow Diagram

Comment [JM28]: FIGURE 3



The addition of ~~tertiary~~ filtration ~~unit~~ would require installation of a ~~cloth~~ filtration unit, which could be housed within a control building or separate structure, but ~~also this would~~ increase the overall WWTP footprint and capital costs. Although the Borough's current DMRs suggest a low level of influent phosphorus, for the purpose of this study, phosphorus removal technology is considered necessary to consistently achieve a TP concentration equal to or less than 0.8 mg/L. The existing Terre Hill Borough WWTP is located on approximately 2.4 acres of land; however, only half of the total site is used by the treatment units. An oxidation ditch unit alone would likely require up to a half acre of land area. This does not include the construction of secondary clarification and other WWTP peripherals. The construction of an oxidation ditch system would require minimal flow logistics and would not interrupt current treatment service. The approximate capital costs to construct a new oxidation system is \$6,418,932.00 with an estimated annual O&M cost of \$295,500.00.

3.5.9 Alternative No. 3 - Construct New Sequencing Batch Reactor (SBR)

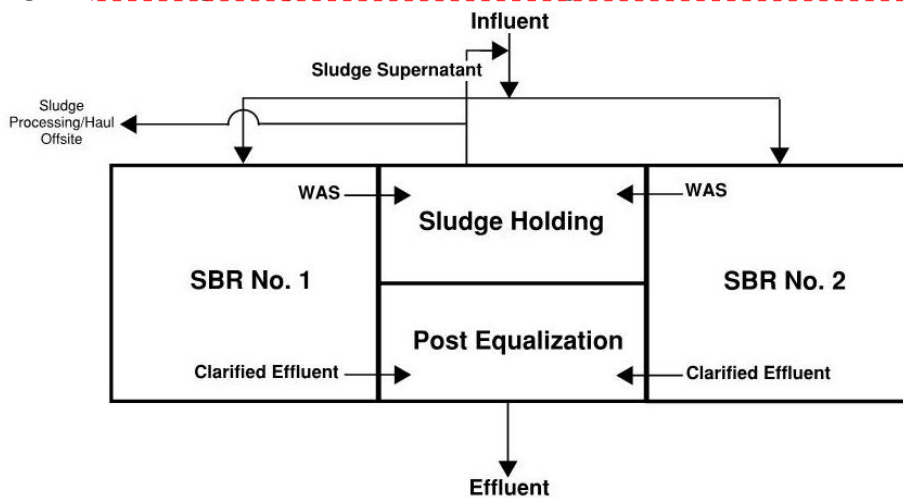
Sequencing batch reactors (SBRs) provide excellent wastewater treatment when operated well and are widely used in Lancaster County and ~~the~~ general south-central Pennsylvania region. This is beneficial to the Borough's operation staff because ~~an experienced network of operators~~ an experienced network of operators is available if additional operational knowledge is

needed. A SBR treatment system consists of two or more basins with each basin sharing a common wall. Figure 4 shows a SBR system layout without primary or disinfection treatment.

Comment [JM29]: FIGURE 4 REF

Figure 4. Basic Sequencing Batch Reactor Flow Diagram

Comment [JM30]: FIGURE 4



The SBR treatment process operates by alternating influent flow to each basin. As one basin is filled with wastewater, the other basin performs aeration and settling. The ability to perform several operations in a single basin results in a compact footprint and reduces the amount of materials, such as concrete and yard pipe, required to construct the wastewater treatment plant, which reduces the overall capital cost. The SBR process can effectively reduce total nitrogen and total phosphorus concentrations by alternating the treatment cycle periods. A SBR system can produce effluent quality consistent with the current NPDES permit effluent concentration limits, such as the TP limit of 2.0 mg/L, and can be operated to produce a TN concentration of 6.0 mg/L or less. However, in order to achieve a consistent TP effluent limitation of 0.8 mg/L or less in an SBR system, and as required by the ~~Pa~~-DEP's Chesapeake Bay Watershed Implementation Plan, tertiary treatment, such as cloth filtration is required. Existing SBR systems with a hydraulic design capacity comparable to the Borough's have been constructed on a half acre, which included a control building and WWTP peripherals. Construction of an SBR system would not interrupt current Borough sewer service and allow additional land to remain undeveloped for future Borough use or upgrades. The approximate

capital costs to construct a new SBR system is \$4,979,219.00 with an estimated annual O&M cost of \$258,500.00.

3.5.10 Alternative No. 4 - Joint Sewer Authority and Regional WWTP

The Borough of Terre Hill could form a joint sewer authority with East Earl Township to construct and operate a regional WWTP. The Borough does not have available land to develop and therefore cannot increase the number of rate payers for sewer service, with the exception of minor developable land surrounding the Borough, but located in East Earl Township. However, most of the immediate land surrounding the Borough, but within East Earl Township, is not zoned for development and remains agricultural. Without the ability to expand the number of rate payers connected to the existing wastewater collection system, the ownership of these facilities remains fixed and therefore the existing customers are required to pay a higher cost to upgrade and maintain the wastewater facilities. The wastewater treatment upgrade and maintenance costs become increasingly more expensive as treatment requirements become more stringent and wastewater treatment technology increases in cost. Since both municipalities have expressed an interest in sharing sewer services, the formation of a joint sewer authority to construct own and operate a regional WWTP, is a viable option.

The formation of a regional WWTP would increase the number of rate payers and therefore lower the individual rate payer costs, and allow East Earl Township to mitigate the failing on-lot disposal systems within the Village of Goodville and along S.R. 625. A joint sewer authority would also allow the Borough to keep future wastewater treatment costs lower than the Borough's continued independent wastewater treatment. The Borough's existing collection system could be owned by a joint sewer authority and therefore future upgrade and repair costs could be distributed over a larger user base. -The formation of a joint sewer authority would require the Borough to share any allocated nutrient cap load with East Earl Township; however, East Earl Township would receive 25 lbs of TN per OLDS connected to a public sewer and therefore share the additional TN loading with the Borough. A joint sewer authority with a larger nutrient loading can help to buffer O&M costs.

The owner's of Conestoga Wood Specialties, which currently own and operate a 19,000 gallon per day (gpd) wastewater treatment plant along the Conestoga River, have expressed

interest in selling land near their existing WWTP to the municipalities for construction of a regional WWTP. This area is considered to be an excellent location for construction of a new treatment plant because it is of low elevation, which allows optimal use of gravity sewer and is close to a larger surface water for stream discharge. An additional benefit to this location is the availability of three phase electric power, which is present for the Conestoga Wood Specialties manufacturing facility, and therefore would eliminate an expense from the capital costs for construction of a new WWTP. Three phase power is beneficial because it allows for use of more efficient equipment, as opposed to single phase power, and therefore can reduce O&M costs, too.

An SBR system would provide a minimal footprint, but achieve excellent effluent quality and could be constructed near the existing 19,000 gpd WWTP with a stream discharge to the Conestoga River. This has an added environmental benefit of removing the Borough's discharge to Black Creek, a designated high quality stream. The regional option is further explored in Section 4 of this study; however, the estimated capital costs for a regional collection system and SBR WWTP is \$~~1617,345~~8799,309\$84.00. The estimated annual O&M cost for a regional WWTP and collection system is \$~~588,000~~1,772,339.00.

3.5.11- No Action Alternative

The Borough of Terre Hill could opt to continue using the existing wastewater facilities and delay replacement or upgrade of the facilities. Although delaying replacement and/or upgrading of the existing wastewater treatment facilities does not impact the Borough within the immediate future, the Borough is likely to face higher upgrade costs for each additional year replacement and/or upgrades are delayed. The long term impacts of not planning and implementing wastewater facilities upgrades would likely mean higher costs for Borough ratepayers, as a result of system failures, increased operation and maintenance costs and penalties for water quality violations. The Borough is taking a proactive approach in performing sewage planning for the replacement and/or upgrade of their existing wastewater treatment facilities. Replacement of aging infrastructure is recommended in order to provide environmentally responsible and cost effective sewage treatment, as well as continuous sewer service. The "No Action Alternative" is not considered a viable option to address the Borough's long term sewage needs.

3.6 Present Worth Cost Effectiveness Analysis

The present worth analysis was developed to allow a direct comparison of the life cycle costs of each treatment alternative. Present Worth is the dollar amount, which if invested now at a given fixed interest rate, would provide the funds necessary to make all future payments on the selected wastewater treatment facilities. The future payments for Present Worth calculations for wastewater treatment facilities also includes the operation and maintenance costs for the 20 year planning period.

All construction and equipment costs were evaluated based on the Engineering News Records (ENR) 2015 Construction Cost Index, as well as the U.S. Bureau of Labor and Statistics' (BLS) Consumer Price Index. However, a detailed treatment facilities design and site investigation must be performed to develop a detailed cost for financing prior to actual bid. All of the wastewater treatment facilities have been analyzed based on a 20 year planning period. The wastewater facilities costs were developed for the year 2015. The following assumptions were used for the present worth analysis:

- The planning period is 20 years, ~~or~~ from 2015 to 2035.
- Costs were developed for the year 2015 (Engineering News Record CCI of 9971).
- A discount rate of 4.625% was provided by the U.S. EPA for the water year from October 1, 2014 to September 30, 2015.
- The annual operations and maintenance costs are assumed to remain constant for the planning period and are based on the design flow.
- The salvage value of capital projects depreciates linearly over the expected life of the project. Land value for right of way/easements and land is assumed to remain constant. The depreciation schedule and salvage value factors are as noted below in Table 12 and follow the recommended U.S. EPA guidelines for present worth evaluations.
- Inflation was not factored into the present worth analysis because of the difference in schedule for completion between the independent and regional alternatives.

Table 12. Year 2035 Salvage Value (Percent of Initial Construction Costs)

Type of Facility	Expected Life	Salvage Value (% of Initial Cost)
Collection and Conveyance	50 Years	60
Pump Facilities	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	33.3
Right-of-Ways/Easements	-----	100
Wastewater Treatment Plant	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	25

Comment [JM31]: TABLE 12

The alternatives reviewed are analyzed in Table 13 to determine the present worth for each alternative. Please see Appendix C for a more detailed cost analysis.

Table 13. Borough Wastewater Facilities Present Worth Analysis

	Alternative 1 Upgrade Existing Borough WWTP	Alternative 2 Borough Oxidation Ditch WWTP	Alternative 3 Borough SBR WWTP	Alternative 4 Regional WWTF ^A
Collection System Capital Cost (2015, \$)	n/a	n/a	n/a	\$76,113,740 65,400
WWTP Capital Cost (2015, \$)	\$4,111,400 \$5,637,732	\$6,418,932 651,400	\$4,979,219 3,608,130	\$5,757,929 12,898,050
Construction Contingency (15%)	\$616,710 \$680,732	\$770,141 \$697,710	\$597,405 \$541,219	\$2,026,075 \$1,934,707
Admin, Engineering, Legal Services (20%)	\$945,622 \$1,043,789	\$1,180,883 \$1,069,822	\$916,021 \$829,869	\$3,106,648 \$2,966,551
O&M Cost (2015, \$)	\$280,00	\$295,500	\$258,500	\$1,772,339 \$88,000
Net Present Worth Cost (2015, \$)	\$8,819,271 \$8,819,271	\$9,770,000 \$9,770,000	\$7,998,520 \$7,998,520	\$22,286,09 \$17,799,309
No. of EDUs in Authorities	615,629	615,629	615,629	260,224 222
Est. Cost Per EDU (2015, \$)	\$14,021 \$14,340	\$15,886 \$15,332	\$13,005 \$12,716	\$8,564 \$9,616
Est. User Cost (2015, \$)	\$318 \$325.42	\$350.22 \$342	\$299.44 \$292	\$254.80 \$279

Comment [J32]: APPENDIX C

Comment [JM33]: TABLE 13

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3.7 Institutional Evaluation and Recommended Sewage Alternative

The Borough of Terre Hill owns and operates ~~their-its~~ own existing collection system and wastewater treatment plant. The Borough also owns ~~their-its~~ own water treatment and distribution system. The Borough Council and operations staff are responsible for the implementation of the ~~Pennsylvania~~-DEP regulations governing the wastewater collection and treatment systems. The Borough is capable of administering the Borough only sewer alternative and working with the East Earl Sewer Authority to form a joint sewer authority. Please see Section 4.0 for an institutional evaluation for a joint authority.

Based on the findings of this study, the recommended sewage alternative for the Borough is to form a joint sewer authority with East Earl Township to construct and operate a regional WWTP. The construction of a regional collection system and WWTP, by a joint sewer authority, is estimated to cost \$~~176,458,799,984,309~~.00 with annual O&M cost of ~~\$5881,772,339,000~~.00 per year for both the collection and treatment systems. However, if the Borough and East Earl Township are unable to agree on the terms for formation of a joint sewer authority, then the recommended contingency alternative is for the Borough to construct a new WWTP, such as an SBR systems on the site of the existing WWTP. The construction of a new Borough system is estimated to have a project costs of \$4,979,219.00 with an annual O&M cost of \$258,500.00.

It is the responsibility of the Borough Council to implement the Borough only alternatives or to establish a joint sewer authority with East Earl Township. The Borough and Township must agree upon a joint sewer authority. Once the determination has been made by the municipalities to either pursue or not pursue the regional alternative, funding availability and options must be reviewed. Please see Section 4.8 for funding options and details. The formation of a joint sewer authority and/or the independent Borough option cannot be pursued until the Joint Act 537 Plan is approved.

3.8 Review of Consistency Requirements - Recommended Regional Alternative

The regulations promulgated by the ~~Pennsylvania~~-DEP within 25 Pa. Code § 71.21(a)(5) requires each available alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's

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prime agricultural land policy, County plans approved by the ~~Pennsylvania~~ DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a regional WWTP, designed and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Wasteload Management Reports for both municipalities were reviewed and the construction of a regional WWTP would enable both municipalities to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A regional WWTP would take into account projected and existing hydraulic and organic loadings from the Borough and the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. ~~In order for~~ a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality Act of 1987, that are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The formation of a joint sewer authority with East Earl Township to own and operate a regional WWTP to provide sewer service to portions of the Township and to ~~all of the~~ entire Borough is consistent with the 2008 *ELANCO Comprehensive Plan*. The formation of a joint sewer authority and the construction of a regional WWTP is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

Preliminary effluent limits were obtained from the ~~Pennsylvania~~ DEP for the proposed discharge point from a regional WWTP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to preliminary effluent limits developed by the ~~Pennsylvania~~ DEP. Therefore a planned regional WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate failing OLDS is consistent with the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a regional WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land. Please see Map No. 5 for agricultural lands.

Comment [JM34]: MAP 5

- **Stormwater Management Plans**

The construction of a new regional WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the ~~Pennsylvania~~ DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new regional WWTP, located at the existing WWTP site, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix D for PNDI Receipt.

Comment [J35]: APPENDIX D

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a regional WWTP contains no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP. This proposed project has been submitted to the PHMC for assessment ~~and has been found to be clear of any impacts to any significant or historical resources~~. Please see Appendix E for PHMC review.

Comment [J36]: APPENDIX E

3.9 Review of Consistency Requirements - Recommended Borough Alternative

The regulations promulgated by the ~~Pennsylvania~~-DEP within 25 Pa. Code § 71.21(a)(5) requires each available alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the ~~Pennsylvania~~-DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory requirements.

This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The Borough's 2013 NPDES permit was reviewed prior to the review of applicable wastewater treatment technologies. The construction of a new Borough WWTP, design and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Reports Wasteload Management Reports for ~~both~~ the Borough of Terre Hill was reviewed and the construction of a new WWTP would enable the Borough to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A new Borough WWTP would take into account projected and existing hydraulic and organic loading from the Borough.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. ~~In order for~~For a municipality's application to be given consideration by the

federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality Act of 1987; that are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The construction of a new Borough WWTP is consistent with the 2008 ELANCO Comprehensive Plan. A new WWTP allows the Borough to continue to provide uninterrupted public sewer service to the residents in the Borough and East Earl Township. The minor growth areas outside of the Borough could connect to the existing system without overloading a new WWTP. A new Borough WWTP is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

The wastewater treatment technologies reviewed are all capable of operating to meet the required NPDES effluent limits and potential Chesapeake Bay nutrient requirements. The recommended Borough alternative allows the municipality to maintain effluent water quality discharged into Black Creek.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to the 2013 NPDES permit developed by the ~~Pennsylvania~~

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DEP. A new Borough WWTP is consistent with the effluent limits developed under the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a new Borough WWTP is outside of designated Agricultural Preserved and Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new Borough WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

The Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS ~~application, application~~ identifies the original wastewater treatment cells as wetlands; however, these man-made treatment units were decommissioned due to ineffective treatment in 2012. Therefore no wetlands exist within the proposed construction site for the new Borough WWTP.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new Borough WWTP, located at the existing WWTP site, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix [D](#) for PNDI Receipt.

Comment [J37]: APPENDIX D

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a new Borough WWTP contains ~~the existing Borough WWTP and control building. no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP.~~ This proposed project has been submitted to the PHMC for assessment ~~and has been found to be clear of any impacts to any significant or historical resources.~~ Please see Appendix [E](#) for PHMC review.

Comment [J38]: APPENDIX E

3.10 Recommended Borough Only Sewage Alternative Implementation Schedule

An implementation schedule is provided below for the Borough to construct a new WWTP on the existing WWTP site. Should the municipalities, within a six (6) month period, successfully negotiate the formation of a joint sewer authority, a second implementation schedule is provided for the construction of a regional WWTP and can be found in Section 4.11. Permitting time frames were developed based on the PA DEP's *Permit Decision Guarantee* (Doc No. 021-21000-001, Nov 2012) guidance and the allocated business days for Department review.

Comment [JM39]: SECTION REF

3.11 Public Participation

The Borough of Terre Hill ~~has~~ held several meetings regarding the investigation into the formation of a joint sewer authority with East Earl Township. As part of the Joint Act 537 Study, written public comments and responses can be found in Section 5.0 of this report.

Comment [JM40]: SECTION REF

Table 14. Implementation Schedule for Borough WWTP Upgrade**Comment [JM41]:** TABLE 14

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan to PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Preparing NPDES Permit Application (<u>Assumes Failure To Form Joint Sewer Authority During 6 Month Period</u>)	7/1/2016
Initiate Design of Wastewater Treatment Plant and Develop Technical Specifications	8/1/2016
Prepare Land Development Plans	9/1/2016
Submit Land Development Plans	12/1/2016
Complete Design of Wastewater Treatment Plant and Technical Specifications	1/1/2017
Prepare Bid Plans and Specifications	3/1/2017
Receive Approval of Land Development Plans	4/1/2017
Submit WQM Permit Application to PA DEP	5/1/2017
Receive Approval of WQM Permit	11/1/2017
Submit PENNVEST Application	12/1/2017
Receive PENNVEST Funding Notice & Meeting (Dependent on PENNVEST Board Meeting Schedule)	TBD
Advertise Bids	3/1/2018
Receive Bids	4/14/2018
Issue Notice to Award	5/14/2018
Begin Construction	7/14/2018
Contract Substantial Completion	8/1/2019
Submit WQM Post Construction Certification with "As-Built" Drawings	11/1/2019

4.0 Borough of Terre Hill and East Earl Township

Joint Sewer Authority Review

4.1 Introduction

Since 2002, the East Earl Township supervisors have worked to identify a cost effective and environmentally responsible method for sewage disposal for the Village of Goodville. On December 17, 2012 East Earl Township entered into a Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environmental Protection (DEP or Department) to investigate wastewater disposal alternatives and determine if the original recommendations contained in the July 2002 Act 537 Sewage Facilities Plan Update Revision remained feasible. Please see Appendix F for the signed Consent Order and Agreement. The Township investigated several wastewater disposal methods in the 2013 Act 537 Update Study for the Village of Goodville; however, in mid-2013 the Borough of Terre Hill approached the East Earl Township supervisors about investigating the formation of a joint sewer authority and the sharing of wastewater services. Subsequently, on April 22, 2014 the Borough of Terre Hill and East Earl Township entered into a CO&A with the Pennsylvania DEP to review the formation of a joint sewer authority to own and operate a regional wastewater treatment plant. The approved Task Activity Report required both municipalities to submit a final joint Act 537 Sewage Facilities Plan by June 23, 2015.

Comment [J42]: APPENDIX F

4.2 Update Revision Objectives

The purpose of this study is to separately and jointly update the Borough and Township's existing Act 537 Sewage Facilities Plan, and determine if both municipalities should separately treat their domestic wastewater, or form a joint authority to operate a regional WWTP. The Joint Act 537 Plan objectives identify wastewater treatment alternatives for the municipalities and compares those alternatives to determine the most environmentally responsible and cost effective long term sewage disposal methods.

The Joint Act 537 Sewage Facilities Plan serves an update to the Borough of Terre Hill's November 1986 Act 537 Sewage Facilities Plan Update Revision and East Earl Township's 1994 Act 537 Sewage Facilities Plan and 2002 Act 537 Update Revisions. As part of the Joint Act 537 Plan, East Earl Township's 1998 Act 537 Update Revision also was reviewed, along with the 2002 Village of Goodville Update Revision and the 2013 Village of Goodville Update Revision.

4.3 Planning Area Physical Conditions and Demographics

4.3.1 Introduction

The planning area reviewed, and outlined within the approved Task Activity Report, includes the Borough of Terre Hill, East Earl Township along and near S.R. 625, and the Village of Goodville, as well as areas adjacent to Blue Ball. Table 15 below provides more information regarding the planning area. Descriptions of the planning areas for the Borough of Terre Hill are located in Section 3.0 of this study. For a description of the Village of Goodville planning area, see Appendix B. This section discusses the additional planning area within East Earl Township along the S.R. 625 corridor and near Blue Ball. Table 15 shows the additional planning areas considered within East Earl Township.

Table 15. East Earl Township Sewage Planning Area Excluding the Village of Goodville

Conestoga View Drive
Hay Field Drive
Union Grove Road (Borough of Terre Hill Line to end of RL Zoning District)
Spring Grove Road (North of the Conestoga River)
S.R. 625/Reading Road (South of Old Road)
Ironstone Drive
Springville Road (Between S.R. 23 and U.S. 322)
S.R. 23/Main Street (Between Marble Road and VGB for Goodville)
U.S. 322/Division Highway (Between Center Avenue and Sheep Hill Road)
Toddy Drive
Ewell Road

The additional planning area within East Earl Township consists of a mix of land uses, including agricultural, low density residential, commercial and light industrial land use. Located within the Smart Growth Neighborhood Option Overlay District in East Earl Township are two noncontiguous parcels of 32.4 acres and 45.6 acres, which are targeted for high density development. Most of the properties within the East Earl Township sewage planning area rely on individual wells for potable water and on-lot disposal systems for domestic wastewater

Comment [343]: APPENDIX B

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treatment, with the exception of the Borough of Terre Hill and area near Blue Ball. Please see Map 3 for the existing public water and sewer service area.

Comment [JM44]: MAP Reference

4.3.2 Topography

The topography of the planning area is largely gently rolling hills bisected by the Conestoga River. Within the planning area, and between S.R. 23/Main Street and intersection of S.R. 625/Reading and Spring Grove Road, the land generally slopes towards the Conestoga River. The planning area around Ewell Road and S.R.897/Springville Road largely slopes towards Cedar Creek, a tributary to the Conestoga River. Please see Map 2 to view the topography of East Earl Township.

Comment [JM45]: MAP REFERENCE

4.3.3 Geology and Soils

The geology and soils were analyzed within the sewage planning area for the purpose of determining if continued use of on-lot disposal systems is feasible based on the USDA Natural Resources Conservation Service Web Soil Survey Suitability and Limitations Ratings for Sanitary Facilities. Please see Map No. 6 for the soils with OLDS limitations within the planning area. The soils were rated based on their limitation for on-lot disposal systems as follows:

Comment [JM46]: MAP 6

- Slightly Limited Soils are generally favorable for in-ground on-lot disposal system use when the limiting depth is 60 inches or more and contain a slope between 0 and 25 percent. Slightly Limited soils accounts for nearly fifty (50) percent of the soils within the sewage planning area.
- Moderately Limited Soils are not favorable for in-ground on-lot disposal system use and requires an elevated sound mound or PA DEP approved Alternate OLDS. Moderately limited soil characteristics include a depth to the limiting zone between 20 and 60 inches and a slope of less than 12 percent and OLDS are generally difficult to site on properties of less than one acre. Moderately Limited

soils account for forty-three (43) percent of the soils within the sewage planning area.

- Very Limited

Soils are very unfavorable for on-lot disposal system use and requires significant engineering and construction costs, and requires more frequent maintenance. Very Limited soils characteristics include a depth to limiting zone of 20 inches or less or a depth to limiting zone between 20 and 60 inches and slopes in excess of 12 percent, hydric soils, and soils classified as quarry, pits, urban and water. Very Limited soils account for seven (7) percent of the soils within the sewage planning area.

4.4 ~~Population and~~ Future Growth and Land Development in East Earl Township

The 2008 ELANCO Comprehensive Plan (2008 Plan) identifies areas for growth in East Earl Township, which remain near Blue Ball along U.S. 322, S.R. 23/Main Street and S.R. 897/Springville Road. The 2008 Plan also identifies limited areas for growth surrounding the Borough of Terre Hill. Please see Map [1](#) for zoning within both municipalities.

Comment [347]: MAP REFERENCE

In 2012, the Lancaster County Planning Commission (LCPC) performed population projections for Lancaster County and each municipality. The report by LCPC, titled *2040 Population Projections for Lancaster County and Municipalities Description of Methodology* (2040 Projections Study), provides population projections based on mathematical modeling methods used by consulting demographers. Although the study only provides projections and does not provide a forecast for the Township, the projections are incorporated into the Joint Act 537 Plan.

Table 16 below, represents the projections from the 2040 Projections Study; however, the 1990, 2000 and 2010 values are based on U.S. Census data.

Table 16. Historic and Projected Population within East Earl Township

Year	Population (persons)
1990	5,491
2000	5,723
2010	6,507
2015	6,764
2020	7,020
2025	7,233
2030	7,445
2035	7,620
2040	7,794

The LCPC's projections result in a population increase of ~~seventeen-thirteen~~ (4713) percent for East Earl Township from 2015 to 2040, if the study assumptions hold true. The 2008 *ELANCO Comprehensive Plan* provides a projected total growth rate from the year 2000 to 2030 of approximately eleven (11) percent for East Earl Township and six (6) to eight (8) percent per decade for the ELANCO Region.

Based on the LCPC's population projections, from 2015 to 2040, the East Earl Township is expected to add 1,030 new persons and therefore expected to generate 103,000 gpd.

The East Earl Township currently has land zoned for commercial, industrial and residential development. The majority of the land identified and zoned for development was planned for in the Township's 1998 Act 537 Sewage Facilities Plan Amendment (1998 Amendment) and 1995 Sewage Feasibility Study. The 1998 Amendment, which included the 1995 Sewage Feasibility Study, identified areas of need and future development, as well as recommended the Township construct a collection and conveyance system to send sewage flow from existing and planned growth areas to the then newly constructed Earl Township WWTP. The existing needs and potential growth areas, identified in previous Lancaster County growth

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plans, were primarily east of the community of Blue Ball and along S.R.897/Springville Road and Sheep Hill Road. The East Earl Township purchased 250,000 gpd of capacity for existing and future wastewater needs. The capacity purchased by East Earl Township at the Earl Township WWTP is also the maximum amount of sewage flow that can be conveyed from East Earl Township to the Earl Township Sewer Authority's WWTP using the Kinzer Avenue Pump Station. The collection and conveyance infrastructure within East Earl Township, including the existing low pressure sewer system, Witmer Road Pump Station and gravity collection system was designed to handle wastewater flows from those planned areas in the 1998 Amendment.

Since the 1998 Amendment, the Township has amended their zoning for some undeveloped parcels of land immediately east of Blue Ball, and along U.S.322/Division Highway. The designation of these parcels of land was changed to allow for high density residential and commercial development, and must meet the Township's amended zoning ordinance for the Smart Growth Neighborhood Option. An analysis of undeveloped lots east and southeast of Blue Ball suggests up to 742 potential EDUs or up to 185,500 gpd of domestic wastewater.

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4.5 Evaluation of Existing WWTF

4.5.1 Introduction

East Earl Township, within the Joint Act 537 study area, is mostly served by on-lot disposal systems, as well as two package WWTPs with stream discharge. Low pressure sewer is used along Ewell Road, S.R.897/Springville Road, U.S. 322 and East Earl Road to convey domestic wastewater to the Earl Township Sewer Authority's WWTP. The East Earl Sewer Authority's 2013 Chapter 94 Report states ~~that~~ an average daily flow of 135,260 gpd to the Earl Township Sewer Authority, with an average organic strength of 283 lbs per day. EESA currently has a total of 250,000 gpd of capacity at the ETSA WWTP ~~and the Chapter 94 Report anticipates, which is based on the East Earl Township's 1998 Act 537 Sewage Facilities Plan Amendment.~~

A majority of the OLDS within the Village of Goodville are failing and these failures have been documented in the 2002 ~~and 2013~~ Act 537 Sewage Facilities Plan Update Revisions ~~and the 2013 Act 537 Update Study~~. Since the wells in the Village of Goodville have been ~~extensively~~ reviewed in previous Act 537 Plans, they were not sampled for ~~theis~~ Joint Act 537 Study. Additionally, the Borough of Terre Hill is served by both public water and sewer and therefore no OLDS exist for sampling. Residential potable water wells along S.R. 625/Reading Road, as well as S.R. 23/Main Street, Spring Grove Road and Union Grove Road were reviewed for the Joint Act 537 Plan. The properties located along Toddy Drive and Ewell Road are connected to East Earl Sewer Authority's low pressure sewer system and therefore were not sampled as part of this study.

~~A-Excluding the Village of Goodville, the sewage planning area has a~~ total of 141 individual properties ~~exist within the sewage planning area~~ that use onsite wells and on-lot disposal systems. However, the properties selected for sampling were narrowed based on a distance of less than 100 feet from the nearest public roadway to the home, or less than one acre and 200 feet from the home to the nearest public roadway. Based on the ~~Pa~~-DEP's Act 537 Sewage Disposal Needs Identification document, a total of twenty-five (25) percent of the wells in the service area must be sampled when the service area is between 101 and 500 properties.

Well sampling and surveys were conducted by Martin Water Conditioning on November 11th and 18th of 2014, and the laboratory analysis was performed by Pure-Test Water laboratory. Properties were randomly selected and a contingency list was created in the event that not all property owners wished to participate. A total of thirty-nine (39) property owners of the randomly selected properties were willing to participate in the well sampling and survey for the study. This exceeded the minimum 25 percent required for the service area size. See Map No. 7 for location of well sampling.

Comment [JM48]: MAP 7

4.5.2 Well Surveys, Testing and Results

Martin Water Conditioning conducted the surveys of property ~~owner's~~ owner's knowledge of their water wells and OLDS. Property owners were surveyed to determine the construction type, location, age and treatment, if any, of their wells. The property owners were also surveyed based on the condition of their existing OLDS, frequency of system pumping, age and previous malfunctions. The survey results did not yield useful data and were mostly unremarkable because most homeowner's do not possess detailed knowledge of their water wells and OLDS. Please see Appendix G for the residential survey results.

Comment [J49]: APPENDIX G

The wells were analyzed to determine the nitrate levels, ~~which with a concentration~~ greater than 10.0 mg/L ~~indicates indicating~~ well failure. The individual property wells were also analyzed for E.Coli and ~~Fecal Total~~ Coliform. Any well found to contain 1 colony forming unit per 100 milliliters (CFU/100 mL) of E.Coli or ~~Fecal Total~~ Coliform indicates well failure. Table 17 on the subsequent page provides the sampling results for the well sampling performed in November of 2014. Please see Appendix G for the well sampling results.

Comment [JM50]: TABLE 17 REF

Comment [J51]: APPENDIX G

Of the thirty-nine (39) wells sampled, twenty-four (24) failed for at least one of the sampling parameters. A total of six (6) potable wells sampled, which did not contain concentrations that exceed well standards, contained nitrates greater than 7.9 mg/L. These results suggest potential nitrate influence from an outside source, such as a malfunctioning OLDS or agricultural land. ~~At~~ Table 18 below provides a breakdown of the nitrate distribution among wells sample.

Table 17. East Earl Township Well Sampling Results for Sewage Planning Area**Comment [JM52]:** TABLE 17

Location	Nitrate (mg/L)	E.Coli (CFU/100 mL)	Total Coliform (CFU/100 mL)
1463 Main St	11.60	0.0	2.0
156 Reading Rd	11.00	9.9	53.1
184 Reading Rd	12.60	2.0	83.1
186 Reading Rd	9.92	0.0	16.4
188 Reading Rd	9.29	0.0	22.2
200 Reading Rd	15.90	0.0	0.0
202 Reading Rd	17.10	0.0	144.5
204 Reading Rd	13.30	0.0	5.3
206 Reading Rd	15.80	0.0	1.0
208 Reading Rd	8.47	22.2	>200.5
244 Reading Rd	12.00	0.0	0.0
290 Reading Rd	2.85	0.0	1.0
310 Reading Rd	7.38	0.0	>200.5
327 Reading Rd	9.17	5.3	16.4
366 Reading Rd	10.90	0.0	0.0
370 Reading Rd	9.40	0.0	3.1
372 Reading Rd	9.45	0.0	5.3
396 Reading Rd	5.09	2.0	118.4
397 Spring Grove Rd	8.21	94.5	>200.5
401 Spring Grove Rd	11.10	12.4	129.8
434 Spring Grove Rd	9.81	0.0	1.0
1462 Union Grove Rd	7.66	0.0	69.7
1476 Conestoga View Dr	14.60	0.0	7.5
1484 Conestoga View Dr	8.00	0.0	1.0

Table 18. Summary of 2014 Nitrate Sampling Results Distribution

Nitrate Concentrations (mg/L)	No. of Samples	Percent of Total Samples	Cumulative Percent of Total Samples
15-20	3	7.6	7.6
10-15	8	20.5	28.1
5-10	18	46.2	74.3
1-5	6	15.5	89.8
<1	4	10.2	100.0
Total	39	100	

Comment [JM53]: TABLE 18

A total of 28.1 percent of the samples tested higher than the recommended maximum level of 10.0 mg/L for nitrates. Regulatory requirements state that drinking water that contains one or more bacterial colony forming units per 100 mL of well water are unsafe to drink. A total of six of 39 wells, or 15 percent, sampled returned positive results for E.Coli, and 21 of 39 wells, or 54 percent, sampled returned positive results for Total Coliforms failed the regulatory requirement and are unsafe for to drink. The sampling results indicate that 24 of 39 wells, or 61.5 percent, failed one or all of three of the sampling parameters, which indicates that the on-lot disposal systems are failing and impacting nearby groundwater.

In 2002, as part of the Act 537 Update Revision for the Village of Goodville, the Township inspected 44 OLDS and sampled 37 potable water wells. Of those samples taken in 2002, twenty-seven (27) percent of wells showed nitrates in excess of 10.0 mg/L and 32 percent contained nitrate concentrations between 5.0 and 10.0 mg/L. The 2002 study also found nineteen percent (19) percent of wells sampled contained bacteria. Subsequently in 2013, as part of the Act 537 Update Study for the Village of Goodville, nine (9) wells were sampled with twenty-two (22) percent exhibiting nitrate levels in excess of 10.0 mg/L and forty-four (44) percent of wells containing contained between 5.0 and 10.0 mg/L of nitrates. For more information on the 2013 Act 537 Update Study, please see Appendix B.

Comment [J54]: APPENDIX REFERENCE

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4.6 Wastewater Treatment Alternatives

4.6.1 Introduction

The Borough of Terre Hill and East Earl Township reviewed several wastewater treatment alternatives, including a regional activated sludge wastewater treatment plant, the Borough's continued operation of a separate WWTP, the Township's operation of a new non-regional WWTP, and construction of a pump station and force main to the Township's existing low pressure sewer system.

4.6.2 Evaluation of East Earl Township Wastewater Flows

Wastewater flows for East Earl Township were developed based on a combination of the Townships EDU flow value of 250 gpd/EDU, as well as 19,000 gpd permitted capacity for Conestoga Wood Specialties and 4,000 gpd permitted capacity for the Goodville Industrial Center. ~~A wastewater flow of 50,000 gpd was used for Shady Maple Smorgasbord; however, the Township's Annual Chapter 94 Report for the year 2013, indicates that they have remained below this flow.~~ Shady Maple Smorgasbord and Goods Store have purchased a combined capacity of 215 EDUs for a combined total flow of 53,750 gpd; ~~however, the Township's Annual Chapter 94 Report for the year 2013 indicates that they have remained below this flow.~~

Wastewater flows for future developments were estimated for the undeveloped properties located at 4440 and 4996 Division Highway because they are within the sewage planning area, and are within the growth boundary identified in the 2008 ELANCO Comprehensive Plan. ~~However, during the public comment period of the Joint Act 537 Plan, the owner-developer of the 4440 Division Highway property formally requested sewage capacity for 235 EDUs from the East Earl Sewer Authority Board and were subsequently approved. However, no capacity has been purchased to date.~~ These parcels are also zoned as Commercial Neighborhood and use the Smart Growth Neighborhood Option Overlay Zone per the SGNO Ordinance. The ~~S~~section 810.9.A of the SGNO Ordinance requires these parcels to connect to public sewer and therefore these properties are included in sewage planning for East Earl Township. The Borough of Terre Hill's existing WWTP capacity of 0.210 MGD was included into the regional wastewater treatment plant alternative. Table 19 represents the permitted and projected flows for East Earl Township.

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Table 19. East Earl Township Calculated Wastewater Flows

Location	EDU	MGD
Village of Goodville		
Residential	106	0.0265
Commercial	13	0.0033
Future Use	5	0.0013
Goodville Industrial Center*	16	0.0040
East Earl Township - 2014/2015 Sewage Planning Area		
Residential	136	0.0340
Conestoga Wood Specialties**	76	0.0190
Shady Maple Smorgasbord	215	0.0540
East Earl, LLC Property - 4996 Division Highway***	230	0.0575
4440 Division Highway***	230	0.0575
*Existing WWTP Capacity Per NPDES PA0085448 **Existing WWTP Capacity Per NPDES PA0083909 ***Assumed Total Number Of Developable EDUs for Sewage Planning		

Comment [JM55]: TABLE 19

4.6.3 Chesapeake Bay Requirements

The Pennsylvania DEP's Chesapeake Bay nutrient requirements were considered when reviewing each sewage disposal alternative. The Borough of Terre Hill, as an existing Phase 4 discharger under the Chesapeake Bay Watershed Implementation Plan, can receive nutrient cap loads based on their existing performance or a Department assigned cap load of 7,306 lbs/yr of total nitrogen (TN) and 974 lbs/yr of total phosphorus (TP), whichever is more stringent. Pennsylvania DEP verification of the estimated Borough nutrient cap loads is required. These nutrient cap loads could be transferred to a joint sewer authority to be used at a regional WWTP.

East Earl Township does not currently operate a WWTP with a stream discharge and therefore is not eligible for nutrient cap loads. However, for each on-lot disposal system constructed prior to August of 2003, and connected by a municipality to a publicly owned treatment works (POTW), an offset of 25 lbs of TN/OLDS is allocated to the municipality. There are approximately 250 existing OLDS within the sewage planning area that can be connected to a POTW in East Earl Township, which and would provide the Township with

approximately 6,250 lbs of total nitrogen. These potential nutrient loadings and offsets were considered in the review of wastewater alternatives.

4.6.4 Wastewater Treatment Alternatives

Table 20 lists the wastewater treatment alternatives considered by the municipalities, along with a brief description of each alternative. These alternatives were selected for evaluation based on footprint, construction cost, operation and maintenance costs, treatment efficiency and ability to consistently meet effluent water quality requirements.

Comment [JM56]: TABLE 20

Table 20. Joint Act 537 Sewage Facilities Plan Wastewater

Alt. No.	Description	Borough of Terre Hill Required Action	
1	Municipalities own and operate separate wastewater treatment facilities.	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a c businesses along would be loca
2	Municipalities form joint sewer authority and construct a centralized WWTP.	The Borough works with the Township to create a joint sewer authority to construct, own and operate a regional WWTP	The Township c
3	Connect residents along S.R. 625 and in the Village of Goodville to the East Earl Township's existing low pressure sewer system.	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a sewer connection to th
4	Repair and/or replace existing OLDS in East Earl Township	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	The Township
5	Township constructs separate wastewater treatment facilities for the residents along S.R. 625 and the Village of Goodville	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a col Conestoga River S.R. 625, and se
6	Township constructs a spray irrigation system	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a coll system to s
7	Township constructs a drip irrigation system	Construct a new WWTP on the site of the existing treatment system to serve existing sewer service area only	Construct a col system to s
8	No Action	Continues operating system as is without replacement and/or repair of existing system	Continues <u>to</u> al and <u>does</u>

4.6.4.1 -Alternative No. 1 - Municipalities Construct Separate WWTP

Alternative No. 1 requires the Borough of Terre Hill to construct a new activated sludge wastewater treatment plant to ~~only~~ meet only the needs of their existing sewer service area. The estimated project cost for the Borough to construct a new SBR WWTP is \$4,979,219.00, and the estimated annual O&M cost is \$258,500.00. Alternative No. 1 requires the Borough to fund all costs associated with their system, including any future collection system upgrade cost. Future treatment plant upgrade costs as a result of regulatory changes would also solely be the responsibility of the Borough. Please see Section 3.0 for more information regarding the Borough's construction and operation of a new WWTP.

