



Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

AN EMPLOYEE-OWNED COMPANY

**369 East Park Drive
Harrisburg, PA 17111
717. 564.1121
www.hrg-inc.com**

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**UNIFORM ENVIRONMENTAL REVIEW
ACT 537 SEWAGE FACILITIES PLAN
FOR
SHINGLEHOUSE BOROUGH**

POTTER COUNTY, PENNSYLVANIA

HRG Project No. 004004.0431

TABLE OF CONTENTS

<u>SUBJECT</u>	<u>PAGE</u>
1.0 PROJECT DESCRIPTION AND NEED	ER-1
1.1 PURPOSE OF AND NEED FOR PROJECT.....	ER-1
1.2 PROJECT DESCRIPTION	ER-8
2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED.....	ER-11
2.1 ALTERNATIVES FOR UN-SEWERED AREAS	ER-12
2.2 WASTEWATER TREATMENT PLANT UPGRADE ALTERNATIVES	ER-13
2.3 COMPARATIVE COSTS	ER-17
2.4 FUNDING ALTERNATIVES	ER-19
3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECTS	ER-27
3.1 LAND USE/IMPORTANT FARMLAND/FORMALLY CLASSIFIED LANDS	ER-29
3.2 FLOODPLAINS	ER-30
3.3 WETLANDS	ER-30
3.4 HISTORIC RESOURCES.....	ER-32
3.5 SENSITIVE BIOLOGICAL RESOURCES	ER-32
3.6 WATER QUALITY ISSUES.....	ER-33
3.7 COSTAL RESOURCES.....	ER-34
3.8 SOCIO-ECONOMIC ISSUES.....	ER-34
3.9 RECREATIONAL OPEN SPACE	ER-34
3.10 AIR QUALITY	ER-34
3.11 TRANSPORTATION	ER-34
3.12 NOISE ABATEMENT AND CONTROL	ER-34

3.13 WILD AND SCENIC RIVERS	ER-35
3.14 MISCELLANEOUS ENVIRONMENTAL CONSIDERATIONS	ER-35
4.0 SUMMARY OF MITIGATION	ER-35
5.0 PUBLIC PARTICIPATION.....	ER-36
6.0 EXHIBITS	ER-36

LIST OF EXHIBITS

- EXHIBIT A – ACT 537 BOROUGH MAPS
- EXHIBIT B – ON-LOT SANITARY SEWAGE SURVEY SUMMARY
- EXHIBIT C – STRUCTURAL COLLECTION ALTERNATIVES
- EXHIBIT D – STRUCTURAL WWTP ALTERNATIVES
- EXHIBIT E – COST ESTIMATES FOR WWTP ALTERNATIVES
- EXHIBIT F – PPMC CORRESPONDENCE
- EXHIBIT G – PNDI CORRESPONDENCE

**SHINGLEHOUSE BOROUGH
ACT 537 OFFICIAL SEWAGE FACILITIES PLAN
Potter County, Pennsylvania**

ENVIRONMENTAL REPORT

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

Enacted by Pennsylvania Legislature in 1966, The Pennsylvania Sewage Facilities Act (Act 537) requires every municipality within the Commonwealth develop and maintain an up-to-date Sewage Facilities Plan. Shinglehouse Borough, Potter County, Pennsylvania, has not previously adopted a Sewage Facilities Plan and has authorized the preparation of this Environmental Report as a portion of the Act 537 Official Sewage Facilities Plan (Act 537 Plan) for the Borough of Shinglehouse (Borough). This authorization was a voluntary decision primarily based on mandated requirements, however, it also creates consistency with other municipal planning objectives set forth by the Borough. The Planning Area for this Act 537 Plan (Planning Area) consists of Shinglehouse Borough in its entirety.

The Borough provides sanitary sewer service to residents and businesses, as well as to the Oswayo Valley Elementary School and to the Jr. & Sr. High School. Approximately twenty eight (28) developed properties within the Borough are outside of the sanitary sewer service area and are currently served by On-Lot Disposal Systems (OLDS). The Act 537 Plan is being implemented for the purposes of evaluating options for replacing and/or upgrading the existing 0.16 MGD sewage treatment plant to address aging technology. Additionally, this Act 537 Plan examines options for extending public sanitary sewer to areas of the Borough currently served by OLDS. A map of the Planning Area is presented in Section 6.0 of this Report.