This alternative requires East Earl Township to construct a 0.200 MGD WWTP with a stream discharge to the Conestoga River to meet the needs of the properties within East Earl Township, excluding the properties served by the Borough's public sewer system. For Alternative No. 1 the contributing wastewater flows to a Township only WWTP come from the sewage planning area long S.R. 625/Reading, Village of Goodville, Shady Maple Smorgasbord and the undeveloped lot owned by East Earl, LLC. The Township would construct a collection system with pump stations and force mains to convey wastewater to a new activated sludge treatment system capable of meeting water quality and nutrient removal effluent limits developed by the Pennsylvania DEP. Please see Map 8 for the Alternative No. 1 public sewer layout.

Comment [J57]: MAP 8

Based on the DEP's 2014 Integrated Water Quality Monitoring and Assessment Report (formerly 303d list) and the Department's Water Viewer for the Enterprise (WAVE) GIS application, the Conestoga river, within East Earl Township, is impaired due to nutrients and sedimentation. Under 25 Pa. Code §§ 93.4a, §93.6 and §-96.3, the Department must protect the existing surface water use from degradation or further degradation and therefore develop and implement, through a NPDES permit, protective effluent limits for discharges to waters of the Commonwealth. A draft and final NPDES permit is likely to include more stringent BOD, TSS, TN and TP effluent limitations for discharge to the Conestoga River. The Township, in order to meet the requirements of a final NPDES permit, will likely need to install advanced secondary or tertiary treatment technologies.

In addition to meeting final NPDES discharge effluent limits, a new ly constructed WWTP is required to comply with the DEP's Chesapeake Bay Watershed Implementation Plan

Borough of Terre Hill & East Earl Township

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mass loading limits or nutrient cap loads, which require new dischargers to operate as a "net zero" discharger of nutrients. There are technological limits to current wastewater treatment technologies and their ability to remove nutrients; however, to operate a WWTP as a "net zero" discharger of TN and TP, a facility owners can purchase nutrient credits through a nutrient credit broker or purchase credits from a nutrient auction. A discharger of nutrients is required to purchase nutrient credits, generated within the Susquehanna Watershed, to offset ~~and the~~ discharged d loading of TN and TP that exceed~~sever~~ their assigned cap load. However, because of the existing stream impairment, and because a TMDL has not yet been developed, the Township is required to meet the nutrient cap loads and cannot purchase credits for nutrients that exceed the cap load. An exceedance of the nutrient cap loads by a discharger is a violation of the CBWIP, and is subject to penalties and/or corrective actions.

However, East Earl Township would receive 25 lbs of TN offset per each OLDS, constructed prior to 2003, that is connected to a publicly owned treatment works (POTW). Based on the sewage planning area, East Earl Township would receive approximately 6,250 lbs/yr of TN. The use of TN offsets will reduce the Township's nutrient credit cost by reducing the total amount of TN nutrient credits required for purchase, if any. The estimated ~~capital~~ project cost for the Township to construct a new collection system and SBR WWTP is ~~\$10,864,878~~11,261,628.00, and the estimated combined annual O&M costs for the collection system and WWTP is \$380,800.00. The operation and maintenance costs include an estimate for the annual purchase of nutrient credits. This alternative requires the Township to fund all costs associated with their system, including any future collection system upgrade cost.

A Township only WWTP can be engineered and constructed, as can a Borough only WWTP. Constructing a new Township WWTP near the Conestoga River has several advantages, including: a relatively large receiving stream; elevation allowing for maximizing use of gravity sewer and therefore ~~minimizes~~ minimizing use of pump stations; a available 3-Phase power near site; elimination of package WWTP discharges; a available land for treatment plant site; a and provide connection for areas with potential OLDS failures outside of the current sewage planning area, such as Fetterville. However, a primary disadvantage of Alternative No. 1 is that both municipalities would not have an increased number of users to support long term wastewater costs beyond the planning period. The construction of a Township WWTP would

create a new discharge point and the Township would only have access to TN offsets and minor nutrient loadings obtained from connection of the Conestoga Wood Specialties package WWTP and the Goodville Industrial Center package WWTP. Alternative No. 1 does create multiple discharge points and maintains a smaller user base per each plant. Beyond the sewage planning period, future wastewater treatment replacement and operation costs are likely to increase and therefore increase the per capita cost for the residents and business owners within the municipalities.

4.6.4.2 -Alternative No. 2 - Joint Sewer Authority Operates Regional WWTP

Alternative No. 2 requires the Borough and the Township to form a joint sewer authority to own, operate and maintain a regional domestic wastewater collection system and WWTP with a stream discharge to the Conestoga River. The calculated project cost and respective annual operation and maintenance cost for Alternative No. 2 ~~is are~~ \$176,458,799,309,984.00 and \$588,000, respectively. The annual operation and maintenance cost of \$588,000.00 does not include the municipalities' respective existing collection system maintenance costs, which if included, results in a total annual operation and maintenance costs of \$1,772,339.00.

The joint sewer authority would construct a collection and conveyance system to serve those areas of the Township that are currently served by on-lot disposal systems, and identified within the sewage planning area. ~~The A~~ joint sewer authority would take over ownership of the existing Borough collection system and Township collection system, and also replace or install liners on any portion of the existing ~~Borough collection and conveyance systems found~~ determined to be in disrepair. The authority would construct a new regional 0.410 MGD WWTP near the existing Conestoga Wood Specialties' current 19,000 gpd WWTP. Table 21 on the subsequent page shows the flow from contributing locations within the planning area. The Shady Maple Smorgasbord and the East Earl, LLC/4996 Division Highway properties are included in the sewage planning area. According to the ELANCO Comprehensive Plan the properties located at 4440 and 4996 Division Highway are zoned for residential development. Connecting Shady Maple Smorgasbord, as well as the East Earl, LLC property currently located at, formerly 4996 Division Highway, ~~would remove~~reduces capacity ~~from in~~ the existing East Earl Sewer Authority's low pressure sewer system. This would also free the East Earl Sewer Authority's purchased capacity at ETSA's WWTP and allow future planned in-fill to occur.

Comment [J58]: TABLE REFERENCE

Properties zoned for development, and ~~are~~ adjacent to the existing low pressure sewer system, such as the property located at 4440 Division Highway, could connect to public sewer. Additional properties in East Earl Township, such as the Paul Kurtz property along Ranck Road, for which the Developer in 2012 indicated a future development could require 240 EDUs at total build-out, could connect to EESA's gravity sewer, ~~which -and-~~ flows to ETSA's WWTP.

Table 21. Planning Area Estimated Wastewater Flow to Regional WWTP

Location	EDU	MGD
Borough of Terre Hill ¹	615 629	0.210
East Earl Township		
S.R. 625 Residential & Commercial	136	0.034
Conestoga Wood Specialties ²	76	0.019
Goodville Industrial Center ³	16	0.004
Shady Maple Smorgasbord	200	0.054
Village of Goodville	124	0.031
4996 Division Highway Property - Zoned for Development (East Earl, LLC)	230	0.0575
Total	1,397	0.4055
Note: 1. Borough of Terre Hill is allocated 0.210 MGD of wastewater capacity per NPDES Permit PA0020222 and currently has 629 EDUs connected to their system.- 2. Conestoga Wood Specialties is allocated 0.019 MGD of wastewater capacity per NPDES Permit PA 3. Goodville Industrial Center is allocated 0.004 MGD of wastewater capacity per NPDES Permit PA0085448.		

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The Conestoga River is impaired and therefore a regional WWTP with discharge to the river is more likely to receive a NPDES permit limit with low effluent limits. A regional WWTP is also required to comply with the nutrient standards laid out in the CBWIP, which requires TN and TP discharge effluent concentrations of 6.0 mg/L and 0.8 mg/L, respectively. Based on preliminary effluent limits developed by the Pennsylvania DEP Southcentral Regional Office's engineers, a regional WWTP is likely required to meet a nutrient cap load of 7,306 lbs/yr of TN and 974 lbs/yr of TP. The joint sewer authority would need to install biological nutrient removal

treatment technology and potentially tertiary treatment technology, such as filtration, to consistently meet the nutrient limits.

The formation of a joint sewer authority is feasible as demonstrated by the municipalities willingness to enter into a joint Consent Order and Agreement with the PA-DEP. The engineering and construction of a regional sewer collection and conveyance system, and WWTP is also feasible. Constructing a regional WWTP near the Conestoga Wood Specialties' existing treatment plant has several advantages, including: surface water for discharge, elevation ~~allows~~ allowing for maximizing use of gravity sewer and therefore ~~minimizes-minimizing~~ use of pump stations, available 3-Phase power near site, elimination of multiple discharge points; and available land for construction of treatment plant. The formation of a joint sewer authority between the Borough and Township has several advantages, including: the transfer of nutrient loading available to the Borough to a regional treatment facility, sharing of the Township's TN offsets for connection of OLDS, elimination of the ~~Borough's-Borough's~~ discharge to Black Creek (a HQ-WWF), the sharing of long term wastewater cost through an increased number of users, and allowings the Township to potentially connect additional areas with potential failing OLDS, such as Fetterville.

4.6.4.3 -Alternative No. 3 - Sewer Extension to Low Pressure Sewer System

Alternative No. 3 requires each municipality to pursue construction and operation of independent wastewater facilities without sharing project or operation and maintenance costs. Under this alternative, the Borough of Terre Hill would construct a new WWTP at ~~their-its~~ existing treatment plant location to serve ~~their-its~~ existing sewer service area. Separately, the Township would construct a collection and conveyance system to convey domestic wastewater from the planning area to the existing low pressure sewer (LPS) system near the intersection of U.S. 322/Division Highway and East Earl Road.

Beyond the construction of new collection and conveyance systems within the Township's sewage planning area, additional modifications to the existing low pressure sewer system and downstream collection system are required to make this alternative feasible. Modifications, such as sewer main upsizing and pump station upgrades, are required to handle the additional capacity from the sewage planning area.

The modifications to the existing EESA system require the Township to plan for sewer use for additional areas within the planning area and Urban Growth Area, ~~this which~~ includes the properties located at 4440 and 4996 Division Highway. It is estimated that if these lots were developed, they would account for up to 460 EDUs or 115,000 gpd. Therefore, line upsizing and pump station upgrades to the existing EESA sewer system are required to handle the additional flow.

The East Earl Sewer Authority (EESA) has a reserved capacity of 250,000 gpd with the Earl Township Sewer Authority, and currently uses an approximate 141,900 gpd of their reserved capacity. In 2014, the Earl Township Sewer Authority submitted permit applications to the PA DEP to upgrade the Earl Township WWTP for nutrient removal. The upgrades to the WWTP will not result in an increase in domestic wastewater capacity for EESA. With limited available capacity remaining at the WWTP, EESA would be prohibited from sending all of the domestic wastewater flow from the planning area to the Earl Township WWTP, unless EESA pays to expand ETSA's WWTP capacity.

The estimated ~~capital project~~ cost of conveying domestic wastewater from the Township's planning area, as well as upgrades to the existing EESA LPS system, is estimated to cost approximately ~~\$1716,859,063,940,673.00~~. This cost does not reflect homeowners' ~~required to purchase and installation of~~ individual grinder pumps. ~~The total cost reflects the purchase of an additional 0.095 MGD of wastewater capacity from Earl Township at an approximate tapping fee of \$8,700.00 per EDU (actual tapping fee as of 2015 is \$8,689.00 per EDU).~~ The estimated annual O&M costs for the collection system extension and additional WWTP operation is \$461,800.00. The engineering for Alternative No. 3 is feasible and a single discharge point at Earl Township's WWTP is maintained; however, the option is more costly than Alternative No. 1 and 2. Also, this option would require conveying potential areas with OLDS failure, such as Fetterville, over greater distance and therefore increase O&M cost.

Comment [JM59]: Removed because inconsistent with final draft

4.6.4.4 -Alternative No. 4 - Construction of Three Municipal WWTPs

Alternative No. ~~54~~, requires the Borough of Terre Hill to separately pursue construction of a new WWTP to serve only the Borough's existing service area. East Earl Township would construct two separate activated sludge WWTPs.

East Earl Township would construct a WWTP to treat the domestic wastewater from the Village of Goodville with a stream discharge and separately construct a WWTP to treat the domestic wastewater from residences along the S.R. 625 area. This alternative is feasible from an engineering analysis and the main advantage is a reduced footprint in terms of collection system size. However, the construction of two separate WWTPs within East Earl Township, and a separate system in the Borough, is not cost effective in terms of project cost and operation and maintenance cost. With existing stream impairment, multiple point source discharges are not the most protective of stream water quality and therefore not likely to be permitted by the PA DEP. Table 24-22 represents the estimated project costs to each municipality to construct new wastewater treatment facilities.

Table 22. Comparison of Alternative No. 5-4 Project and O&M Costs

Municipality	WWTP Cost (2015, US\$)	Collection System Cost (2015,\$)	Contingency Costs (2015,\$)	O&M Costs (2015,\$)
A. Borough of Terre Hill				
Borough WWTP - 0.210 MGD	\$3,608,130	\$0	\$1,371,089	\$258,500
<u>Borough Total Capital Cost</u>	<u>\$4,979,219</u>			<u>\$258,500</u>
B. East Earl Township				
Reading Road WWTP - 0.165 MGD	\$3, 007,347 ,400	\$3, 570,998 ,000	\$2, 579,102 ,442	\$331,400
Village of Goodville WWTP - 0.035 MGD	\$1, 566,591 ,700	\$1, 179,191 ,250	\$1, 043,057 ,711	\$117,550
<u>Township Total Capital Cost</u> (A+B)	<u>\$17,848,862</u>			<u>\$707,450</u> <u>448,950</u>

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Alternative No. 5-4 is less advantageous than Alternatives No. 1-3 because of the capital investment and O&M cost to maintain multiple treatment systems within East Earl Township. Construction of a WWTP for the Village of Goodville, with stream discharge to Cedar Creek, is not environmentally beneficial because the receiving stream is impaired and likely to have low assimilative capacity due to the low stream Q₇₋₁₀. Since Cedar Creek is impaired for nutrients, the PA DEP is likely to issue low effluent concentrations to prevent further tributary impairment,

as well as to prevent the stream from becoming effluent dominated due to the ratio of effluent to stream flow.

4.6.4.5- Alternative No. 5 - Repair and Replace Existing OLDS

Alternative No. ~~5~~4 requires each homeowner to repair and replace their failing on-lot disposal system within East Earl Township's planning area. The Borough of Terre Hill would construct a new WWTP on the site of their existing WWTP.

This alternative is not feasible for the majority of the homes within the East Earl Township sewage planning area due to soil quality and limited lot sizes, particularly in the Village of Goodville. A new OLDS system must maintain a minimum setback distance of 100 feet from potable water wells, as well as 10 feet from property lines, easements and right-of-ways. Meeting the setback requirements becomes increasingly difficult with lot sizes of less than one acre. ~~An On-lot disposal system requires more area, a larger drainfield, or and a large downstream plume easement,~~s when groundwater nitrate levels become elevated, in order to provide a sufficient recharge area for the dilution of effluent. Twenty-eight (28) percent of the OLDS sampled for the Joint Act 537 Study show elevated nitrate levels above 10.0 mg/L and an additional forty-six (46) percent contained nitrates between 5.0 and 10.0 mg/L. On-lot disposal systems capable of denitrification can cost \$30,000.00 or more. On-lot disposal systems, such as the Orenco AdvanTex systems, can reduce nitrates to 20.0 mg/L or less; however, a large recharge area is still required to reduce the nitrate plume from 20.0 mg/L to 10.0 mg/L at the property line. Since the properties sampled for this study are on one acre or less, replacing existing OLDS is not a preferred option.

4.6.4.6 -Alternative No. 6 - Construction of a Spray Irrigation System

Alternative No. 6 requires the Borough of Terre Hill to separately pursue construction of a new WWTP to treat only the Borough's existing service area. East Earl Township would construct an activated sludge treatment system, such as an extended aeration system, with a large lagoon and spray irrigation for application of the treated effluent.

The Township would construct a collection and conveyance system to convey wastewater to a new wastewater treatment plant. Spay irrigation systems can be an effective wastewater treatment alternative for municipal wastewater by employing soil microbes to remove organic and nutrient wastewater constituents. However, these systems require an increased level of

operator attention as compared to some other treatment technologies. This is partially due to the maintenance of the spray field grounds.

Maintenance of spray irrigation grounds can be labor intensive if irrigation lines and fixed spray headers are constructed. Since spray irrigation systems use soil to treat municipal wastewater, and to prevent line damage, the use of machinery is limited on spray fields. Therefore increased operator labor is required to remove the cover crop and subsequently prevent total nitrogen accumulation within the groundwater. Other irrigation systems exist, such as center pivot irrigation, which is considered an economical spray system. The level of treatment required in a spray irrigation system is dictated by soil type, existing groundwater quality and field application type, such as direct to human consumption agricultural crops.

The use of treated effluent is prohibited from direct spray onto agricultural crops intended for direct human consumption, unless the effluent quality is consistent with U.S. EPA and PA DEP requirements. For example, treated domestic effluent can be applied to direct to human agricultural crops if applied 15 days prior to harvest and the effluent quality is consistent with Class B or higher standards. These effluent standards require a high degree of disinfection, as well as biological treatment.

To produce the required effluent quality for application onto agricultural crops, the capital investment for wastewater treatment technologies is similar to that of treatment systems with stream discharge. However, total project capital investment increases beyond that of treatment systems with stream discharge because of the total land required for spray application. Also, spray irrigation systems must be capable of providing 120 days of wastewater storage capacity, in the event spray is prohibited due to low ambient temperatures and precipitation. For example, irrigation of treated wastewater in winter months is limited due to snow accumulation and freezing of surface soil. Therefore, the capital costs of a spray irrigation system is also dependent on the required storage capacity. Spray irrigation systems also require the installation of monitoring wells throughout the site and require occasional sampling by the system operator.

A spray irrigation system to treat the full flow of the East Earl Township's portion of the sewage planning area is estimated to require a minimum of 75 acres. More land may be required depending on the topography, underlying geology, ~~soil~~and soil quality and ~~to meet~~ setback requirements. Spray irrigation was not feasible for the Village of Goodville because of costs and

available land. Creating a larger system for the entire East Earl Township planning area would costs two to three times that of the alternative reviewed in the 2013 Update Revision for the Village of Goodville. Also, spray irrigation systems can be operator intensive, and although the systems receive WQM permits, the PA DEP is issuing permits for spray irrigation with 5 year renewal clauses.

The primary advantage of spray irrigation treatment of domestic wastewater is the system's ability to passively reduced pollutant loadings. The engineering of a spray irrigation system is feasible; however, because of the land area required for spay application and lagoon impoundments, capital cost and O&M costs, Alternative No. 6 was not further considered as an effective long term wastewater disposal solution.

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4.6.4.7 -Alternative No. 7 - Construction of a Drip Irrigation System

Alternative No. 7 requires the Borough of Terre Hill to separately pursue construction of a new WWTP to treat only the Borough's existing service area. East Earl Township would construct a wastewater collection and conveyance system and a wastewater treatment plant with drip irrigation and disposal.

The Township would be required to construct a collection and conveyance system to convey wastewater to a new wastewater treatment plant. The collection system would likely convey wastewater to the same location as a spray irrigation system.

Drip irrigation systems require the construction of irrigation lines below the soil surface. Unlike spray irrigation systems, which rely on microbes in the soil surface to treat and remove wastewater constituents, drip irrigation systems are designed for disposal of treated effluent. Therefore, wastewater treatment systems that use drip irrigation disposal methods must be designed to accomplish a higher degree of treatment to prevent contamination of groundwater. The capital costs for wastewater treatment technology with nutrient removal for disposal through a drip irrigation field is the same as a WWTP with direct discharge to surface water. Additional capital costs are required for construction of drip irrigation pump facilities, drip irrigation lines and land acquisition. This option is not considered cost effective because significant additional expense is required on top of the cost to construct a WWTP capable of secondary or better treatment. No further review of this option is considered necessary.

4.6.4.8 -Alternative No. 8 - No Action Alternative

Alternative No. 8 does not require either municipality to construct and operate new wastewater treatment facilities. Under this alternative the Borough would continue operating their existing wastewater treatment facilities and the Township would continue to allow use of existing malfunctioning OLDS. The Borough's wastewater treatment facilities are aging and are likely to require additional capital investment for continued operation, and the existing treatment technology is not likely to meet future water quality effluent requirements. The majority of OLDS within the sewage planning area in East Earl Township are malfunctioning, and lot size and soil type prohibit replacement with new on-lot disposal systems. The malfunctioning OLDS will continue to degrade groundwater quality. Therefore, the "No Action" alternative is not

considered feasible for either facility and is not given additional consideration as a viable alternative in the Joint Act 537 Sewage Facilities Plan.

4.7 Present Worth Cost Effectiveness Analysis

The present worth analysis was developed for comparison of the costs of each viable treatment alternative. Present Worth is the dollar amount, which if invested now at a ~~given~~-fixed interest rate, would provide the funds necessary to make all future payments on the selected wastewater treatment facilities. The operation and maintenance costs are included in the future payments for Present Worth calculations for wastewater treatment facilities ~~also include the operations and maintenance costs for the~~ a 20 year planning period. Performing a Present Worth analysis of the wastewater treatment alternatives allows for a direct comparison of the entire life cycle cost of the viable wastewater treatment alternatives.

All construction and equipment costs were evaluated based on Engineering News Records 2015 Construction Cost Index, as well as the U.S. Bureau of Labor and Statistic's Consumer Price Index. However, detailed treatment facilities design and site investigation must be performed to develop a detailed cost for financing prior to actual bid. All of the wastewater treatment facilities have been analyzed based on a 20 year planning period and costs are based on early 2015 dollar values. The following assumptions were used ~~for in~~ the present worth analysis:

- The planning period is 20 years, ~~or~~ from 2015 to 2035.
- Costs were evaluated in terms of 2015 values (Engineering News Record CCI of 9971.96).
- A discount rate of 4.625% was used, as required by the U.S. EPA, for the water year from October 1, 2014 to September 30, 2015.
- The annual operations and maintenance costs are assumed to be fixed cost for the planning period.
- The salvage value of capital projects depreciates linearly over the expected life of the project. Land value for right of way/easements and land is assumed to remain constant. The depreciation schedule and salvage value factors are as noted below in Table 23 and follow the recommended U.S. EPA guidelines for present worth evaluations.

Comment [J60]: TABLE REFERENCE

Table 23. Year 2035 Salvage Value (Percent of Initial Construction Costs)

Type of Facility	Expected Life	Salvage Value (% of Initial Cost)
Collection and Conveyance	50 Years	60
Pump Facilities	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	33.3
Right-of-Ways/Easements	-----	100
Wastewater Treatment Plant	Equipment (1/3 costs) = 20 years Structures (2/3 costs) = 40 years	25

Comment [J61]: TABLE REFERENCE

Please see Table 243 on the subsequent page for an abbreviated comparison of Present Worth cost for each alternative investigated in this section. Please see Appendix C for a more detailed estimate of the alternatives compared in this section, as well as the Section 3.0.

Comment [JM62]: TABLE REFERENCE

Comment [JM63]: CORRECT LOCATION TO TABLE 24, FOLLOWING COMPLETION OF DOC TO GUARANTEE THE CORRECT PAGE REFERENCE

Comment [J64]: APPENDIX REFERENCE

4.8 Institutional Evaluation and Recommended Alternative

The Borough of Terre Hill's Public Works Department operates a collection system and 0.210 MGD WWTP with discharge to Black Creek. The Borough has a full time operator and one assistant operator, as well as a part time administrator. The Borough does not currently have outstanding financial obligations for their collection system and WWTP.

In East Earl Township, the East Earl Sewer Authority operates a combination of gravity sewer collection and low pressure sewer conveyance systems. The Authority has two employees that who operate and maintain the collection system, as well as a part time administrator and five (5) authority members. East Earl Township's domestic wastewater flows are conveyed to either the Earl Township WWTP or the New Holland Borough WWTP for treatment. Currently, the EESA has an agreement to share upgrade costs with the Earl Township Sewer Authority (ETSA) for the Earl Township WWTP. Those shared costs include an expansion and upgrade of the WWTP to meet the Chesapeake Bay nutrient requirements; however, no additional capacity is provided to the East Earl Sewer Authority. The future financial obligation that EESA is responsible for, for the proposed upgrades to the Earl Township WWTP, is approximately \$5,000,000.00; however, ETSA currently holds \$1,500,000.00 in EESA tapping fees. Therefore, the likely future EESA debt will be approximately \$3,500,000.00. The Earl Township Sewer Authority is currently waiting to receive permits from the PA DEP to move

forward with the construction of the proposed upgrades and to determine the exact costs EESA must contribute.

Alternative No. 2 is the recommended wastewater alternative, which requires the Township and Borough to construct, and operate and maintain a regional collection system and WWTP with a discharge outfall on the Conestoga River. However, if the Borough and the Township are unable to agree upon the details of a joint sewer authority, then the municipalities are recommended to implement Alternative No. 1. Under Alternative No. 1, the Township is required to construct a WWTP near Conestoga Wood Specialties, or in the same location as a regional WWTP, with a discharge outfall on the Conestoga River.

Alternative No. 2, ~~or which includes~~ the formation of a joint sewer authority to construct, operate and maintain a regional WWTP, is recommended as the primary long term wastewater solution based on the following:

- The municipalities can provide a more cost effective long term domestic wastewater solution by combining the total number of sewer users and therefore lowering the user rates than compared to continued separate operation. The Borough of Terre Hill is mostly built out and there is limited growth potential of the land surrounding the Borough, but within East Earl Township. A regional WWTP provides a more cost effective solution to Borough and Township residents connected to the Borough's public system. Regionalization of domestic wastewater services are likely to be beneficial beyond the twenty (20) year sewage planning period because wastewater treatment and operation costs are likely to continue to increase. Therefore, an increased number of users is likely to keep future individual user costs lower when compared to separate municipal system construction and operation cost.
- Regionalization of public sewer services can offer an economy scale, which yields reduced costs and greater resource management. Specifically, a joint sewer authority to construct, own and operate a regional collection system and WWTP, allows the municipalities to merge staff and reduce costs from administration, laboratory sampling, and other operation and maintenance costs. The sharing of public services through regionalization is an increasing trend with local governments and other industries, such as education and healthcare. The Borough and Township ~~already~~ share police services and

some roadway services, and can benefit from sharing public sewer services too. Beyond the scope of this sewage planning study, the regionalization of sewer services, and increase in user base, may provide future costs benefits as a result of regulatory changes for the municipalities, such as more strict effluent limits and sampling costs distributed over a larger user base.

- The connection of malfunctioning OLDS in East Earl Township to public sewer eliminates a source of groundwater contamination. Since most lot sizes with malfunctioning OLDS are small, and meeting current set back requirements is not possible, the replacement or repair of existing OLDS is considered not possible.
- The elimination of multiple discharge points from package WWTPs, including Conestoga Wood Specialties and Goodville Industrial Center, and the Borough of Terre Hill's WWTP discharge to Black Creek, an HQ-WWF stream, reduces the potential impact points to the Conestoga River Watershed. Unlike large municipal WWTPs, small package WWTPs tend to have part time operators and/or inconsistent influent loading, which makes consistent operation and treatment difficult. This often results in the discharge of higher organic loadings for parameters of concern, such as phosphorus.
- Allows East Earl Township to meet the projected population growth as provided in the ELANCO Comprehensive Plan and therefore provide public sewer to accommodate the projected growth. This can be accomplished by freeing up existing capacity on the existing low pressure sewer system and gravity sewer system that is operated by EESA and, which conveys wastewatered to Earl Township Sewer Authority's WWTP, and providing wastewater capacity at a regional WWTP.
- Allows the municipalities to share nutrient loading and-and Total Nitrogen offsets at a regional WWTP, which can be beneficial for design and engineering of a new WWTP, as well as operation. A larger WWTP can more cost effectively and consistently remove nutrients through the application of technology, such as cloth filtration, which is otherwise more-can be cost prohibitive for smaller WWTP owners to install.
- Allows East Earl Township greater flexibility to connect malfunctioning OLDS that were not discovered during this planning study. For example, the Township may be able to

connect Fetterville or other areas, if OLDS are malfunctioning and replacement is not feasible.

- A regional WWTP can more easily buffer varying organic loadings from commercial users, such as restaurants, and therefore provide a more consistent influent strength. A more consistent influent wastewater allows an operator to consistently meet water quality requirements and reduce or maintain operational costs.

East Earl Township is a township of the second class under the applicable laws of the Commonwealth of Pennsylvania. The administrative and legal activities which must be undertaken by East Earl Township, to implement the recommendations of the Joint Act 537 Plan, ~~Study is are the responsibility of the Township that of the East Earl Sewer Authority or EESA.~~ The Township EESA will negotiate with the Borough to form a joint sewer authority. The joint sewer authority will determine wastewater staff needs to operate a regional collection system and treatment plant, if the regional alternative is agreed upon by the both the Borough and Township. The joint sewer authority will also submit all necessary permit applications in their name, as well as all pertinent environmental documentation.

The estimated project costs for the construction of a regional collection system and WWTP, by a joint sewer authority, is ~~estimated to cost \$1617,458,799.984309.00~~ with annual O&M cost of \$588,000.00 per year for combined operation of the proposed collection and treatment system. However, if the Township and the Borough of Terre Hill are unable to agree on the terms for formation of a joint sewer authority, then the ~~recommended alternative is for the~~ Township is recommended to follow Alternative 1 to and construct a new WWTP near the existing Conestoga Wood ~~Specialties' Specialties'~~ existing WWTP. The construction of a new Township collection and treatment system is estimated to have a ~~capital project~~ costs of ~~\$1011,864,835.878363.00~~ with an annual O&M cost of \$380,800.00. For more information pertaining to costs of the wastewater alternatives, see Table 24 within this section.

It is the responsibility of the Township to implement the Township-only alternative or to implement Alternative No. 2 and establish a joint sewer authority with the Borough. Both municipalities are regulated by the Commonwealth of Pennsylvania and therefore have the authority to implement wastewater planning, construct, operate and maintain wastewater

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facilities, and set user rates. The Borough and Township must agree upon a joint sewer authority.

Following approval of the Joint Act 537 Sewage Facilities Plan, the Borough and Township must take the following steps to implement recommended wastewater alternative:

- The municipalities must begin preliminary negotiations to form a joint sewer authority to determine details, such as the total number of Authority members, number of Authority members represented by each municipality, number of wastewater operators required, required administrative staff, billing procedures, authority facilities required, if any, and user rate structure.
- Each municipality must authorize through a resolution or ordinance, their intention to organize a Joint Sewer Authority, which is consistent with the Municipal Authorities Act.
- Following negotiations and resolution to form a joint sewer authority, the municipal authorities must file an application to form a joint sewer authority with the Secretary of the Commonwealth, which is consistent with the requirements of the Municipal Authorities Act
- Following issuance of a certificate of incorporation by the Secretary of the Commonwealth, and the organization of a joint sewer authority, the Joint Sewer Authority Secretary shall certify to the Secretary of the Commonwealth the Joint Sewer Authority Officers in accordance with the Municipal Authorities Act.
- Following certification of the Joint Sewer Authority, a consulting engineer must be selected to perform the permitting and design of a new regional WWTP. The permitting applications would be filed under the new Joint Sewer Authority.
- The Joint Sewer Authority will also need to pursue the acquisition of any rights-of-way and land needed to implement the approved sewage planning. This includes land for the construction of pump stations and a WWTP.
- The Joint Sewer Authority will also submit the necessary funding applications to either the appropriate government agencies or private institutions.

If both municipalities are unable to negotiate the formation of a joint sewer authority to implement Alternative No. 2, then the, both municipalities have the ability to separately implement the contingency alternative, separately, Alternative No. 1, or jointly, Alternative No. 2. Once the determination has been made by the municipalities to either pursue or not pursue the regional alternative, the municipalities can pursue funding to implement separately, Alternative No. 1, or jointly, Alternative No. 2. Financing for the selected wastewater alternative can occur through a combination or individual use of bank loans, direct capital financing, municipal bonds, USDA Rural Development funds or PENNVEST funds.

- Bank loans from a private lender can be obtained to finance the selected wastewater alternative. These loans can be obtained in several forms, including Real Estate Loans, Installment Loans, Syndicated Loans, and Commercial and Industrial Loans, and private loans offer some flexibility, including the ability to select from multiple lenders and flexibility in repayment schedules. If bank loans are selected as a full or partial financing option, the loan types and lender requirements should be reviewed. ~~The lender requirements,~~ as well as interest rates, which are likely to ~~vary~~, based on the implementation of and sewer alternative selected.
- Direct capital financing requires the municipalities to fund capital expenditure from their own capital funds, which avoids the use of a third party and subsequent financing fees and interest rates. However, direct funding does not allow the municipalities to support other required construction projects during the fiscal year and therefore is most likely not a favorable funding source for the selected wastewater alternative.
- PENNVEST, also known as the Pennsylvania Infrastructure and Investment Authority, provides low interest loans and/or grants. The eligible costs covered by PENNVEST include engineering and design, improvements to existing facilities and new construction. The PENNVEST low interest loan interest rates range from one (1) to five (5) percent with terms of 20 years, and in special cases can be extended to 30 years. Grant eligibility depends on the affordability rate and is determined at the time of submission by PENNVEST. A PENNVEST application cannot be submitted until all sewage planning and permits are obtained. PENNVEST evaluates the applications based on the cost-effectiveness of the selected wastewater option, environmental impacts and sewer needs.

PENNVEST limits the total funding eligibility to \$11,000,000.00 for a single municipality and \$20,000,000.00 for multi-municipality projects. PENNVEST requires applicants to submit a Second Opinion Review for projects with a project costs (capital and contingency) that exceeds \$10,000,000.00. If Alternative No. 1 is selected, the Borough does not require a Second Opinion Review, but East Earl Township would require a Second Opinion Review. If Alternative No. 2 is selected, and in order to qualify for PENNVEST funding, the municipalities would be required d to obtain a Second Opinion Review, ~~if pursuing PENNVEST funding~~. The primary advantage of PENNVEST funding is the availability of low interest loan, ~~and~~ if eligible, grant money. There are additional considerations when accepting PENNVEST loans and/or grants, such as "or equal" requirements for bidding and required written approval from the PA DEP and PENNVEST for change orders. Written approval for change orders is required for cost greater than \$25,000.00 or two (2) percent of the original construction cost, whichever amount is ~~less~~smaller; total cost of all change orders greater than ten (10) percent of the original construction cost; and change in scope of the project as defined by PENNVEST regulations.

- United States Department of Agriculture (USDA) Rural Development Program also offers grants and loans for rural communities to improve water and wastewater infrastructure that are ~~not~~ otherwise unable to obtain commercial credit and have less than 10,000 people. The USDA Rural Development loans offer up to a 40 year payback period or based on the useful life of the facilities financed. The loans offered also include fixed interest rates, which is based on the need of the project and the median income of the area to be served.
- Municipal bonds can be taxable and tax-exempt. The two most common types of municipal bonds are general obligation bonds and revenue bonds. General obligation bonds are backed by the full faith and credit, and taxing power of the issuer. Revenue bonds are backed by the revenues from the project, such as sewer bills. Municipal bonds provide the majority of funding for water and wastewater infrastructure. Municipal bond interest rates are market set and vary by credit, term and tax status. Municipal bonds require an investment banker to sell and distribute the bonds and are generally favorable

to risk ~~averse~~^{adverse} investors because of the various tax-exemptions, as well as steady stream of income payments. Prior to sale of a municipal bond, rating agencies, such as Standard and Poor's, must rate the bond. Generally, the higher the rating, such as AAA, the lower the risk to an investor and therefore the lower the interest rate paid on the bond. Bond Counsel and the Authority's Solicitor must review documentation for financing to protect their respective clients. A Bond Trustee disburses the proceeds and collects payments from the Borrower, and enforces the Borrower's obligations. A Bond Insurer supports the Borrower's credit in exchange for a fee, and provides a bond insurance policy. A municipal bond can be developed in approximately twelve (12) weeks.

The final funding instrument or instruments will be determined based on the municipalities' selection of a joint sewer authority or independent municipal options. The PENNVEST funding option has been included within the Implementation Schedule to a provide funding milestone; however, should the municipalities select a municipal bond funding option, a period of twelve (12) weeks may be needed. Additional grant and funding opportunities may become available that were not reviewed as part of this study and should be assessed to determine the applicability and benefit to the municipalities.

Table 24. Calculated Present Worth Analysis of Wastewater

Item	Alternative No. 1		Alternative No. 2	
	Borough SBR WWTP	Township Collection System & SBR WWTP	Regional Collection System & SBR WWTP ^A	Borough SBR WWTP
Flow (MGD)	0.210	0.200	0.410	0.210
WWTP Construction Cost	\$3,608,130	\$3,171,400	\$5,216,400	\$3,608,130
Collection System Construction Cost	\$0	\$4,701,700	\$6,710,400	\$0
Construction Contingency Cost	\$541,219	\$1,180,965	\$1,789,020	\$541,219
Admin, Engineering, Legal Services	\$829,869	\$1,810,813	\$2,743,164	\$829,869
Total Project Cost	\$4,979,219	\$10,864,878	\$16,458,984	\$4,979,219
WWTP Annual O&M Cost	\$258,500	\$263,800	\$382,000	\$258,500
Present Worth WWTP O&M Cost	\$7,998,520	\$14,453,961	\$22,286,093	\$7,998,520
Collection System Annual O&M Cost	\$0	\$117,000	\$206,000	\$0
Present Worth Collection O&M Cost	\$0	\$1,505,577	\$2,650,845	\$0
WWTP Salvage Value	\$758,815	\$844,058	\$1,326,391	\$758,815
Collection System Salvage Value	\$0	\$2,394,500	\$2,970,000	\$0
Net Present Worth Cost	\$7,998,520	\$14,453,961	\$22,286,093	\$7,998,520
Projected EESA Annual Debt Service	\$304,054	\$543,224	\$884,826	\$304,054
Total Number of EDUs Served within Authorities	615	1,987	2,602	615
Cost/EDU (2015,\$)	\$13,005	\$7,274	\$8,564	\$13,005
Projected User Fee (per quarter)	\$299.44	\$242.71	\$254.80	\$299.44

Note A – Does not include cost to individual homeowners required to install grinder pump systems.

Table 24. Calculated Present Worth Analysis of Wastewater

Item	Alternative No. 1		Alternative No. 2	Alternative No. 3
	Borough SBR WWTP	Township Collection System & SBR WWTP	Regional Collection System & SBR WWTP	Borough SBR WWTP

		<u>SBR WWTP^A</u>	<u>SBR WWTP^A</u>		
<u>Flow (MGD)</u>	<u>0.210</u>	<u>0.200</u>	<u>0.410</u>	<u>0.210</u>	
<u>WWTP Construction Cost</u>	<u>\$3,608,130</u>	<u>\$3,6458,900</u>	<u>\$5,503784,4900</u>	<u>\$3,608,130</u>	
<u>Collection System Construction Cost</u>	<u>\$0</u>	<u>\$4,701917,700450</u>	<u>\$76,113710,65400</u>	<u>\$0</u>	
<u>Construction Contingency Cost</u>	<u>\$541,219</u>	<u>\$1,22486,090452</u>	<u>\$1,832,145934,707</u>	<u>\$541,219</u>	
<u>Construction Cost Total</u>	<u>\$4,149,349</u>	<u>\$9,862384,690802</u>	<u>\$14,046,445832,757</u>	<u>\$4,149,349</u>	
<u>Admin, Engineering, Legal Services</u>	<u>\$829,869</u>	<u>\$1,876972,938560</u>	<u>\$2,809966,289551</u>	<u>\$829,869</u>	
<u>Total Project Cost</u>	<u>\$4,979,219</u>	<u>\$11,261835,628363</u>	<u>\$176,799855,309734</u>	<u>\$4,979,219</u>	
<u>WWTP Annual O&M Cost</u>	<u>\$258,500</u>	<u>\$263,800</u>	<u>\$382,000</u>	<u>\$258,500</u>	
<u>Present Worth WWTP O&M Cost</u>	<u>\$3,326,424</u>	<u>\$3,394,625</u>	<u>\$4,915,644</u>	<u>\$3,326,424</u>	
<u>Collection System Annual O&M Cost</u>	<u>\$0</u>	<u>\$117,000</u>	<u>\$206,000</u>	<u>\$0</u>	
<u>Present Worth Collection O&M Cost</u>	<u>\$0</u>	<u>\$1,505,577</u>	<u>\$2,650,845</u>	<u>\$0</u>	
<u>WWTP Salvage Value</u>	<u>\$758,615</u>	<u>\$1,044,433</u>	<u>\$1,5226,766607,266</u>	<u>\$758,615</u>	
<u>Present Worth WWTP Salvage Value</u>	<u>\$307,123</u>	<u>\$422,835</u>	<u>\$618,106650,696</u>	<u>\$307,123</u>	
<u>Collection System Salvage Value</u>	<u>\$0</u>	<u>\$2,394542,50950</u>	<u>\$2,970,0003,517,450</u>	<u>\$0</u>	
<u>Present Worth Collection System Salvage Value</u>	<u>\$0</u>	<u>\$969,4051,029,504</u>	<u>\$1,202,394424,027</u>	<u>\$0</u>	
<u>Individual Net Present Worth Cost</u>	<u>\$7,998,520</u>	<u>\$154,283769,590225</u>	<u>=</u>	<u>\$7,998,520</u>	<u>\$</u>
<u>Combined Net Present Worth Cost</u>		<u>\$223,768281,745110</u>	<u>\$232,29601,723074</u>		<u>\$298,730</u>

<u>Projected EESA Annual Debt Service</u>	<u>\$0</u>	<u>\$213,726</u>	<u>\$213,726</u>	<u>\$0</u>	
<u>Total Number of EDUs Served within Authorities</u>	<u>629</u>	<u>1,793</u>	<u>2,422</u>	<u>629</u>	
<u>Existing O&M Cost (2015,\$)</u>	<u>\$174,070</u>	<u>\$1,005,047</u>	<u>\$1,184,339</u>	<u>\$174,070</u>	
<u>Cost/EDU (2015,\$)</u>	<u>\$12,716</u>	<u>\$8,237,523</u>	<u>\$9,334,616</u>	<u>\$12,716</u>	
<u>Projected User Fee (per quarter)</u>	<u>\$292</u>	<u>\$26,772</u>	<u>\$27,93</u>	<u>\$292</u>	
<u>Note A - Does not include cost to individual homeowners required to install grinder pump systems.</u>					
<u>Note B - Includes contingency for construction, engineering, administrative and legal cost</u>					

4.9 Review of Consistency Requirements - Recommended Regional Alternative

The regulations promulgated by the Pennsylvania DEP within 25 Pa. Code § 71.21(a)(5) requires each ~~available-viable~~ alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the Pennsylvania DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory and regulatory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a regional WWTP, designed and operated according to a final NPDES permit, is not in conflict with the Pennsylvania Clean Streams s Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

Chapter 94 Wasteload Management Reports for both municipalities were reviewed and the construction of a regional WWTP would enable both municipalities to address new domestic wastewater concerns, as well as continue to provide uninterrupted sewer service. A regional WWTP would take into account projected and existing hydraulic and organic loadings from the Borough and the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage facilities. In order for a ~~municipality's-municipality's~~ application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality

Act of 1987⁵; that are not met through the Act 537 Sewage Facilities Plan, would be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The formation of a joint sewer authority between the Borough of Terre Hill and East Earl Township, to own, operate and maintain a regional WWTP to serve the Township and ~~all of the~~the entire Borough is consistent with the *2008 ELANCO Comprehensive Plan*. The formation of a joint sewer authority and the construction of a regional WWTP ~~is are~~ also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process.

- **Antidegradation**

Preliminary effluent limits were obtained from the Pennsylvania DEP for the proposed discharge point from a regional WWTP. Please see Appendix N for the preliminary effluent limits developed by the PA DEP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to the preliminary effluent limits developed by the Pennsylvania DEP, which can be found in Appendix N. Therefore a planned regional

WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate failing OLDS is consistent with the Clean Streams Law and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a regional WWTP is outside of designated Agricultural Preserved and ~~Agricultural~~ Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new regional WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed. It is anticipated that limited wetland disturbance would be required for the proposed projects and would be handled ~~with~~ through Chapter 105 General Permits.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new WWTP, located near the Conestoga Wood Specialties WWTP, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix H ~~for~~ PNDI Receipt.

Comment [J66]: APPENDIX REFERENCE

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a regional WWTP contains no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP. ~~This proposed-A basic project-Act 537 Plan narrative has~~ was been submitted to the PHMC for assessment and ~~has been found to be clear of any~~

~~impacts to any significant or historical resources~~ their subsequent response can be located in. Please see Appendix I for PHMC review.

Comment [JM67]: APPENDIX REFERENCE

4.10 Review of Consistency Requirements - Recommended Township Alternative

The regulations promulgated by the Pennsylvania DEP within 25 Pa. Code § 71.21(a)(5) requires each ~~available-viable~~ alternative for new or upgraded wastewater facilities to be evaluated for consistency with the objectives and policies of Comprehensive Plans, State Water Plans, the Federal Water Quality Act (1987), water quality anti-degradation requirements, Pennsylvania's prime agricultural land policy, County plans approved by the Pennsylvania DEP under the Storm Water Management Act, the Pennsylvania Natural Diversity Inventory, and the Pennsylvania Historical and Museum Commission.

- **Pennsylvania Clean Streams Law and U.S. Clean Water Act**

The installation and operation of wastewater treatment facilities are to protect human and environmental health, and are to be maintained and operated according to state and federal permits that are consistent with the state and federal statutory and regulatory requirements. This includes the anti-degradation requirements of 25 Pa. Code Chapters 93, 95 and 102. The construction of a new WWTP in East Earl Township, designed and operated by the East Earl Sewer Authority in accordance with a final NPDES permit, is not in conflict with the Pennsylvania Clean Stream Law or U.S. Clean Water Act.

- **Chapter 94 Reports**

The East Earl Sewer Authority's Chapter 94 Wasteload Management Report for the year 2013 was reviewed and the construction of a new WWTP would enable the Township to address new domestic wastewater needs and address malfunctioning OLDS. A new WWTP would take into account projected and existing hydraulic and organic loadings from the Township.

- **Federal Water Quality Act of 1987**

The 1987 Federal Water Quality Act establishes specific requirements for wastewater facilities planning, which are only pertinent to municipalities applying or intending to apply for financial assistance from the federal government for construction of sewage

facilities. In order for a municipality's application to be given consideration by the federal government, a municipality must demonstrate compliance with the planning requirements. Any provisions required by the Federal Water Quality Act of 1987, ~~that~~ which are not met through the Act 537 Sewage Facilities Plan, ~~would~~ will be met through an application to PENNVEST, which is partially funded through this Act.

- **Comprehensive County Plans**

The construction of new WWTP in East Earl Township, and operated by East Earl Sewer Authority, to provide sewer service to the Township is consistent with the *2008 ELANCO Comprehensive Plan*. The construction and operation of a new WWTP in East Earl Township is also consistent with *Balance*, the Lancaster County Growth Management Plan (2006), which recommends connection of failing OLDS and package WWTPs. The plans also recommended future wastewater disposal needs within Urban Growth Areas be considered as part of the Act 537 process. A new East Earl Township WWTP would allow the Authority to manage new domestic wastewater flows from areas identified for development within the county plans.

- **Antidegradation**

Preliminary effluent limits were obtained from the Pennsylvania DEP for the proposed discharge point from a new WWTP. The wastewater treatment technologies reviewed are all capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The recommended wastewater alternative also reduces the impact of existing OLDS on groundwater and therefore eliminates direct sources of groundwater degradation.

- **State Water Plans**

Applicable plans developed under Section 4 and 5 of the Clean Streams Law (CSL) require a municipality to consider water quality management and pollution control within a watershed. Section 208 of the Clean Water Act requires the development of plans that identify municipal and industrial wastewater treatment needs. The comprehensive plans developed under Section 4 and 5 of the CSL were developed in the 1970s and are no longer readily available; however, these older plans require

compliance with Chapter 93 and Chapter 16 regulations. As part of this study, consideration was given to preliminary effluent limits developed by the Pennsylvania DEP and located in Appendix N. Therefore a planned WWTP to eliminate multiple discharge points, treat to the required final effluent limits and eliminate malfunctioning OLDS is consistent with the Clean Streams Law, and subsequent requirements of Chapter 93 and 16.

- **Pennsylvania's Prime Agricultural Land Policy**

The proposed location for a new Township WWTP is outside of designated Agricultural Preserved and ~~Agricultural~~Agricultural Security land. The project should not impact farmland designated as Prime Agricultural Land.

- **Stormwater Management Plans**

The construction of a new WWTP does not impact stormwater management.

- **Chapter 105 Waterways and Wetlands Protection**

Based on the Pennsylvania DEP's Water Viewer for the Enterprise (WAVE) GIS application, wetlands are located along the Conestoga River near the site selected for a regional WWTP. Construction of the WWTP will take place outside of the designated wetlands area, with the exception of the outfall pipe for the facility. Wetlands are also located near the crossing of S.R. 625/Reading Road and the Conestoga River, which is where the main interceptor to the WWTP will be constructed. It is anticipated that limited wetland disturbance would be required for the proposed projects and would be handled ~~with~~through Chapter 105 General Permits.

- **Pennsylvania Natural Diversity Inventory**

A PNDI search was conducted for a new WWTP, located near the Conestoga Wood Specialties WWTP, and the search returned "No Known Impacts" for the pertinent agencies. Please see Appendix H for PNDI Receipt.

- **Pennsylvania Historical and Museum Commission Site Assessment**

A PHMC review is required for any projects seeking Federal and/or State funds, as well as for Pennsylvania DEP issued permits. The proposed location for a new WWTP

Comment [J68]: APPENDIX REFERENCE

contains no building or other structures, aside from the existing 19,000 gpd Conestoga Wood Specialties WWTP. ~~This proposed project has been submitted to the A basic Act 537 narrative was submitted to the PHMC for assessment and has been found to be clear of any impacts to any significant or historical resources their response can be found in. Please see Appendix I for PHMC review.~~

Comment [J69]: APPENDIX REFERENCE

4.11 Sewage Facilities Implementation Schedule

An implementation schedule is provided below for the formation of a joint sewer authority to construct, operate and maintain a regional WWTP. However, should the municipalities be unable to agree within a six (6) month period to negotiate the formation of a joint sewer authority, a second implementation schedule is provided for the construction of a WWTP to serve only East Earl Township. Permitting timeframes were developed based on the PA DEP's *Permit Decision Guarantee* (Doc No. 021-21000-001, Nov 2012) guidance and the allocated business days for Department review.

Table 25. Proposed Joint Sewer Authority Implementation Schedule for Regional Alternative

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan To PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive Pa-PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Joint Sewer Authority Formation	1/1/2016
Finalize Joint Sewer Authority	7/1/2016
Begin Preparing NPDES Permit Application	7/1/2016
Initiate Design of Regional Collection System and WWTP and Develop Technical Specifications	9/1/2016
Submit WWTP NPDES Permit Application to PA DEP	1/1/2017
Prepare Regional Land Development Plans	3/1/2017
Receive Draft Regional NPDES Permit Application	7/1/2017
Submit Regional Land Development Plans	9/1/2017

Complete Design of Regional Collection System and WWTP and Technical Specifications	10/1/2017
Submit WQM Permit Application To PA DEP	12/1/2017
Prepare PENNVEST Application	2/1/2018
Receive Land Development Approval	3/1/2018
Receive WQM Permit	5/1/2018
Submit PENNVEST Application	7/1/2018
Prepare Bid Plans and Specifications	7/1/2018
Receive PENNVEST Funding Approval	1/1/2019
Advertise Bids	3/1/2019
Receive Bids	4/15/2019
Issue Notice to Award	5/15/2019
Begin Construction of Collection System	7/15/2019
Begin Construction of WWTP	9/1/2019
Complete Construction of Collection System	12/31/2020
Complete Construction of WWTP	12/31/2020
Submit WQM Post Construction Certification with "As-Built" Drawings	3/31/2021

Table 26 East Earl Township Implementation Schedule for Township WWTP

Description	Interim Milestones/ Submission Dates
Submit Final Act 537 Sewage Facilities Plan To PA DEP	6/23/2015
Planning Meeting with PA DEP and PENNVEST	TBD
Receive PA DEP Approval of Joint Act 537 Study	1/1/2016
Begin Preparing NPDES Permit Application (<u>Assumes Failure To Form Joint Sewer Authority During 6 Month Period</u>)	7/1/2016
Initiate Design of Township Collection System and WWTP and Develop Technical Specifications	9/1/2016
Submit Township WWTP NPDES Permit Application to PA DEP	1/1/2017

Borough of Terre Hill & East Earl Township

Joint Act 537 Sewage Facilities Plan - ~~DRAFT~~ March-June 2015

Prepare Township Land Development Plans	3/1/2017
Receive Draft Township NPDES Permit Application	7/1/2017
Submit Township Land Development Plans	9/1/2017
Complete Design of Collection System and WWTP and Technical Specifications	10/1/2017
Submit WQM Permit Application To PA DEP	12/1/2017
Prepare PENNVEST Application	2/1/2018
Receive Land Development Approval	3/1/2018
Receive WQM Permit	5/1/2018
Submit PENNVEST Application	7/1/2018
Prepare Bid Plans and Specifications	7/1/2018
Receive PENNVEST Funding Notice & Meeting (Dependent on PENNVEST Board Meeting Schedule)	TBD
Advertise Bids	3/1/2019
Receive Bids	4/15/2019
Issue Notice to Award	5/15/2019
Begin Construction of Collection System	7/15/2019
Begin Construction of WWTP	9/1/2019
Complete Construction of Collection System	12/31/2020
Complete Construction of WWTP	12/31/2020
Submit WQM Post Construction Certification with "As-Built" Drawings	3/31/2021

5.0 Public Participation

~~The Separately, the~~ municipalities ~~have~~ discussed the Act 537 Plan objectives and potential outcomes at ~~their respective several~~ public meetings in 2014. From March 11, 2015 to April 11, 2015, the Borough ~~and and the~~ Township solicited written comments from the public through public notification in the Lancaster Newspaper on March 7th, 2015. Please see Appendix J ~~for~~ proof of public notification.

Comment [J70]: APPENDIX REFERENCE

A special joint East Earl Township Board of Supervisors and Terre Hill Borough Council meeting was conducted on Tuesday March 17, 2015 at the Garden Spot Fire Rescue Station 3, located at 4315 Division Highway in Blue Ball, PA. The purpose of this meeting was to allow the ELA Group, Inc. to make ~~of a~~ formal presentation of their findings in preparation of the Joint Act 537 Plan draft report and to address any questions asked by the public. Township, Borough and Lancaster County Planning Commissions, and Township and Borough sewer and water authorities were invited and encouraged to attend this special meeting and provide written comments.

Public comments were received by the ~~public municipalities~~ within the Borough of Terre Hill and East Earl Township and can be found in Appendix K with written municipal responses to each comment.

Comment [J71]: APPENDIX REFERENCE

The ELA Group publicly provided a brief status update to the Borough of Terre Hill's Council on May 12, 2015 at 7:00 pm. The ELA Group also presented at the East Earl Township Office, located at 4610 Division Highway in East Earl on May 12, 2015 at approximately 8:30pm to the East Earl Township Supervisors and public present. The purpose of the second presentation was to address some of the public comments and further explain some of the areas reviewed as part of the draft Joint Act 537 Plan.

Appendix A

Uniform Environmental Review

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

_____The Borough of Terre Hill currently operates under their 1986 Act 537 Sewage Facilities Plan, approved by the then Pennsylvania Department of Environmental Resources. The Borough's current 0.210 million gallon per day (MGD) wastewater treatment plant (WWTP) was constructed in 1962 and subsequently updated in 1988, and serves 1,449 persons within the Borough and East Earl Township. However, the treatment plant has reached the end of its useful planning life and is unable to meet future nutrient requirements, and likely unable to meet more stringent effluent limits. Although development is limited within the Borough boundary, the Borough does provide public sewer to the surrounding land adjacent to the Borough, but within East Earl Township. The surrounding area to the Borough ~~which~~ has limited growth potential. Additionally, the stream which the Borough's WWTP discharges ~~too, was recently re-to is~~ classified as a High-Quality Warm Water Fishes stream. ~~Therefore~~ Ultimately, the Borough must ~~perform~~ updated sewage planning to address ~~their~~ its long term sewage treatment and disposal needs. For more information on the existing Borough system, see Section 3.0 of the Joint Act 537 Plan.

_____East Earl Township, which surrounds s the Borough of Terre Hill, last updated ~~their~~ its sewage planning in ~~1994-1990, 1992 and 1994~~, with more recent subsequent amendments in 1998 and 2002. The 2002 Act 537 Sewage Facilities Update Revision (2002 Update Revision) specifically addressed the Village of Goodville, located just northeast of Blue Ball, Pennsylvania. The Village of Goodville is home to approximately 330 residents and some commercial establishments. The 2002 Update Revision identified malfunctioning on-lot disposal systems (OLDS) through well sampling of 37 potable wells, which showed that twenty-seven (27) percent contained nitrates above the 10.0 mg/L limit and nineteen (19) percent showed bacterial contamination. In 2013, under Consent Order and Agreement (CO&A) with the Pennsylvania Department of Environmental Protection (PA DEP), the Township performed an update revision (2013 Update ~~Study~~) to the 2002 Update Revision to determine the necessary corrective actions to address the OLDS malfunctions. The 2013 Update ~~Study~~ confirmed the OLDS malfunctions and 2002 Update Revision recommendation of construction of a wastewater collection system and treatment plant. However, prior to

submission of the 2013 Update Study to the PA DEP, the Borough of Terre Hill approached East Earl Township about the possibility of exploring the formation of a joint sewer authority to construct, own and operate a regional WWTP. On April 22, 2014, the Borough and Township jointly entered into a CO&A with the Pennsylvania DEP to update their respective sewage facilities planning, review additional areas within the Township for OLDS malfunctions and to determine the feasibility of forming a joint sewer authority. For more information on the Township's existing systems, please see Section 4.0 of the Joint Act 537 Plan.

___ The Joint Act 537 Sewage Facilities Plan represents an official update to the Borough's Borough's 1986 Act 537 Plan and the Township's 1994 Act 537 Plan. The purpose of this Joint Act 537 Plan was-is to identify additional OLDS malfunctions within East Earl Township, and determine the wastewater alternative most protective of human health and the environment, and investigate the feasibility of shared sewer service through a joint sewer authority. The wastewater alternatives reviewed in the Joint Act 537 Plan include, separate operation of wastewater facilities for the municipalities, a regional WWTP and a no-action alternative. The Joint Act 537 Plan also identifies additional OLDS malfunctions outside of the Village of Goodville and within the Township. More details on the wastewater alternatives evaluation can be found in Section 3.5 and Section 4.6 of the Joint Act 537 Plan.

Comment [JM72]: SECTION NO.

___ The financing options reviewed and considered within the Joint Act 537 Plan considers use of PENNVEST and USDA Rural Development funds as an option for a joint sewer authority. The funding under these programs must be consistent with the National Environmental Policy Act or NEPA (42 USC § 4321 et seq.). The project does not meet the definition of Categorical Exclusion as defined in the PA DEP's *Guidelines for the Uniform Environmental Review Process* (Doc. No. 381-5511-111) and therefore the project must undergo an Environmental Assessment.

1.2 Project Description

___ The sewage planning area reviewed in the Joint Act 537 Plan includes the Borough of Terre Hill, Village of Goodville and portions of East Earl Township east of Blue Ball and along S.R. 625/Reading Road. Please see Map 1 for the sewage planning area.

Comment [JM73]: MAP REFERENCE

___ The Borough of Terre Hill's WWTP has a hydraulic design flow of 0.210 MGD and is also designed to treat up to 357 lbs per day (lbs/day) of BOD. The Borough's public sewer system, originally constructed in 1962, serves the entire Borough and limited area adjacent to the Borough, but within East Earl Township. Currently, the WWTP flow averages 0.140 MGD and 148 lbs/day of BOD.

___ East Earl Township is served by a combination of gravity sewer, low pressure sewer system and OLDS. The gravity sewer and low pressure sewer systems convey wastewater to the Earl Township Sewer Authority's sewer system and New Holland Borough's sewer system, and is mostly concentrated near or around the town of Blue Ball.

___ The selected alternative, Alternative No. 2 - Regional Collection System and WWTP, recommends the municipalities form a joint sewer authority to construct, own and operate a regional WWTP with a stream discharge to the Conestoga River. The proposed location of a regional WWTP maximizes the use of gravity conveyance and ~~the would use~~ treatment technology ~~reviews will that~~ allows the Joint Sewer Authority to meet the federal and state regulatory requirements of a final NPDES Permit, as well as the preliminary effluent limits and nutrient mass loading limits provided by the PA DEP. Please see Appendix N for the preliminary limits. Following a detailed review of an NPDES Permit Application to the PA DEP, the Joint Sewer Authority ~~is likely to have to meet similar~~ will be required to meet the preliminary effluent limits or ~~more potentially more~~ stringent effluent limits; however, the technology selected allows operators to adjust accordingly to meet effluent limits.

Comment [JM74]: APPENDIX REFERENCE

___ If the municipalities are unable to agree or negotiate the formation of a joint sewer authority, Alternative No. 1 is recommended as a contingency. Alternative No. 1 recommends the Borough and Township, if unable to form a joint sewer authority, construct separate wastewater facilities. The Borough would construct a new WWTP on the site of ~~its~~ existing WWTP. The Township would construct a new WWTP at the same location proposed ~~for a location of a~~ regional WWTP. However, the Borough and Township are willing to work towards a joint sewer authority as demonstrated by their willingness to enter together into a CO&A ~~together~~ with the PA DEP.

___ The primary funding source will be determined upon completion of a formation of a regional WWTP. The Joint Sewer Authority will evaluate all funding sources, including

bank loans, municipal bonds, PENNVEST and the USDA Rural Development Program. The estimated cost and projected user fees for the recommended alternatives were developed based on 2015 dollar values.

The total project cost for Alternative No. 2 for a regional collection system and WWTP, and including contingency cost, is estimated to be ~~\$1617,459,799.30~~ \$1,617,459,799.30 with an annual operation and maintenance (O&M) costs for the WWTP and collection system is estimated to be \$588,000.00 per year. The calculated cost per EDU for Alternative No. 2 is ~~\$8,564,616.00~~ \$8,564,616.00 with a projected quarterly user fee of ~~approximately \$256,272.00~~ approximately \$256,272.00. For more information on the costs of the recommended alternative, Alternative No. 2, see Table 24 in Section 4.8.

As a contingency, Alternative No. 1 costs are provided, if the municipalities are unable to negotiate a joint sewer authority. The total project cost for a new Borough WWTP is estimated to be ~~\$4,919,979.21~~ \$4,919,979.21 with an annual O&M costs of \$258,500.00. The total project costs for a Township collection system and WWTP, and including contingency costs, is estimated to be ~~\$1411,454,835.00~~ \$1,411,454,835.00 with an annual O&M costs of \$380,800.00. The calculated cost per EDU for Alternative No. 1 for the Borough, and East Earl Township residence connected to the Borough system, is ~~\$13,005,12,716.00~~ \$13,005,12,716.00 per EDU with a projected quarterly user fee of ~~approximately \$300,562,922.00~~ approximately \$300,562,922.00. The calculated cost for East Earl Township residences along S.R. 625/Reading Road, Village of Goodville and properties along S.R. 897/Springville Road near Blue Ball is ~~\$7,274,852.00~~ \$7,274,852.00 per EDU with a projected quarterly user fee of ~~\$244,712,722.00~~ \$244,712,722.00. For more information on the costs of the contingency alternative, Alternative No. 1, see Table 20 in Section 4.6.4.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Alternatives Considered

Alternative No. 1 - Separate Municipal WWTPs: Alternative No. 1 recommends each municipality would construct ~~their-its~~ own wastewater treatment plant, and the Township would construct a new collection system. The Borough could construct a new WWTP on the site of ~~their-its~~ existing system. Additional acreage is available for construction of a new WWTP on the existing system and logistically this would not interrupt service. The

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Comment [JM76]: TABLE NO

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discharge would remain in the same location and continue to discharge to Black Creek, a high-quality warm water fishes designated stream. The rehabilitation of the existing system was compared to the construction of a new oxidation ditch system and a new sequencing batch reactor (SBR) system. Rehabilitation of the existing system was eliminated as a viable option because the integrity of the existing concrete structures could not be verified and the cost of replacing piping and internal equipment approaches that of a new WWTP. Oxidation ditch systems were considered with tertiary filtration because the technology is proven to effectively reduce BOD and TSS, and can be designed to remove nutrients. However, oxidation ditch systems were eliminated because of the footprint and subsequent costs. Sequencing Batch Reactor technology with tertiary filtration is also proven technology and can produce low BOD and TSS concentrations, and can be operated to reduce nutrients concentrations and mass loadings discharged to Black Creek. The SBR technology can perform biological treatment and clarification in a single basin, and a separate tertiary filtration unit can provide additional effluent polishing. The SBR system has a more compact footprint than an oxidation ditch system and therefore was selected as the primary treatment technology. The Borough WWTP would be designed based on to meet their 2013 NPDES Permit effluent limits, as well as anticipation of future nutrient limits and therefore will address water quality regulations, such as those in 25 Pa. ~~A~~ Code §-Chapters 93 and 96. The construction of a new WWTP would allow the Borough to provide uninterrupted public sewer service and continue to protect public health and safety. The same technology reviewed was applied-considered for the to a system for East Earl Township.

 East Earl Township would construct an SRB-SBR system near the existing Conestoga Wood Specialties 0.200 MGD WWTP with a discharge to the Conestoga River, a designated warm water fishes stream. The Township would also construct a combination of gravity sewer, low pressure sewer, and pump station and force mains to convey wastewater to the plant. A Township WWTP would be designed based on the preliminary effluent limits developed by the PA DEP and therefore will address water quality regulations, such as those in 25 Pa. Code §-Chapters 93 and 96. The construction of a new WWTP would allow the Township to provide public sewer service and eliminate malfunctioning OLDS, a source of groundwater contamination and environmental degradation. The treatment of domestic wastewater would also eliminate a public health and safety concern to Township residence

and business owners. A Township WWTP would also eliminate the discharge from several package WWTPs and therefore improve effluent and water quality. For more information on Alternative No. 1, see Section 4.6.4.1.

Comment [JM78]: SECTION NO

Alternative No. 2 - Joint Sewer Authority & Regional WWTP: Alternative No. 2 recommends the Borough of Terre Hill and East Earl Township form a joint sewer authority to construct, own and operate a regional WWTP with discharge to the Conestoga River. A regional WWTP would require the Joint Sewer Authority to construct a regional collection system, which consists of gravity sewer, low pressure sewer, and force and pump station, to convey wastewater to regional WWTP with discharge to the Conestoga River. Per the reasons reviewed in Alternative No. 1, an SBR system with tertiary treatment was selected for use at a regional wastewater facility. The construction of a regional collection system and WWTP would protect public health and safety by eliminating malfunctioning OLDS. A regional WWTP would also eliminate multiple discharges from package WWTPs, and the discharge from the Borough of Terre Hill to Black Creek, a HQ-WWF stream.

Regionalization of wastewater treatment would provide more efficient treatment and therefore benefit water quality through a single controlled discharge point. For more information on Alternative No. 1, see Section 4.6.4.2.

Comment [JM79]: SECTION NO

Alternative No. 3 - New Borough WWTP & Township Sewer Extension: Alternative No. 3 ~~considered-requires~~ the ~~Borough to separately construction of~~ a new ~~Borough-SBR~~ WWTP and the ~~East Earl Township to construct additional collection and conveyance systems for~~ connection of non-sewered areas ~~of East Earl in the~~ Township to ~~their-the Authority's~~ existing low pressure sewer system. The East Earl Sewer Authority (EESA) ~~owns and~~ operates a low pressure sewer system east of Blue Ball, which conveys domestic wastewater to the neighboring Earl Township's collection system and treatment plant. This option ~~included~~ includes the construction of gravity sewer, low pressure sewer, and force mains and pump stations ~~systems~~ to convey wastewater to the existing low pressure sewer system. However, upgrades to the existing low pressure sewer system ~~were-are~~ also necessary, as ~~was-is~~ the construction of additional treatment capacity at the Earl Township WWTP. The East Earl Sewer Authority conveys wastewater to the Earl Township Sewer Authority's WWTP and the New Holland Borough's WWTP. This option provides for the protection of public health

and safety as discussed in Alternatives No. 1 and No. 2, and provides the environmental benefit of eliminating multiple discharges. For more information on Alternative No. 1, see Section 4.6.4.3.

Comment [JM80]: SECTION NO

Alternative No. 4 - New Borough WWTP & Two Township WWTPs: This alternative considered the construction of a new Borough ~~system-SBR WWTP~~ and, ~~separately~~, the construction of two new WWTPs in East Earl Township. Two ~~separate~~ WWTPs were considered to treat the Village of Goodville separately from the homes and businesses along S.R. 625/Reading and S.R. 897/Springville Road near Blue Ball. This option also provides for the protection of public health and safety as discussed in the previous alternatives. For more information on Alternative No. 1, see Section 4.6.4.4.

Comment [JM81]: SECTION NO

Alternatives No. 8 - No Action Alternative: The no action alternative allows the Borough to continue to use the existing WWTP without giving consideration to replacement of the existing treatment technology or future effluent limits. Under this same alternative the Township would not take any action on the malfunctioning OLDS and would not consider future changes to population. For more information on Alternative No. 1, see Section 4.6.4.8.

Comment [JM82]: SECTION NO

2.2 Comparison of Alternatives

Alternative No. 1 provides a feasible path for each municipality to move forward; however, from a long-term cost effective perspective, Alternative No. 2 provides the best path forward. Alternatives No. 1 and No. 2 are similar in quarterly user cost; ~~however, but,~~ Alternative No. 2 is more likely to ~~have provide greater~~ benefits beyond the twenty (20) year planning period, as a result of material, labor and technology costs increases. Alternative No. 2 allows the municipalities to share services, eliminates malfunctioning OLDS and multiple discharge points, and increase the sewer user base by combining users in both municipalities. Under Alternative No. 2, East Earl Township can better meet projected population growth and planned development by allowing the Township to remain below its purchased capacity at the Earl Township WWTP.

Based on existing zoning, the planned growth areas within East Earl Township are mostly east and southeast of Blue Ball. Properties east of Blue Ball, and along S.R.23/Main Street,

Ewell Road and S.R. 897/Springville Road north of U.S.322/Division Highway, convey domestic wastewater south to the Witmer Road Pump Station. The Township's existing zoning along Ewell Road and U.S.322/Division Highway allows for high density development and commercial development on remaining undeveloped acreage. The Township conveys domestic wastewater from the properties south of U.S.322/Division Highway and located along East Earl Road, Rancks Road, Sheep Hill Road and S.R.897/Springville Road to the Earl Township collection system and WWTP. East Earl Township's existing zoning along these same roads, as well as along the south side of U.S.322/Division Highway allow for low density and light industrial development on the remaining undeveloped acreage. Alternative No. 2 allows the East Earl Township to convey domestic wastewater from north of the U.S. 322/Division Highway to a regional WWTP. Under this same alternative the Township can continue to convey the domestic wastewater from existing and new development south of the U.S.322/Division Highway to the Earl Township WWTP. East Earl Township would also have flexibility in connecting malfunctioning OLDS that were not discovered during the development of the Joint Act 537 Sewage Facilities Plan.

However, if East Earl Township conveyed all domestic wastewater to the Earl Township WWTP, from S.R.625/Reading Road, the Village of Goodville and the planned growth areas east and southeast of Blue Ball, the Township would be required to upgrade existing collection and conveyance systems from East Earl Township and Earl Township, as well as construct or purchase additional capacity at the Earl WWTP. This concept was reviewed under Alternative No. 3 of the Joint Act 537 Plan.

As part of Alternative No. 3 and the additional flow conveyed to the Earl Township WWTP, the municipalities gave consideration to the low flow conditions of the receiving streams for existing and potential discharges, as well as proximity of those discharge points to other dischargers and the impacts those conditions have on final effluent limits, and capital and operation costs. The municipalities also considered the distance to convey wastewater from the source to the treatment facilities and system upgrades that are required to accommodate the increased flow, which includes flow from malfunctioning OLDS that were not identified as part of this Joint Act 537 Plan.

____, as well as connect potential malfunctioning OLDS outside of the sewage planning area. Therefore, although the costs for Alternative No. 1 and Alternative No. 2 are similar on close on a per-quarterly user rate basis; however, Alternative No. 2 provides the Township with flexibility to handle future sewer needs and reduces the number of point source discharges to the Conestoga River Watershed, including the Borough's discharge to Black Creek a designated High Quality stream, and therefore is considered the more environmentally beneficial option. Alternatives No. 3 and No. 4 were eliminated based on the lack of flexibility for the Township to meet long term sewage disposal needs and the capital and operation and maintenance costs. Alternative No. 8, or the "No Action" Alternative, is not considered viable because it does not address the malfunctioning OLDS or projected growth in East Earl Township and therefore does not meet their sewer needs. Alternative No. 8 does not address the aging wastewater treatment infrastructure within the Borough of Terre Hill and does not allow the Borough to continue to meet public sewer needs and future water quality limits. Therefore, Alternative No. 8 does not address the Borough's long-term sewage facilities needs.

Table 1 on the subsequent page provides the present worth analysis performed on the reasonable sewer alternatives.

Comment [JM83]: TABLE REFERENCE

Table 1. Approximate Present Worth Analysis of Wastewater Facilities (2015,\$)

Flow (MGD)	0.210	0.200	0.410	0.210	
WWTP Construction Cost	\$3,608,130	\$3,171,400	\$5,216,400	\$3,608,130	
Collection System Construction Cost	\$0	\$4,701,700	\$6,710,400	\$0	
Construction Contingency Cost	\$541,219	\$1,180,965	\$1,789,020	\$541,219	
Admin, Engineering, Legal Services	\$829,869	\$1,810,813	\$2,743,164	\$829,869	
Total Project Cost	\$4,979,219	\$10,864,878	\$16,458,984	\$4,979,219	
WWTP Annual O&M Cost	\$258,500	\$263,800	\$382,000	\$258,500	
Present Worth WWTP O&M Cost	\$7,998,520	\$14,453,961	\$22,286,093	\$7,998,520	
Collection System Annual O&M Cost	\$0	\$117,000	\$206,000	\$0	
Present Worth Collection O&M Cost	\$0	\$1,505,577	\$2,650,845	\$0	
WWTP Salvage Value	\$758,815	\$844,058	\$1,326,391	\$758,815	
Collection System Salvage Value	\$0	\$2,394,500	\$2,970,000	\$0	
Net Present Worth Cost	\$7,998,520	\$14,453,961	\$22,286,093	\$7,998,520	
Combined Net Present Worth Cost					
Projected EESA Annual Debt Service	\$304,054	\$543,224	\$884,826	\$304,054	
Total Number of EDUs Served within Authorities	615	1,987	2,602	615	
Cost/EDU (2015,\$)	\$13,005	\$7,274	\$8,564	\$13,005	
Projected User Fee (per quarter)	\$299.44	\$242.71	\$254.80	\$299.44	

Note A— Does not include cost to individual homeowners required to install grinder pump systems.

Note B— Includes contingency for construction, engineering, administrative and legal cost

Table 1. Calculated Present Worth Analysis of Wastewater Treatment Alternatives

<u>Item</u>	<u>Alternative No. 1</u>		<u>Alternative No. 2</u>	<u>Alternative No. 3</u>	
	<u>Borough SBR WWTP</u>	<u>Township Collection System & SBR WWTP^A</u>	<u>Regional Collection System & SBR WWTP^A</u>	<u>Borough SBR WWTP</u>	<u>Township Collection System & SBR WWTP^A</u>
<u>Flow (MGD)</u>	<u>0.210</u>	<u>0.200</u>	<u>0.410</u>	<u>0.210</u>	<u>0.200</u>
<u>WWTP Construction Cost</u>	<u>\$3,608,130</u>	<u>\$3,658,900</u>	<u>\$5,784,400</u>	<u>\$3,608,130</u>	<u>\$3,658,900</u>
<u>Collection System Construction Cost</u>	<u>\$0</u>	<u>\$4,917,450</u>	<u>\$7,113,650</u>	<u>\$0</u>	<u>\$4,917,450</u>
<u>Construction Contingency Cost</u>	<u>\$541,219</u>	<u>\$1,286,452</u>	<u>\$1,934,707</u>	<u>\$541,219</u>	<u>\$1,286,452</u>
<u>Construction Cost Total</u>	<u>\$4,149,349</u>	<u>\$9,862,802</u>	<u>\$14,832,757</u>	<u>\$4,149,349</u>	<u>\$9,862,802</u>
<u>Admin, Engineering, Legal Services</u>	<u>\$829,869</u>	<u>\$1,972,560</u>	<u>\$2,966,551</u>	<u>\$829,869</u>	<u>\$1,972,560</u>
<u>Total Project Cost</u>	<u>\$4,979,219</u>	<u>\$11,835,363</u>	<u>\$17,799,309</u>	<u>\$4,979,219</u>	<u>\$11,835,363</u>
<u>WWTP Annual O&M Cost</u>	<u>\$258,500</u>	<u>\$263,800</u>	<u>\$382,000</u>	<u>\$258,500</u>	<u>\$263,800</u>
<u>Present Worth WWTP O&M Cost</u>	<u>\$3,326,424</u>	<u>\$3,394,625</u>	<u>\$4,915,644</u>	<u>\$3,326,424</u>	<u>\$3,394,625</u>
<u>Collection System Annual O&M Cost</u>	<u>\$0</u>	<u>\$117,000</u>	<u>\$206,000</u>	<u>\$0</u>	<u>\$117,000</u>
<u>Present Worth Collection O&M Cost</u>	<u>\$0</u>	<u>\$1,505,577</u>	<u>\$2,650,845</u>	<u>\$0</u>	<u>\$1,505,577</u>
<u>WWTP Salvage Value</u>	<u>\$758,615</u>	<u>\$1,044,433</u>	<u>\$1,607,266</u>	<u>\$758,615</u>	<u>\$1,044,433</u>
<u>Present Worth WWTP Salvage Value</u>	<u>\$307,123</u>	<u>\$422,835</u>	<u>\$650,696</u>	<u>\$307,123</u>	<u>\$422,835</u>
<u>Collection System Salvage Value</u>	<u>\$0</u>	<u>\$2,542,950</u>	<u>\$3,517,450</u>	<u>\$0</u>	<u>\$2,542,950</u>
<u>Present Worth Collection System Salvage Value</u>	<u>\$0</u>	<u>\$1,029,504</u>	<u>\$1,424,027</u>	<u>\$0</u>	<u>\$1,029,504</u>

<u>Individual Net Present Worth Cost</u>	<u>\$7,998,520</u>	<u>\$15,283,225</u>	<u>=</u>	<u>\$7,998,520</u>	
<u>Combined Net Present Worth Cost</u>		<u>\$23,281,745</u>	<u>\$23,291,074</u>		<u>\$28,272,819</u>
<u>Projected EESA Annual Debt Service</u>	<u>\$0</u>	<u>\$213,726</u>	<u>\$213,726</u>	<u>\$0</u>	
<u>Total Number of EDUs Served within Authorities</u>	<u>629</u>	<u>1,793</u>	<u>2,422</u>	<u>629</u>	
<u>Existing O&M Cost (2015,\$)</u>	<u>\$174,070</u>	<u>\$1,005,047</u>	<u>\$1,184,339</u>	<u>\$174,070</u>	
<u>Cost/EDU (2015,\$)</u>	<u>\$12,716</u>	<u>\$8,523</u>	<u>\$9,616</u>	<u>\$12,716</u>	
<u>Projected User Fee (per quarter)</u>	<u>\$292</u>	<u>\$272</u>	<u>\$279</u>	<u>\$292</u>	
<u>Note A - Does not include cost to individual homeowners required to install grinder pump systems.</u>					

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___ Under the recommended alternative, Alternative No. 2, ~~the~~ area to be disturbed for a regional collection system ~~and~~ will occur mostly ~~on-in~~ Township roads and Pennsylvania Sstate routes. The total construction of a new SBR WWTP with access drive is expected to disturb approximately 3.0 acres. The required pump stations are estimated to disturb less than 1.0 acres combined. Additional land disturbance is necessary for the installation of the collection and conveyance system and will be concentrated within existing roadways. There will be temporary environmental impacts from the earth disturbance activities and construction of a WWTP with discharge outfall, impacting floodplains and streams. The selected location for a regional WWTP is outside of the floodplain. All necessary permitting for the temporary construction impacts will be obtained from the PA DEP, and all necessary Highway Occupancy Permits will be obtained from the Pennsylvania Department of Transportation.

___ Under the contingency alternative, Alternative No. 1, the area to be disturbed for a regional collection system will remain mostly the same as in Alternative No. 2. However, the need for sewer mains along S.R. 1044/Union Grove Road ~~are~~ is eliminated and therefore the land disturbance impacts from the collection system are less than Alternative No. 2. Land disturbance for Alternative No. 1 increases with the construction of separate Borough and Township WWTPs. The estimated area of land disturbance for a new SBR system at the Borough's existing WWTP is less than 1.5 acres. The estimated area of land disturbance for a new SBR system for the Township is estimated to be less than 2.5 acres with an access drive.

Alternative No. 2 - Regional WWTP:

___ The area to be affected by this alternative is approximately 3.2-2 acres, which includes a 0.410 MGD SBR WWTP, control building and access drive, and ~~would be~~ is located between Conestoga Creek Road and off of S.R. 625/Reading Road. The new WWTP would be constructed immediately southeast of the existing Conestoga Wood Specialties existing 19,000 gpd WWTP.

___ The construction of a regional WWTP will temporarily impact the immediate environment surrounding the WWTP location. These impacts will be the result of earth

disturbance activities and construction of an outfall pipe to the Conestoga River. All necessary temporary permits will be obtained from the PA DEP prior to construction.

Additional temporary environmental impacts will occur as a result of the construction of an interceptor from the gravity sewer system to the WWTP. This will occur near the crossing of S.R. 625/Reading Road and the Conestoga River. The necessary temporary permits will be obtained from the PA DEP for the construction.

___The regional collection and conveyance system will also require the construction of a pump station, likely to be located off of Frogtown Road. The pump station can be located outside of the floodplain and earth disturbances will most likely be limited to less than 10,000 square feet. The nearest stream to the proposed pump station location is Cedar Creek. A second pump station will be located off of Spring Grove Road, but north of the Conestoga River. This pump station will be small and earth disturbance is likely to be less than 2,500 square feet. This pump station will be located well outside of the flood plain and no watercourse is located near the proposed site. A third pump station will be constructed on the site of the existing Borough of Terre Hill WWTP. The pump station construction will involve limited earth disturbance and shall remain under 0.5 acre. The closest watercourse to the proposed pump station location is Black Creek.