This Report has been prepared in accordance with the *Guidelines for the Uniform Environmental Review Process in Pennsylvania* published by the Pennsylvania Department of Environmental Protection (PA DEP). Section 1.0 of the Report summarizes activities and analyses completed during preparation of the Shinglehouse Borough Act 537 Plan. A summary of alternatives considered by the Act 537 Plan is included as Section 2.0 of this Report. Environmental consequences of the alternatives selected for implementation by the Act 537 Plan are included in Section 3.0 of this Report.

1.1.1 Wastewater Treatment Facilities

The Borough's Wastewater Treatment Plant (WWTP) is located north of Honeoye Street at the terminus of Wolcott Avenue. The Borough's WWTP discharges treated effluent to the Honeoye Creek in Potter County under the National Pollutant Discharge Elimination System (NPDES) permit number PA0036773. This permit has an expiration date of March 31, 2021.

The WWTP's current annual permitted discharge flow is 0.160 million gallons per day (MGD), with a peak wet weather flow or maximum monthly average flow (MMAF) of 0.160 MGD and a peak hourly flow of 0.250 MGD. The design capacity for organic loading is 447 pounds/day BOD₅ with a summer average monthly loading rate of 15 lbs/day CBOD₅ and a winter average monthly loading rate of 17 lbs/day CBOD₅.

During the development of the Potter County Comprehensive Plan in 2005, it was determined that the Borough's public sewer system was operating at 116% of its permitted capacity. Since 2005, the Borough's WWTP has had issues meeting its permitted effluent limits but has reduced inflow and infiltration so the WWTP is operating well below its rated hydraulic capacity. The summer Fecal Coliform instantaneous maximum (IMAX) effluent limits were exceeded in May and July of 2017 which resulted in violations. Similar violations have occurred in recent years.

Flow through the WWTP is primarily by gravity. The plant utilizes primary clarification, fixed film bioreactors, and final clarification to achieve secondary treatment. Effluent is disinfected using sodium hypochlorite before being discharged to the Honeoye Creek.

Sludge is wasted from the primary clarifier into the aerobic digester. Sludge from the final clarifier is returned to the influent of the WWTP. Digested sludge is stored on-site until it can be dewatered using manually cleaned drying beds and disposed of via landfilling. Filtrate from the drying beds drains to the influent of the WWTP.

The Borough's existing wastewater treatment plant, constructed in 1966, has reached the end of its useful life and majority of its components are in need of replacement. In an effort to address the aged technology, a Wastewater Treatment Plant Evaluation Study (WWTP Study) was performed in October 2016 by Herbert, Rowland & Grubic, Inc. (HRG) to evaluate the existing treatment process facilities and provide a recommendations for improvements based on existing record drawings, site visits, personal communications with Borough Staff, equipment manufacturers, and other documents provided by the Borough.

HRG completed the WWTP Study using the literature values and design parameters outlined in the PA DEP Domestic Wastewater Facilities Manual and Environmental Protection Agency (EPA) Process Design Manual for Sludge Treatment and Disposal to determine performance-limiting factors of treatment unit processes. Historical data on the performance of the treatment plant was reviewed and field inspections of the facilities were conducted.

The following recommendations were identified in the WWTP Study:

1. Rehabilitation of the chlorine contact tank and miscellaneous headworks improvements.
2. Installation of the vertical fine screen and rehabilitation of the final clarifier.
3. Installation of the oxidation basin and grit system, supervisor controls, and demolition of the existing equipment.

1.1.2 Collection and Conveyance Facilities

The original sewage collection and conveyance system was constructed in the 1960's and consists of approximately 10 miles of gravity sewer and force mains. An eight (8) inch diameter main conveys the wastewater to the WWTP. There are two (2) pumping stations within the system (Low Street and Mill Street, respectively). Neither of the pump stations are at capacity as demonstrated in Table 1.1.2. The locations of the existing Borough collection and conveyance mains, pump stations, and WWTP are provided on a map in Section 6.0 of this Report.