___The construction of a regional collection system will involve earth disturbance mainly within state routes and township roads, including S.R. 625/Reading Road, S.R. 23/Main Street, S.R. 897/Springville Road (Township), S.R. 1044/Union Grove Road, and S.R. 897 East Main Street (Borough). The necessary Highway Occupancy Permits will be obtained for this work. Please see the Sewage Facilities Planning Area Map No. 1-~~XX~~1 to view for the ~~delineation delineated of the~~ planning area in East Earl Township and Borough of Terre Hill.

Comment [J85]: MAP NO

The construction of a regional collection and conveyance system will eliminate the use of individual malfunctioning OLDS, a source of groundwater contamination. A regional WWTP will eliminate multiple discharge points, including the Borough's discharge to a high quality warm water fishes designated stream. Operation of a new regional SBR WWTP with tertiary filtration will produce a higher quality effluent than is currently discharged by the

Borough's WWTP and the separate package WWTPs at the Conestoga Wood Specialties and Goodville Industrial Center sites.

Alternative No. 1 - Separate Municipal WWTPs

___ The area to be affected by the construction of a new Borough SBR WWTP will be less than 1.5 acres and the area to be affected by a new Township ~~WWPT~~ WWTP is approximately 3.2-2 acres, which includes a 0.200 MGD SBR WWTP, control building and access drive, and ~~would be~~ located ~~off of~~ between the Conestoga Creek Road and S.R. 625/Reading Road. The new Township WWTP ~~will~~ be constructed immediately southeast of the ~~existing~~ Conestoga Wood Specialties' existing 19,000 gpd WWTP.

___ The construction of a new Borough WWTP will temporarily impact the environment surrounding the existing WWTP site. The earth disturbances will remain outside of the floodplain and ~~does~~ not require work within waters of the Commonwealth. The existing outfall structure can be retained for discharge from a new Borough WWTP. All necessary temporary permits will be obtained from the PA DEP prior to construction. The closest watercourse to the site is Black Creek.

___ The construction of a Township WWTP will temporarily impact the immediate environment surrounding the WWTP location. These impacts will be the result of earth disturbance activities and construction of an outfall pipe to the Conestoga River. All necessary temporary permits will be obtained from the PA DEP prior to construction.

___ Additional temporary environmental impacts will occur as a result of the construction of an interceptor from the gravity sewer system to the WWTP. This will occur near the crossing of S.R. 625/Reading Road and the Conestoga River. The necessary temporary permits will be obtained from the PA DEP for the construction.

___ The Township collection and conveyance system will also require the construction of a pump station, likely to be located off of Frogtown Road. The pump station can be located outside of the floodplain and earth disturbances will most likely be limited to less than 10,000 square feet. The nearest stream to the proposed pump station location is Cedar Creek. A second pump will be located off of Spring Grove Road, but north of the Conestoga River. This pump station is relatively small and earth disturbance is likely to be less than 2,500 square feet. This pump station will be located well outside of the flood plain and no

watercourse is located near the proposed site. The closest watercourse to the proposed pump station location is Black Creek.

___The construction of a Township collection system will involve earth disturbance mainly within state routes and township roads, including S.R. 625/Reading Road, S.R. 23/Main Street, S.R. 897/Springville Road (~~Township~~), and S.R. 1044/Union Grove Road, and ~~S.R. 897 East Main Street (Borough)~~. The necessary Highway Occupancy Permits will be obtained for this work. Please see the Sewage Facilities Planning Area Map No. ~~1 - [XX]~~ to view 1 for the delineation delineated of the sewage planning area in East Earl Township.

Comment [J86]: MAP NO

___The construction of a Township collection and conveyance system will eliminate the use of individual malfunctioning OLDS, a source of groundwater contamination. A Township WWTP will eliminate multiple discharge points, including the separate package WWTPs onsite at Conestoga Wood Specialties and the Goodville Industrial Center. Operation of a new Township SBR WWTP with tertiary filtration will produce a higher quality effluent than is currently discharged d by the separate package WWTPs at the Conestoga Wood Specialties and Goodville Industrial Center sites.

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3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECT

___The selected alternative is Alternative No. 2: Construction of a new regional collection, conveyance, and regional Sequencing Batch Reactor (SBR) WWTP. This Alternative was selected for the following reasons:

- It is the most cost effective when considering all of the Borough of Terre Hill and East Earl Township rate payers.
- The pooling of more rate payers by through regionalization helps mitigate future O&M and capital costs for the Borough and Township beyond the planning period.
- It is the most environmentally responsible option as a result of ceasing the Borough's 210,000 gpd WWTP discharge to a relatively small HQ WWF stream; eliminating the Goodville Industrial Center's 4,000 gpd WWTP discharge to a small receiving stream (Cedar Run); and terminating the Conestoga Wood

Specialties' 19,000 gpd WWTP discharge to Conestoga River. These three discharges will be, and combined with the influent wastewater from malfunctioning OLDS, sources into a single discharge from a regional WWTP to the Conestoga River.

- A regional WWTP can provide greater nutrient reductions than package WWTPs and can therefore reduce the annual nutrient mass loading to the Conestoga River Watershed and the Chesapeake Bay Watershed.
- It takes approximately 275 existing OLDS offline and conveys their sewage to an advanced treatment system and eliminates a direct source of groundwater contamination.
- It allows for additional OLDS to be taken offline and connected to public sewer from future -needs areas identified by the Township and PA DEP in East Earl Township.
- It provides East Earl Township flexibility when using their existing sewage collection systems that convey wastewater to the Earl Township Sewer Authority WWTP and New Holland Borough WWTP.
- Allows the Joint Sewer Authority to potentially accept wastewater from areas without public sewer, and which are outside of the Township, including Churchtown and Beartown.
- Allows the Joint Sewer Authority to accept septage pumped from nearby OLDS and therefore generate a supplemental revenue stream.

3.1 Land Use / Important Farmland / Formally Classified Lands

Alternative No. 2, the construction of a r-Regional WWTP, -will utilize land within the Township that is zoned Industrial-Light for the regional WWTP and associated treatment equipment/processes. This, which is a permitted use by local zoning ordinances and is consistent with the ELANCO comprehensive plan. The collection and conveyance systems will ~~primarily~~ be contained primarily within the Township and State road right-of-ways. A new regional WWTP will require a new

parcel of approximately 3.2 acres of land to be subdivided to allow sufficient room for expansion if ever needed in the future.

Based on current zoning and the Township's push to preserve farmland over the previous decade, the construction of the selected alternative is anticipated to primarily allow growth to occur in areas already zoned and designated for growth; such as the areas identified near the Borough and the community of Blue Ball. Blue Ball contains two noncontiguous parcels of 32.4 acres and 45.6 acres that are located within East Earl Township's Smart Growth Neighborhood Option Overlay District, which targets land for high density development based on the Lancaster County Planning Commission's *Balance: Growth Management Plan*. Public sewer is available to these undeveloped areas, but there is insufficient capacity in the East Earl Sewer Authority's existing collection and conveyance system, and the Earl Township Sewer Authority's WWTP is unable to accept domestic wastewater from the entire planning area within the East Earl Township. If domestic wastewater were sent entirely to the Earl Township WWTP, upgrades to the existing EESA collection system and Earl Township treatment plant would be needed. This option was reviewed under Alternative No. 3. However, construction of the selected Alternative 2 will enable the municipalities to meet their anticipated projected population growth and wastewater needs over the next twenty (20) years.

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The land where the proposed WWTP will be located is classified as Prime Agricultural Soils by the Lancaster County GIS database, as are a majority of the soils located within both municipalities. This project will have a direct impact on Prime Agricultural Soils, but not on agricultural preservation since the land is not zoned Ag. See Maps 1, 4, and 5 for the Zoning, Preserved Farms and Agricultural Security Areas, and Prime Agricultural Soils Maps, respectively. See the County's comments within Appendix I.

Comment [JM87]: MAP REFERENCE

Comment [JM88]: APPENDIX

No National or State Parks, forests, or trails will be impacted by this proposed project, nor are any exist within a mile of the project area. The S.R. 23/Main Street is classified as a Scenic Byway; however, only buried piping and flush mounted manholes will be contained within or along this Scenic Byway. and therefore the

[below ground infrastructure](#) complies with the Township's Scenic Byway
~~Ordinance~~[Ordinance](#).

Alternative No. 1 - Separate Municipal WWTPs, which remains a contingency in the event the municipalities are unable to negotiate a joint sewer authority, requires the Township ~~continue with the work described under Alternative No. 2~~ to construct a new Township WWTP. The Borough would construct a new WWTP on the site of ~~their~~[its](#) existing WWTP, which does not contain farm land or Prime Agricultural Soils.

3.2 Floodplains

Under Alternative No. 2—~~Regional WWTP,~~ the municipalities would construct the proposed regional WWTP, accessory structures, and any earthen fill will be located outside of the 100 year floodway and floodplain, ~~except for~~ ~~Although~~ a portion of security fencing, the WWTP outfall structure and potential step aeration system would be located in the 100 year floodway and floodplain. See Map 2 for FEMA floodplain mapping. The proposed design ~~should does~~ not require any variances from the local zoning ordinances and the project ~~should does~~ require permits through the PA DEP's Chapter 105 General Permits Program for the proposed work within the floodplain.

Comment [JM89]: MAP REFERENCE

Under Alternative No. 1—~~Separate Municipal WWTPs, the work as described in Alternative No. 2 will continue for a new Township WWTP,~~ the Township would construct a WWTP, accessory structures, and any earthen fill will be located outside of the 100 year floodway and floodplain—A, although a portion of security fencing, the WWTP outfall structure and potential step aeration system would be located in the 100 year floodway and floodplain. The proposed Township WWTP does not require any variances from the local zoning ordinances and the project does require permits through the PA DEP's Chapter 105 General Permits Program for the proposed work within the floodplain.—The Borough would construct a new WWTP on the site of ~~their~~ its existing WWTP and this is expected to remain outside of the 100 year floodway and floodplain.

3.3 Wetlands

Under Alternative No. 2—~~Regional WWTP,~~ the proposed regional WWTP project area disturbance will be located outside of all jurisdictional wetlands. However, the WWTP outfall structure and potential step aeration system may impact a limited amount of wetlands directly along the Conestoga River stream bank. The Outfall structure will be located along a steep overbank area to allow a step aeration system to work, if selected as part of this project, or as a future WWTP upgrade. ~~Steep-s~~Stream banks with steep slopes are not conducive to wetland formation and ~~theis~~ proposed

location is ~~approximated to be the best location~~selected to minimize disturbance to wetlands.

____ There will be one crossing of the Conestoga River at S.R. 625/Reading Road via gravity sewer that will be bored a minimum of three (3) feet below the stream channel bottom. Cedar Run will be crossed at S.R. 23/Main Street via a lower pressure sewer main and will be horizontally directional drilled at a ~~-~~minimum of three (3) feet below the stream channel bottom. Consequently, the chosen methods for crossing streams should minimize wetland disturbance.

____ The proposed collection and conveyance systems will ~~primarily~~ be contained primarily within the Township and State road right-of-ways, which appear to have no jurisdictional wetlands.

____ Based on the aforementioned, it appears the cumulative wetland disturbance will be less than 0.10 acres and should be eligible for permitting through the PA DEP's Chapter 105 General Permits Program. See Map 2 for wetland mapping.

Comment [JM90]: MAP REFERENCE

____ Under Alternative No. 1—~~Separate Municipal WWTPs~~, the Borough would construct a new WWTP on the site of ~~their~~its existing WWTP. No work is anticipated within wetlands for the construction of a separate Borough WWTP. Under this alternative, the Township would construct a separate WWTP as ~~mentioned~~described in Section 4.6.4.1 of the Joint Act 537 Narrative~~narrative to the Joint Act 537 Plan~~Alternative No. 2.

3.4 Historic Resources

____ The proposed WWTP site has no structures within the general vicinity, aside from the existing 19,000 gpd package wastewater treatment plant that was constructed within the 1990's. The existing 19,000 gpd WWTP is the only structure that is proposed to be demolished for the recommended alternative, Alternative No. 2 - Regional WWTP.

____ The proposed collection and conveyance systems will primarily be contained within the Township and State road right-of-ways and should have no impact on historical resources.

____ If the municipalities are unable to negotiate the formation of a joint sewer authority, the ~~Borough's-Borough's~~ construction of a new WWTP on the site of ~~their-its~~ existing WWTP will require demolition of the existing WWTP. This is applicable under Alternative No. 1; however, the demolition of the Borough's existing WWTP is likely also to ~~also~~ occur under Alternative No. 2.

See Appendices E and I for the Cultural Resources Notification application packages and PHMC responses.

Comment [JM91]: APPENDICES

3.5 Sensitive Biological Resources

____ Within the last two years a search of the Pennsylvania Natural Diversity Inventory (PNDI) database has been performed for both the proposed regional WWTP site and the Borough of Terre Hill's existing WWTP. The PNDI search returned no potential impacts to Sensitive Biological Resources.

See Appendices D and I for the PNDI review receipts.

Comment [JM92]: APPENDICES

3.6 Water Quality Issues

____ Preliminary effluent limits were obtained from the ~~Pennsylvania-PA~~ DEP for the proposed discharge point for a new regional WWTP to the Conestoga River (WWF). The wastewater treatment technologies reviewed are capable of operating to meet the required effluent limits at the proposed point of discharge and therefore not degrade water quality. The selected wastewater alternative, Alternative No. 2 - Regional WWTP, - reduces the impact of 275 existing OLDS on groundwater and ~~therefore~~ eliminates direct sources of groundwater degradation. The Alternative No. 2 - Regional WWTP, also eliminates multiple WWTP stream discharges and combines the influent wastewater sources into a single source for efficient treatment and discharge to a larger receiving stream. The Alternative No. 1 - Separate Municipal WWTPs, which remains a contingency in the event the municipalities fail to negotiate a joint sewer authority, reduces the impact of 275 existing OLDS on groundwater; however, the construction of two separate municipal plants maintains two (2) discharge points instead of one (1). The Borough would continue to discharge to an HQ-WWF designated stream, but the Township would eliminate two (2) package plant discharges.

_____ This project area is not within a sole-source aquifer recharge area as designated by the EPA.

3.7 Coastal Resources

_____ This project area is not located within a coastal zone management area.

3.8 Socio-Economic Issues

_____ The selected ~~a~~A Alternative does not appear to impose any disproportionate adverse effects on minority and disadvantaged populations based on the latest census bureau statistics and the proposed location of the WWTP.

3.9 Air Quality

_____ An increase of dust may occur as a result of construction activities associated with the proposed actions of this plan update. As a requirement of the local conservation district, dust must be treated to maintain the existing level of air quality, which may be achieved by applying water to soils. Other industry practices may be used to reduce dust from construction activities.

_____ A ~~w~~Well-operated SBR WWTP²s typically produces ~~s~~ minimal odors, if any. Odors from SBR WWTPs are typically ~~more~~ localized to ~~the~~ immediate area surrounding the WWTP, compared to the odors emanating from manure applied to the agricultural fields surrounding the proposed project site. Odors at the WWTP and pump stations will be continually monitored and the system optimized as much as possible to minimize odors, and odor control equipment is easily applied to the localized sites.

3.10 Transportation

_____ Transportation patterns within the study area will not permanently change as a result of the proposed improvements. Traffic patterns will change to accommodate construction equipment and to maintain a level of safety for all construction laborers when work is being completed within the road right-of-way. Transportation patterns will be returned to pre-existing conditions once construction is completed.

3.11 Noise Abatement and Control

____ The WWTP blower motors are typically the loudest ~~pieces-components~~ of ~~equipment at~~ a WWTP. The proposed blower motors will be housed in a solid concrete walled room that is integral to the SBR basins. It is anticipated that adjacent property owner will not experience an increased level in noise pollution after the proposed WWTP is in operation. Insulation can be added if required to abate noise pollution. The types of pumps typically used in pump stations for wastewater conveyance are submersible and the motors are housed within noise containing structures.

3.12 Wild and Scenic Rivers

____ This study area is not located within wild or scenic rivers.

3.13 Miscellaneous Environmental Considerations

____ Not applicable.

4.0 SUMMARY OF MITIGATION

____ Watercourses of the Commonwealth of Pennsylvania will be disturbed during construction of the proposed WWTP stream discharge, collection system and potentially during the proper abandoning of the three existing WWTP stream discharges. A field survey will be conducted prior to design of the proposed collection system and WWTP to map all environmental resources within the proposed project area. During the field survey, a wetland survey will be conducted by a qualified professional. If wetlands are present, then they will be avoided to minimize impacts as much as possible. However, if a wetlands area needs to be disturbed, then it shall be returned to its natural state, as permitted by the PA DEP.

5.0 PUBLIC PARTICIPATION

____ The Pennsylvania Department of Environmental Protection requires a 30 day public comment period for all Act 537 Plan Updates. See Appendix J for the advertisement of Notice of Public Comment Period for Joint Act 537 Official Sewage Facilities Plan, joint special public meeting agenda and minutes. See Appendix K for all written public comments and municipal responses addressing public comments.

Comment [JM93]: APPENDIX REFERENCE

____ The Plan has been submitted to Lancaster County Planning Commission for comment, and has been presented and made available to the East Earl Township and Borough of Terre Hill Planning Commissions, as well as the water and sewer authorities/Public Works Departments.

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Appendix C

Detailed Cost Analysis

Joint Act 537 Plan Detailed Cost Analysis: Wastewater Treatment Plant Capital and O&M Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR ^K	Township WWTP Oxidation Ditch	Township WWTP SBR ^K	Regional WWTP Oxidation Ditch	Regional WWTP SBR ^K	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning System ^K	SBR	Village of Goodville Extended Aeration
Design Flow (MGD)	0.210	0.210	0.210	0.200	0.200	0.410	0.410	0.205	0.165		0.035
WWTP Land Area Required (Acre)	0.5	2.0	0.5	3.5	2.5	4.0	3.2	0.5	2.0		1.0
WWTP Land Costs (2015,\$) ^L	\$ -	\$ -	\$ -	\$ 402,500.00	\$ 287,500.00	\$ 460,000.00	\$ 368,000.00	\$ 12,500.00	\$ 230,000.00		\$ 25,000.00
WWTP Capital Costs											
Equalization Tank	\$ 275,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,000.00
Influent Pump Station	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 365,000.00	\$ 365,000.00	\$ 250,000.00	\$ 200,000.00	\$ -	\$ 90,000.00
Influent Screen	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ 195,000.00	\$ -	\$ 15,000.00
Aeration Equipment	\$ 400,000.00	\$ 400,000.00	\$ 557,900.00	\$ 400,000.00	\$ 557,900.00	\$ 750,000.00	\$ 1,300,000.00	\$ 557,900.00	\$ 455,000.00	\$ -	\$ 215,000.00
Treatment Unit Tank	\$ 350,000.00	\$ 880,000.00	\$ 457,100.00	\$ 880,000.00	\$ 457,100.00	\$ 1,060,000.00	\$ 850,000.00	\$ 457,100.00	\$ 400,000.00	\$ -	\$ 200,000.00
Anoxic Selector	\$ 215,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Post Equalization (See Footnote K)	\$ -	\$ 90,000.00	\$ -	\$ 90,000.00	\$ -	\$ 180,000.00	\$ -	\$ -	\$ -	\$ -	\$ 35,000.00
Secondary Clarifier Modifications	\$ 185,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Secondary Clarifier	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,000.00
Cloth Filter	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ 271,400.00	\$ -	\$ 135,700.00
UV Disinfection	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 110,000.00	\$ 220,000.00	\$ 220,000.00	\$ 110,000.00	\$ 110,000.00	\$ -	\$ 55,000.00
Septage Receiving Station ^M	\$ -	\$ -	\$ -	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ -	\$ 200,000.00	\$ -	\$ -
Control Building	\$ 100,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 550,000.00	\$ 800,000.00	\$ 800,000.00	\$ 550,000.00	\$ 470,000.00	\$ -	\$ 190,000.00
Potable Water System w/Onsite Well	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ -	\$ 20,000.00	\$ -	\$ 20,000.00
Anaerobic Digester Upgrades	\$ 450,000.00	\$ 450,000.00	\$ 450,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sludge Holding - Aerobic (See Footnote K)	\$ -	\$ -	\$ -	\$ 350,000.00	\$ -	\$ 350,000.00	\$ -	\$ -	\$ -	\$ -	\$ 90,000.00
Mobilization	\$ 130,000.00	\$ 130,000.00	\$ 125,000.00	\$ 130,000.00	\$ 125,000.00	\$ 200,000.00	\$ 200,000.00	\$ 125,000.00	\$ 110,000.00	\$ -	\$ 40,000.00
Sitework w/Excavation	\$ 250,000.00	\$ 400,000.00	\$ 200,000.00	\$ 400,000.00	\$ 200,000.00	\$ 620,000.00	\$ 310,000.00	\$ 200,000.00	\$ 200,000.00	\$ -	\$ 125,000.00
Electrical	\$ 195,000.00	\$ 190,000.00	\$ 126,730.00	\$ 190,000.00	\$ 125,000.00	\$ 315,000.00	\$ 130,000.00	\$ 125,000.00	\$ 115,000.00	\$ -	\$ 55,000.00
Controls & Instrumentation	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 80,000.00	\$ 80,000.00	\$ 140,000.00	\$ 140,000.00	\$ 80,000.00	\$ 70,000.00	\$ -	\$ 20,500.00
Piping	\$ 565,000.00	\$ 565,000.00	\$ 145,000.00	\$ 565,000.00	\$ 145,000.00	\$ 940,000.00	\$ 235,000.00	\$ 145,000.00	\$ 230,000.00	\$ -	\$ 145,000.00
HVAC	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 85,000.00	\$ 180,000.00	\$ 180,000.00	\$ 85,000.00	\$ 71,000.00	\$ -	\$ 20,500.00
Tapping Fee to Earl Township (appr. \$8700/EDU)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Cost Subtotal	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ -	\$ 1,591,700.00
Total Construction Cost (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 5,168,900.00	\$ 3,658,900.00	\$ 7,266,400.00	\$ 5,784,400.00	\$ 3,163,900.00	\$ 3,347,400.00	\$ -	\$ 1,591,700.00
WWTP Salvage Value (2015,\$) ^H	\$ 1,130,183.33	\$ 1,115,183.33	\$ 758,615.83	\$ 1,516,433.33	\$ 1,044,433.33	\$ 2,128,516.67	\$ 1,607,266.67	\$ 769,433.33	\$ 956,266.67	\$ -	\$ 372,300.00
Present Worth WWTP Salvage Value (2015,\$)	\$ 457,550.97	\$ 451,478.27	\$ 307,123.10	\$ 613,923.00	\$ 422,835.37	\$ 861,722.90	\$ 650,696.57	\$ 311,502.53	\$ 387,141.38	\$ -	\$ 150,724.42
N= 20 i= 0.04625											
WWTP Operation & Maintenance Costs											
Operator Wage & Benefit	\$ 135,000.00	\$ 140,000.00	\$ 110,000.00	\$ 140,000.00	\$ 110,000.00	\$ 175,000.00	\$ 150,000.00	\$ 60,000.00	\$ 90,000.00	\$ -	\$ 30,000.00
Administrative	\$ 10,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 17,000.00	\$ 17,000.00	\$ 11,000.00	\$ 9,500.00	\$ -	\$ 3,400.00
Insurance	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ -	\$ 1,500.00
Electric	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 55,000.00	\$ 45,000.00	\$ 105,000.00	\$ 85,000.00	\$ 45,000.00	\$ 33,000.00	\$ -	\$ 7,500.00
Chemical	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 15,000.00	\$ 17,500.00	\$ 22,500.00	\$ 32,000.00	\$ 32,000.00	\$ 15,000.00	\$ -	\$ 5,000.00
Natural Gas or Diesel	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 1,500.00	\$ 2,000.00	\$ 2,000.00	\$ 1,500.00	\$ 1,000.00	\$ -	\$ 500.00
Materials & Equipment	\$ 24,500.00	\$ 24,500.00	\$ 20,000.00	\$ 24,500.00	\$ 20,000.00	\$ 32,000.00	\$ 25,500.00	\$ 25,500.00	\$ 21,500.00	\$ -	\$ 6,500.00
Constructural/Other	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 17,500.00	\$ 22,500.00	\$ 22,500.00	\$ 25,500.00	\$ 15,000.00	\$ -	\$ 5,000.00
Nutrient Credits (assumes TN & TP = \$2.50/credit)	\$ -	\$ -	\$ -	\$ 5,300.00	\$ 5,300.00	\$ -	\$ -	\$ 5,300.00	\$ 4,400.00	\$ -	\$ 900.00
Sludge Handling	\$ 20,000.00	\$ 20,000.00	\$ 25,000.00	\$ 20,000.00	\$ 25,000.00	\$ 30,000.00	\$ 35,000.00	\$ 29,500.00	\$ 30,000.00	\$ -	\$ 10,000.00
Annual PA DEP NPDES Permit Fee	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ 500.00	\$ -	\$ 250.00
Vehicle Operation and Maintenance	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ -	\$ 2,500.00
Professional Services - Software and Support	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ -	\$ 2,000.00
Total WWTP O&M Costs (2015,\$)	\$ 280,000.00	\$ 295,500.00	\$ 258,500.00	\$ 300,800.00	\$ 263,800.00	\$ 419,000.00	\$ 382,000.00	\$ 248,300.00	\$ 228,900.00	\$ -	\$ 75,050.00
WWTP Operation & Maintenance Present Worth (2015,\$)	\$ 3,603,090.38	\$ 3,802,547.17	\$ 3,326,424.51	\$ 3,870,748.52	\$ 3,394,625.87	\$ 5,391,767.39	\$ 4,915,644.74	\$ 3,195,169.08	\$ 2,945,526.39	\$ -	\$ 965,756.90
N= 20 i= 0.04625											

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems Capatial Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4		
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning System	SBR	Village of Goodville Extended Aeration	
Collection System Land Area (Acre)				1.0	1.0	1.0	1.0	1.0	1.0		0.0	
Collection System Land Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ 25,000.0	\$ -	
Collection System Capital Costs												
Gravity Sewer Main 8-Inch Dia PVC												
Conestoga View	\$ -	\$ -	\$ -	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ 54,000.00	\$ -	
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ 310,000.00	\$ -	
Union Grove Rd ^A	\$ -	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ -	\$ -	\$ 142,500.00	\$ 142,500.00	\$ 142,500.00	\$ -	
S.R. 625/Reading Road	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,140,000.00	\$ -	\$ -	\$ -	
S.R. 897/Springville Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Gravity Sewer Main 10-Inch Dia PVC												
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ 1,437,500.00	\$ -	\$ 1,437,500.00	\$ -	\$ -	
Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 412,500.00	\$ 412,500.00	\$ -	\$ 412,500.00	\$ -	\$ -	
S.R. 23/Main Street	\$ -	\$ -	\$ -	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ 218,750.00	\$ -	\$ 218,750.00	\$ -	\$ -	
S.R. 897/Toddy Drive	\$ -	\$ -	\$ -	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ 187,500.00	\$ -	\$ 187,500.00	\$ -	\$ -	
Sewer Main to WWTP	\$ -	\$ -	\$ -	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ -	\$ 150,000.00	\$ -	\$ -	
Precast Manholes - Concrete	\$ -	\$ -	\$ -	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 330,000.00	\$ 290,000.00	\$ 310,000.00	\$ -	\$ -	
Forcemain 2-Inch Dia PVC												
Ironstone Dr	\$ -	\$ -	\$ -	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ -	
Spring Grove Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	
Valley View Rd to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	
Silver Road to S.R. 23/Main St	\$ -	\$ -	\$ -	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ 12,500.00	\$ -	\$ 12,500.00	\$ 12,500.00	
Forcemain 3-Inch Dia PVC	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Spring Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Forcemain 4-Inch Dia DI												
Spring Grove Rd	\$ -	\$ -	\$ -	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ 155,000.00	\$ -	\$ -	
S.R. 897 & E Main St to Union Grove Rd (high point)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,000.00	\$ 80,000.00	\$ -	\$ -	\$ -	\$ -	
Forcemain 6-Inch Dia DI												
Frogtown Rd to S.R. 625	\$ -	\$ -	\$ -	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ 170,000.00	\$ -	\$ -	\$ -	
S.R. 23 to Frogtown Rd	\$ -	\$ -	\$ -	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ 592,000.00	\$ -	\$ -	\$ 592,000.00	
Forcemain 8-Inch Dia DI												
Borough of Terre Hill (Existing WWTP Site) to Union Grove Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 812,500.00	\$ 812,500.00	\$ -	\$ -	\$ -	\$ -	
Pump Stations w/Backup Power & Controls												
Spring Grove Road (North of Conestoga River)	\$ -	\$ -	\$ -	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ 221,600.00	\$ -	
Village of Goodville (Frogtown Rd)	\$ -	\$ -	\$ -	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ 443,200.00	\$ -	\$ -	\$ 443,200.00	
Borough of Terre Hill (Existing WWTP Site)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 831,000.00	\$ 831,000.00	\$ -	\$ -	\$ -	\$ -	
S.R. 23/Main Street Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 720,150.00	\$ -	\$ -	\$ -	
S.R. 625/Reading Rd	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	\$ -	
State Route Mill & Overlay												
S.R. 625/Reading Rd (N. of Conestoga River)	\$ -	\$ -	\$ -	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ 81,100.00	\$ -	
S.R. 625/Reading Rd (S. of Conestoga River)	\$ -	\$ -	\$ -	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ 126,700.00	\$ -	
S.R. 23/Main Street (S.R. 897/Springville Rd to S.R. 625/Reading Rd)	\$ -	\$ -	\$ -	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ 30,400.00	\$ -	
S.R. 23/Main Street (S.R. 625 to Frogtown Rd)	\$ -	\$ -	\$ -	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ 20,300.00	\$ -	
S.R. 23/Main Street (Frogtown Rd to Bridgeville Rd)	\$ -	\$ -	\$ -	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ 116,550.00	\$ -	\$ -	\$ 116,550.00	
S.R. 897/Springville Rd (Toddy Dr to S.R. 23/Main St)	\$ -	\$ -	\$ -	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ 25,350.00	\$ -	
S.R. 1044 (E Main St to S.R. 625)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 202,700.00	\$ 202,700.00	\$ -	\$ -	\$ -	\$ -	
U.S. 322 (Ewell Rd to E Earl Rd)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,800.00	\$ 22,800.00	\$ 22,800.00	\$ -	
State Route Mill & Overlay Subtotal	\$ -	\$ -	\$ -	\$ 400,400.00	\$ 400,400.00	\$ 603,100.00	\$ 603,100.00	\$ 423,200.00	\$ 306,650.00	\$ 116,550.00	\$ 116,550.00	
Existing Forcemain & Low Pressure Sewer System Upgrades												
Low Pressure Main Increase to 10-Inch DI												
S.R. 23 & S.R. 625 to East Earl Road	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 936,250.00	\$ -	\$ -	\$ -	
East Earl Road to Witmer Road Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 443,200.00	\$ -	\$ -	\$ -	
Kinzer Avenue								\$ 1,802,500.00				
Pump Station Upgrades												
Witmer Road Pump Station Upgrade ^B	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	\$ -	
Kinzer Avenue Pump Station Upgrade ^B	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 360,075.00	\$ -	\$ -	\$ -	
Construction Cost Sub Total	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	\$ 1,191,750.00	
Total Construction Cost (2015,\$)	\$ -	\$ -	\$ -	\$ 4,917,450.00	\$ 4,917,450.00	\$ 7,113,650.00	\$ 7,113,650.00	\$ 9,111,950.00	\$ 3,998,500.00	\$ 1,191,750.00	\$ 1,191,750.00	
Collection System Salvage Value (2015,\$) ^H	\$ -	\$ -	\$ -	\$ 2,542,950.00	\$ 2,542,950.00	\$ 3,517,450.00	\$ 3,517,450.00	\$ 4,543,703.33	\$ 2,166,016.67	\$ 526,933.33	\$ 526,933.33	
Present Worth Salvage Value (2015,\$)	\$ -	\$ -	\$ -	\$ 1,029,504.86	\$ 1,029,504.86	\$ 1,424,027.95	\$ 1,424,027.95	\$ 1,839,503.20	\$ 876,904.65	\$ 213,327.21	\$ 213,327.21	
N= 20 i= 0.04625												

Joint Act 537 Plan Detailed Cost Analysis: Collection and Conveyance Systems O&M Costs

Description	Alternative 1						Alternative 2		Alternative 3	Alternative 4		
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR		Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning System	SBR	Village of Goodville Extended Aeration
Collection System Operation & Maintenance Costs												
Operator Wage & Benefits	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00		\$ 30,000.00	\$ 30,000.00	\$ 40,000.00	\$ 25,000.00		\$ 10,000.00
Officer Compensation	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ -		\$ -
Advertising	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 500.00	\$ 500.00	\$ 500.00	\$ -		\$ -
Administrative	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 10,000.00	\$ 10,000.00		\$ 2,500.00
Insurance	\$ -	\$ -	\$ -	\$ 3,500.00	\$ 3,500.00		\$ 5,000.00	\$ 5,000.00	\$ 4,000.00	\$ 3,000.00		\$ 1,500.00
Electric	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 40,000.00	\$ 40,000.00	\$ 60,000.00	\$ 7,500.00		\$ 2,500.00
Natural Gas or Diesel	\$ -	\$ -	\$ -	\$ 5,000.00	\$ 5,000.00		\$ 5,500.00	\$ 5,500.00	\$ 7,000.00	\$ 3,500.00		\$ 1,500.00
Materials & Equipment	\$ -	\$ -	\$ -	\$ 15,000.00	\$ 15,000.00		\$ 20,000.00	\$ 20,000.00	\$ 30,000.00	\$ 15,000.00		\$ 7,500.00
Constructural/Other	\$ -	\$ -	\$ -	\$ 10,000.00	\$ 10,000.00		\$ 15,000.00	\$ 15,000.00	\$ 20,000.00	\$ 10,000.00		\$ 5,000.00
Vehicle Operation and Maintenance	\$ -	\$ -	\$ -	\$ 2,500.00	\$ 2,500.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 2,500.00		\$ 2,500.00
Professional Services - Software and Support	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 3,000.00	\$ 3,000.00	\$ 3,000.00	\$ 3,000.00		\$ 3,000.00
Professional Services - Engineering	\$ -	\$ -	\$ -	\$ 25,000.00	\$ 25,000.00		\$ 30,000.00	\$ 30,000.00	\$ 25,000.00	\$ 20,000.00		\$ 5,000.00
Communications	\$ -	\$ -	\$ -	\$ 3,000.00	\$ 3,000.00		\$ 6,000.00	\$ 6,000.00	\$ 8,000.00	\$ 3,000.00		\$ 1,500.00
LS for O&M of Existing Borough System	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 25,000.00	\$ 25,000.00				
Collection System Operation & Maintenance Costs (2015,\$)	\$ -	\$ -	\$ -	\$ 117,000.00	\$ 117,000.00		\$ 206,000.00	\$ 206,000.00	\$ 213,500.00	\$ 102,500.00		\$ 42,500.00
Collection System Operation & Maintenance Present Worth Cost (2015,\$)	\$ -	\$ -	\$ -	\$ 1,505,577.05	\$ 1,505,577.05		\$ 2,650,845.07	\$ 2,650,845.07	\$ 2,747,356.42	\$ 1,318,988.44		\$ 546,897.65
N= 20 i= 0.04625												
WWTP & Collection System Sub Total (2015,\$)	\$ 4,111,400.00	\$ 4,651,400.00	\$ 3,608,130.00	\$ 10,086,350.00	\$ 8,576,350.00		\$ 14,380,050.00	\$ 12,898,050.00	\$ 12,275,850.00	\$ 7,345,900.00		\$ 2,783,450.00
Construction Contingency (15%)	\$ 616,710.00	\$ 697,710.00	\$ 541,219.50	\$ 1,512,952.50	\$ 1,286,452.50		\$ 2,157,007.50	\$ 1,934,707.50	\$ 1,841,377.50	\$ 1,101,885.00		\$ 417,517.50
Construction Cost Subtotal	\$ 4,728,110.00	\$ 5,349,110.00	\$ 4,149,349.50	\$ 11,599,302.50	\$ 9,862,802.50		\$ 16,537,057.50	\$ 14,832,757.50	\$ 14,117,227.50	\$ 8,447,785.00		\$ 3,200,967.50
Admin, Engineering, Legal Services (20%)	\$ 945,622.00	\$ 1,069,822.00	\$ 829,869.90	\$ 2,319,860.50	\$ 1,972,560.50		\$ 3,307,411.50	\$ 2,966,551.50	\$ 2,823,445.50	\$ 1,689,557.00		\$ 640,193.50
WWTP & Collection System Present Worth (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00		\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00		\$ 3,841,161.00
Net Present Worth of Total Project (2015,\$) - ADJUSTED TO INCLUDE MILL & OVERLAY	\$ 8,819,271.41	\$ 9,770,000.90	\$ 7,998,520.81	\$ 17,652,060.72	\$ 15,283,225.69		\$ 25,601,330.61	\$ 23,291,074.28	\$ 20,732,192.77			\$ 18,127,574.72

Joint Act 537 Plan Detailed Cost Analysis: Overall Cost Summary and User Rates

Description	Alternative 1					Alternative 2		Alternative 3	Alternative 4	
	Borough WWTP Rehabilitate/Upgrade (w/anoxic selector)	Borough WWTP Oxidation Ditch	Borough WWTP SBR	Township WWTP Oxidation Ditch	Township WWTP SBR	Regional WWTP Oxidation Ditch	Regional WWTP SBR	East Earl Township Connects Into Existing LPS System	SR 625 Sewage Planning System	SBR Village of Goodville Extended Aeration
EDU Count - Planning Area & Existing EESA Borough of Terre Hill (2014 Chap 94 Report) - UPDATED	629	629	629			629	629			
Existing East Earl Sewer Authority (including Shady Maple Smorgasbord)				1437	1437	1437	1437	1437		1437
Village of Goodville										
Residential				106	106	106	106	106		106
Commercial				13	13	13	13	13		13
Future				5	5	5	5	5		5
Goodville Industrial Center				16	16	16	16	16		16
Conestoga Wood Specialty ^D - Changed from 40 EDU to 76 EDU ≈ 19,000 gpd				76	76	76	76	76		76
East Earl Sewer Authority Planning Area Residential & Commercial				140	140	140	140	140		140
4440 U.S. 322/Division Highway (32.4 Acres) ^E – REMOVED										
4996 U.S. 322/Division Highway (45.6 Acres) ^E – REMOVED										
Total EDUs Served (Includes 230 for East Earl, LLC.)	629	629	629	1793	1793	2422	2422	1793		1793
Total Cost Per EDU (2015,\$)^F	\$ 14,021.10	\$ 15,532.59	\$ 12,716.25	\$ 9,844.99	\$ 8,523.83	\$ 10,570.33	\$ 9,616.46	\$ 11,562.85	\$ 10,110.19	
Projected EESA Debt for the Earl Sewer Authority WWTP Upgrades (2015,\$)	\$ -	\$ -	-	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	\$ 3,500,000.00	
Projected EESA Annual Debt Service for the Earl WWTP Upgrades (2015,\$)^I N= 240 i= 0.172%	\$0.00	\$0.00	\$0.00	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$213,726.40	\$ 213,726.40	
WWTP & Collection System Projected Construction Costs (2015,\$)	\$ 5,673,732.00	\$ 6,418,932.00	\$ 4,979,219.40	\$ 13,919,163.00	\$ 11,835,363.00	\$ 19,844,469.00	\$ 17,799,309.00	\$ 16,940,673.00	\$ 10,137,342.00	\$ 3,841,161.00
Projected Intital Tapping Fee Revenue Tapping Fee= \$7,160	\$ -	\$ -	\$ -	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	\$ 2,513,160.00	
Projected Alternative Initial Debt (2015,\$)	\$5,673,732.00	\$6,418,932.00	\$4,979,219.40	\$11,406,003.00	\$9,322,203.00	\$17,331,309.00	\$15,286,149.00	\$14,427,513.00	\$11,465,343.00	
Projected Alternative Aunual Debt Service (2015,\$)^I N= 240 i= 0.172%	\$346,464.67	\$391,970.07	\$304,054.47	\$696,504.00	\$569,257.41	\$1,058,330.95	\$933,443.90	\$881,011.56	\$700,127.58	
Exisiting O&M Costs^J	\$174,070.00	\$174,070.00	\$174,070.00	\$1,005,047.22	\$1,005,047.22	\$1,184,339.32	\$1,184,339.32	\$1,005,047.22	\$1,005,047.22	
Projected O&M Costs for New Collection, Conveyance, and Treatement Systems	\$280,000.00	\$295,500.00	\$258,500.00	\$417,800.00	\$380,800.00	\$625,000.00	\$588,000.00	\$461,800.00	\$331,400.00	\$117,550.00
Projected User Fee (per quarter)	\$318.18	\$342.42	\$292.78	\$295.50	\$272.60	\$296.00	\$279.29	\$327.36	\$300.35	
Projected User Fee (per month)	\$106.06	\$114.14	\$97.59	\$98.50	\$90.87	\$98.67	\$93.10	\$109.12	\$100.12	

FootNotes

A - If the collection system within East Earl Township is constructed solely for the Township, Union Grove Road between the Borough of Terre Hill's boundary down to S.R. 625/Reading Road would require an 8-Inch, instead of a 10-inch main. Therefore costs would be adjusted by \$230,000 for this line item to account for the higher costs as compared to the regional alternative. However, if the regional alternative is pursued then the separate line item for Union Grove Road, under 10-Inch Gravity Sewer Main reflects this costs. The line size is increased for the flow of from the Borough of Terre Hill.

B - Assumes half the costs of a new pump station located at the intersection of S.R. 22 and S.R. 625

C - Footnote no longer applies as proposed development was removed for the purpose of determining final cost. See revision appendix - MS Excel Row No.'s 179 & 180.Estimated number of EDUs for property based on a mixed use of townhomes, apartments and single family homes. This estimate is based on ELA's experience with other land development projects within Lancaster County. The property at 4440 U.S.322/Division Highway in Alternative No. 1 and 2 would go to the existing EESA LPS system because of the shifting of capacity from Shady Maple Smorgasbord over to a new WWTP.

D - Footnote was inconsistent with the Municipal Authorities Act and has been removed from the final Joint Act 537 Plan.

E - Total EDU costs does not account for individual homeowners that must purchase grinder pump systems.

F - Original footnote is no applicable due to the difference in project completion dates. Assumes construction starts in 2019 and that inflation data from the Federal Reserve Bank – Philadelphia, since 2005 has shown inflation to however between 2.10 and 2.50 %. Therefore, for conservative calcluation, an inflation rate of 2.5% is used. <http://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/historical-data/inflation-forecasts.cfm>

G - Assumes average of inflation in construction costs from ENR's CCI 1995 - 2014. The inflationary period covers the recessionary period starting in late 2007/early 2008, as well as the rapid rise in building cost in the years before the recession; however, if 2004 to 2008 are excluded an inflation rate of 2.5% is computed, instead of the 3.1% for the full period. Since the ENR CCI data closely reflects that of the Fed and BLS's data, an inflation rate of 2.5% is also used. Also reviewed was the U.S. Bureau of Reclamation Construction Cost Trend data for western states, which showed some consistency with ENR, BLS and the Fed-Phila

H - Assumes construction is completed by 1.1.2021 and therefore the 20 year evaluation period starts from 2021.

I - Assumes 20 year loan term with 240 scheduled payments and a PENNVEST blended monthly intrrest rate of 2.063%/12 for Lancaster County per the PENNVEST website.

J - Existing 2014 Budgets for East Earl and Terre Hill O&M costs (minus Terre Hill's estimated WWTP costs), inflated by 3.0% to 2015 dollars

NEW K - The SBR Treatment Unit Tank & Aeration Equipment include costs for Post Equalization and Sludge Holding

NEW L - Estimated Acreage Cost of \$115,000/Industrial Acre and \$25,000/Agricultural Acre. These estimated values are based on recent estimates for property in East Earl Township

NEW M - A Septage Station would allow the Joint Sewer Authority to accept septage at the WWTP and generate a revenue stream; however, an estimated revenue stream was not considered in this cost analysis

Joint Act 537 Sewage Facilities Plan

Maps 7 - 11

DRAFT

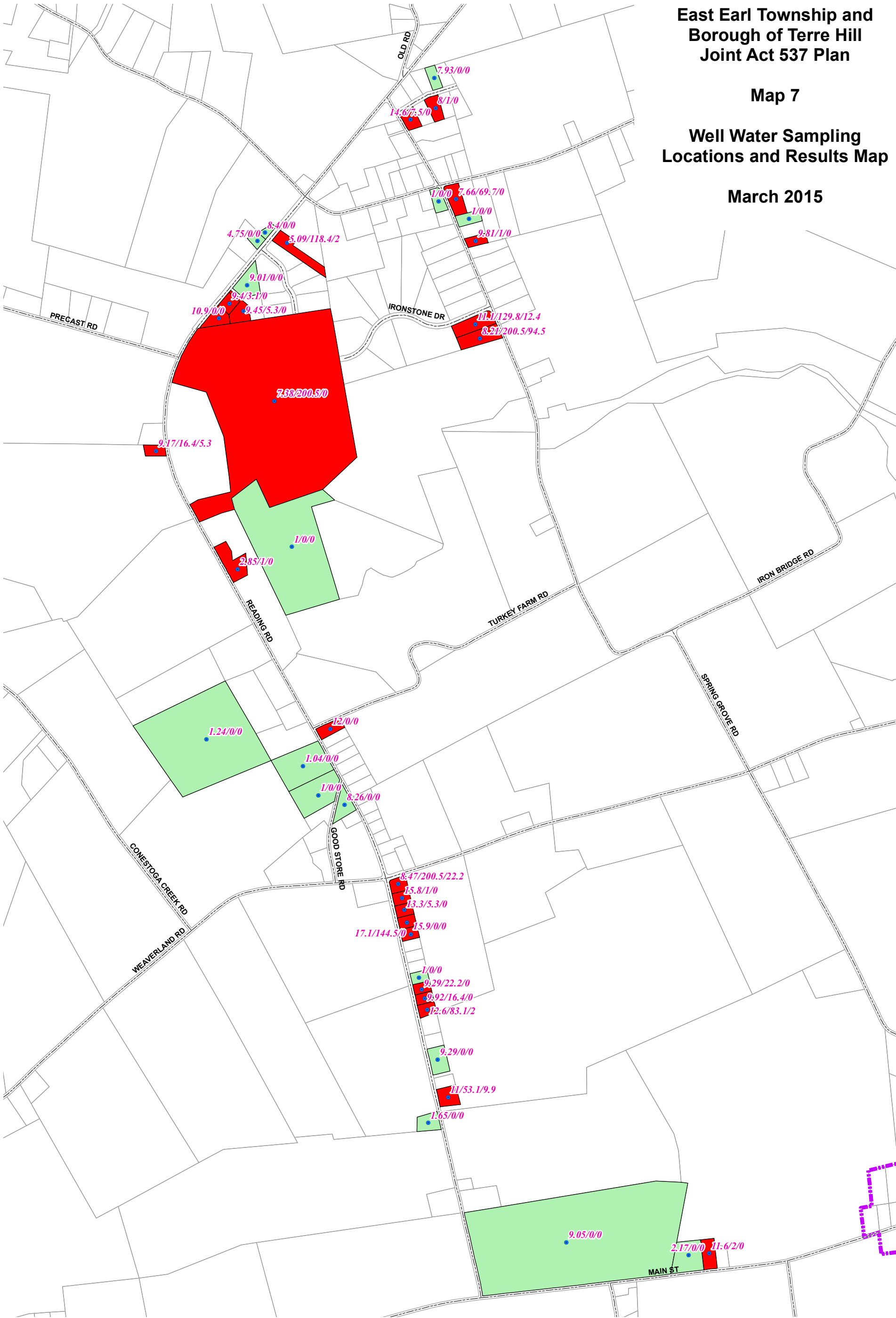


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 7

Well Water Sampling
Locations and Results Map

March 2015



Map Legend

- Goodville Village Growth Area
- Well Sampling Results (Nitrates/Total Coliform/Fecal Coliform)
- Pass
- Fail

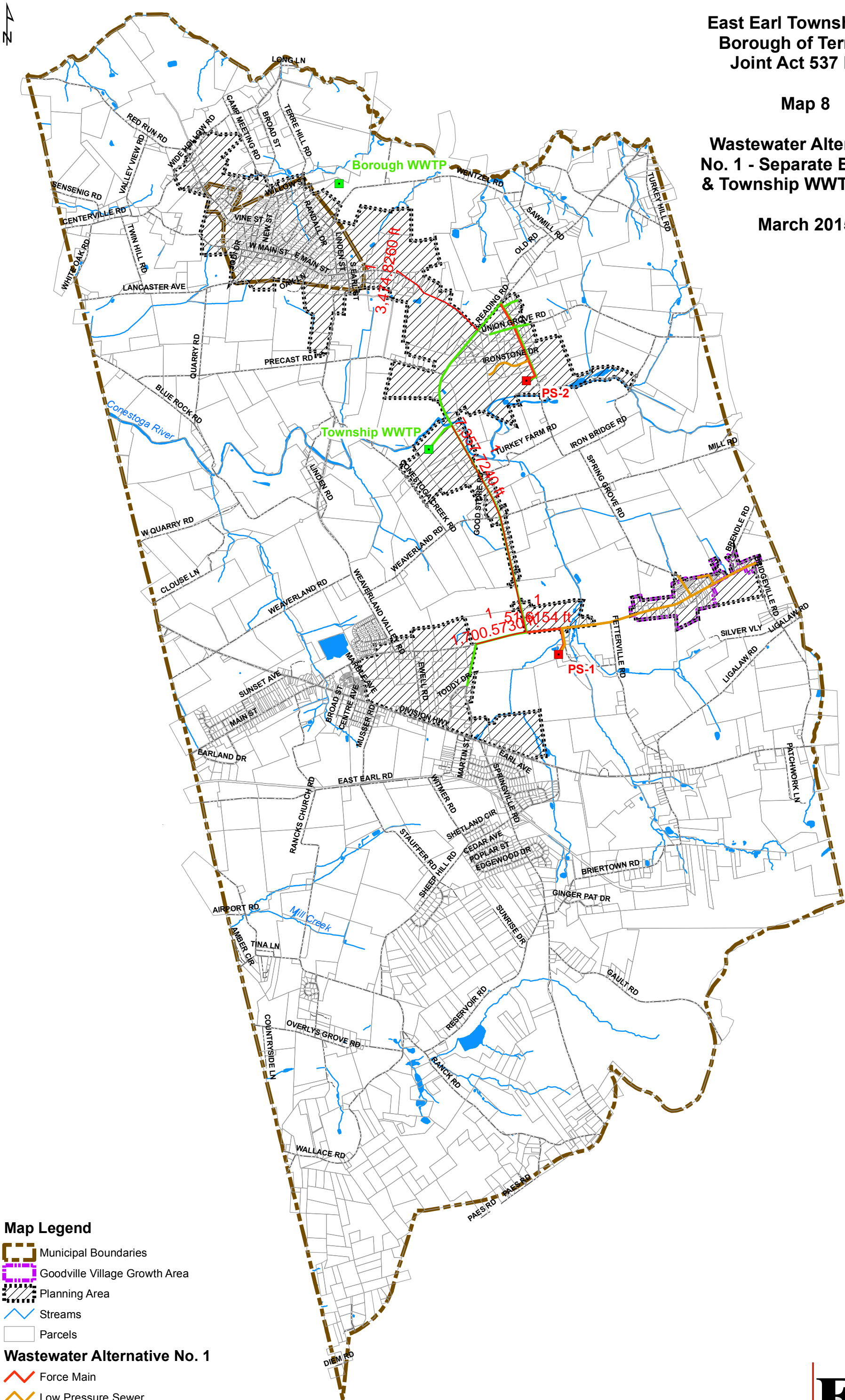


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 8

Wastewater Alternative
No. 1 - Separate Borough
& Township WWTPs Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 1

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet

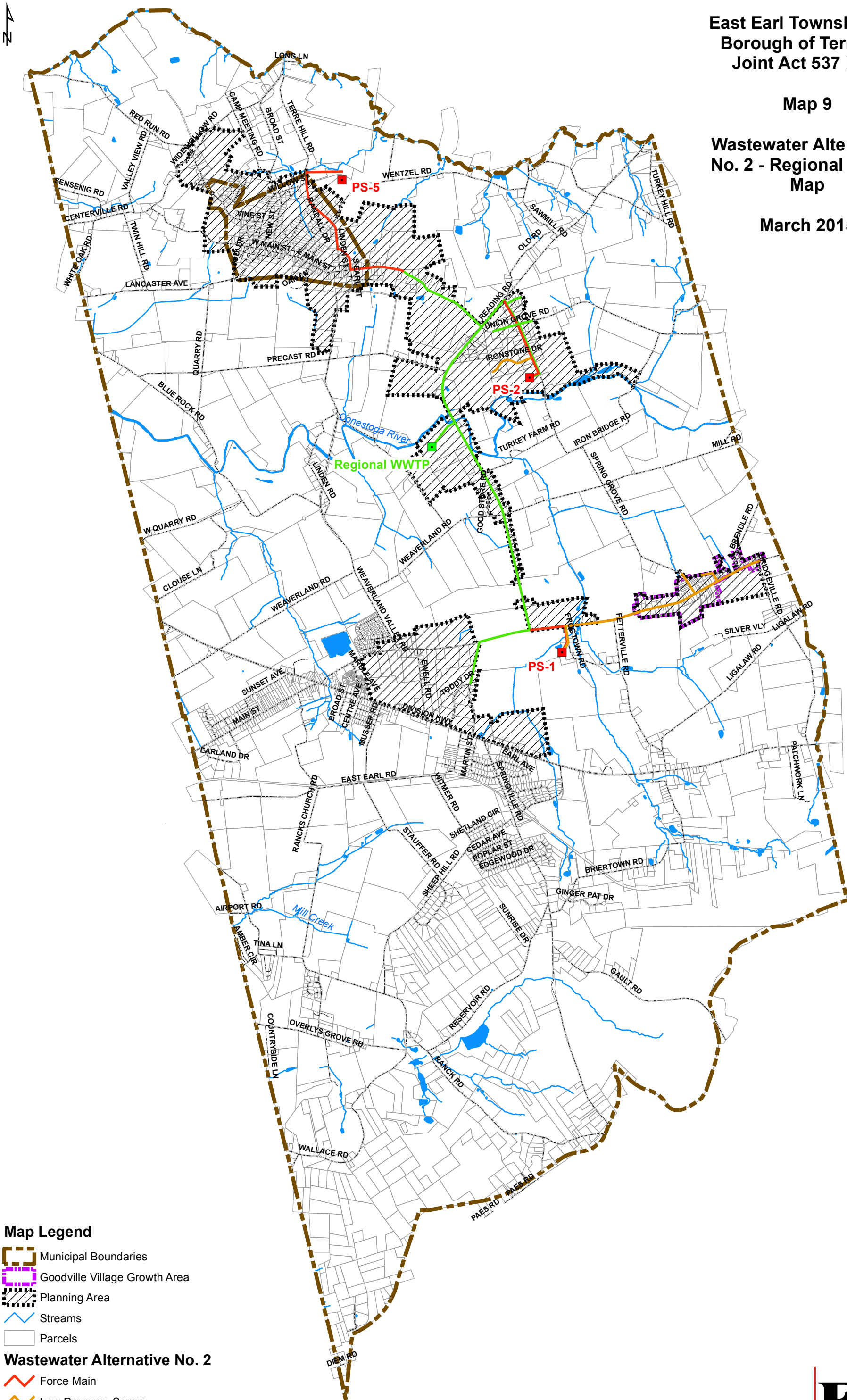


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 9

Wastewater Alternative
No. 2 - Regional WWTP
Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 2

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet

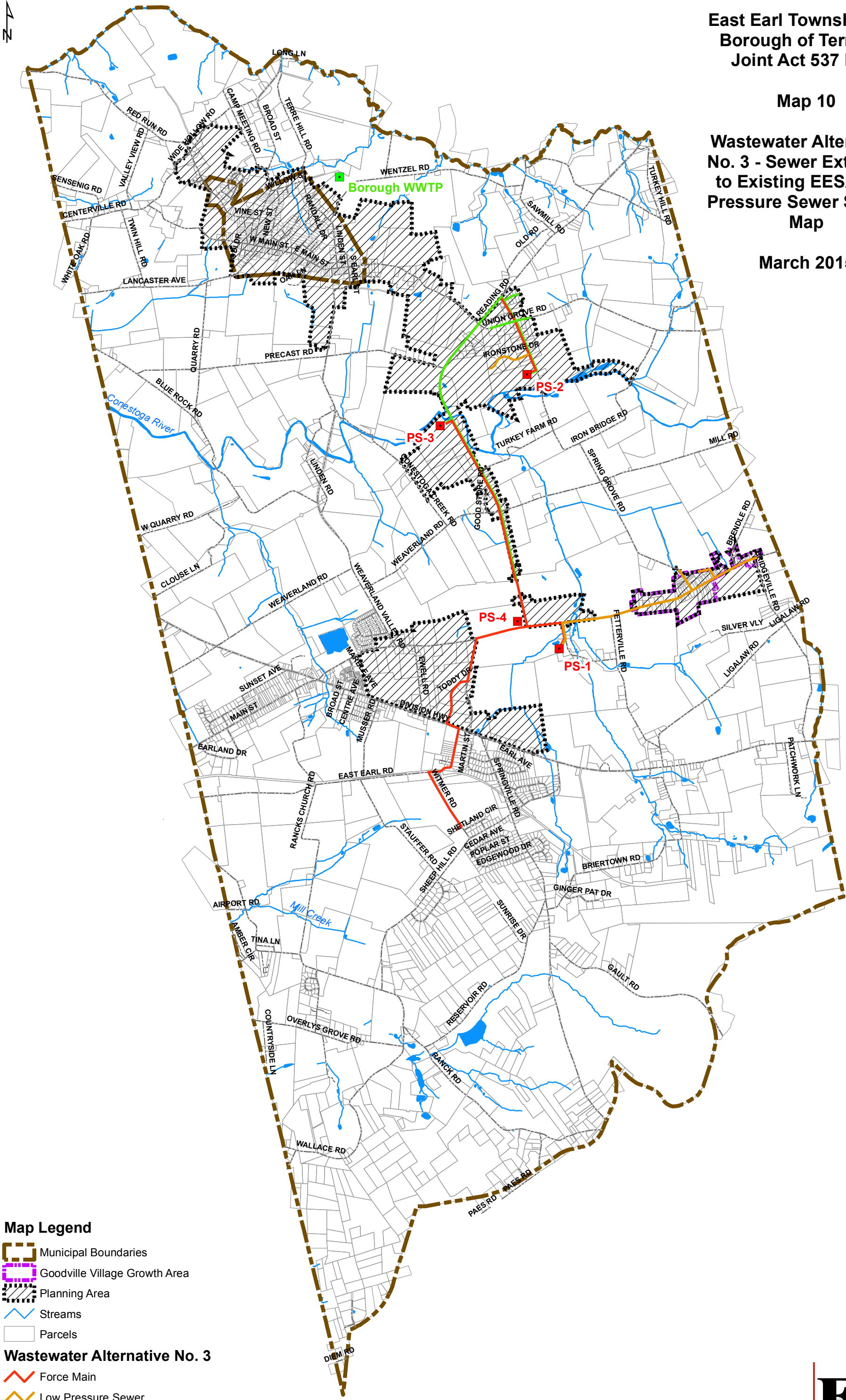


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 10

Wastewater Alternative
No. 3 - Sewer Extension
to Existing EESA Low
Pressure Sewer System
Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 3

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet

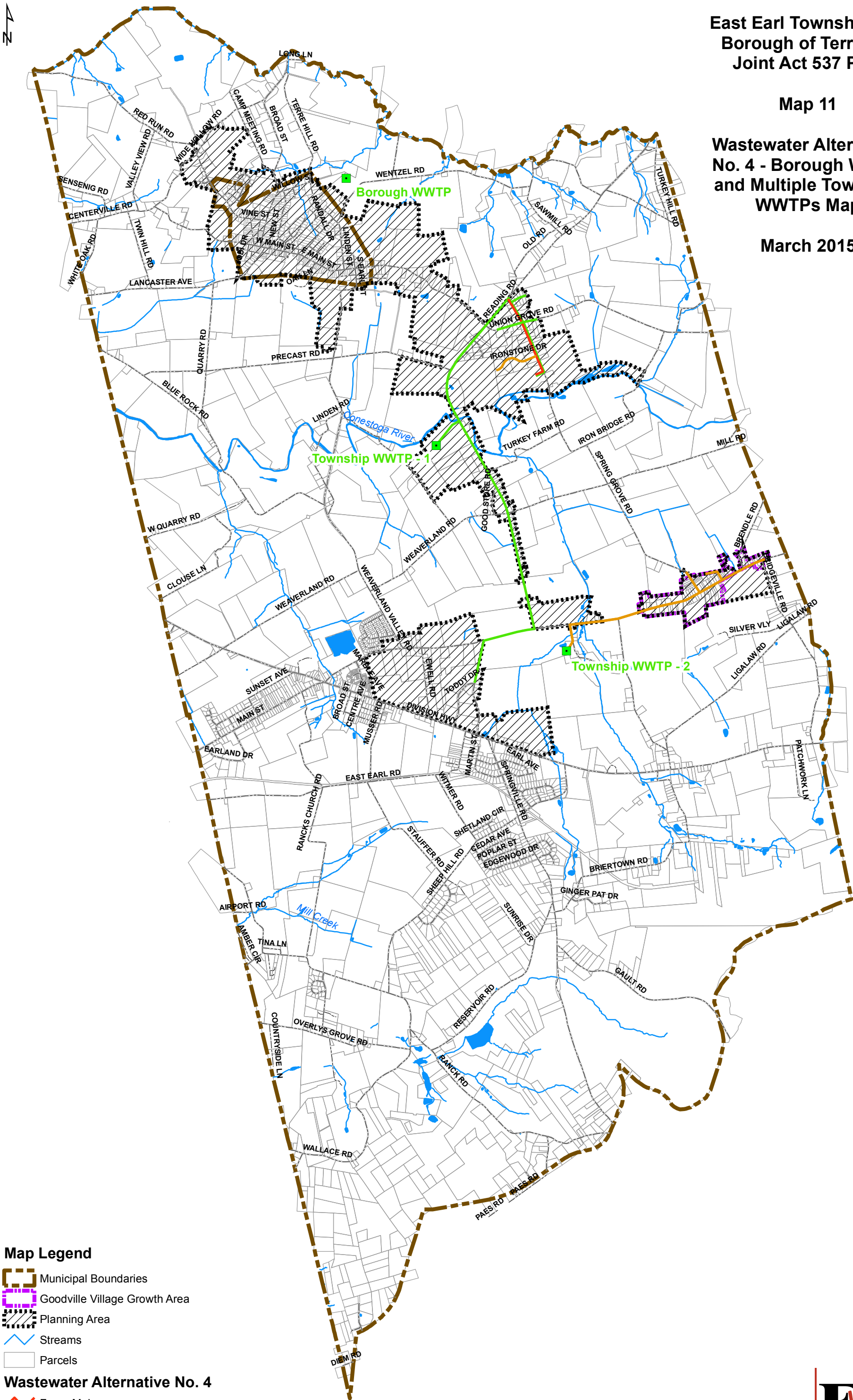


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 11

Wastewater Alternative
No. 4 - Borough WWTP
and Multiple Township
WWTPs Map

March 2015

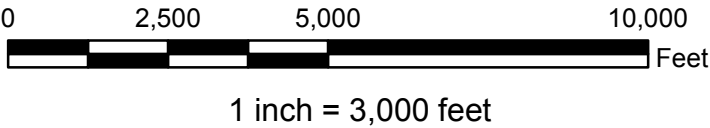


Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 4

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Wastewater Treatment Plant



Appendix N
Resolution of Adoption

**TOWNSHIP OF EAST EARL
LANCASTER COUNTY, PENNSYLVANIA**

RESOLUTION NO. 17-2015

A RESOLUTION OF THE BOARD OF SUPERVISORS OF
THE TOWNSHIP OF EAST EARL, LANCASTER COUNTY,
PENNSYLVANIA, TO ADOPT A JOINT ACT 537 OFFICIAL
SEWAGE FACILITIES PLAN FOR EAST EARL TOWNSHIP.

WHEREAS, the Board of Supervisors of the Township of East Earl (the "Board of Supervisors") authorized the preparation of a Joint Act 537 Official Sewage Facilities Plan ("Plan") for the Township in conjunction with the Borough of Terre Hill; and

WHEREAS, ELA Group, Inc., was selected as the consultant to assist the Board of Supervisors in the preparation of the Plan; and

WHEREAS, pursuant to the regulations of the Pennsylvania Department of Environmental Protection (the "Department"), the Board of Supervisors advertised the preparation of the proposed Plan and provided a 30-day public comment period for such Plan; and

WHEREAS, the Township provided a copy of the proposed Plan to the Lancaster County Planning Commission for review in accordance with the regulations of the Department; and

WHEREAS, the Board of Supervisors desires to adopt the proposed Plan as its Joint Act 537 Official Sewage Facilities Plan in accordance with the provisions and requirements of the Pennsylvania Sewage Facilities Act (Act 537) and the Regulations of the Department.

NOW THEREFORE, BE IT RESOLVED by the Board of Supervisors of East Earl Township, Lancaster County, Pennsylvania, as follows:

Section 1. The Board of Supervisors adopts the official sewage facilities plan entitled "Joint Act 537 Official Sewage Facilities Plan" for East Earl Township prepared by ELA Group, Inc., in the form and content presented at this public meeting, as the official sewage facilities plan for the Township in accordance with the Pennsylvania Sewage Facilities Act and the regulations of the Department.

Section 2. The Plan as adopted by the Board of Supervisors shall include the following sections and all maps, charts, tables, diagrams, appendices, figures and textual matter contained therein and appended thereto:

- Section 1: Executive Summary;
- Section 2: Sewage Facilities Planning Act;
- Section 3: Borough of Terre Hill;
- Section 4: Borough of Terre Hill and East Earl Township Joint Sewer Authority; and
- Section 5: Public Participation.

Section 3. The Board of Supervisors adopts ALTERNATIVE NO. 2 (Joint Sewer Authority Operates Regional WWTP) which shall be implemented by the Township upon approval of the Plan by the Department in accordance with the implementation schedule set forth in Table 24 of the Plan. Should the formation of a joint authority not be accomplished within six (6) months of Department's approval of the Plan, the Board of Supervisors then adopts ALTERNATIVE NO. 1 (Municipalities Construct a Separate WWTP) as the contingent alternative.

Section 4. This Resolution shall become effective and be in force immediately.

DULY ADOPTED this 9th day of June, 2015 by the Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, in lawful session duly assembled.

EAST EARL TOWNSHIP

Attest:

Connie J. Gross
(Asst) Secretary

By: Carl H. Kreider
(Vice) Chairman

[TOWNSHIP SEAL]

CERTIFICATION

I, Connie J. Gross, Secretary of the Board of Supervisors of East Earl Township, Lancaster County, Pennsylvania, do hereby certify that the foregoing is a true and correct copy of a Resolution duly adopted at a legally constituted meeting of the Board of Supervisors of East Earl Township held on June 9, 2015, at which meeting a quorum was present and voted in favor thereof.

Signed *Connie J. Gross*
Secretary

(seal)

BOROUGH OF TERRE HILL
LANCASTER COUNTY, PENNSYLVANIA

RESOLUTION NO.

2015-5

RECEIVED
JUN 19 2015
ELA GROUP, Inc.

A RESOLUTION OF THE BOROUGH COUNCIL OF THE
BOROUGH OF TERRE HILL, LANCASTER COUNTY,
PENNSYLVANIA, TO ADOPT A JOINT ACT 537 OFFICIAL
SEWAGE FACILITIES PLAN WITH EAST EARL
TOWNSHIP

WHEREAS, the Borough Council (**Borough Council**) of the Borough of Terre Hill (**Borough**) authorized the preparation of a Joint Act 537 Official Sewage Facilities Plan (**Plan**) for the Borough in conjunction with East Earl Township (**Township**); and

WHEREAS, ELA Group, Inc., was selected as the consultant to assist the Borough and Township in the preparation of the Plan; and

WHEREAS, pursuant to the regulations of the Pennsylvania Department of Environmental Protection (**Department**), the Township advertised the preparation of the proposed Plan and provided a 30-day public comment period for such Plan; and

WHEREAS, the Township provided a copy of the proposed Plan to the Lancaster County Planning Commission for review in accordance with the regulations of the Department; and

WHEREAS, the Borough desires to adopt the proposed Plan as its Joint Act 537 Official Sewage Facilities Plan in accordance with the provisions and requirements of the Pennsylvania *Sewage Facilities Act* (**Act 537**) and the Regulations of the Department.

NOW, THEREFORE, BE IT RESOLVED by the Borough Council of Terre Hill Borough, Lancaster County, Pennsylvania, as follows:

Section 1. The Borough adopts the official sewage facilities plan entitled "*Joint Act 537 Official Sewage Facilities Plan for East Earl Township prepared by ELA Group, Inc.*", in the form and content presented at this public meeting, as the official sewage facilities plan for the Borough in accordance with the Pennsylvania *Sewage Facilities Act* and the regulations of the Department.

Section 2. The Plan as adopted by the Borough shall include the following sections and all maps, charts, tables, diagrams, appendices, figures and textual matter contained therein and appended thereto:

- Section 1: Executive Summary
- Section 2: Sewage Facilities Planning Act
- Section 3: Borough of Terre Hill
- Section 4: Borough of Terre Hill and East Earl Township Joint Sewer Authority
- Section 5: Public Participation.


Section 3. The Borough adopts ALTERNATIVE NO. 2 (Joint Sewer Authority Operates Regional WWTP), which shall be implemented by the Borough and the Township upon approval of the Plan by the Department in accordance with the implementation schedule set forth in Table 24 of the Plan. Should the formation of a joint authority not be accomplished within six (6) months of Department's approval of the Plan, the Borough then adopts ALTERNATIVE NO. 1 (Municipalities Construct a Separate WWTP) as the contingent alternative.

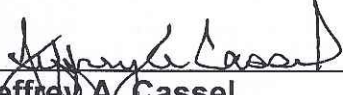
Section 4. This Resolution shall become effective and be in force immediately.

DULY ADOPTED this 9th day of June 2015 by the Borough Council of the Borough of Terre Hill, Lancaster County, Pennsylvania, in lawful session duly assembled.

ATTEST:

TERRE HILL BOROUGH,
Lancaster County, Pennsylvania


Valerie A. Gregory
Borough Secretary

By: 
Jeffrey A. Cassel
Borough Council President

[BOROUGH SEAL]

Appendix O
Township Zoning and Land Development Ordinance

**EAST EARL TOWNSHIP
ZONING ORDINANCE**

ADOPTED: FEBRUARY 8, 2000

PREPARED BY:

**THE
EAST EARL TOWNSHIP PLANNING COMMISSION
EAST EARL TOWNSHIP BOARD OF SUPERVISORS**

FACILITATED BY:

**ELA Group, Inc.
48 Copperfield Circle
Lititz, PA 17543**

ARTICLE III
DESIGNATION OF DISTRICTS

ARTICLE III

DESIGNATION OF DISTRICTS

Section 301. ZONING DISTRICTS

For the purpose of this Zoning Ordinance, the Township is hereby divided into districts which shall be designated as follows:

(AG)	Agricultural
(CO)	Conservation/Open Space
(RL)	Residential Low Density
(RM)	Residential Medium Density
(CN)	Commercial Neighborhood
(CG)	Commercial General
(IV)	Industrial Vehicular
(IL)	Industrial Light
(MR)	Mineral Recovery District
(FW)	Floodway
(FF)	Flood Fringe

Section 302. ZONING MAP

- A. The boundaries of AG, CO, RL, RM, CN, CG, IV, IL and MR Districts shall be as shown, upon the map attached to and made a part of this Ordinance which shall be designated "Zoning Map". The said map and all the notations, reference and other data shown thereon are hereby incorporated by reference into this Ordinance as if all were fully described herein.
- B. The boundaries of the FW and FF Districts shall serve as overlays to the underlying Districts as shown on the Official Zoning Map, and as specifically described in the Floodway Data Table and 100 year flood delineation in the Flood Insurance Study (FIS) prepared for the Township by the Flood Insurance Administration (FIA) dated September 4, 1987. The said study and accompanying maps, all notations, reference and other data shown thereon are hereby incorporated by reference into this Ordinance as if all were fully described herein.

Section 303. DISTRICT BOUNDARIES

- A. The boundaries between these districts are, unless otherwise indicated, either the lot lines or the center lines of streets.
- B. Where figures are shown on the Zoning Map between a street, alley, right-of-way, or lot line, and a district boundary line, such figures indicate that the district boundary line runs parallel to that line at a distance therefrom equivalent to the number of feet so indicated.
- C. Where district boundaries are not clearly fixed by the above methods, such boundaries shall be determined by the use of the scale of the Zoning Map.

- D. Should any other uncertainty exist, the Zoning Officer shall interpret the intent of the Zoning Ordinance and Map as to the exact location of district boundaries.

ARTICLE IV
AGRICULTURAL (AG) DISTRICT

ARTICLE IV

AGRICULTURAL (AG) DISTRICT

Section 401. INTENDED PURPOSE

The regulations for this District are intended to protect those areas in the Township that primarily consist of prime agricultural soils. Residential development, as well as, compatible farm-related occupations shall be permitted on a limited basis.

Section 402. PERMITTED USES

- A. Agricultural uses in accordance with Section 1301.2 herein. In conjunction with any agricultural use in this zone on a lot of record in existence as of May 10, 1983, one single family dwelling ("First Dwelling") occupied by the person conducting the agricultural use and his or her family shall be permitted as of right. In addition, a second single family dwelling ("Second Dwelling"), which may be either an add-on to the First Dwelling or a separate structure, shall be permitted on such a lot of record, provided the applicant demonstrates compliance with and agrees to abide by all of the following conditions:
1. The occupants of the Second Dwelling shall be members of the same family who occupy the First Dwelling or a full time employee of the farm on which the First Dwelling is situated.
 2. The lot of record must be used for agricultural purposes.
 3. Prior to construction of the Second Dwelling, approval shall be obtained from the Pennsylvania Department of Environmental Protection and/or the Township's Sewage Enforcement Officer for the type of sewage treatment method proposed.
 4. A Sketch Plan shall be submitted with any application for a Second Dwelling depicting it and all relevant features necessary for the Zoning Officer to determine compliance with all applicable dimensional provisions of this Ordinance.
 5. If the Second Dwelling is proposed to be a structure separate from the First Dwelling, the Second Dwelling shall be located on the lot of record in such a way to permit, if allowed by this Ordinance, subdivision of the Second Dwelling from the lot of record in compliance with all provisions of this Ordinance relating to single family dwelling use.
 6. The Second Dwelling shall be located at a location to comply with Article XVII of this Ordinance (relating to Floodplain Management).
 7. An "East Earl Township's Farm Housing Agreement," which is available at the Township Office, shall be executed by the property owners and East Earl Township and recorded at the Lancaster County Office of the Recorder of Deeds.
 8. By filing an application for a Second Dwelling, the applicant and

occupants of the First and Second Dwellings agree that the Township Zoning Officer and/or Township representatives shall be entitled to reasonably inspect the lot of record and all structures on it for the purpose of verifying compliance with this section, and shall agree upon request by the Township to annually provide information to the Township concerning the use and occupancy of the Second Dwelling to verify compliance with this Section.

9. Any subdivision sought for the lot of record (which would necessarily require compliance with Section 405 of this Ordinance) shall include a subdivision of the Second Dwelling.
- B. Farm-related occupations in accordance with Section 1301.16 herein.
 - C. Single family detached dwellings.
 - D. Public park and recreational areas and facilities.
 - E. Game refuges.
 - F. Public and private conservation areas and structures for the conservation of open land, water, soil and wildlife resources and historic preservation.
 - G. Uses and buildings customarily accessory and incidental to any permitted use.

Section 403. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX, herein.

- A. Kennels.
- B. Veterinary facilities.
- C. Home occupation.
- D. Accessory apartments in accordance with Section 1301.4 herein.
- E. Bed and breakfast establishments.
- F. Churches or similar places of worship, parish houses, convents.
- G. Cemeteries and monument sales.
- H. Public and private schools.
- I. Public utility and communication uses.
- J. Municipal buildings and facilities, including emergency services facilities, sewage and water pumping stations, reservoirs and similar structures.

Section 404. HEIGHT REGULATIONS

- A. The height of a non-agricultural principal building shall not exceed thirty-five (35') feet.
- B. The height of an non-agricultural accessory structure shall not exceed fifteen (15') feet.
- C. No height restrictions shall be placed upon agricultural structures.

Section 405. DIMENSIONAL AND IMPERVIOUS COVERAGE REGULATIONS

A. Number of Dwelling Units and Lots for Nonagricultural Purposes Permitted

- 1. In order to preserve agricultural tracts, it is the expressed intent of this provision that the subdivision lots from farms or the development of nonagricultural uses and structures on existing farms shall be limited. In addition, it is the expressed intent of this provision that the maximum size of lots created for any use other than agriculture, be limited in order to provide for the retention of tracts of sufficient size to be used for agricultural purposes. It is the intent of the Board of Supervisors to implement the mandate of the Pennsylvania Municipalities Planning Code, as amended, to preserve prime agricultural land through the enactment of these regulations.
- 2. The combined maximum number of dwelling units and lots for nonagricultural purposes shall be based on the acres of contiguous land held in single and separate ownership (the "parent tract" as defined herein) on May 10, 1983, or, if such land was not classified as Agricultural District on May 10, 1983, the date on which such land was first zoned Agricultural District. The following scale shall be used to determine the permissible subdivision/land development:

<u>Size of Parcel</u>	<u>Permitted Number of Dwellings/Lots for Nonagricultural Purposes</u>
0-49.99 acres	1
50-99.99 acres	2
100 or more acres	3

- 3. Any land development, the purpose of which is to permit the erection of a permanent single-family dwelling on a parent tract which has been previously improved with a dwelling, which also will remain upon the tract, or to permit the erection of a structure for an additional principal use of the parent tract, including any and all other agricultural uses, shall be considered a subdivision for purposes of this section. It is the purpose and intent of this section to limit the development of agricultural tracts regardless of whether such development is accomplished by subdivision or land development as those terms are defined herein.
- 4. No subdivision shall be permitted which shall increase the lot size as set forth in Subsection B, below. Any lot which is three (3) acres or

less in size shall be presumed to be used for residential or nonagricultural purposes and the size of such lot shall not be increased.

5. A subdivision, the sole purpose of which is to transfer land to increase the size of a lot being used for agricultural purposes, where both the parent tract from which the land is taken and the lot to which the land is added, totals twenty (20) acres or more after such subdivision, shall not be included when computing the permissible number of lots to be subdivided from a tract as set forth in Subsection A.2. above.
6. A subdivision to create a lot which will be transferred to the township, a municipal authority created by the township, or other governmental entity, shall not be included when computing the permissible number of lots to be subdivided from a tract as set forth in Subsection A.2. above.
7. Any subdivision or land development plan hereafter filed with the applicable approving body for subdivision or land development of a parent tract shall specify which lot or lots shall carry with it a right of further subdivision or nonagricultural land development, if any such right remains from the number allocated to the parent tract on May 10, 1983, or on the date when such land was first included within the Agricultural District, whichever is later. The right of further subdivision or nonagricultural land development or a note stating that no further subdivision or nonagricultural land development is permissible, shall also be included on the recorded subdivision/land development plan and in the deed to the newly created lot. In the event that a lot, which was not classified as part of the Agricultural District on May 10, 1983, is or was thereafter classified as part of the Agricultural District, the size and ownership of any such lot, on the effective date of the change in zoning classification, shall determine the number of lots which may be subdivided from or the number of single-family dwellings or other principal nonagricultural buildings which may be erected on such lot.
8. In no event shall any tract of land which is subdivided or resubdivided after the same becomes subject to the provisions of this Section 406, nor any of the lots which are created by such subdivision or resubdivision, result in an increase in the number of lots permitted by Subsection A.2. of this Section.

B. Lot Area:

1. Agriculture:

Minimum lot area shall be ten (10) acres.

2. Single Family Detached Dwelling:

Minimum lot area: one (1) acre

Maximum lot area: three (3) acres; provided, however, that the

maximum lot area may be increased if, after completing any hydrogeologic studies required by the Township and/or DER, a larger lot area is required to accommodate an individual on-lot sewage disposal system.

3. All Other Uses:

Lot area shall be based upon required setbacks, impervious coverage, parking and loading/unloading area standards, but in no instance shall be less than one (1) acre nor greater than three (3) acres; provided, however, that the maximum lot area may be increased if, after completing any hydrogeologic studies required by the Township and/or DER, a larger lot area is required to accommodate an individual on-lot sewage disposal.

C. Lot Width:

1. The minimum lot width shall be not less than:

- (a) One hundred fifty (150') feet at the minimum building setback line.
- (b) Fifty (50') feet at the dedicated right-of-way.

D. Impervious Coverage:

1. Impervious coverage shall not exceed twenty-five (25%) percent.

Section 406. SETBACK REGULATIONS

The following setback regulations shall apply to all uses permitted within this District unless otherwise specified herein:

A. Principal Uses

1. Front Yard: Fifty-five (55') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.

2. Side Yards:

- (a) Single Family Residential Uses: Twenty (20') feet.
- (b) Agricultural Uses and Farm-related Occupations: Fifty (50') feet.
- (c) Other Uses: As specified in Article XIII herein.

3. Rear Yard:

- (a) Single Family Residential Uses: Forty (40') feet.
- (b) Agricultural Uses and Farm-related Occupations: Fifty (50') feet.
- (c) Other Uses: As specified in Article XIII herein.

B. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 and 1309 herein.

C. Where required, buffer yards/screening shall be provided in accordance with Section 1306 herein.

D. For permitted yard reductions, refer to Section 1305 herein.

Section 407. OFF-STREET PARKING/ACCESS

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended.

ARTICLE V

CONSERVATION/OPEN SPACE (CO) DISTRICT

ARTICLE V

CONSERVATION/OPEN SPACE (CO) DISTRICT

Section 501. INTENDED PURPOSE

The Conservation/Open Space District is designed to protect areas in the Township for the preservation and conservation of the natural environment and watershed area, encourage the retention of forested and steep sloped areas and wildlife resources while permitting very limited residential and passive recreational uses.

Section 502. PERMITTED USES

- A. Single-family detached dwellings.
- B. Agricultural uses in accordance with Section 1301.2 herein.
- C. Public park and recreation areas and facilities, game refuges and similar nonintensive uses.
- D. Public conservation areas and structures for the conservation of open land, water, soil and wildlife resources and historic preservations.
- E. Public campgrounds and facilities.
- F. Electric and telephone public utility transmission and distribution facilities, including substations.
- G. Signs, when erected and maintained in accordance with Article XVI herein.
- H. Municipal facilities, including, emergency services facilities, water pumping stations, reservoirs and similar structures.
- I. Uses and buildings customarily accessory and incidental to any permitted use.