Table 1.1.1 - Average Daily Flows and Rated Capacities of Shinglehouse Borough Pumping Stations

Pumping Station	Location	Rated Capacity (gpd)	2017 Conditions	
			Average Daily Flow (gpd) ⁽¹⁾	Remaining Facility Capacity (gpd)
1	Mill Street Pump Station	54,000	165	53,835
2	Low Street Pump Station	21,600	253	21,347

Notes:

⁽¹⁾ Average Daily Flows are calculated based on the monthly pump run-times and the rated capacity of the pumps as supplied by the pump manufacturers. Peaking Factor of 4.0 was assumed.

1.1.3 Existing Individual On-Lot Systems

Currently, there are 28 existing On-Lot Systems located in the Planning Area. A map of the location of these systems can be found in Section 6.0 of this Report. The remainder of the Borough is serviced by the Borough's WWTP.

The primary type of On-Lot System implemented is classified as:

- **In-Ground** – Systems consisting of absorption areas, trenches and other disposal systems that rely solely on the surrounding soil for treatment.

The primary sub-type of On-Lot System found in the area is classified as:

- Standard in-ground systems (septic tank with below-grade seepage bed).

Current regulations regarding On-Lot disposal systems began in 1966, and it is known that most systems installed before 1972 did not use best available technologies or methods that would be acceptable today.

Sanitary Sewer On-Lot Survey

An On-Lot sanitary sewage survey was conducted in order to determine whether the condition of the OLDS in Shinglehouse Borough could endanger public health. There are approximately 28 homes in the Borough served by OLDS. A total of 15 surveys were collected from randomly selected property owners throughout the Borough. The survey inquired about the age, type, and condition of the OLDS and water systems on the property. The Act 537 Sewage Disposal Needs Identification Guidance (SDNIG) document published by PA DEP was used as the basis for performing the sanitary sewer surveys.

Follow-up field verifications ("door-to-door surveys") were performed for a percentage of the properties based on guidelines set forth in the SDNIG document. According to the SDNIG document, a recommended minimum number of properties with OLDS within each Sewage Management Area (SMA) should be surveyed in order to conduct a "representative", or "valid" door-to-door sanitary sewage survey of the SMA. The minimum percentage of the properties that should be surveyed varies with the total number of properties in the SMA in accordance with the requirements published in the SDNIG (Table 1.1.3).

Table 1.1.2 - Minimum OLDS Requirements for Door-To-Door Sanitary Survey – Tier 2

OLDS in the SMA	Minimum Percentage of OLDS to Survey
Up to 50	50%
51 to 100	35%
101 to 500	25%
501 to 1,000	20%
Greater than 1,000	15%

The PA DEP has designated "public health needs" as a general needs category relating to sewage disposal that must be considered. The definitions and requirements stated in this section are taken from the DEP's SDNIG document. Public health needs are considered to be those health hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or waters of the Commonwealth, including groundwater. Most commonly, these needs are found to be malfunctioning OLDS and malfunctioning Community On-Lot Disposal Systems (COLDS). On-Lot disposal system malfunctions are classified into three categories: confirmed, suspected, and potential. When determining the public health needs of an area using OLDS/COLDS, all systems inventoried, mapped, and analyzed must be placed into one of four categories:

1. Confirmed Malfunctions are malfunctions documented by dye testing, laboratory test results, observation by a Sewage Enforcement Officer (SEO) or a professional with

experience in OLDS, "Best Technical Guidance" repair permits, and seasonally wet absorption areas. Also included are piped discharges from a single structure with direct evidence of sewage (i.e. direct observation of soap suds, food residue, solids, odors, etc.), reported system backups, malfunctions with photographic documentation, or other similar evidence.