Section 503. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Private conservation areas and structures for the conservation of open land, water, soil and wildlife resources and historic preservation.
- B. Private park and recreation areas and facilities, game refuges and similar nonintensive uses.
- C. Private campgrounds and facilities.
- D. Farm-related occupations in accordance with Section 1301.16 herein.

Section 504. SPECIAL PROVISIONS

- A. All future development shall comply with applicable general provisions and floodplain management regulations as set forth in Articles XIII and XVII herein.

Section 505. HEIGHT REGULATIONS

- A. The height of a principal structure shall not exceed thirty-five (35') feet.
- B. The height of an accessory structure shall not exceed fifteen (15') feet.
- C. Farm structures shall be exempt from height regulations.

Section 506. LOT AREA, LOT WIDTH AND IMPERVIOUS COVERAGE REGULATIONS

A. Lot Area:

- 1. The lot area shall be based upon required setbacks, impervious coverage, parking and loading/unloading, on-lot well and septic system requirements, floodplain/wetland, steep slope requirements, woodland preservation and other applicable criteria as set forth in this Ordinance. Under no circumstances shall a lot be less than three (3) acres in area.

B. Lot Width:

- 1. The minimum lot width shall be not less than:
 - (a) Two hundred (200') feet at the building line.
 - (b) Fifty (50') feet at the dedicated right-of-way.

C. Impervious Coverage:

- 1. Lot impervious coverage shall not exceed twenty (20%) percent.

Section 507. SETBACK REGULATIONS

The following setback regulations apply to all uses permitted within this District unless otherwise specified herein:

- A. Front yard: Fifty-five (55') feet measured from the centerline of the right-of-way.
- B. Side yards: Thirty (30') feet.
- C. Rear yard: Fifty (50') feet.
- D. Where required, buffer yards/screening shall be provided for in accordance with Section 1306 herein.
- E. Accessory Buildings and Structures: Shall provide front, side and rear yards in accordance with Section 1305 herein.

F. For permitted yard reductions, refer to Section 1305 herein.

Section 508. OFF-STREET PARKING/ACCESS

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended.

ARTICLE VI
RESIDENTIAL LOW DENSITY (RL) DISTRICT

ARTICLE VI

RESIDENTIAL LOW DENSITY (RL) DISTRICT

Section 601. INTENDED PURPOSE

The regulations for this District are intended to provide low density residential areas within the Township, located primarily adjacent to higher density residential development, thereby limiting further encroachment into the existing agricultural areas.

Section 602. PERMITTED USES

- A. Single-family detached dwellings.
- B. Agriculture, horticulture, or floriculture, and any accessory uses or structures appurtenant thereto, including farm-based businesses.
- C. Signs, when erected and maintained in accordance with Article XVI herein.
- D. Uses and buildings customarily accessory and incidental to any permitted use.

Section 603. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Churches or similar places of worship, parish house, convents.
- B. Public and private schools.
- C. Accessory apartments.
- D. Family day care homes.
- E. Home occupations.
- F. Cemeteries and monument sales.
- G. Municipal facilities, public libraries, and emergency services facilities.
- H. Public parks, playgrounds and municipal recreation areas.
- I. Public utility and communication uses where operation requirements necessitate locating within the District.
- J. Clubs and lodges.
- K. Radio and television antennas.

Section 604. HEIGHT REGULATIONS

- A. The height of a principal building shall not exceed thirty-five (35') feet.
- B. The height of an accessory structure shall not exceed fifteen (15') feet.

Section 605. LOT AREA, LOT WIDTH AND IMPERVIOUS COVERAGE REGULATIONS

Unless otherwise specified in Article XIII herein, lot area, lot width and impervious coverage requirements of not less than the following dimensions shall be provided for each structure or use hereafter erected, established or altered for any use permitted within this District.

A. Lot Area:

1. Single-family detached dwelling

- (a) On-lot septic system: one (1) acre or larger if required by Township Sewage Enforcement Officer and/or Pennsylvania Department of Environmental Resources.
- (b) Public sewer: 15,000 square feet.
- (c) Water: Approval is subject to an on-lot water study showing sufficient capacity in accordance with East Earl Township Subdivision and Land Development Ordinance

2. For all other permitted uses, the lot area shall be based upon required setbacks, impervious coverage, parking and loading/unloading standards, and on-lot well and septic system requirements, but in no instance shall be less than twenty thousand (20,000) square feet.

B. Lot Width:

1. Building Setback Line

- (a) On-lot septic system: one-hundred-fifty (150') feet.
- (b) Public sewer: ninety (90') feet.

C. Maximum Impervious Coverage:

- 1. Single-family detached dwellings: Thirty (30%) percent.
- 2. Nonresidential uses: Forty (40%) percent.

Section 606. SETBACK REGULATIONS

The following setback regulations apply to all uses permitted within this District unless otherwise specified herein:

A. On-lot septic system:

1. Front yard: Forty-five (45') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.

2. Side yards: Fifteen (15') feet.

3. Rear yard: Forty (40') feet.

B. Public sewer:

1. Front yard: Forty-five (45') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.

2. Side yards: Ten (10') feet.

3. Rear yard: Twenty-five (25') feet.

- C. Where required, buffer yards/screening shall be provided in accordance with Section 1306 herein.

- D. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 herein.

- E. For permitted yard reductions, refer to Section 1305 herein.

- F. When located adjacent to agricultural uses, shade trees shall not be planted closer than ten (10') feet to the affected property line.

Section 607. OFF-STREET PARKING/ACCESS

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended.

ARTICLE VII

RESIDENTIAL MEDIUM DENSITY (RM) DISTRICT

ARTICLE VII

RESIDENTIAL MEDIUM DENSITY (RM) DISTRICT

Section 701. INTENDED PURPOSE

The regulations for this District are intended to provide for various types of higher density residential development, in order to encourage a mix of housing types, in older residential areas of the Township. Emphasis is placed upon the accessibility to transportation, community facilities, and public facilities.

Section 702. PERMITTED USES

- A. Single-family detached dwelling.
- B. Single-family semi-detached dwelling.
- C. Two-family detached dwelling (duplex dwelling).
- D. Single-family attached dwelling (rowhouse, townhouse and multiplex dwellings).
- E. Apartment dwellings (garden apartment, apartment house).
- F. Non-commercial agricultural and horticultural uses and structures, such as greenhouses, when accessory to a residential use.
- G. Signs, when erected and maintained in accordance with Article XVI herein.
- H. Uses and buildings customarily accessory and incidental to any permitted uses.

Section 703. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Conversion apartments.
- B. Accessory apartments.
- C. Family day care home.
- D. Home occupations.
- E. Mobile (manufactured) home parks.
- F. Public and private parks, playgrounds and municipal recreation areas.
- G. Municipal facilities, public libraries and emergency services facilities.
- H. Churches or similar places of worship, parish house, convents.

- I. Public and private schools.
- J. Group care facilities.
- K. Group day care facilities.
- L. Adult day care facilities.
- M. Personal care boarding homes.
- N. Boarding homes.
- O. Nursing homes.
- P. Clubs and lodges.
- Q. Public utility and communication uses where operation requirements necessitate locating within the District.
- R. Radio and television antennas.
- S. Family Care Facility

Section 704. HEIGHT REGULATIONS

- A. The height of a principal structure shall not exceed thirty-five (35') feet.
- B. The height of an accessory structure shall not exceed fifteen (15') feet.

Section 705. LOT AREA, LOT WIDTH AND MAXIMUM IMPERVIOUS COVERAGE REGULATIONS

A. Residential Uses

- 1. The minimum lot area per dwelling unit, minimum lot width at the building setback lines and maximum impervious coverage shall be not less than that indicated below:
 - (a) On-lot septic system: one (1) acre or larger if required by Township Sewage Enforcement Officer and/or Pennsylvania Department of Environmental Resources.
 - (b) Public Water/Public Sewer

DWELLING TYPE	LOT AREA/ DWELLING UNIT (square feet)	LOT WIDTH AT SETBACK (feet)	MAX. IMPER. COVERAGE (%)
Single-family detached	10,000	80	40
Single-family semi- detached	5,000	50	50
Single-family attached	3,000	20	50
Two-family detached	5,000	100 ¹	50
Apartment	2,000	---	50
Accessory apartment	2,500	100 ¹	50
Conversion apartment	5,000	100 ¹	50
¹ per building			

B. Nonresidential Uses

1. For a permitted nonresidential use, the lot area shall be based upon required setbacks, impervious coverage, parking and loading/unloading standards, and on-lot well and septic system requirements, but in case shall be less than ten thousand (10,000) square feet.
2. Minimum lot width at building setback line: One hundred (100') feet.
3. Unless otherwise specified within Article XIII herein, lot impervious coverage for permitted nonresidential uses shall not exceed fifty (50%) percent.

Section 706. SETBACK REGULATIONS

The following setback regulations apply to all uses permitted within this District unless otherwise specified herein:

A. On-lot septic systems:

1. Front yard: Forty-five (45') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.
2. Side yards: Fifteen (15') feet.
3. Rear yards: Forty (40') feet.

B. Public sewer:

1. Front yard: Forty-five (45') feet measured from the centerline of the right-of-way.
 2. Side yards: (Excluding apartments and/or attached dwellings.) Eight (8') feet.
 3. Rear yard: (Excluding apartments and/or attached dwellings.) Twenty five (25') feet.
 4. Interior yards: (Open space between principal structures) Interior yards shall be provided in accordance with Section 1305.4 herein.
 5. For apartments and/or attached dwellings of one or two stories, there shall be a front yard, two (2) side yards and a rear yard each of not less than thirty (30') feet. For each story over two (2), five (5') feet of width or depth shall be added to each yard.
- C. Where required, buffer yards/screening shall be provided in accordance with Section 1306 herein.
- D. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 herein.
- E. For permitted yard reductions, refer to Section 1305 herein.
- F. When located adjacent to agricultural uses, shade trees shall not be planted closer than ten (10') feet to the affected property line.

Section 707. OFF-STREET PARKING/ACCESS

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended.

ARTICLE VIII

COMMERCIAL NEIGHBORHOOD (CN) DISTRICT

ARTICLE VIII

COMMERCIAL NEIGHBORHOOD (CN) DISTRICT

Section 801. INTENDED PURPOSE

The regulations for this District are intended to serve commercial needs of the surrounding residences and residential areas providing a variety of goods and services to meet their needs within existing mixed use areas.

Section 802. PERMITTED USES

- A. Single-family detached dwelling.
- B. Single-family semi-detached dwelling.
- C. Single-family attached dwelling (townhouse, rowhouse).
- D. Conversion apartments.
- E. Accessory apartments.
- F. Home occupations.
- G. Agriculture, horticulture, or floriculture, and any accessory uses or structures appurtenant thereto, including farm-related businesses.
- H. Bus passenger stations.
- I. Motels, hotels, boarding homes, bed and breakfast establishments.
- J. Any retail business not separately listed below as a permitted use or special exception whose principal activity is the sale of merchandise in an enclosed building, such as hardware, variety, clothing, personal service shops, appliance stores and similar retail activities, excluding drive-thrus.
- K. Convenience stores, including the sale of motor fuels.
- L. Business, financial, professional offices, including financial institutions, excluding drive-thrus.
- M. Personal service establishments, excluding drive-thrus.
- N. Repair establishments contained within an enclosed building.
- O. Eating and drinking establishments, excluding drive-thrus.
- P. Movie and performing arts theaters, studios for instruction in dance, music, arts and science.
- Q. Indoor recreational facilities.
- R. Florists, greenhouses, or nurseries, provided that all incidental equipment and supplies, including fertilizers and empty cans, are kept within a building.

- S. Group day care facilities.
- T. Personal care boarding homes.
- U. Boarding homes.
- V. Nursing homes.
- W. Day care facilities.
- X. Medical centers.
- Y. Parking as a principal use.
- Z. Municipal facilities.
- AA. Churches or similar places of worship, parish houses and convents.
- BB. Public utility and communication uses where operation requirements necessitate locating within the District.
- CC. Signs when erected and maintained in accordance with the provisions of Article XVI herein.
- DD. Uses and buildings customarily accessory and incidental to any permitted use.

Section 803. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Outside storage and display when accessory to a permitted use.
 - 1. Outside storage or display shall not occupy any part of the street right-of-way and no other area intended or designed for pedestrian use, required parking areas, nor required front yard.
 - 2. Outside storage areas, excluding display areas, shall be shielded from view from the public streets.
 - 3. Roadside produce stands and nurseries shall be exempted from outside storage limitations.
- B. Drive-in establishments.
- C. Radio and television antennas.
- D. Shopping centers and retail stores in excess of 50,000 square feet of gross floor area subject to 1301 (51).

Section 804. USE RESTRICTIONS

The above specified permitted and special exception uses shall be permitted only under the following conditions:

- A. Such stores, shops and businesses shall be conducted within an enclosed building, except as otherwise permitted in accordance with Article XIII herein.
- B. Such commercial uses shall be limited to a maximum combined area of three thousand (3,000) square feet of gross floor or land area utilized solely for the commercial use(s).
- C. Such uses, operations or products are not obnoxious or offensive by reason of the emission of gas, odor, dust, smoke, noise, vibration, refuse matter or other causes in accordance with Article XIII herein.
- D. There shall be no manufacturing, compounding, processing or treatment of products other than that which is clearly incidental and essential to a retail store, and when all such products are sold on the premises.

Section 805. HEIGHT REGULATIONS

- A. The height of a principal structure shall not exceed forty (40') feet.
- B. The height of an accessory structure shall not exceed twenty (20') feet.

Section 806. LOT AREA, LOT WIDTH AND MAXIMUM IMPERVIOUS COVERAGE REGULATIONS

A. Residential Uses

- 1. The minimum lot area per dwelling unit, minimum lot width at the building setback lines and maximum lot impervious coverage shall be as follows:

(a) On-lot septic system: one (1) acre or larger if required by Township Sewage Enforcement Officer and/or Pennsylvania Department of Environmental Resources.

(b) Public Water/Public Sewer:

DWELLING TYPE	LOT AREA/ DWELLING UNIT (square feet)	LOT WIDTH AT SETBACK (feet)	MAX. IMPER. COVERAGE (%)
Single-family detached	8,000	65	40
Single-family semi-detached	5,000	40	50
Single-family attached	3,000	10	50
Accessory apartment	2,500	65 ¹	50
Conversion apartment ¹ per building	5,000	65 ¹	50

2. Lot area, width, and impervious coverage regulations for all other residential uses shall be in accordance with Article VII herein.

B. Nonresidential Uses:

1. Except as otherwise required by Article XIII herein, minimum lot area and width for nonresidential uses shall be based upon required setbacks, maximum impervious coverage, parking, loading/unloading, and on-lot well and septic system requirements, and other applicable standards.
 2. Maximum impervious coverage: Seventy-five (75%) percent.
- C. At least ten (10%) percent of the lot area shall be maintained with a vegetative cover.

Section 807. SETBACK REGULATIONS

Unless otherwise specified, each lot shall have front, side and rear yards of not less than the depth or width indicated below:

- A. Front yard: Thirty-five (35') feet measured from the centerline of the right-of-way.
- Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.
- B. Side yards: Eight (8') feet. No side yard shall be required where structures abut one another.
- C. Rear yard: Twenty-five (25') feet.
- D. Interior yards: (open space between structures) Interior yards shall be provided in accordance with Section 1305.4 herein.
- E. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 herein.
- F. Buffer yards/screen plantings shall be provided in accordance with Section 1306 herein.

Section 808. OFF-STREET PARKING/ACCESS AND LOADING/UNLOADING

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended and Section 1301 (51).

Section 809. SITE DESIGN STANDARDS

The following additional site design standards are applicable for any new construction within the Commercial Neighborhood District:

A. Off-street parking:

1. Off-street parking shall be provided only at the side or to the rear of buildings.

B. Lighting:

1. Lighting must be controlled in both height and intensity to maintain rural character.
2. Light standards are restricted to a maximum of twenty (20') feet in height.
3. All lighting (except for security purposes) shall be turned off between the hours of 11 p.m. and 6 a.m. Exceptions will be granted by the Zoning Officer for those businesses which operate during such hours.

C. Curbs and sidewalks:

1. Curbs and sidewalks shall be required for all new construction and shall be installed in accordance with the applicable Subdivision and Land Development Ordinance, as amended.

ARTICLE IX

COMMERCIAL GENERAL (CG) DISTRICT

ARTICLE IX

COMMERCIAL GENERAL (CG) DISTRICT

Section 901. INTENDED PURPOSE

The purpose of the Commercial General District is to provide for the orderly development of a variety of highway-oriented commercial uses within certain areas of the Township along major roads and to minimize traffic congestion along such major roads through controlled ingress and egress.

Section 902. PERMITTED USES

- A. Dwelling units when accessory and incidental to a permitted nonresidential use.
- B. Financial institutions; business and professional offices.
- C. Eating establishments.
- D. Any retail business whose principal activity is the sale of merchandise in an enclosed building.
- E. Funeral homes.
- F. Retail sales in which both a workshop and repair shop and retail showroom are required.
- G. Motels, hotels, bed and breakfast establishments, boarding/rooming and lodging houses.
- H. Studio or galleries for the display and/or instruction of dance, art, music or similar cultural pursuits.
- I. Movie and performing arts theaters.
- J. Indoor recreational facilities, excluding amusement arcades.
- K. Bakery, candy, pastry, confectionery or ice cream retail sales, with minor related processing permitted.
- L. Bus passenger stations.
- M. Vehicular service stations.
- N. Vehicular garages for the storage and repair of motor vehicles, including vehicular body shops.
- O. Vehicular wash.
- P. Vehicular sales and equipment, as a permitted outdoor use.
- Q. Florists, greenhouses, roadside produce markets, or nurseries, provided that

all incidental equipment and supplies, including fertilizers and empty cans, are kept within a building.

- R. Self-service storage facilities.
- S. Fitness centers.
- T. Medical centers.
- U. Municipal facilities.
- V. Public utility and communication uses where operation requirements necessitate locating within the District.
- W. Signs when erected and maintained in accordance with the provisions of Article XVI herein.
- X. Uses and buildings customarily accessory and incidental to any permitted use.

Section 903. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Outside storage and display when accessory to a permitted use, provided that the following provisions are met:
 - 1. Outside storage or display shall not occupy any part of the street right-of-way and no other area intended or designed for pedestrian use, required parking areas, nor required front yard.
 - 2. Outside storage areas, excluding display areas, shall be shielded from view from the public streets.
 - 3. Roadside produce stands and nurseries shall be exempted from outside storage limitations.
- B. Amusement arcades.
- C. Outdoor amusement facilities.
- D. Adult businesses, in accordance with the East Earl Township Obscenity Ordinance.
- E. Radio and television antennas.
- F. Planned shopping centers.
- G. Day care facilities as accessory to a principal use.
- H. Shopping centers and retail stores in excess of 50,000 square feet of gross floor area subject to 1301 (51).

Section 904. USE RESTRICTIONS

The above specified permitted and special exception uses shall be permitted only under the following conditions:

- A. Such stores, shops and businesses shall be conducted within an enclosed building, except as otherwise permitted in accordance with Article XIII herein.
- B. Such uses, operations or products are not obnoxious or offensive by reason of the emission of gas, odor, dust, smoke, noise, vibration, refuse matter or other causes in accordance with Article XIII herein.
- C. There shall be no manufacturing, compounding, processing or treatment of products other than that which is clearly incidental and essential to a retail store, and when all such products are sold on the premises.
- D. Provisions for public sewer or a community system must be in place prior to the obtaining of a building permit.

Section 905. HEIGHT REGULATIONS

- A. The height of a structure shall not exceed forty (40') feet.
- B. The height of an accessory structure shall not exceed twenty (20') feet.

Section 906. LOT AREA, LOT WIDTH AND MAXIMUM IMPERVIOUS COVERAGE REGULATIONS

- A. Unless otherwise specified herein, minimum lot area and width shall be based upon required setbacks, maximum impervious coverage, parking, loading/unloading, buffer yard/screening, on-lot well and septic system requirements, and other applicable standards.
- B. Maximum impervious coverage: Sixty-five (65%) percent.
- C. At least fifteen (15%) percent of the lot area shall be maintained with a vegetative cover.
- D. Lot area, lot width and impervious coverage requirements for any residential use permitted in this District shall be in accordance with adjacent residential district standards. Should more than one residential district be adjacent to said use, the more restrictive district provisions shall apply.

Section 907. SETBACK REGULATIONS

Unless otherwise specified, each lot shall have front, side and rear yards of not less than the depth or width indicated below:

- A. Front yard: Thirty-five (35') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be

constructed shall be provided in accordance with Section 1305 herein.

- B. Side yards: Eight (8') feet. No side yard shall be required where structures abut one another, provided that a written agreement is entered into by such property owners and submitted to the Zoning Officer. However, in no case shall common party walls be permitted between properties of separate ownership.
- C. Rear yard: Twenty-five (25') feet.
- D. Interior yards: (open space between structures) Interior yards shall be provided in accordance with Section 1305.4 herein.
- E. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 herein.
- F. Buffer yards/screen plantings shall be provided in accordance with Section 1306 herein.

Section 908. OFF-STREET PARKING/ACCESS AND LOADING/UNLOADING

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV herein and the applicable Subdivision and Land Development Ordinance, as amended and Section 1301 (51).

ARTICLE X

INDUSTRIAL LIGHT (IL) DISTRICT

ARTICLE X

INDUSTRIAL LIGHT (IL) DISTRICT

Section 1001. INTENDED PURPOSE

The purpose of the Industrial Light District is intended to maximize industrial potential while ensuring compatibility with surrounding Districts. New residential development is excluded from this District, both to protect residences from an undesirable environment and to ensure the reservation of adequate areas for industrial development.

Section 1002. PERMITTED USES

- A. Any manufacturing, wholesaling or distributing use which meets the performance standards as set forth in Section 1302 herein.
- B. Dwelling quarters for watchmen and/or caretakers employed on the premises, as an accessory use.
- C. Agriculture, horticulture or floriculture, and any accessory uses or structures, including farm-based businesses.
- D. Lumber and coal yards, building material storage yards, contractor equipment and storage yards and wholesale and retail sales for each as an accessory use.
- E. Laundries, cleaning, dyeing, carpet and rug cleaning.
- F. Blacksmiths and machine shops.
- G. Self-service storage facilities.
- H. Municipal facilities.
- I. Public utility and communication uses where operation requirements necessitate locating within the District.
- J. Uses and buildings customarily accessory and incidental any permitted use.
- K. Signs, when erected and maintained in accordance with Article XVI herein.

Section 1003. SPECIAL EXCEPTIONS

The following special exceptions may be permitted by the Zoning Hearing Board, following review and comment by the Planning Commission, pursuant to standards and criteria as set forth in Articles XIII and XIX herein.

- A. Vehicular body shops, painting, tire retreading or recapping and welding shops.
- B. Day care centers as accessory to a principal use.
- C. Crematoriums.

- D. Sawmill.
- E. Landfills and transfer stations.
- F. Junkyard/salvage yard.
- G. Resource recovery facilities.
- H. Outside storage and display when accessory to a permitted use, provided that the following provisions are met:
 - 1. Outside storage or display shall not occupy any part of the street right-of-way and no other area intended or designed for pedestrian use, required parking areas, nor required front yard.
 - 2. Outside storage areas, excluding display areas, shall be shielded from view from the public streets.
 - 3. Roadside produce stands and nurseries shall be exempted from outside storage limitations.
- I. Radio and television antennas.

Section 1004. PERFORMANCE STANDARDS

- A. All uses shall be conducted in accordance with Performance Standards as set forth in Section 1302 herein.

Section 1005. HEIGHT REGULATIONS

- A. No structure shall exceed forty (40') feet in height.
- B. The height of an accessory structure shall not exceed twenty-five (25') feet in height.

Section 1006. LOT AREA, LOT WIDTH AND MAXIMUM IMPERVIOUS COVERAGE REGULATIONS

- A. Unless otherwise specified herein, minimum lot area and width shall be based upon required setbacks, maximum impervious coverage, parking, loading/unloading, buffer yard/screening, on-lot well and septic system requirements, and other applicable standards.
- B. Maximum impervious coverage: Sixty (60%) percent.
- C. At least fifteen (15%) percent of the lot shall be maintained in a vegetative cover.
- D. Lot area, lot width and impervious coverage requirements for any residential use permitted in this District shall be in accordance with adjacent residential district standards. Should more than one residential district be adjacent to said use, the more restrictive district provisions shall apply.

Section 1007. SETBACK REGULATIONS

Unless otherwise specified, each lot shall have front, side and rear yards of not less than the depth or width indicated below:

- A. Front yard: Forty-five (45') feet measured from the centerline of the right-of-way.

Exception: Where buildings exist in the same block on either side of the street, the setback line of the building to be constructed shall be provided in accordance with Section 1305 herein.

- B. Side yards: Fifteen (15') feet.

- C. Rear yard: Forty (40') feet.

- D. Interior yards: (open space between structures) Interior yards shall be provided in accordance with Section 1305.4 herein.

- E. Accessory Buildings and Structures: Shall provide front, side, and rear yards in accordance with Section 1305 herein.

- F. Buffer yards/screen plantings shall be provided in accordance with Section 1306 herein.

Section 1008. OFF-STREET PARKING/ACCESS AND LOADING/UNLOADING

Off-street parking/access and loading/unloading shall be provided in accordance with Article XV and Section 1315 herein and the applicable Subdivision and Land Development Ordinance, as amended.

EAST EARL TOWNSHIP
Lancaster County, Pennsylvania

ORDINANCE NO. 167 - 2010

AN ORDINANCE OF THE BOARD OF SUPERVISORS OF
EAST EARL TOWNSHIP, LANCASTER COUNTY,
PENNSYLVANIA AMENDING CERTAIN PROVISIONS OF
CHAPTER 18 OF THE TOWNSHIP'S CODE OF
ORDINANCES.

BE IT ORDAINED AND ENACTED by the Board of Supervisors of East Earl Township,
Lancaster County, Pennsylvania that the following sections of the East Earl Township Code of
Ordinances are hereby amended:

Section 1. Chapter 18 (Sewers and Sewage Disposal), Part 2 (Holding Tanks), Section
18-208 (Duties of Improved Property Owner) is hereby amended by adding the following sentence
to subsection B. thereof:

"Owner shall have the contents of any holding tank located on the
improved property pumped out at least annually. However, in the
event that the warning device on any holding tank is activated
indicating that the tank is filled to within 75% of its capacity, then
owner shall have the contents of the tank pumped out within 24 hours
of the warning."

Section 2. Chapter 18 (Sewers and Sewage Disposal), Part 3 (Sewage Facilities
Maintenance Program), Section 18-305 (Maintenance) is amended by deleting from subsection
1. the number "4" wherever it appears and substituting in its place the number "2," such that all
septic tanks shall be required to be pumped out every 2 years.

Section 3. All other provisions of Chapter 18 of the East Earl Township Code of
Ordinances shall remain in full force and effect as heretofore adopted.

Section 4. The Ordinance shall become effective five (5) days after its adoption.

DULY ORDAINED AND ENACTED by the Board of Supervisors of East Earl Township,
Lancaster County, Pennsylvania this 9th day of November, 2010.

ATTEST:

By:

Connie J. Gross
Secy-Treasurer

BOARD OF SUPERVISORS
EAST EARL TOWNSHIP

By:

[Signature]
(Vice) Chairman

(SEAL)

Part 3

Sewage Facilities Maintenance Program

§18-301. Purpose.

The purpose of this Part is to establish a sewage facilities maintenance program under the authority of East Earl Township to regulate, inspect and assure maintenance and proper operation of all existing and future sewage facilities and/or alternative systems permitted by the Township and to set forth charges and fees for rendering such services pursuant to statutory authority of the East Earl Township Board of Supervisors.

(Ord. 92, 3/10/1998, §1)

§18-302. Definitions.

ALTERNATIVE SYSTEM - a system for the disposal of domestic wastewaters not operating below ground level but located on or near the site of the building or buildings being served (e.g., composting toilets, gray water recycling systems, incinerating toilets, spray irrigation and black water recycling systems, etc.)

AUTHORIZED AGENT - a licensed sewage enforcement officer, professional engineer or sanitarian, plumbing inspector, soils scientist or any other qualified or licensed person who is delegated to function within the specified limits as the agent of East Earl Township to carry out the provisions of this Part.

DEVELOPER - any person, partnership or corporation which erects or contracts to erect a building on property owned by it with the intent to sell the building to some other party upon its full or partial completion, or upon the conveyance of property on which the building is to be built.

MANAGEMENT DISTRICT or DISTRICT - the management district shall encompass the areas of Goodville as delineated on the map in Exhibit "A" serviced by sewage facilities or any other alternative system which discharges into the soils of the Township. All systems shall be operated under the jurisdiction of the East Earl Township Board of Supervisors regulating the subsurface disposal and/or alternate systems, and other applicable laws of this Commonwealth.

OWNER - any natural person, corporation, partnership, joint venture or limited partnership holding deed/title to lands within the management district.

SEWAGE ENFORCEMENT OFFICER - a person authorized by the Pennsylvania Department of Environmental Protection in accordance with "Chapter 71, Administration of Sewage Facilities Program" of "Title 25, Rules and Regulations," to perform percolation tests, site and soil evaluation and issue sewage permits for onlot disposal systems.

CHAPTER 18

SEWERS AND SEWAGE DISPOSAL

Part 1

Connection to Sewer System Required

- §18-101. Definitions
- §18-102. Use of Public Sewers Required
- §18-103. Building Sewers and Connections
- §18-104. Rules and Regulations Governing Building Sewers and Connections to Sewers
- §18-105. Enforcement
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Part 2

Holding Tanks

- §18-201. Purpose
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- §18-203. Rights and Privileges Granted
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- §18-206. Rates and Charges
- §18-207. Exclusiveness of Rights and Privileges
- §18-208. Duties of Improved Property Owner
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- §18-210. Abatement of Nuisances
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Part 3

Sewage Facilities Maintenance Program

- §18-301. Purpose
- §18-302. Definitions
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- §18-304. Inspection
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- §18-307. Operation
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- §18-310. Charges and Liens
- §18-311. Penalties
- §18-312. Administration
- §18-313. Haulers
- §18-314. Separation
- §18-315. Future Systems

Part 1

Connection to Sewer System Required

§18-101. Definitions.

Unless the context specifically and clearly indicates otherwise, the meaning of terms and phrases used in this Part shall be as follows:

AUTHORITY - East Earl Sewer Authority, a Pennsylvania municipality authority.

BUILDING SEWER - that part of the main building or house drain or sewer line inside the walls of the building and extending through the wall and connecting to the service or house connection.

IMPROVED PROPERTY - any property located within this Township upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and from which structure sanitary sewage and/or industrial wastes shall be or may be discharged.

INDUSTRIAL ESTABLISHMENT - any improved property located in this Township used wholly or in part for the manufacturing, processing, cleaning, laundering or assembly of any product, commodity or article, or any other improved property located in this Township from which wastes, in addition to or other than sanitary sewage, are discharged.

INDUSTRIAL WASTES - any and all wastes discharged from an industrial establishment, other than sanitary sewage.

LATERAL - that part of the sewer system extending from a sewer to the grinder pump or, if no such lateral shall be provided, then "lateral" shall mean that portion of, or place in, a sewer which is provided for connection of any building sewer.

OWNER - any person vested with ownership, legal or equitable, sole or partial, of any improved property.

PERSON - any individual, partnership, company, association, society, corporation or other group or entity.

SANITARY SEWAGE - normal water carried household and toilet wastes from any improved property.

SEWAGE COLLECTION SYSTEM - all facilities, as of any particular time, for collecting, transporting, pumping and disposing of sanitary sewage and/or industrial wastes, owned, maintained and operated by or in behalf of the Authority.

SEWERS AND SEWAGE DISPOSAL

SEWER - any pipe or conduit constituting a part of the sewage collection system used for use for sewage collection purposes.

TOWNSHIP - the Township of East Earl, Lancaster County, Pennsylvania, acting by and through its Board of Supervisors or, in appropriate cases, by and through its authorized representatives.

(Ord. 39, 2/25/1986, Art. I)

§18-102. Use of Public Sewers Required.

1. The owner of any improved property located in this Township and accessible to and whose principal building is within 150 feet from the sewage collection system, shall connect such improved property to the sewage collection system, in such manner as this Township and the Authority may require, within 60 days after notice to such owner from this Township to make such connection, for the purpose of discharge of all sanitary sewage and industrial wastes from such improved property, subject to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township or the Authority, from time to time.
2. All sanitary sewage and industrial wastes from any improved property, after connection of such improved property with a sewer shall be required under subsection (1), above, shall be conducted into a sewer, subject to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township or the Authority from time to time.
3. No person shall place or deposit or permit to be placed or deposited upon public or private property within this Township any sanitary sewage or industrial wastes in violation of subsection (1), above. No person shall discharge or permit to be discharged to any natural outlet within this Township any sanitary sewage or industrial wastes in violation of subsection (1), above, except where suitable treatment has been provided which is satisfactory to this Township.
4. No privy vault, cesspool, sinkhole, septic tank or similar receptacle shall be used and maintained at any time upon any improved property which has been connected to a sewer or which shall be required under subsection (1), above, to be connected to a sewer. Every such privy vault, cesspool, sinkhole, septic tank or similar receptacle in existence shall, at the discretion of this Township, be abandoned and shall, at the discretion of this Township, be cleansed and filled under the direction and supervision of this Township; and any such privy vault, cesspool, sinkhole, septic tank or similar receptacle not so abandoned and, if required by this Township, cleansed and filled, shall constitute a nuisance and such nuisance may be abated as provided by law, at the expense of the owner of such improved property.
5. No privy vault, cesspool, sinkhole, septic tank or similar receptacle at any time shall be connected with a sewer.

6. The notice by this Township to make a connection to a sewer, referred to in subsection (1), above, shall consist of a written or printed document requiring such connection in accordance with the provisions of this Part and specifying that such connection shall be made 60 days from the date such notice is given. Such notice may be given at any time after a sewer is in place which can receive and convey sanitary sewage and industrial wastes for treatment and disposal from the particular improved property. Such notice shall be served upon the owner either by personal service or by registered mail or by such other method as at the time may be provided by law.

(Ord. 39, 2/25/1986, Art. II)

§18-103. Building Sewers and Connections.

1. Except as otherwise provided in this subsection (1), each improved property shall be connected separately and independently with a sewer through a building sewer. Grouping of more than one improved property on one building sewer shall not be permitted, except under special circumstances and for good sanitary reasons or other good cause shown, and then only after special permission of this Township and the Authority, in writing, shall have been secured.
2. All costs and expenses of construction of a building sewer and all costs and expenses of connection of a building sewer to a sewer shall be borne by the owner of the improved property to be connected; and such owner shall indemnify and save harmless this Township and the Authority from all loss or damage that may be occasioned, directly or indirectly, as a result a construction of a building sewer or of connection of a building sewer to a sewer.
3. A building sewer shall be connected to a sewer at the place designated by the Authority and where the lateral is provided. The invert of a building sewer at the point of connection shall be the same or a higher elevation than the invert of the sewer. A smooth, neat joint shall be made and the connection of a building sewer to the lateral shall be made secure and watertight.
4. If the owner of any improved property located in this Township and accessible to and whose principal building is within 150 feet from the sewage collection system, after 60 days' notice from this Township, in accordance with §18-102(1), shall fail to connect such improved property, as required, this Township may make such connection and may collect from such owner the costs and expenses thereof. In such case, this Township shall forthwith, upon completion of the work, send an itemized bill of the cost of the construction of such connection to the owner of the improved property to which connection has been so made, which bill shall be payable forthwith. In case of neglect or refusal by the owner of such improved property to pay said bill, this Township shall file a municipal lien for said construction within 6 months of the date of the completion of the construction of said connection, the same to be subject in all respects to the general law providing for the filing and recovery of municipal liens.

SEWERS AND SEWAGE DISPOSAL

(Ord. 39, 2/25/1986, Art. III)

§18-104. Rules and Regulations Governing Building Sewers and Connections to Sewers.

1. Where an improved property, at the time connection to a sewer is required, shall be served by its own sewage disposal system or device, the existing house sewer line shall be broken on the structure side of such sewage disposal system or device and attachment shall be made, with proper fittings, to continue such house sewer line, as a building sewer.
2. No building sewer shall be covered until it has been inspected and approved by this Township and the Authority. If any part of a building sewer is covered before so being inspected and approved, it shall be uncovered for inspection at the cost and expense of the owner of the improved property to be connected to a sewer.
3. Every building sewer of any improved property shall be maintained in a sanitary and safe operating condition by the owner of such improved property.
4. Every excavation for a building sewer shall be guarded adequately with barricades and lights to protect all persons from damage and injury. Streets, sidewalks and other public property disturbed in the course of installation of a building sewer shall be restored, at the cost and expense of the owner of the improved property being connected, in a manner satisfactory to this Township.
5. If any person shall fail or refuse, upon receipt of a notice of this Township or the Authority, in writing, to remedy any unsatisfactory condition with respect to a building sewer, within 60 days of receipt of such notice, this Township or the Authority may refuse to permit such person to discharge sanitary sewage and industrial wastes into the sewage collection system until such unsatisfactory condition shall have been remedied to the satisfaction of this Township and the Authority.
6. This Township reserves the right to adopt, from time to time, additional rules and regulations as it shall deem necessary and proper relating to connections with a sewer and the sewage collection system, which additional rules and regulations, to the extent appropriate, shall be and shall be construed as part of this Part.

(Ord. 39, 2/25/1986, Art. IV)

§18-105. Enforcement.

Any person, firm or corporation who shall violate any provision of this Part, upon conviction thereof in an action brought before a district justice in the manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure, shall be sentenced to pay a fine of not more than \$1,000 plus costs and, in

default of payment of said fine and costs, to a term of imprisonment not to exceed 90 days. Each day that a violation of this Part continues or each Section of this Part which shall be found to have been violated shall constitute a separate offense.

(*Ord. 39*, 2/25/1986, Art. V; as amended by *Ord. 106*, 11/13/2001)

§18-106. Declaration of Purpose.

It is declared that enactment of this Part is necessary for the protection, benefit and preservation of the health, safety and welfare of inhabitants of this Township.

(*Ord. 39*, 2/25/1986, Art. VII)

Part 2

Holding Tanks

§18-201. Purpose.

The purpose of this Part is to establish procedures for the use and maintenance of holding tanks designed to receive and retain sewage whether from residential, commercial or industrial uses and it is hereby declared that the enactment of this Part is necessary for the protection, benefit and preservation of the health, safety and welfare of the inhabitants of this Township.

(Ord. 39B, 6/10/1986, §1)

§18-202. Definitions.

Unless the context specifically and clearly indicates otherwise, the meaning of terms used in this Part shall be as follows:

BOARD - the Board of Supervisors of East Earl Township.

HOLDING TANK - a watertight receptacle which receives and retains sewage and is designed and constructed to facilitate ultimate disposal of the sewage at another site. Holding tanks include, but are not limited to, the following:

- A. **CHEMICAL TOILET** - a toilet using chemicals that discharge to a holding tank.
- B. **RETENTION TANK** - a holding tank where sewage is conveyed to it by a water carrying system.
- C. **VAULT PIT PRIVY** - a holding tank designed to receive sewage where water under pressure is not available.

IMPROVED PROPERTY - any property within the Township upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and from which structure sewage shall or may be discharged.

OWNER - any person vested with ownership, legal or equitable, sole or partial, of any property located in the Township.

PERSON - any individual, partnership, company, association, corporation or other group or entity.

SEWERS AND SEWAGE DISPOSAL

SEWAGE - any substance that contains any of the waste products or excrements or other discharge from the bodies of human beings or animals and any noxious or deleterious substance being harmful or inimical to the public health, or to animal or aquatic life or to the use of water for domestic water supply or for recreation.

TOWNSHIP - East Earl Township, Lancaster County, Pennsylvania.

(*Ord. 39B*, 6/10/1986, §2)

§18-203. Rights and Privileges Granted.

The Board is hereby authorized and empowered to undertake within the Township the control and methods of holding tank sewage disposal and the collection and transportation thereof.

(*Ord. 39B*, 6/10/1986, §3)

§18-204. Rules and Regulations.

The Township is hereby authorized and empowered to adopt such rules and regulations concerning sewage which it may deem necessary from time to time to effect the purposes herein. In absence of adoption of rules and regulations by the Board relative to the administration of this Part, the rules and regulations of the Pennsylvania Department of Environmental Protection (DEP) or any successor department or administrative agency of the state pertaining to the conditions justifying use of holding tanks, the method of construction and installation of said tanks, the method of maintenance of holding tanks and all other matters relative to the use of holding tanks within municipalities shall be considered and deemed rules and regulations of the Township and shall be applied by the Township in the administration of this Part.

(*Ord. 39B*, 6/10/1986, §4; as amended by *Ord. 106*, 11/13/2001)

§18-205. Rules and Regulations to be in Conformity with Applicable Law.

All such rules and regulations adopted by the Township shall be in conformity with the provisions of this Part, all other ordinances of the Township, and all applicable laws, rules and regulations of administrative agencies of the Commonwealth of Pennsylvania.

(*Ord. 39B*, 6/10/1986, §5)

§18-206. Rates and Charges.

The Township shall have the right and power to fix, alter, charge and collect rates, assessments and other charges in the area served by its facilities at reasonable and uniform rates as authorized by applicable law.

(*Ord. 39B*, 6/10/1986, §6)

§18-207. Exclusiveness of Rights and Privileges.

The collection and transportation of all sewage from any improved property utilizing a holding tank shall be done solely by or under the direction and control of the Township, and the disposal thereof shall be made only at such site or sites as may be approved by the Department of Environmental Protection of the Commonwealth of Pennsylvania. The owner shall be required to furnish to the Township a written contract entered into between the owner and the hauler, noncancelable in form, whereby the hauler agrees to receive and dispose of the sewage at site or sites acceptable to the Township and not to cancel or terminate the contract except upon at least 90 days written notice to the Township of intention to terminate.

(*Ord. 39B*, 6/10/1986, §7; as amended by *Ord. 106*, 11/13/2001)

§18-208. Duties of Improved Property Owner.

The owner of an improved property that utilizes a holding tank shall:

- A. Maintain the holding tank in conformance with this or any Part of this Township, the provisions of any applicable law, and the rules and regulations of the Township and any administrative agency of the Commonwealth of Pennsylvania.
- B. Permit only the Township or, if the Township so directs, a person under contract with the property owner to collect, transport, and dispose of the contents therein.
- C. Provide the Township, at least quarterly, with all pumping receipts from the permitted holding tanks on the property of owner, for review and retention by the Township. [*Ord. 70*]

(*Ord. 39B*, 6/10/1986, §8; as amended by *Ord. 70*, 2/25/1992, §2)

§18-209. Violations.

Any person, firm or corporation who shall violate any provision of §18-208, upon conviction thereof in an action brought before a district justice in the manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure, shall be sentenced to pay a fine of not more than \$1,000 plus costs and, in default of

SEWERS AND SEWAGE DISPOSAL

payment of said fine and costs, to a term of imprisonment not to exceed 90 days. Each day that a violation of this Part continues or each Section of this Part which shall be found to have been violated shall constitute a separate offense.

(*Ord. 39B*, 6/10/1986, §9; as amended by *Ord. 106*, 11/13/2001)

§18-210. Abatement of Nuisances.

In addition to any other remedies provided in this Part, violation of §18-208, above, shall constitute a nuisance and may be abated by the Township by either seeking appropriate equitable or legal relief from a court of competent jurisdiction.

(*Ord. 39B*, 6/10/1986, §10)

§18-211. Inspection Fee.

After the first year of installation, all holding tanks shall be inspected at least annually by the Township Sewage Enforcement Officer, who shall prepare a written inspection report. The owner shall pay an inspection fee as established by the Township by resolution from time to time.

(*Ord. 39B*, 6/10/1986; as added by *Ord. 70*, 2/25/1992, §3; and amended by *Ord. 79*, 2/11/1994, §2)

§18-212. Retention of Records.

With respect to each holding tank, the [pumping receipt required under §18-208(C) and the written inspection report required under §18-211 shall be retained by the Township.

(*Ord. 39B*, 6/10/1986; as added by *Ord. 79*, 2/11/1994, §2)

Part 3

Sewage Facilities Maintenance Program

§18-301. Purpose.

The purpose of this Part is to establish a sewage facilities maintenance program under the authority of East Earl Township to regulate, inspect and assure maintenance and proper operation of all existing and future sewage facilities and/or alternative systems permitted by the Township and to set forth charges and fees for rendering such services pursuant to statutory authority of the East Earl Township Board of Supervisors.

(Ord. 92, 3/10/1998, §1)

§18-302. Definitions.

ALTERNATIVE SYSTEM - a system for the disposal of domestic wastewaters not operating below ground level but located on or near the site of the building or buildings being served (e.g., composting toilets, gray water recycling systems, incinerating toilets, spray irrigation and black water recycling systems, etc.)

AUTHORIZED AGENT - a licensed sewage enforcement officer, professional engineer or sanitarian, plumbing inspector, soils scientist or any other qualified or licensed person who is delegated to function within the specified limits as the agent of East Earl Township to carry out the provisions of this Part.

DEVELOPER - any person, partnership or corporation which erects or contracts to erect a building on property owned by it with the intent to sell the building to some other party upon its full or partial completion, or upon the conveyance of property on which the building is to be built.

MANAGEMENT DISTRICT or DISTRICT - the management district shall encompass the areas of Goodville as delineated on the map in Exhibit "A" serviced by sewage facilities or any other alternative system which discharges into the soils of the Township. All systems shall be operated under the jurisdiction of the East Earl Township Board of Supervisors regulating the subsurface disposal and/or alternate systems, and other applicable laws of this Commonwealth.

OWNER - any natural person, corporation, partnership, joint venture or limited partnership holding deed/title to lands within the management district.

SEWAGE ENFORCEMENT OFFICER - a person authorized by the Pennsylvania Department of Environmental Protection in accordance with "Chapter 71, Administration of Sewage Facilities Program" of "Title 25, Rules and Regulations," to perform percolation tests, site and soil evaluation and issue sewage permits for onlot disposal systems.

SEWERS AND SEWAGE DISPOSAL

SEWAGE FACILITIES - any method of sewage collection, conveyance, treatment and disposal which will prevent the discharge of untreated or inadequately treated sewage or other waste into the waters of this Commonwealth or otherwise provide for the safe and sanitary treatment of sewage or other waste.

- A. **INDIVIDUAL ONLOT SEWAGE SYSTEM** - a system of piping, tank or other facilities serving a single lot and collecting, treating and disposing of domestic sewage into a subsurface absorption area or a retaining tank located on that lot.
- B. **COMMUNITY ONLOT SEWAGE SYSTEM** - a system of piping, tanks or other facilities serving two or more lots and collecting, treating and disposing of domestic sewage into a subsurface soil absorption area or retaining tank located on one or more of the lots or at another site.

All other definitions of words and terms used in this Part shall have the same meaning as set forth in "Chapter 73, Standards for Sewage Disposal Facilities," of "Title 25, Rules and Regulations, Department of Environmental Protection."

(Ord. 92, 3/10/1998, §2)

§18-303. Applicability.

The owner of any building or property serviced by a subsurface waste disposal system and/or alternative system within the management district shall be a member of the East Earl Township maintenance district and subject to all the requirements contained herein.

(Ord. 92, 3/10/1998, §3)

§18-304. Inspection.

- 1. All sewage facilities and alternative systems shall be accessible for inspection by the management district or its authorized agent upon the effective date of this Part. Periodic inspections will be performed to determine whether or not the system is operating properly. These inspections may occur at different months of the year and will include the inspection of septic tanks, aerobic tanks, disposal fields, distribution boxes and any other components of the systems. Inspections may include sampling of soils in and around the disposal field, surface water on or adjacent to the property, and ground water from active or inactive wells used for potable water supply or from monitoring wells in and around disposal fields.
- 2. The management district may increase the frequency of inspection:
 - A. If the system is presently malfunctioning.
 - B. If a regular inspection reveals a malfunctioning system.

- C. If the system has malfunctioned in the past.
 - D. If frequent tank pump out is required.
 - E. If seasonal use will significantly increase use of the system.
 - F. If the number of people using the system increases.
 - G. For other good cause shown.
3. The sewage facilities or alternative system is malfunctioning when it causes pollution to the ground or surface waters, contamination of private or public drinking water supplies, nuisance problems or a hazard to public health. Indications of malfunctioning systems are evident when, but are not limited to, foul odors, lush grass growing over the system, backup of wastewater in the attached buildings, soggy ground over the system, surfacing sewage effluent flowing over the ground and occurring at any time of the year.
4. A copy of the inspection report shall be furnished to the owner and shall contain:
- A. Date of inspection.
 - B. Name of address of system owner.
 - C. Description and diagram of the location of the system including location of access hatches, risers and markers.
 - D. Size of tanks and disposal fields.
 - E. Users.
 - F. Indication of any system malfunction observed.
 - G. Results of any and all soils and water tests.
 - H. Any remedial action required.

(Ord. 92, 3/10/1998, §4)

§18-305. Maintenance.

1. All septic tanks shall be pumped within 1 year of the effective date of this Part and every 4 years thereafter. All septic tanks which serve multiple dwellings, such as apartments, shall be pumped at least once each year. The requirement to pump within 1 year of the effective date of this Part can be waived for property owners who provide the Township with a receipt demonstrating that their septic tanks have been pumped within 3 years prior to the effective date of this Part; provided, that the

SEWERS AND SEWAGE DISPOSAL

frequency of pumping is not less frequent than one time every 4 years, or more frequent if required by this Part. When the Township Sewage Enforcement Officer determines that seasonal use will significantly increase use of this system, or that the number of people using this system has increased, or that the system is malfunctioning or for other good cause, more frequent intervals of pumping may be required. Upon termination of the cause for increase in pumping requirements, normal maintenance schedules shall apply.

2. The use of garbage disposals is strongly discouraged for systems within the maintenance district unless the system has been designed to accommodate the additional flow characteristics. The Township may require other maintenance activities such as cleaning and unclogging the pipelines within the system and/or the cleaning of the distribution boxes or mechanical equipment. When a system is found to require maintenance activity, the owner shall complete the required maintenance activity as prescribed by the maintenance district within 30 days of notification by the Township. If the owner fails to comply with the order of the Township, then the private party under contract with the Township may undertake the required activity and the Township shall assess the owner for costs incurred.

(Ord. 92, 3/10/1998, §5)

§18-306. Proof of Compliance.

Every time a septic tank or other subsurface waste disposal system tank is pumped out, the private sewage waste hauler or whomever provides the services, shall provide to the owner of the subsurface waste disposal system a signed receipt containing the following information:

- A. Date of pumping.
- B. Name and address of system owner.
- C. Address of tanks location if different than owners.
- D. Description and diagram of location of tank including location of any markers, risers and access hatches.
- E. Size of tank.
- F. Age of the system (where applicable).
- G. Last date of pump out.
- H. List of any maintenance performed.
- I. Any indication of system malfunctioning observed.

- J. Amount of septage or other solid or semi-solid material removed.
 - K. Cost of pumping service.
 - L. Waste hauler's State license number permitting him to collect and haul septage in the State of Pennsylvania.
2. The receipt shall be signed by the system owner certifying to the best of his knowledge that the septage does not contain any of the substances listed in §18-307. The receipt shall be submitted to the management district to serve as proof of compliance with the pump-out requirements of §18-305. Copies of this receipt shall be retained by the owner, and a copy shall be forwarded to the Township with annual payment of the County/Township tax bill.

(Ord. 92, 3/10/1998, §6)

§18-307. Operation.

1. The management district shall make available to all existing and new members of the management district, a copy of an abstract of the pertinent information and regulations as outlined by this Part. Appropriate literature and publications discussing the care and maintenance of septic tanks, waterless toilets and other subsurface waste disposal systems shall be made available to those members who utilize such systems. Members shall be encouraged to minimize water use and to install water saving devices in order to increase the efficiency and promote the long life of onlot systems. Practices which conserve water shall be favorably looked upon as essential to the maintenance of a system as provided for in §18-305. The following criteria shall be considered as the maximum allowable water usage where a home is to be considered as utilizing water conservation practices:
 - A. Flow control faucet aerators (2 gallons per minute).
 - B. Low flush toilets (3.5 gallons per flush).
 - C. Flow limiting shower heads (2.5 gallons per minute).
2. Only sewage and normal domestic waste shall be discharged into sewage facilities and alternative systems. The following waste shall not be discharged into the system:
 - A. **Industrial Wastes.**
 - (1) Fats, greases and garbage grindings; automobile oil, and other nondomestic oil in excessive amounts.
 - (2) Toxic or hazardous substances or chemicals including, but not limited to, pesticides, disinfectants, acids, paint, paint thinners, herbicides and solvents.

SEWERS AND SEWAGE DISPOSAL

(Ord. 92, 3/10/1998, §7)

§18-308. Right of Entry.

1. Employees and authorized agents/personnel of the district shall, upon presentation of proper credentials and identification, be permitted to enter all properties for the purpose of inspection, observation, sampling, maintenance or rehabilitation of sewage facilities or other alternative systems in accordance with the provisions of this Part.
2. The right of entry shall include the right to excavate any part of the property to inspect, maintain or alter any component of any sewage facilities and alternative systems, or to sample soils, water or septage. Upon completion of the activity requiring excavating, the management district or its authorized agent shall return the land to its former condition as soon as possible; provided, no further maintenance is required.
3. The management district or its authorized agents shall provide at least 72 hours notice to the owner of the sewage facilities and alternate systems prior to entry onto the property for regularly scheduled inspections or maintenance. At least 24 hours notice shall be required prior to inspection, observation, sampling, maintenance or rehabilitation when the district or its authorized agents suspects the sewage facilities or alternative system is malfunctioning, is being operated improperly or is causing a nuisance, water pollution or health hazard.
4. Any real property on which a sewage facility or alternative system is presently under construction or is to be constructed in the future, shall not be conveyed by the developer without the inclusion of an easement in the deed granting the district the right to enter upon the property for the purpose of inspection, observation, sampling, maintenance and rehabilitation of the system and any other activities necessary to effectuate the provisions of this Part. A copy of the deed which is filed in the County Recorder of Deeds Office shall be obtained and sent to the district by the Tax Collector of East Earl Township.

(Ord. 92, 3/10/1998, §8)

§18-309. Transfer of Ownership.

1. Any person, partnership, corporation or subdivision which obtains ownership of any building serviced by a sewage facility or alternative system subsequent to the enactment of this Part shall automatically become a member of the management district upon transfer of ownership of said property.
2. Prior to the sale of any buildings serviced by the sewage facility or alternative system, the district shall require a certificate stating that the system has been

pumped out and has been found to be in proper operating order as in accordance with §18-304.

3. If the system is found to be malfunctioning, the district or its authorized agent shall order remedial measures to be taken to correct the problem including, but not limited to, maintenance and rehabilitation of the system. The code enforcement officer of the Township shall not issue a certificate of occupancy until the required remedial measures are completed to the satisfaction of the district or its authorized agent. A temporary certificate of occupancy may be issued not to exceed 3 months where a buyer agrees to complete the required remedial measures, said measures to be completed to the satisfaction of the district or its authorized agent.

(Ord. 92, 3/10/1998, §9)

§18-310. Charges and Liens.

Charges for services rendered by the management district or its authorized agents will be established from time to time. The management district shall have the authority to contract with any private persons, partnerships or corporations or any public agency to any activity necessary to fulfill the requirements of this Part. Charges for the services performed by the management district, its authorized agent or private parties to the district shall be payable to the management district. Costs incurred by members of the district with private parties shall be payable to the private party. Outstanding charges shall constitute an assessment and lien against the property and shall be filed with the Township Solicitor.

(Ord. 92, 3/10/1998, §10)

§18-311. Penalties.

Any person, firm or corporation who shall violate any provision of this Part, or who shall continue a violation beyond a reasonable time necessary for satisfactory correction, upon conviction thereof in an action brought before a district justice in the manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure, shall be sentenced to pay a fine of not more than \$1,000 plus costs and, in default of payment of said fine and costs, to a term of imprisonment not to exceed 90 days. Each day that a violation of this Part continues or each Section of this Part which shall be found to have been violated shall constitute a separate offense.

(Ord. 92, 3/10/1998, §11; as amended by Ord. 106, 11/13/2001)

§18-312. Administration.

SEWERS AND SEWAGE DISPOSAL

The district shall be administered under the jurisdiction of the East Earl Township Board of Supervisors and its employees, facilities and equipment may be utilized in conducting the activities of the district.

- A. **Personnel.** The district may employ, directly or by contract, a director, technicians, septage haulers, inspectors, an accountant, a solicitor or other office personnel as needed to enforce this Part. This district may contract with private parties or public agencies to conduct inspections, maintenance, rehabilitation and other activities by this Part, such persons to be considered authorized agent/personnel of the district.
- B. **Records.** All permits, records, reports, files and other written material relating to the installation, operation, maintenance and malfunction of sewage facilities or alternative systems in the district in the possession of the sewage enforcement officer or other public agencies shall become property of the district. Records in the possession of the district shall be available for public inspection between the regular business hours at the office of the district.

(Ord. 92, 3/10/1998, §12)

§18-313. Haulers.

Township hereby requires that only DEP certified haulers shall be authorized to pump septic tanks and furthermore directs and requires that all septage be disposed of at DEP certified septage stations.

(Ord. 92, 3/10/1998, §13)

§18-314. Separation.

All wells installed after the effective date of this Part shall be at least 50 feet from all septic tanks and at least 100 feet from absorption fields. This requirement is consistent with the minimum separation distances required by Chapter 73, Standards for Sewage Disposal Facilities of Title 25, Rules and Regulations, Department of Environmental Protection.

(Ord. 92, 3/10/1998, §14)

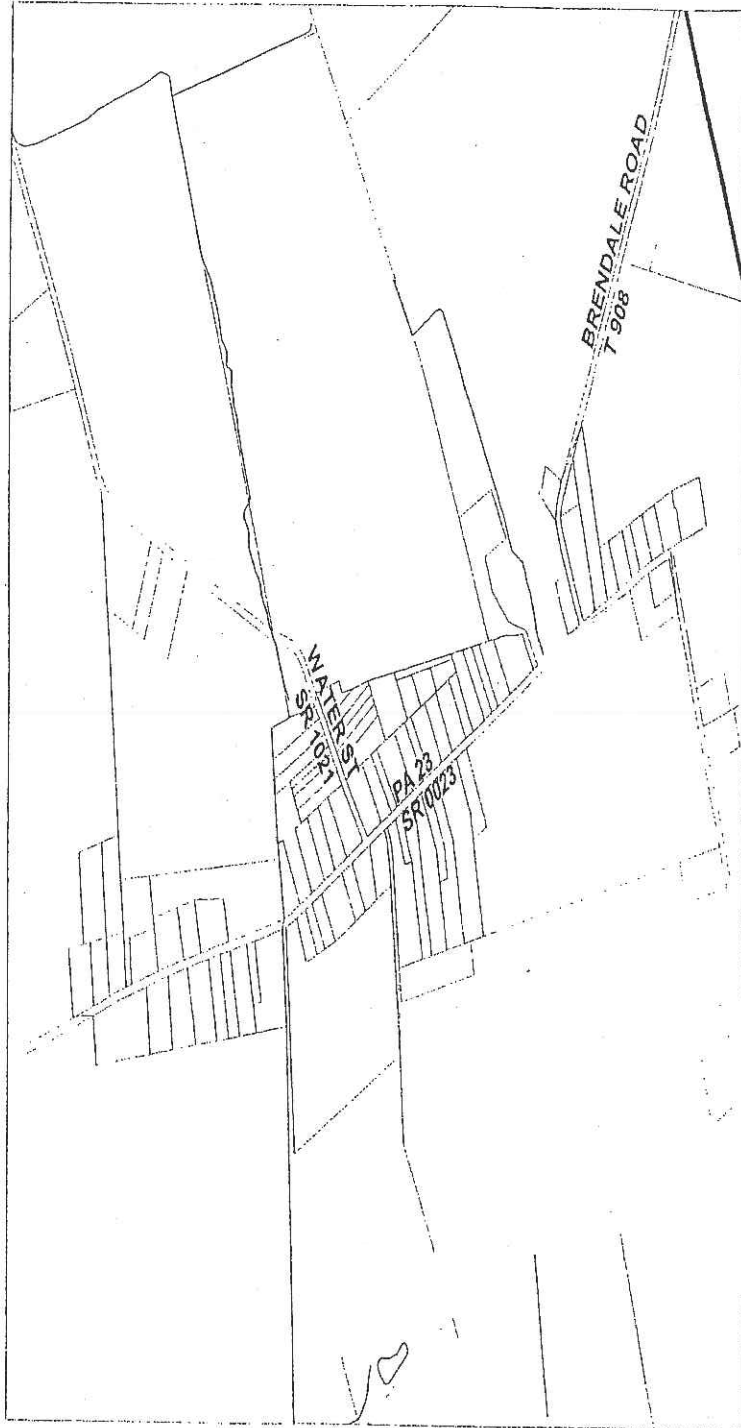
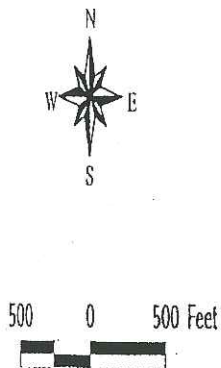
§18-315. Future Systems.

All proposed wastewater disposal systems which require a permit issued by the DEP and are not owned or operated by the Township or Authority shall be required to comply with specific conditions which ensure the long term proper operation and maintenance of such facilities on a case-by-case basis. Such requirements shall ensure consistency with Chapter

71, §71.72 relating to the establishment of the legal entity responsible for the system and financial assurances for the completion, maintenance and operation of such facilities.

(Ord. 92, 3/10/1998, §14)

Exhibit A Goodville



TOWNSHIP OF EAST EARL
Lancaster County, Pennsylvania

ORDINANCE NO. 178 -2012

AN ORDINANCE

AN ORDINANCE OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF EAST EARL, LANCASTER COUNTY, PENNSYLVANIA, AMENDING TOWNSHIP ORDINANCE NO. 39 OF 1986 REQUIRING MANDATORY CONNECTION TO THE PUBLIC SEWER SYSTEM (THE "FIRST AMENDMENT").

The Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, enacts and ordains as follows:

Section 1. SECTION 1.01.A. of ARTICLE I DEFINITIONS of Ordinance 39 of 1986 (the "Ordinance") is hereby amended by deleting the definition of "Authority" in its entirety and substituting in its place the following:

"A. "Authority/ Borough" shall mean either the East Earl Sewer Authority or Terre Hill Borough, depending upon which entity owns the proximate sewer main."

Section 2. The Ordinance is further amended by deleting the defined term "AUTHORITY" wherever it appears in the Ordinance and replacing it with the defined term "AUTHORITY/BOROUGH" in each case.

Section 3. SECTION 5.01. of ARTICLE V ENFORCEMENT is amended by deleting it in its entirety and substituting in its place the following:

"SECTION 5.01. Any person who shall violate any provision of this Ordinance shall be liable, upon summary conviction, for a criminal fine not to exceed one thousand dollars (\$1,000) per violation and/or imprisonment for failing to pay the criminal fine of up to thirty (30) days."

Section 4. All other sections, parts and provisions of the Ordinance shall remain in full force and effect as previously enacted.

Section 5. Any conflicts in the language and provisions of the Ordinance with those of this ordinance, i.e. the First Amendment, shall be resolved in favor of the language and provisions of this ordinance.

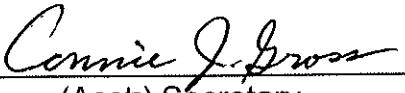
Section 6. In the event any provisions, section, sentence, clause, or part of this ordinance shall be held to be invalid, illegal, or unconstitutional by a court of competent jurisdiction, such invalidity, illegality or unconstitutionality shall not affect or impair the remaining provisions, sections, sentences, clauses or parts of this ordinance, it being the intent of the Board of Supervisors that the remainder of this ordinance shall remain in full force and effect.

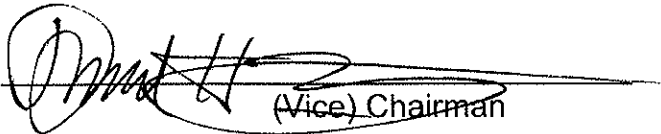
Section 7. This ordinance shall take effect and be in force five (5) days after its enactment by the Board of Supervisors of East Earl Township as provided by law.

DULY ENACTED AND ORDAINED this 11th day of December, 2012 by the Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, in lawful session duly assembled.

ATTEST:

TOWNSHIP OF EAST EARL
Lancaster County, Pennsylvania


(Asst.) Secretary

By: 
(Vice) Chairman

TOWNSHIP OF EAST EARL
Lancaster County, Pennsylvania

ORDINANCE NO.

39

AN ORDINANCE

OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF EAST EARL, LANCASTER COUNTY, PENNSYLVANIA, REQUIRING ALL OWNERS OF IMPROVED PROPERTY LOCATED WITHIN THIS TOWNSHIP AND ACCESSIBLE TO AND WHOSE PRINCIPAL BUILDING IS WITHIN 150 FEET FROM THE SEWAGE COLLECTION SYSTEM TO BE ACQUIRED, CONSTRUCTED AND OPERATED BY EAST EARL SEWER AUTHORITY, TO CONNECT THEREWITH; REGULATING THE MANNER OF MAKING CONNECTIONS; AUTHORIZING THE MANNER OF MAKING CONNECTIONS AT THE COST AND EXPENSE OF ANY OWNER OF IMPROVED PROPERTY FAILING TO MAKE SUCH CONNECTION: ADOPTING CERTAIN RULES AND REGULATIONS AND PROVIDING FOR ADOPTION OF ADDITIONAL RULES AND REGULATIONS; PROHIBITING THE CONNECTION OF PRIVY VAULTS, CESSPOOLS, SINKHOLES, SEPTIC TANKS AND SIMILAR RECEPTACLES TO ANY SEWER; PROHIBITING THE MAINTENANCE OF CERTAIN RECEPTACLES AND REQUIRING ABANDONMENT THEREOF WHERE A SEWER IS AVAILABLE; SETTING FORTH RELATED MATTERS; AND PRESCRIBING PENALTIES FOR VIOLATION.

The Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, enacts and ordains as follows:

ARTICLE I

DEFINITIONS

SECTION 1.01. Unless the context specifically and clearly indicates otherwise, the meaning of terms and phrases used in this Ordinance shall be as follows:

A. "Authority" shall mean East Earl Sewer Authority, a Pennsylvania municipality authority.

B. "Building Sewer" shall mean that part of the main building or house drain or sewerline inside the walls of the building and extending through the wall and connecting to the service or house connection.

C. "Improved Property" shall mean any property located within this Township upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and from which structure Sanitary Sewage and/or Industrial Wastes shall be or may be discharged.

D. "Industrial Establishment" shall mean any Improved Property located in this Township used wholly or in part for the manufacturing, processing, cleaning, laundering or assembly of any product, commodity or article, or any other Improved Property located in this Township from which wastes, in addition to or other than Sanitary Sewage, are discharged.

E. "Industrial Wastes" shall mean any and all wastes discharged from an Industrial Establishment, other than Sanitary Sewage.

F. "Lateral" shall mean that part of the Sewer System extending from a Sewer to the grinder pump or, if no such Lateral shall be provided, then "Lateral" shall mean that portion of, or place in, a Sewer which is provided for connection of any Building Sewer.

G. "Owner" shall mean any Person vested with ownership, legal or equitable, sole or partial, of any Improved Property.

H. "Person" shall mean any individual, partnership, company, association, society, corporation or other group or entity.

I. "Sanitary Sewage" shall mean normal water-carried household and toilet wastes from any Improved Property.

J. "Sewage Collection System" shall mean all facilities, as of any particular time, for collecting, transporting, pumping and disposing of Sanitary Sewage and/or Industrial Wastes, owned, maintained and operated by or in behalf of the Authority.

K. "Sewer" shall mean any pipe or conduit constituting a part of the Sewage Collection System used for usable for sewage collection purposes.

L. "Township" shall mean the Township of East Earl, Lancaster County, Pennsylvania, acting by and through its Board of Supervisors or, in appropriate cases, by and through its authorized representatives.

ARTICLE II

USE OF PUBLIC SEWERS REQUIRED

SECTION 2.01. The Owner of any Improved Property located in this Township and accessible to and whose principal building is within 150 feet from the Sewage Collection System, shall connect such Improved Property to the Sewage Collection System, in such manner as this Township and the Authority may require, within 60 days after notice to such Owner from this Township to make such connection, for the purpose of discharge of all Sanitary Sewage and Industrial Wastes from such Improved Property, subject to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township or the Authority, from time to time.

SECTION 2.02. All Sanitary Sewage and Industrial Wastes from any Improved Property, after connection of such Improved Property with a Sewer shall be required under Section 2.01, shall be conducted into a Sewer, subject to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township or the Authority from time to time.

SECTION 2.03. No Person shall place or deposit or permit to be placed or deposited upon public or private

property within this Township any Sanitary Sewage or Industrial Wastes in violation of Section 2.01.

No person shall discharge or permit to be discharged to any natural outlet within this Township any Sanitary Sewage or Industrial Wastes in violation of Section 2.01, except where suitable treatment has been provided which is satisfactory to this Township.

SECTION 2.04. No privy vault, cesspool, sinkhold, septic tank or similar receptacle shall be used and maintained at any time upon any Improved Property which has been connected to a Sewer or which shall be required under Section 2.01 to be connected to a Sewer.

Every such privy vault, cesspool, sinkhole, septic tank or similar receptacle in existence shall, at the discretion of this Township, be abandoned and shall, at the discretion of this Township, be cleansed and filled under the direction and supervision of this Township; and any such privy vault, cesspool, sinkhole, septic tank or similar receptacle not so abandoned and, if required by this Township, cleansed and filled, shall constitute a nuisance and such nuisance may be abated as provided by law, at the expense of the Owner of such Improved Property.

SECTION 2.05. No privy vault, cesspool, sinkhole, septic tank or similar receptacle at any time shall be connected

with a Sewer.

SECTION 2.06. The notice by this Township to make a connection to a Sewer, referred to in Section 2.01, shall consist of a written or printed document requiring such connection in accordance with the provisions of this Ordinance and specifying that such connection shall be made 60 days from the date such notice is given. Such notice may be given at any time after a Sewer is in place which can receive and convey Sanitary Sewage and Industrial Wastes for treatment and disposal from the particular Improved Property. Such notice shall be served upon the Owner either by personal service or by registered mail or by such other method as at the time may be provided by law.

ARTICLE III

BUILDING SEWERS AND CONNECTIONS

SECTION 3.01. Except as otherwise provided in this Section 3.01, each Improved Property shall be connected separately and independently with a Sewer through a Building Sewer. Grouping of more than one Improved Property on one Building Sewer shall not be permitted, except under special circumstances and for good sanitary reasons or other good

cause shown, and then only after special permission of this Township and the Authority, in writing, shall have been secured.

SECTION 3.02. All costs and expenses of construction of a Building Sewer and all costs and expenses of connection of a Building Sewer to a Sewer shall be borne by the Owner of the Improved Property to be connected; and such Owner shall indemnify and save harmless this Township and the Authority from all loss or damage that may be occasioned, directly or indirectly, as a result a construction of a Building Sewer or of connection of a Building Sewer to a Sewer.

SECTION 3.03. A Building Sewer shall be connected to a Sewer at the place designated by the Authority and where the Lateral is provided.

The invert of a Building Sewer at the point of connection shall be the same or a higher elevation than the invert of the Sewer. A smooth, neat joint shall be made and the connection of a Building Sewer to the Lateral shall be made secure and watertight.

SECTION 3.04. If the Owner of any Improved Property located in this Township and accessible to and whose principal building is within 150 feet from the Sewage Collection System,

after 60 days' notice from this Township, in accordance with Section 2.01, shall fail to connect such Improved Property, as required, this Township may make such connection and may collect from such Owner the costs and expenses thereof. In such case, this Township shall forthwith, upon completion of the work, send an itemized bill of the cost of the construction of such connection to the Owner of the Improved Property to which connection has been so made, which bill shall be payable forthwith. In case of neglect or refusal by the Owner of such Improved Property to pay said bill, this Township shall file a municipal lien for said construction within 6 months of the date of the completion of the construction of said connection, the same to be subject in all respects to the general law providing for the filing and recovery of municipal liens.

ARTICLE IV

RULES AND REGULATIONS GOVERNING

BUILDING SEWERS AND CONNECTIONS TO SEWERS

SECTION 4.01. Where an Improved Property, at the time connection to a Sewer is required, shall be served by its own sewage disposal system or device, the existing house sewer line shall be broken on the structure side of such sewage disposal system or device and attachment shall be made, with proper fittings, to continue such house sewer

line, as a Building Sewer.

SECTION 4.02. No Building Sewer shall be covered until it has been inspected and approved by this Township and the Authority. If any part of a Building Sewer is covered before so being inspected and approved, it shall be uncovered for inspection at the cost and expense of the Owner of the Improved Property to be connected to a Sewer.

SECTION 4.03. Every Building Sewer of any Improved Property shall be maintained in a sanitary and safe operating condition by the Owner of such Improved Property.

SECTION 4.04. Every excavation for a Building Sewer shall be guarded adequately with barricades and lights to protect all persons from damage and injury. Streets, sidewalks and other public property disturbed in the course of installation of a Building Sewer shall be restored, at the cost and expense of the Owner of the Improved Property being connected, in a manner satisfactory to this Township.

SECTION 4.05. If any Person shall fail or refuse, upon receipt of a notice of this Township or the Authority, in writing, to remedy any unsatisfactory condition with respect to a Building Sewer, within 60 days of receipt of such notice, this Township or the Authority may refuse to permit

such Person to discharge Sanitary Sewage and Industrial Wastes into the Sewage Collection System until such unsatisfactory condition shall have been remedied to the satisfaction of this Township and the Authority.

SECTION 4.06. This Township reserves the right to adopt, from time to time, additional rules and regulations as it shall deem necessary and proper relating to connections with a Sewer and the Sewage Collection System, which additional rules and regulations, to the extent appropriate, shall be and shall be construed as part of this Ordinance.

ARTICLE V
ENFORCEMENT

SECTION 5.01. Any Person who shall violate this Ordinance shall be liable, upon summary conviction for a first offense and upon summary conviction for each subsequent offense, to a fine of not less than \$15.00, nor more than \$25.00 together with costs of prosecution in each case. Each day that a violation shall continue shall be deemed and shall be taken to be a separate offense and shall be punishable as such.

SECTION 5.02. Fines and costs imposed under provisions of this Ordinance shall be enforceable and recoverable in the manner at the time provided by applicable law.

ARTICLE VI
SEVERABILITY

SECTION 6.01. In the event any provision, section, sentence, clause or part of this Ordinance shall be held to be invalid, such invalidity shall not affect or impair any remaining provision, section, sentence, clause or part of this Ordinance, it being the intent of this Township that such remainder shall be and shall remain in full force and effect.

ARTICLE VII
DECLARATION OF PURPOSE

SECTION 7.01. It is declared that enactment of this Ordinance is necessary for the protection, benefit and preservation of the health, safety and welfare of inhabitants of this Township.

ARTICLE VIII

REPEALER

SECTION 8.01. All ordinances or parts of ordinances inconsistent with this Ordinance shall be and the same expressly are repealed.

ARTICLE IX

EFFECTIVE DATE

SECTION 9.01. This Ordinance shall become effective 5 days after enactment, as provided by law.

DULY ENACTED AND ORDAINED this 25th day of February, 1986, by the Board of Supervisors of the Township of East Earl, Lancaster County, Pennsylvania, in lawful session duly assembled.

TOWNSHIP OF EAST EARL,
Lancaster County, Pennsylvania

ATTEST:

Earl H. Koider
Secretary

BY: Clyde W. Martin
Chairman of Board of
Supervisors

(SEAL)

**EAST EARL TOWNSHIP
SUBDIVISION
AND
LAND DEVELOPMENT ORDINANCE
2000**

**PREPARED BY
THE EAST EARL TOWNSHIP BOARD OF SUPERVISORS
AND
THE EAST EARL PLANNING COMMISSION
WITH ASSISTANCE FROM
ELA GROUP, INC.**

Quercus acutissima
Quercus coccinea
Quercus palustris
Quercus phellos
Quercus rubra
Tilia cordata
Tilia x euchlora
Tilia tomentosa
Ulmus parvifolia
Zelkova serrata

Sawtooth Oak
Scarlet Oak
Pin Oak
Willow Oak
Red Oak
Littleleaf Linden
Crimean Linden
Silver Linden
Lacebark Elm
Japanese Zelkova

Other tree species may be used provided acceptable information is submitted to indicate that the species are hardy street trees.

SECTION 609 GROUND COVER

- A. Ground Cover. Ground cover shall be provided on all areas of the project to prevent soil erosion. All areas which are not covered by paving, stone, or other solid material shall be protected with a maintained vegetative growth.

SECTION 610 SANITARY SEWAGE DISPOSAL AND WATER SUPPLY

- A. DEP Planning Requirements. As required by DEP, sewage facilities planning approval is required for all subdivisions and all projects on existing lots that propose sewage flows of 800 gallons per day or more. Such approval shall be in the form of a DEP-approved Planning Module for Land Development or a Form B Non-Building Waiver. The Township shall require evidence of such DEP planning approval prior to the final plan approval or the Board of Supervisors may, at its discretion, condition the approval of the final plan that such DEP approval be obtained.
- B. Sanitary Sewage Disposal. The applicant shall be required to connect to the public sewer system in accordance with the East Earl Sewer Authority provisions.
1. The applicant shall provide the type of sanitary sewage disposal facility consistent with the Planning Module for Land Development.
 2. The final plan application shall include a statement from the East Earl Sewer Authority indicating the approval of the plans for design, installation and required financial security.
 3. The sewerage installation shall be in accordance with the specifications of the East Earl Sewer Authority. The East Earl Sewer Authority shall establish requirements for the ownership and maintenance of such system.
- C. On-Lot Sewage Disposal. Where on-site sanitary sewage disposal facilities are

to be utilized, each lot so served shall be of a size and shape to accommodate the necessary subsurface sewage disposal system and a replacement system at a safe distance from building and water supply in accordance with Title 25, Chapter 73, Rules and Regulations of the Pennsylvania Department of Environmental Protection, as amended. Approval shall be received from the Township Sewage Enforcement Officer of the proposed system prior to final plan approval.

D. Public Water Supply. The applicant shall connect to the existing public water system if the proposed subdivision or land development is located within the existing service area boundaries as delineated in the East Earl Township Act 537 Plan. All public water supply systems shall comply with the following:

1. The locations and kind of fire hydrants shall be in accordance with the specifications of the Authority in concert with the local fire department thread requirements. Fire hydrants shall be located at street intersections no more than ten (10) feet from the curb. All fittings shall be National Standard threads. The large fitting shall face the street and be a minimum of sixteen (16) inches above the ground level. A copy of the approval of such system by the Authority shall be submitted.
2. The final plan application shall include a statement from the Authority indicating the approval of the plans for design, installation, and required financial security.
3. The installation and construction shall be in accordance with the specifications of the Authority. The Authority shall establish requirements for the ownership and maintenance of such system.
4. All components of the water supply system shall comply with the minimum horizontal isolation distances established by Pennsylvania Code Title 25, Chapter 73, Section 73.13.

E. Individual Water Supply. Where an individual on-site water supply system is to be utilized, each lot so served shall be of a size and shape to allow safe location of such a system, in accordance with all applicable standards. Individual water supplies shall comply with the minimum horizontal isolation distances established by Pennsylvania Code Title 25, Chapter 73, Section 73.13.

F. Aquifer Test Required. Prior to the subdivision of land into lots which would be served by individual wells in areas or in proximity to areas of known groundwater contamination or inadequate yields of potable supplies, aquifer and water quality tests shall be performed. Areas of known groundwater problems shall be mapped and such information shall be maintained in the offices of the Township.