2. Suspected Malfunctions are systems exhibiting some malfunction characteristics such as abnormally green grass in the vicinity of an absorption area, piped discharges from a dwelling without direct evidence of sewage (i.e. no observation of soap suds, food residue, solids, odors, etc.), absorption areas located in known unsuitable soils (observed wetlands, rock outcropping, etc.), cesspools in high-density development areas, and pit privies.
3. Potential Malfunctions are systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements, systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations for OLDS and systems located on exceptionally steep slopes greater than 25 percent. Included as potential malfunctions are permits issued for OLDS repairs that meet Chapter 73 standards. While this needs category does not represent "stand alone" existing needs, the information may be utilized in a needs analysis to locate areas affected by poorly defined adverse circumstances. For example, clusters of legitimate repairs will often indicate areas requiring closer scrutiny.
4. No Malfunction are those systems that appear to be operating satisfactorily, were constructed since the implementation of system permitting requirements, and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972.

Several other situations exist that must be inventoried, mapped, and analyzed when identifying public health needs for an Act 537 Official Plan or Plan Update Revision. These include wildcat sewers, borehole disposal, holding tanks, public complaints, and sanitation-related illnesses.

5. Wildcat Sewers are collection systems (community sewers) serving more than one equivalent dwelling unit (EDU) and discharging untreated or partially treated sewage to the surface of the ground, storm sewers, or other waters of the Commonwealth.
6. Borehole Disposal is an individual or community system that discharges to a borehole, abandoned water well, dry well, ventilation shaft, or other subterranean structure.
7. Holding Tanks are watertight receptacles designed to retain sewage for disposal at another location. All holding tanks installed as repairs are counted as "needs." Specifically excluded are holding tanks installed to serve new land development or low flow commercial facilities. While not actually discharging sewage into the environment,

properly maintained holding tanks, when used in OLDS repair situations, are included in the confirmed malfunction category.

8. Public Complaints are legitimate complaints received by the PA DEP or the municipality concerning improper sewage disposal. The number, nature, and location of public complaints concerning improper sewage disposal are important, yet often overlooked indicators of sewage disposal problem areas.
9. Sanitation Related Illness is any reported illness, either resulting from or suspected to be resulting from improper sewage disposal. Records and incidents in which polluted water supplies have been suspected or confirmed as the cause of disease is documentation establishing a community's wastewater treatment needs. Confirmed or suspected vectorborne disease that may be attributed to surface ponding of sewage should also be considered.

In accordance with the SDNID, a Tier 1 survey was conducted for the entire Borough and more than 50% of the OLDS were surveyed. At each home where the sewage survey was completed, the field inspectors made general observations of the properties and performed closer investigations of sites that demonstrated evidence of sewage malfunctions including: direct observation of sewage, soapsuds, food residues, solids, or odors. Other environmental conditions including abnormally green grass, piped discharges, and swampy or wet areas in the vicinity of the on-lot systems were also noted.

A total of fifteen (15) properties were surveyed. The number and percentage of the properties in Shinglehouse Borough that were determined to have confirmed, suspected, potential, and no malfunctions are summarized in Table 1.1.4. A map of the results of this survey can be found in Section 6.0 of this Report.

Table 1.1.3 - Summary of Tier 1 Survey Malfunction Categories

OLDS Surveyed	Malfunction (% of OLDS Surveyed)							
	Confirmed		Suspected		Potential		None	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
15	2	13%	0	0%	5	33%	8	53%

Based on the number of surveys completed and the small number of malfunctions found, no further surveys were completed.

Well Water Survey in OLDS Study Areas

Currently, there are twelve (12) properties in Shinglehouse Borough that are not provided public water. Eight (8) of these properties do not have public water or public sanitary sewer service. During the door-to-door sanitary sewage survey, well water samples were collected from the surveyed properties where private wells are used.

According to the guidelines for well water surveys published in the SDNIG document, well water surveys may be completed in two tiers (or steps). In tier one, a minimum of 15% of the wells in the study area must be sampled. For the second tier, representative sampling must be completed with percentages the same as for the Door-to-Door Survey (see Table 1.1.2). Each well water sample was analyzed for total coliform bacteria, fecal coliform bacteria and nitrate-nitrogen concentration.

The Sewage Disposal Needs Identification Guidance requires representative sampling, or second tier sampling in any SMA, if:

1. The total coliform bacteria contamination rate is 10% or greater in the first tier well water samples; and
2. The fecal coliform bacteria contamination rate is 20% or greater in the first tier well water samples that had total coliform bacteria contamination.

A total of two (2) water samples were collected during the Tier 1 analysis of Shinglehouse Borough. These samples were analyzed by Fairway Laboratories. The results of the Tier 1 water sampling are displayed in Table 1.1.5.

Table 1.1.4 - Tier 1 Well Water Survey Results - Bacteria and Nitrate Contamination

Wells Surveyed	Total Coliform Present (% of Surveyed)		Fecal Coliform Present (% of Total Coliform)		Nitrate > 5mg/L, but <10 mg/L (% of Surveyed)		Nitrate >10 mg/L MCL (% of Surveyed)	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
2	0	0%	0	0%	0	0%	0	0%

* Water samples were not taken where residents are provided with a public water supply.

** Environmental Protection Agency: Safe Drinking Water Act set the limit for nitrate (as nitrogen) to 10 mg per liter.

As illustrated in Table 1.1.5, the results of the Tier 1 well water testing indicated that there was no need to complete Tier 2 sampling. The laboratory results for each sample collected by the Borough's Licensed Water Operator and general information on water quality was presented to each homeowner who participated in the well water sampling.

Sanitary and Well Water Survey Summary

Table 1.1.3 and Table 1.1.4 display the results of the sanitary surveys completed for Shinglehouse Borough as part of the Act 537 Plan. The locations where the sanitary surveys were completed and the corresponding malfunction category of each OLDS is displayed on a map in Section 6.0 of this Report. The Tier 1 survey indicated a 13% confirmed malfunction rate (2 properties) based on field observations.

Table 1.1.5 displays the results of the water samples collected. The Tier 1 water sampling

revealed that the few private water wells in the Borough are not adversely impacted by OLDS, indicating that the few OLDS are properly functioning.

It is recommended that an On-lot Sewage Management Program be implemented by the Borough to assist homeowners in developing a regular maintenance schedule to help maintain the functionality of the existing OLDS. Because of the few number of OLDS in the Borough, the construction of public sanitary sewers for these areas needs to be considered. Implementation of a Sewage Management Program for the Borough and construction of public sanitary sewer to areas of the Borough currently served by OLDS is further discussed and evaluated in this Report.

1.2 Project Description

The Planning Area for the Act 537 Plan consists of Shinglehouse Borough in its entirety. Shinglehouse Borough encompasses 2.085 square miles (1,334 acres) and is bordered by Ceres Township (McKean County) to the west and by Sharon Township (Potter County) along all remaining borders.

Currently, twenty eight (28) existing properties operate on-lot disposal systems. Results from the on-lot sewer survey conducted in the Borough confirmed malfunctions in 13% of the on-lot systems and indicated potential malfunctions in 33% of the OLDS. The extension of public sewer and water to these properties was evaluated under the scope of this investigation.

The existing wastewater treatment system owned and operated by the Borough was constructed in 1966 and is mostly original equipment. Small repairs and modifications have been made over the past 50 years to keep the facility in operation and in compliance with the NPDES Permit; however, due to the age and condition of the equipment, issues with rags and other non-disposables, and advances in wastewater treatment technology, major improvements at the WWTP are required.

The WWTP's current annual permitted discharge flow is 0.160 MGD, with a peak wet weather flow or maximum monthly average flow (MMAF) of 0.160 MGD and a peak hourly flow of 0.25 MGD. The service area is not projected to expand in the 20-year planning window and the proposed upgraded WWTP will maintain the current design flows. The primary reasons for upgrading the WWTP is to replace aged equipment and 1966 technology with more efficient advanced technology, enhance treatment during the harsh winter months, and provide treatment flexibility within the system.

In addition to the need to replace existing equipment, the most recent NPDES Permit includes new requirements for total chlorine residual (TCR) effluent limits and monitoring requirements for copper, lead, total nitrogen (TN), and total phosphorous (TP). Although the upgrade is not intended to be capable of TN and TP reduction, it can be easily modified in the future to meet typical biological nutrient requirements should the need exist.

It is considered to be good practice that when evaluating new treatment technologies, that consideration be given for the technology to be adapted, at the lowest cost, to be able to meet new water quality requirements, should they be imposed. While no new water quality requirements have been proposed, consideration for meeting nutrient reduction has been examined in the treatment evaluation due to the water quality requirements being imposed in other areas including the Susquehanna River Basin and Delaware River Basins.

A Wastewater Treatment Plant Evaluation Study was completed in October 2016 to evaluate the existing treatment process facilities and provide a recommendation for improvements based on existing record drawings, site visits, personal communications with Borough Staff, equipment manufacturers, and other documents provided by the Borough.

Upgrades to the Borough's existing wastewater treatment facility were examined under the scope of this investigation.

1.2.1 Collection System Alternatives

Five (5) focused alternatives for providing public sewer service to areas of Shinglehouse Borough currently being served by OLDS were evaluated to determine whether they were cost-effective, environmentally sound, and structurally feasible and are listed below:

- 1A. Low pressure collection system to serve Park Avenue and Karr Hollow area;
- 1B. Low pressure collection system to serve Park Avenue area;
- 2A. Low pressure collection system to serve Horse Run Road area;
- 3A. Low pressure collection system to serve High Street area;
- 3B. Gravity sewer collection system to serve High Street area.

Reports from by the Borough's SEO and completion of the sanitary surveys, indicate there is not an immediate need to provide improved wastewater collection, conveyance or treatment systems to areas of the Borough utilizing on-lot systems. Further, it is not financially feasible to extend public sanitary sewer service to these areas of the Borough. The least expensive alternative for extending sanitary system to the un-sewered areas of the borough has an estimated construction cost of \$79,000 per equivalent dwelling unit (EDU) and is prohibitively expensive. Due to these conditions, these alternatives were not examined further. As a result, these areas will continue to utilize on-lot disposal systems while permissible and non-failing. Repairs to the two (2) malfunctioning systems should be made a priority and a Sewage Management Ordinance should be adopted to protect the existing OLDS against future failure.

1.2.2 Wastewater Treatment Upgrade Alternatives

Three (3) wastewater treatment alternatives were evaluated in the Study. The alternatives considered include the following:

1. Alternative 1 - Existing WWTP Upgrade
2. Alternative 2 – Modified-Ludzack Ettinger (MLE)
3. Alternative 3 – Sequential Batch Reactor (SBR)

Analysis of the Wastewater Treatment Plant Evaluation Study conducted by HRG demonstrates that the current WWTP for Shinglehouse Borough has reached the end of its useful life and is in need of replacement. The current WWTP, located on a 3.0 acre lot north of Honeoye Street at the terminus of Wolcott Avenue, provides sanitary sewer service to the residents and businesses in the Borough of Shinglehouse as well as both the Oswayo Valley Elementary School and Jr. & Sr. High School. The plant is a permitted 160,000 gallon per day (gpd) facility utilizing primary clarification, fixed film bioreactors, and final clarification to achieve secondary treatment. Effluent is disinfected using sodium hypochlorite before being discharged to the Honeoye Creek. Sludge is stored on-site until it can be dewatered using manually cleaned drying beds and disposed of via landfilling. The WWTP was constructed in 1966 and is mostly original equipment. Small repairs and modifications have been made over the past 50 years to keep the facility in operation and in compliance with the NPDES Permit; however, all major equipment at the WWTP is now currently in need of replacement.

The proposed upgrades for the plant will occur at the current treatment plant site with no proposed changes to the outfall.

Based upon the alternatives evaluated for wastewater treatment the recommended alternative is Alternative 2A.

Alternative 2, Option A, exhibits the lowest capital cost and the second lowest operation and maintenance cost making it the lowest total present worth alternative.

Some advantages of this technology are:

1. Lower Capital Cost
2. Simple operation and maintenance
3. Mature Technology with good track record
4. Control system to minimize required operator attention to process
5. Easy adapted for future nutrient reduction measures, if necessary

To implement an alternative the following facilities would need to be constructed, modified, or abandoned:

1. Provision of a Raw Wastewater Influent Screen
2. Replacement of existing raw sewage pumps
3. Replacement of existing level control instrumentation
4. New Grit Removal System
5. Elimination of the existing Primary Clarifier
6. Elimination of the existing Trickling Filters

7. Inclusion of the Secondary Clarifier. The following upgrades will be included:
 - a. Replacement of the existing rake mechanism in kind
 - b. Replacement of the existing secondary sludge pump
8. New Oxidation Ditch (MLE) System
9. Inclusion of existing Chlorine Disinfection System with rehabilitation of the baffle and tank walls.
10. Inclusion of existing Effluent Pump Station. The following upgrades will be included:
 - a. Replacement of existing effluent pumps
 - b. Replacement of existing level control instrumentation
11. Inclusion of existing Aerobic Digesters
12. Use of existing chemical feed system with minor improvements

This alternative would address the deficiencies associated with the existing WWTP and provide the Borough with flexibility to meet nutrient reduction goals with minor capital investment, if required in the future.

The estimated project cost for the selected alternative, Alternative 2A – MLE/Oxidation Ditch is \$2,795,000.

To complete this plant upgrade while maintaining a reasonable user rate, a financing plan consisting of substantial up-front revenue and a low interest financing source will be required. Upon final alternative selection and prior to preliminary design, a detailed financial and funding investigation should be undertaken to examine all funding and financing options available in detail. Funding scenarios studied should include (1) grant monies, and other potential capital contributions to offset the capital costs of the project; (2) the ability to combine debt service and operation and maintenance costs into a reasonable rate structure, and (3) combinations of funding options.

The Borough is currently working towards closing on a \$979,000 grant through the Community Development Block Grant (CDBG) Program. As a result, the Borough would need to finance approximately \$1,816,000. Due to the average income level of the Planning Area, the Borough is fully grant eligible through PENNVEST although it is rare that any project get entirely grant funded. A minimum 60% pro-rated PENNVEST grant would be necessary to maintain a user rate of \$32.75 per month or \$393 annually based on projected operation and maintenance costs.

Due to the complexities associated with funding of the Project, the Borough intends to implement the selected alternative in a minimum of two (2) phases. The first phase would include the necessary improvements to the Headworks, installation of a grit removal system, rehabilitation of the chlorine contact tank, and minor modifications to the chemical feed (disinfection) system. This phase is intended to be implemented using the CDBG funding. The second phase would include the construction of the MLE/oxidation ditch, rehabilitation of the secondary/final clarifier and replacement of the sludge pumps.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

Structural alternatives for upgrading Shinglehouse Borough's existing wastewater treatment plant and conveyance systems are presented below and are evaluated on the basis of cost-effectiveness, environmental soundness, and structural feasibility. Cost estimates including total present net worth assessments are presented for comparative purposes when applicable and are detailed in the tables attached to this Report.

Maps of each of the structural alternatives that identify proposed facilities are presented in Section 6.0 of this Report.

2.1 Alternatives for Un-Sewered Areas

2.1.1 No Action Alternative

The No Action Alternative is the continued use of the compromised and failing residential on-lot systems within the Borough. This alternative has several obvious and deleterious impacts including the degradation of public water supplies, disease proliferation, the loss of recreational use of waterways, environmental hazards, fish kills, and other tragedies. Economically, the no action alternative could result in substantial fines and/or penalties and restrict or prohibit growth to the County's Rural Growth Areas. The No Action Alternative was briefly considered and rejected.

2.1.2 Structural Collection Alternatives

Five (5) focused alternatives for providing public sewer service to areas of Shinglehouse Borough currently being served by OLDS were evaluated to determine whether they were cost-effective, environmentally sound, and structurally feasible and are listed below:

- 1A. Low pressure collection system to serve Park Avenue and Karr Hollow area;
- 1B. Low pressure collection system to serve Park Avenue area;
- 2A. Low pressure collection system to serve Horse Run Road area;
- 3A. Low pressure collection system to serve High Street area;
- 3B. Gravity sewer collection system to serve High