1. Areas of known groundwater problems shall include:

Joint Act 537 Sewage Facilities Plan

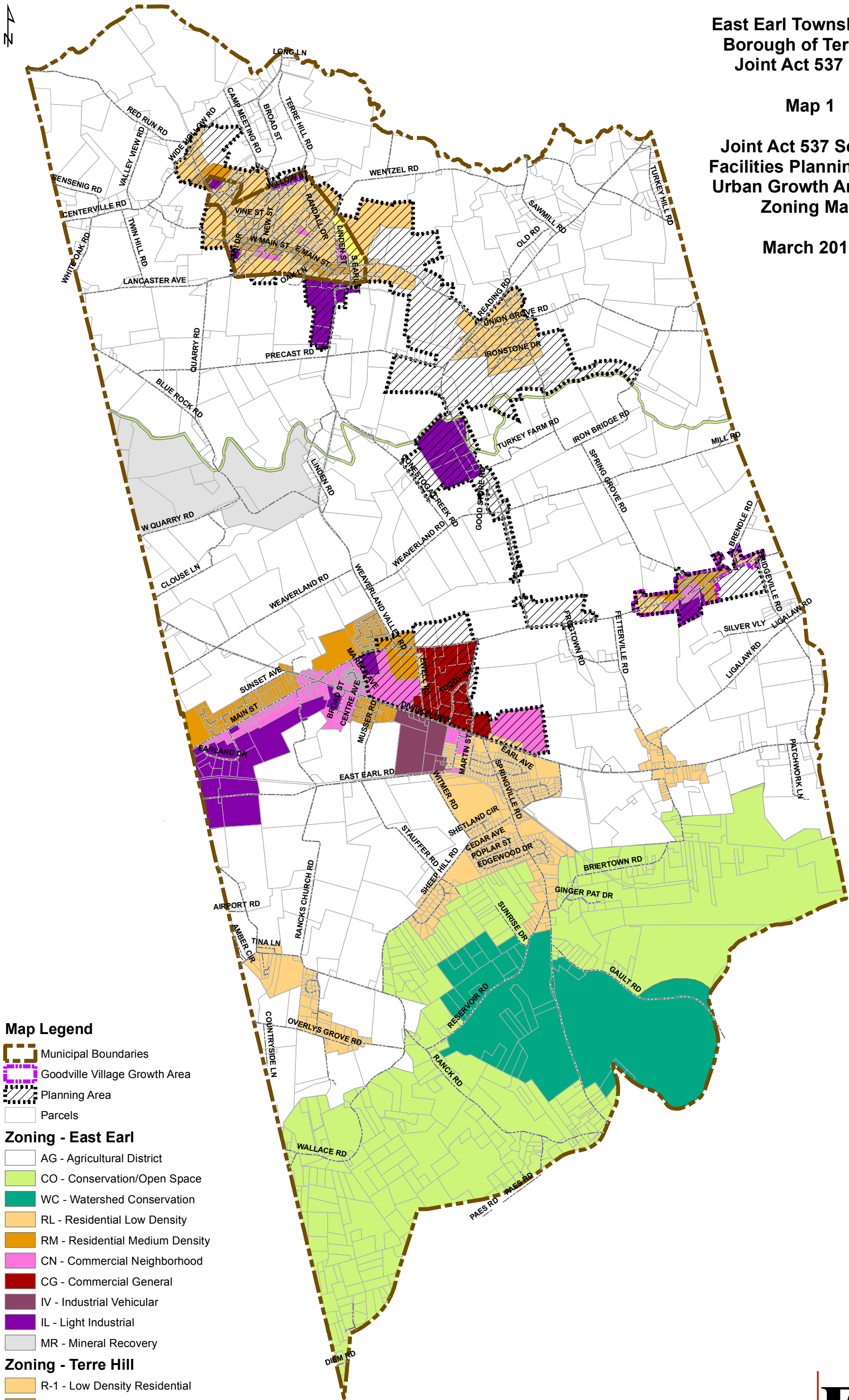
Maps 1 - 11

East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 1

Joint Act 537 Sewage
Facilities Planning Area,
Urban Growth Area and
Zoning Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Parcels

Zoning - East Earl

- AG - Agricultural District
- CO - Conservation/Open Space
- WC - Watershed Conservation
- RL - Residential Low Density
- RM - Residential Medium Density
- CN - Commercial Neighborhood
- CG - Commercial General
- IV - Industrial Vehicular
- IL - Light Industrial
- MR - Mineral Recovery

Zoning - Terre Hill

- R-1 - Low Density Residential
- R-2 - Medium Density Residential
- R-3 - High Density Residential
- CN - Commercial Neighborhood
- IL - Industrial Limited

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet

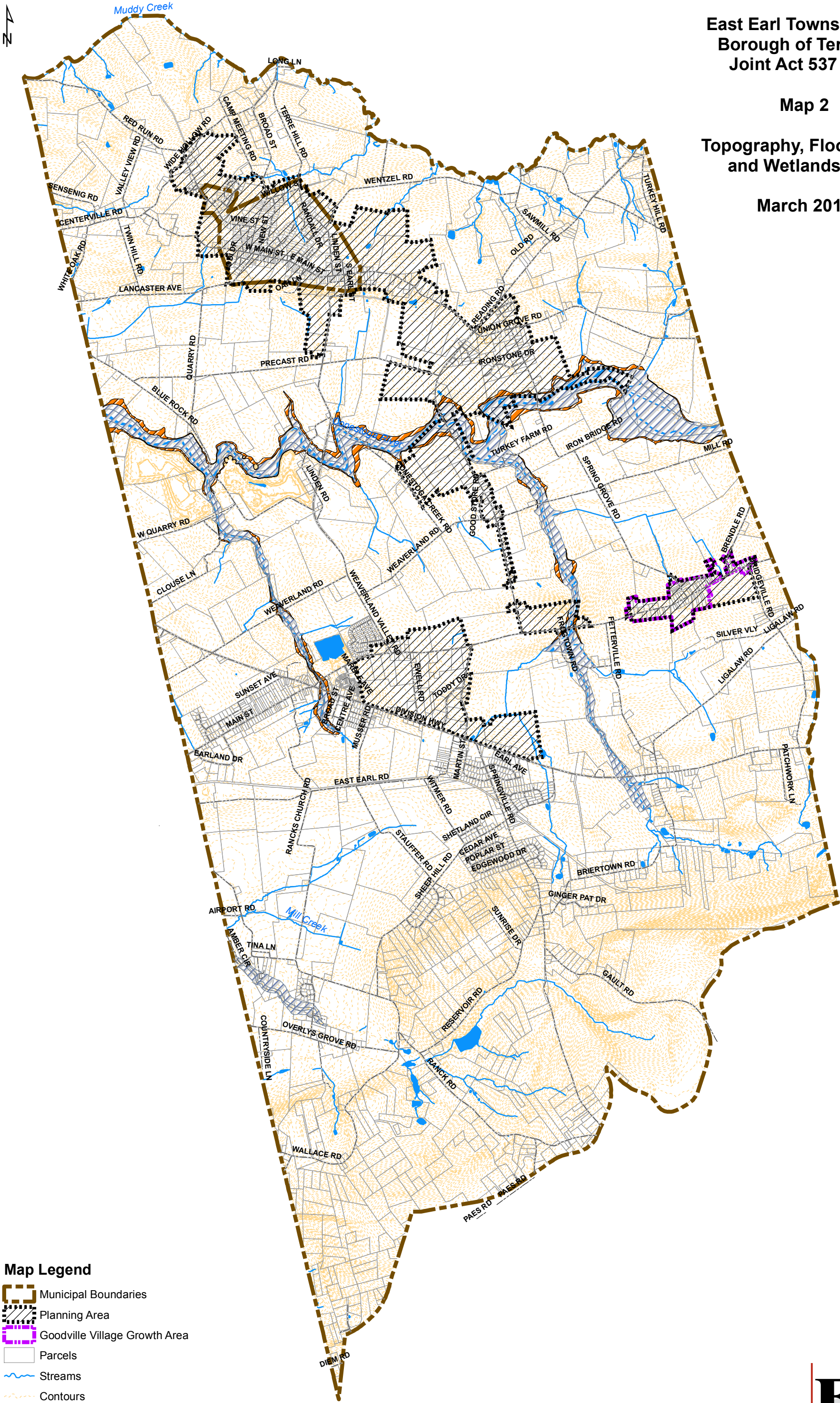


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 2

Topography, Floodplains
and Wetlands Map

March 2015



Map Legend

- Municipal Boundaries
- Planning Area
- Goodville Village Growth Area
- Parcels
- Streams
- Contours

Floodplain

- .2 PCT Annual Chance
- Zone AE

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet

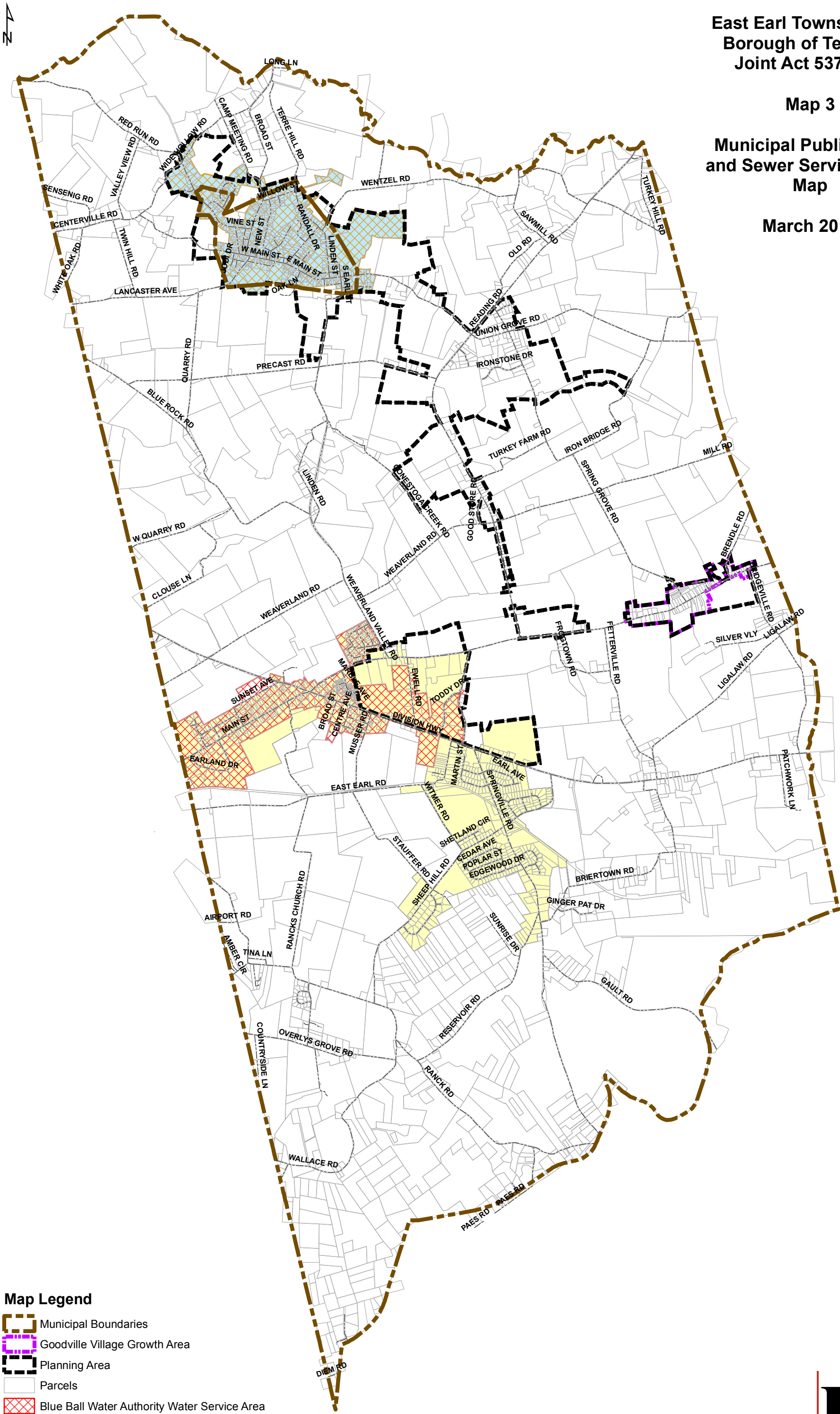


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 3

Municipal Public Water
and Sewer Service Areas
Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Parcels
- Blue Ball Water Authority Water Service Area
- East Earl Sewer Authority Sewer Service Area
- Borough of Terre Hill Water Area
- Borough of Terre Hill Sewer Service Area

0 2,500 5,000 10,000
Feet
1 inch = 3,000 feet

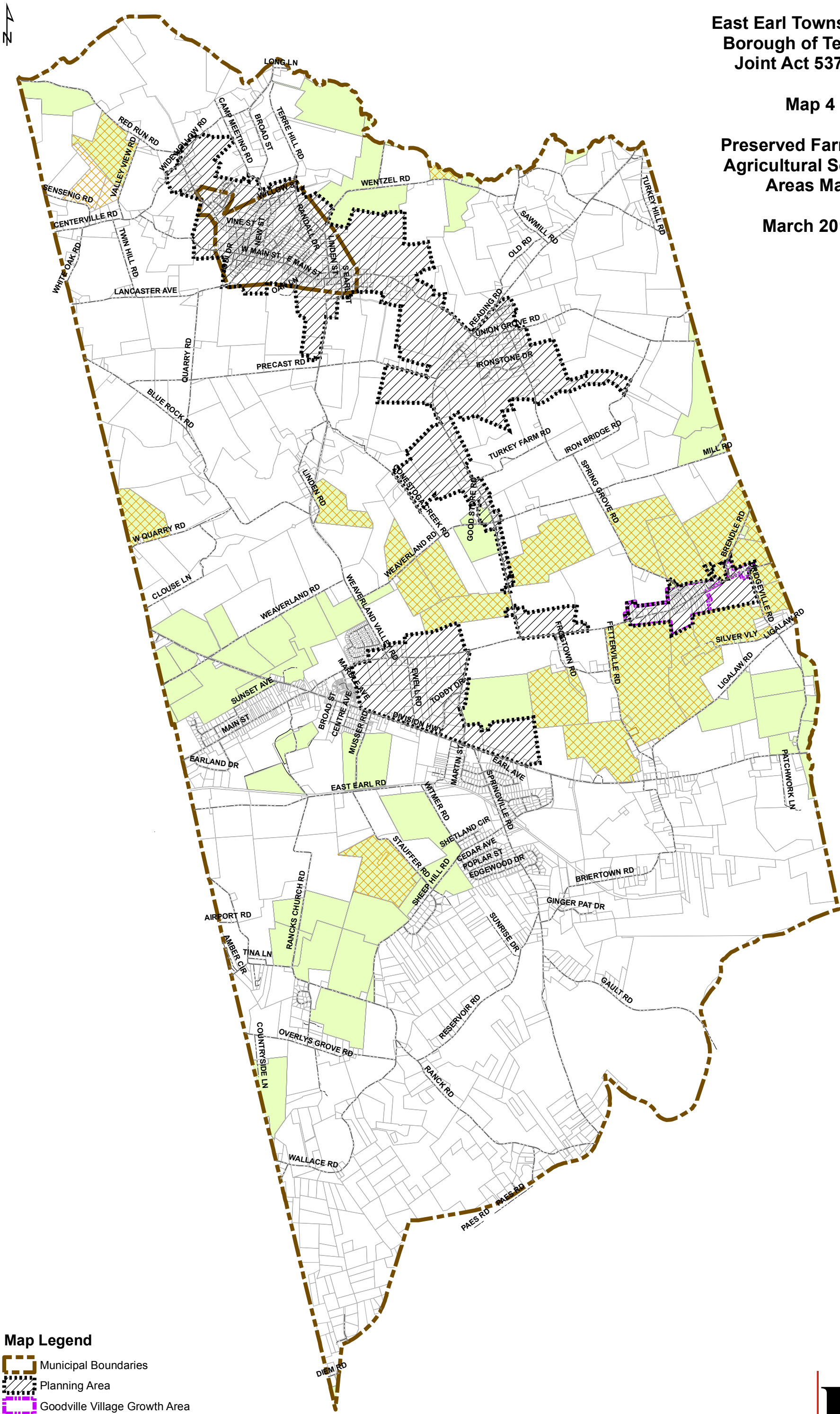


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 4

Preserved Farms and
Agricultural Security
Areas Map

March 2015

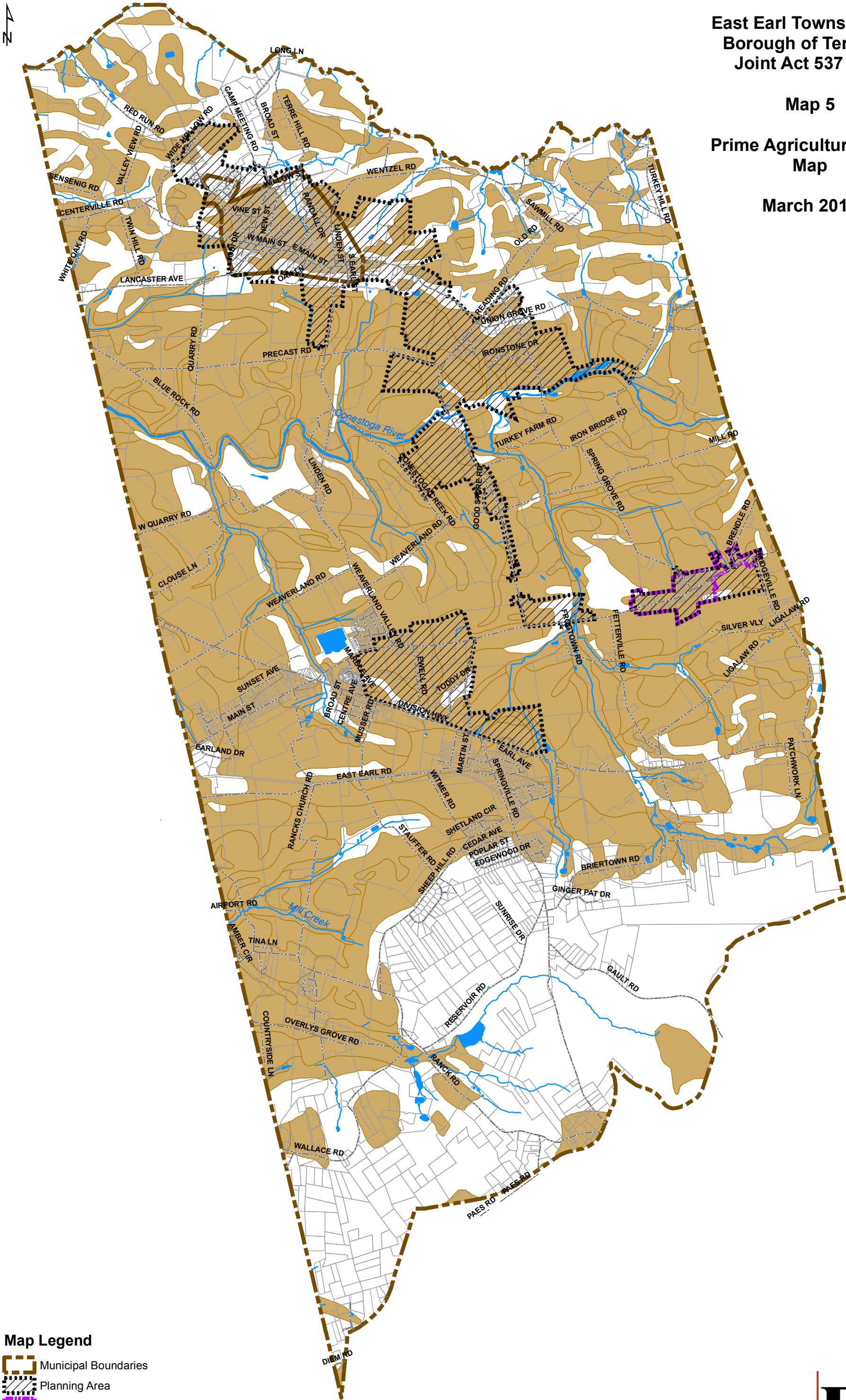


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 5

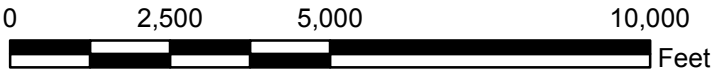
Prime Agricultural Soils
Map

March 2015



Map Legend

- Municipal Boundaries
- Planning Area
- Goodville Village Growth Area
- Streams
- Parcels
- Prime Agricultural Soils



1 inch = 3,000 feet

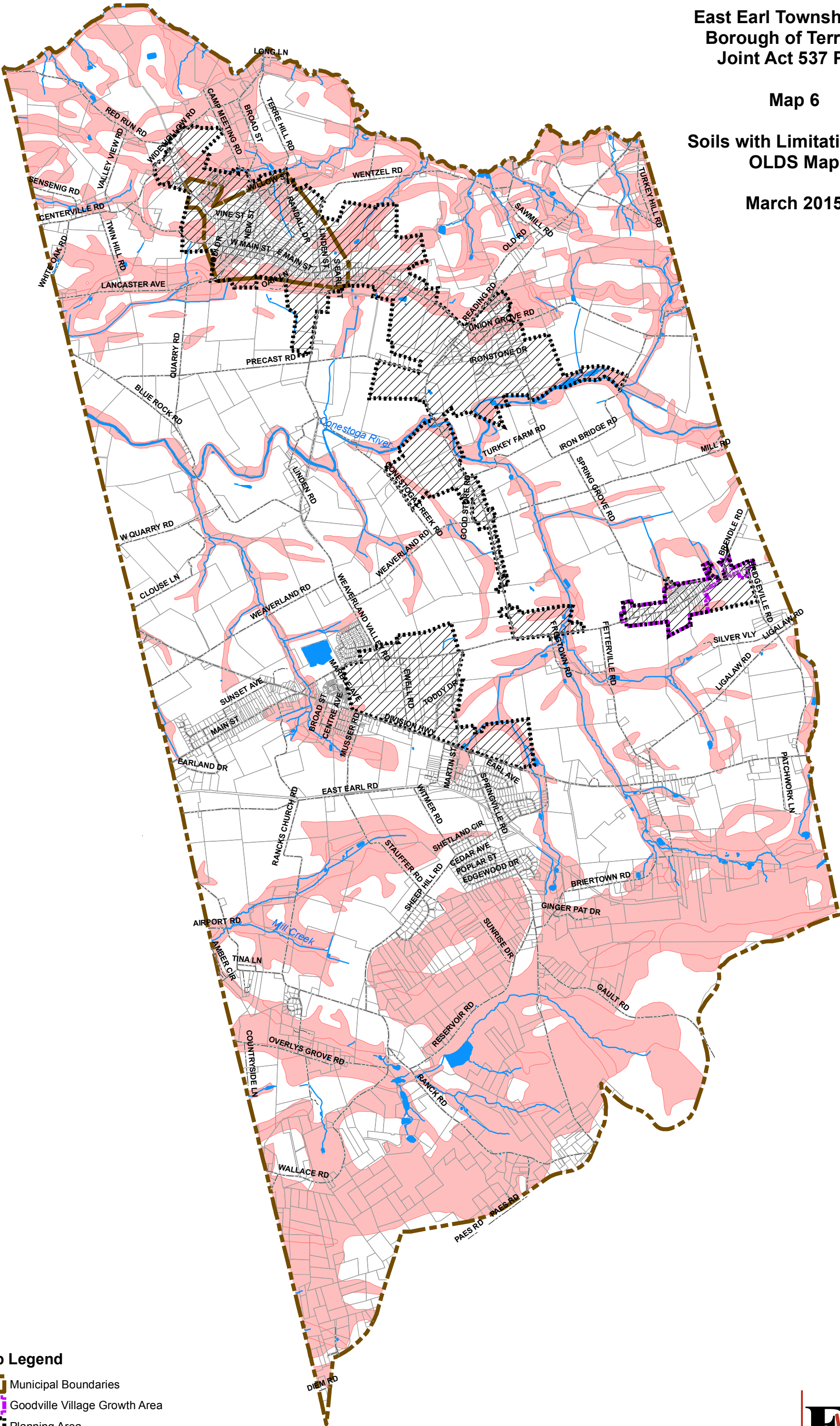


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 6

Soils with Limitations for
OLDS Map

March 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels
- Soils with Limitations for OLDS

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet



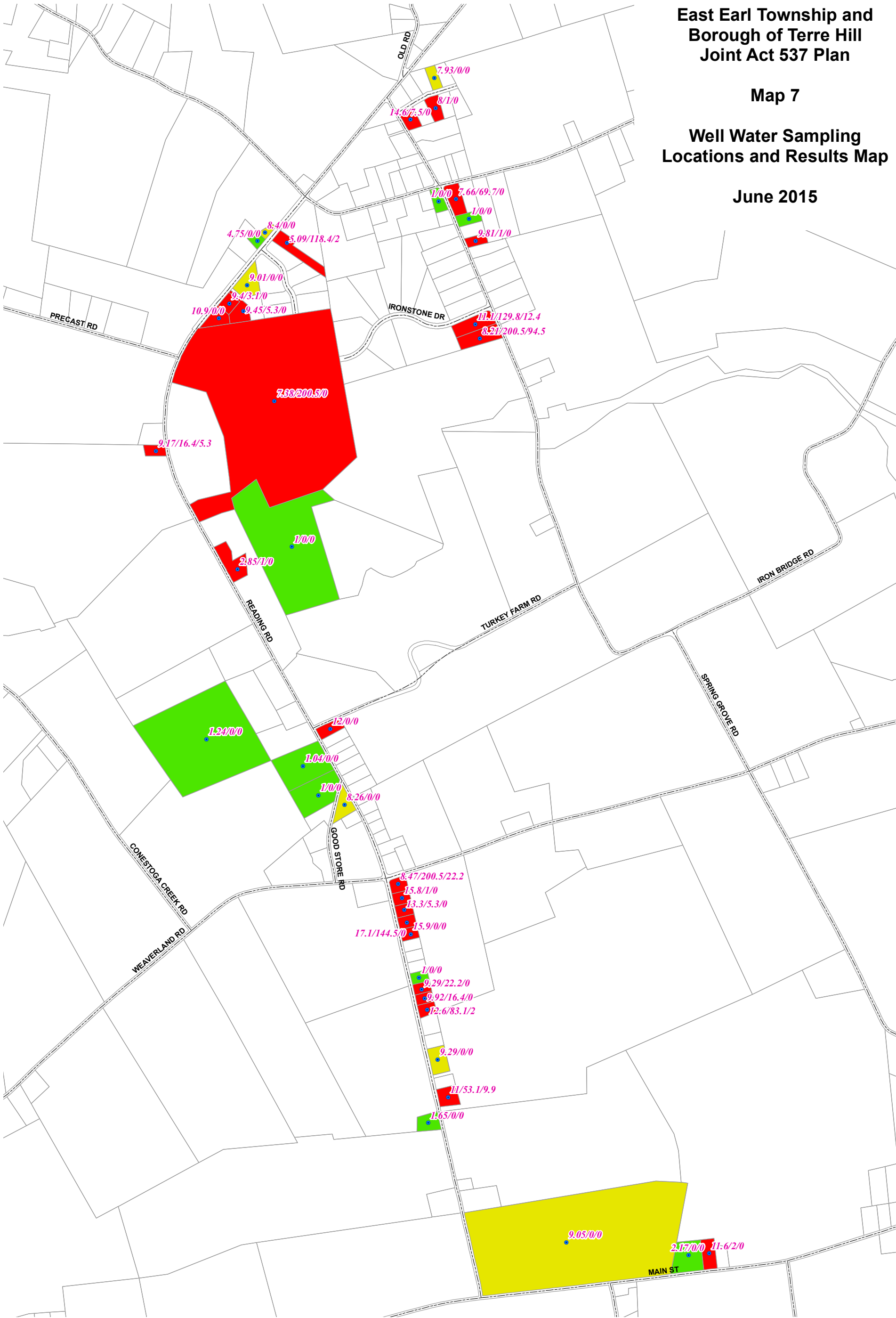


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 7

Well Water Sampling
Locations and Results Map

June 2015



Map Legend

- Goodville Village Growth Area
- Well Sampling Results (Nitrates/Total Coliform/Fecal Coliform)
- Passed
- Failed
- Passed, but are of concern due to having nitrates between 5 mg/L and 10 mg/L.

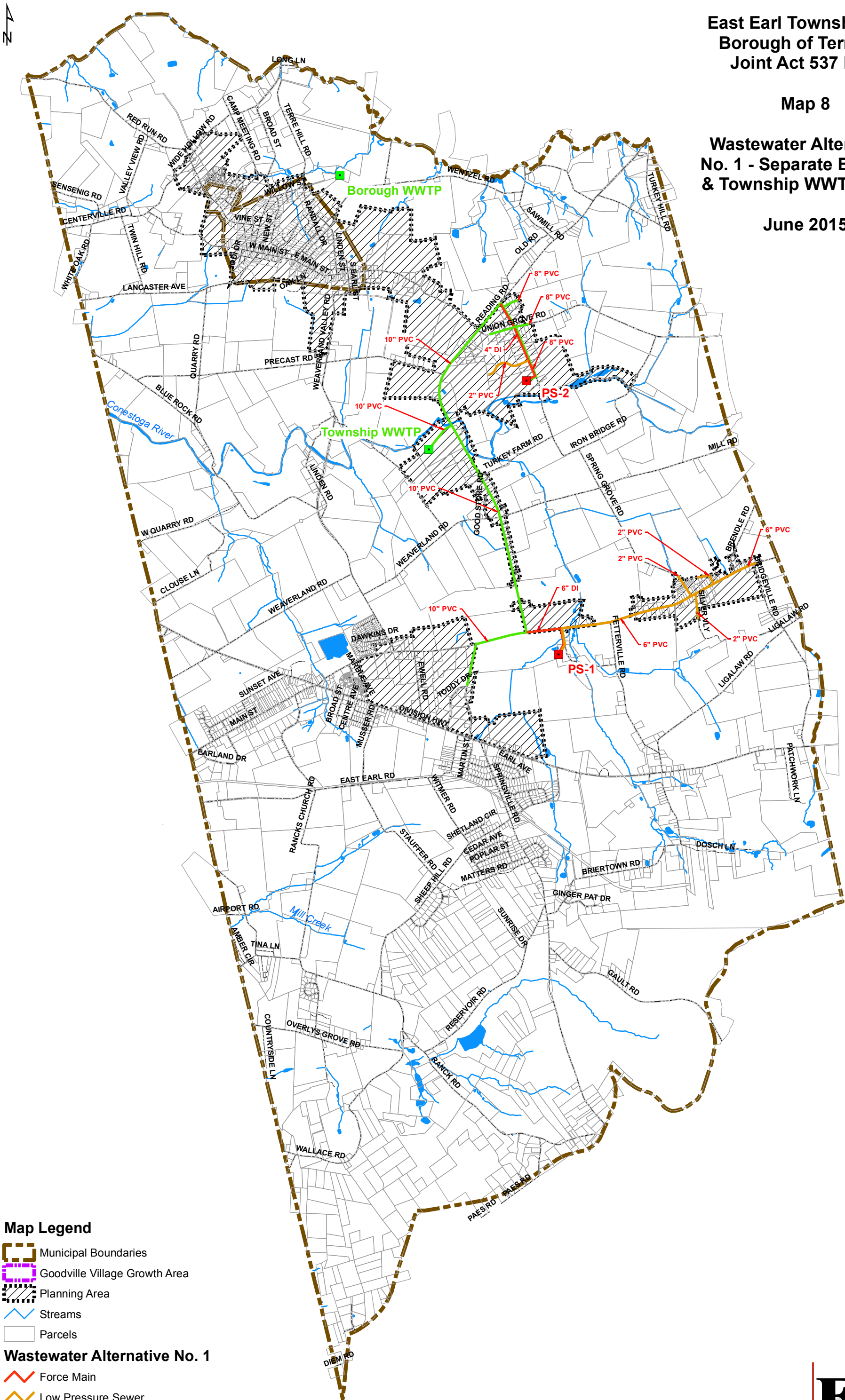


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 8

Wastewater Alternative
No. 1 - Separate Borough
& Township WWTPs Map

June 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 1

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant



1 inch = 3,000 feet

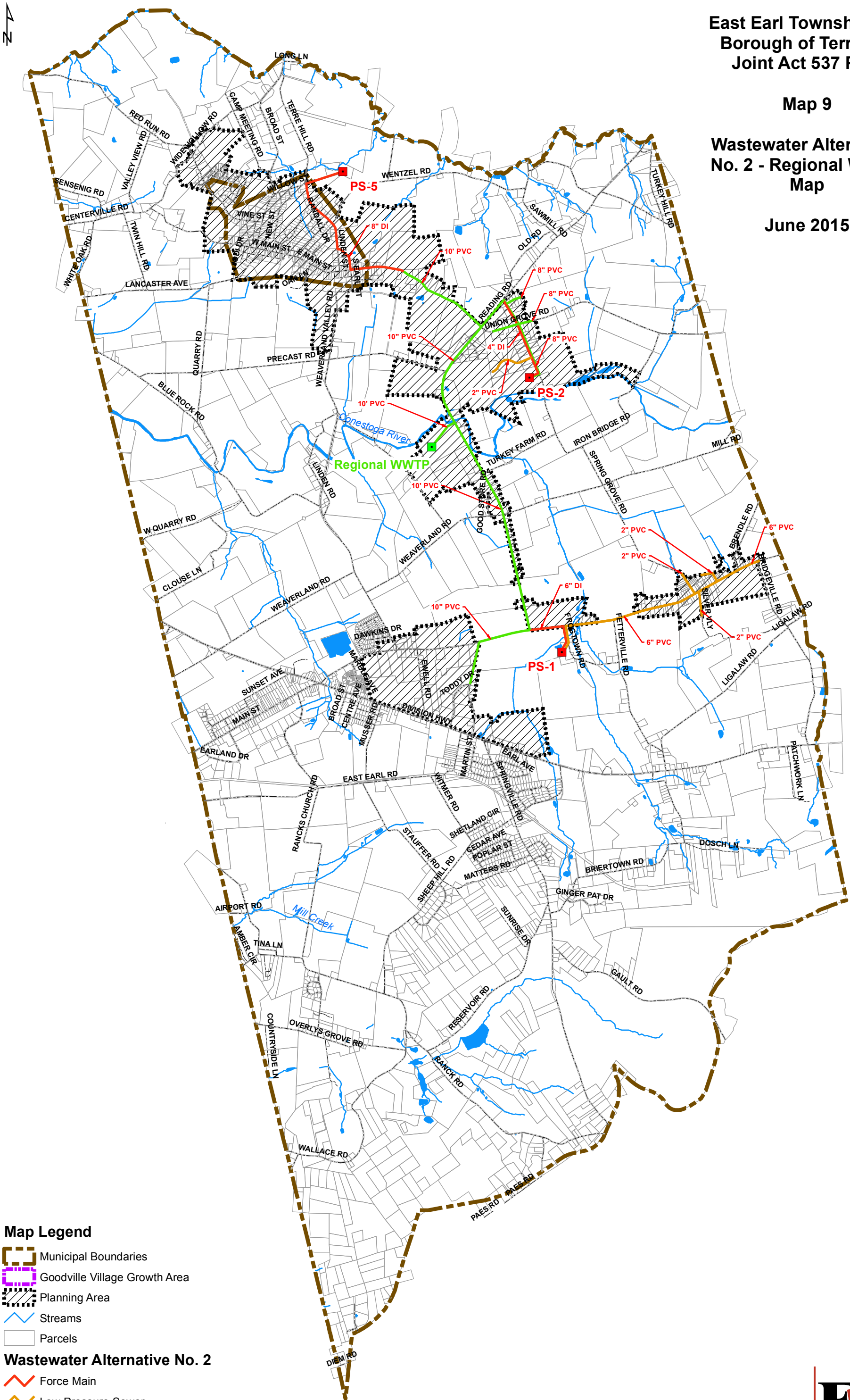


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 9

Wastewater Alternative
No. 2 - Regional WWTP
Map

June 2015

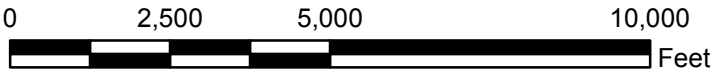


Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 2

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant



1 inch = 3,000 feet

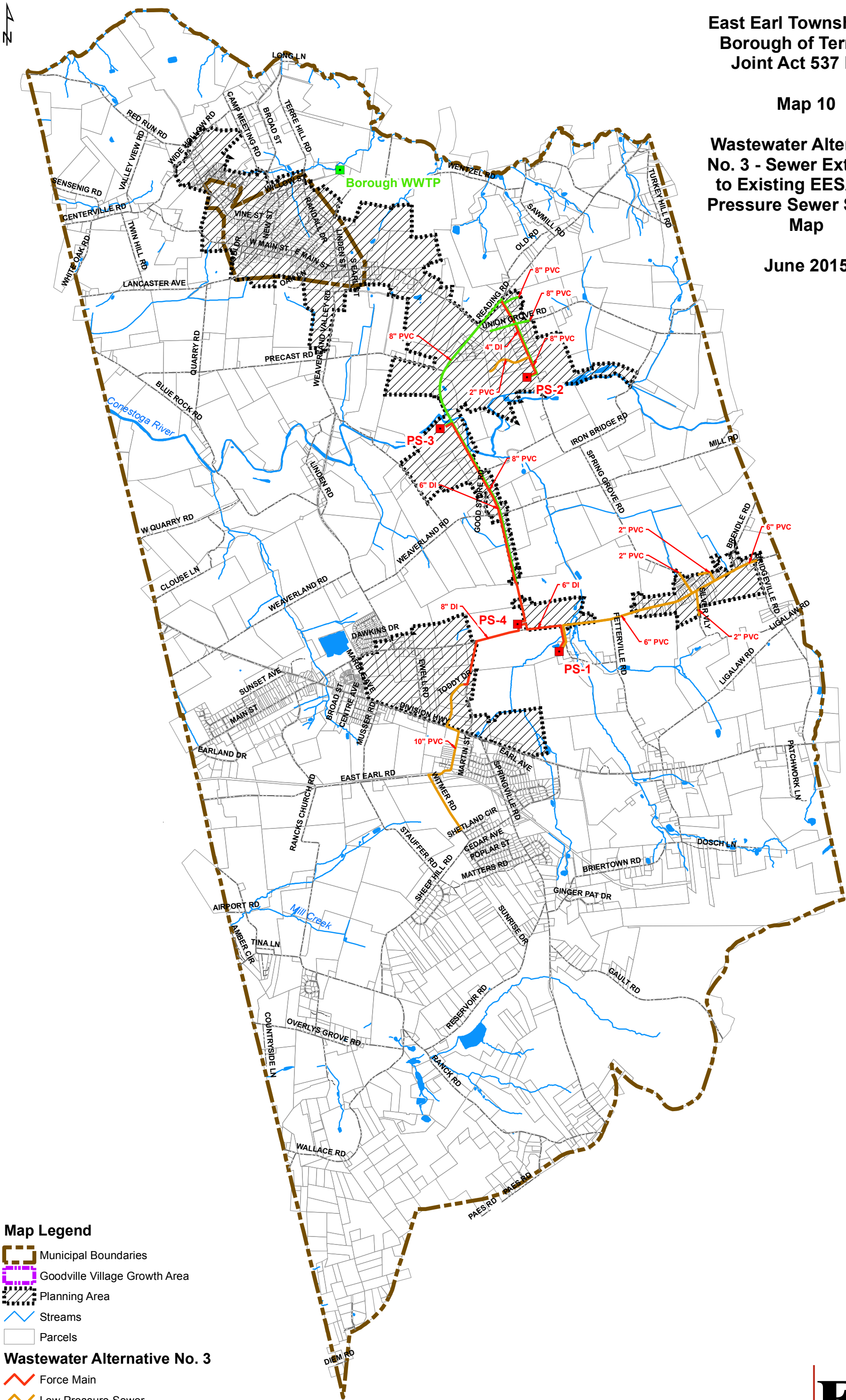


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 10

Wastewater Alternative
No. 3 - Sewer Extension
to Existing EESA Low
Pressure Sewer System
Map

June 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 3

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant

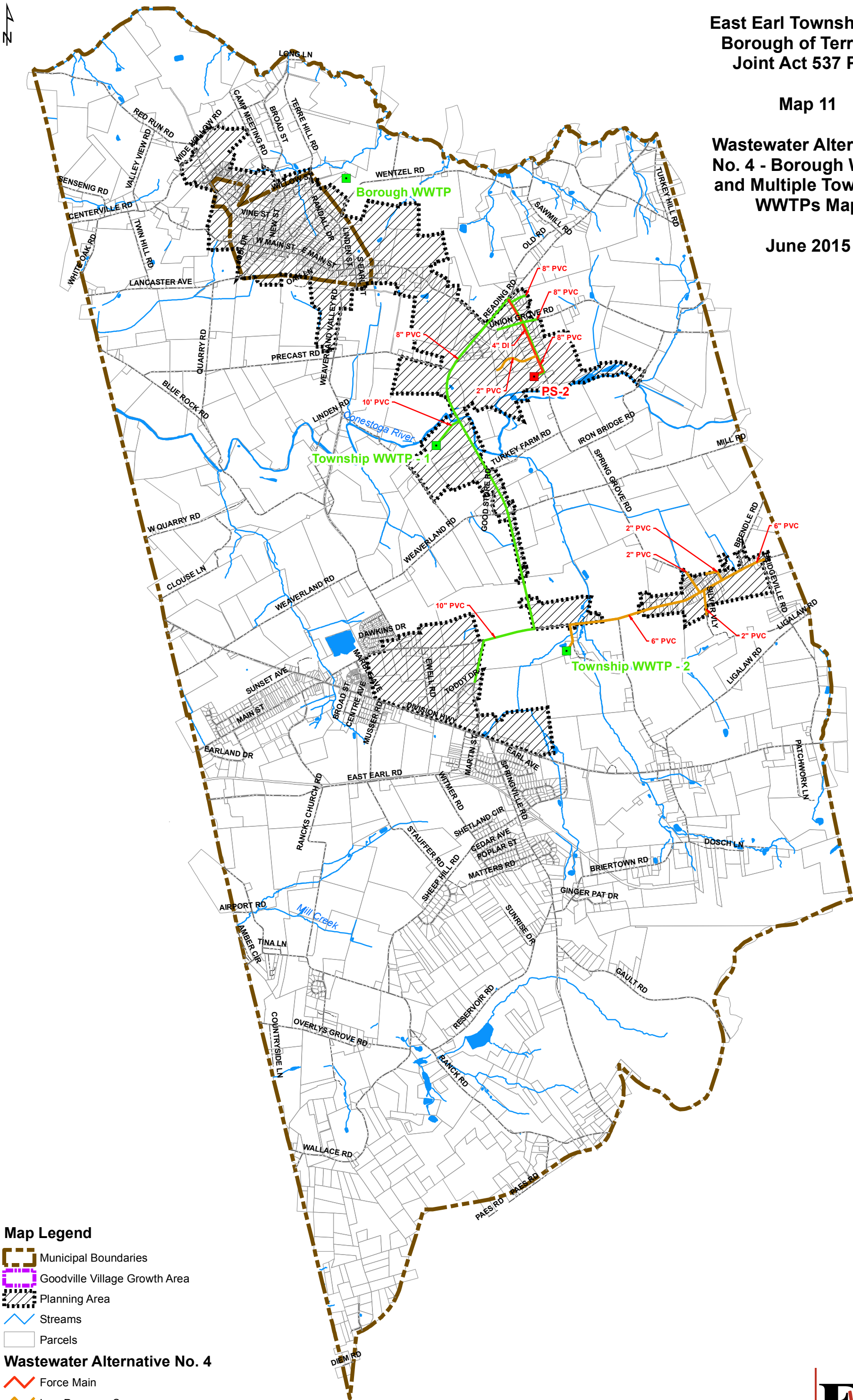


East Earl Township and
Borough of Terre Hill
Joint Act 537 Plan

Map 11

Wastewater Alternative
No. 4 - Borough WWTP
and Multiple Township
WWTPs Map

June 2015



Map Legend

- Municipal Boundaries
- Goodville Village Growth Area
- Planning Area
- Streams
- Parcels

Wastewater Alternative No. 4

- Force Main
- Low Pressure Sewer
- Gravity Sewer
- Pump Station
- Wastewater Treatment Plant

0 2,500 5,000 10,000
Feet

1 inch = 3,000 feet



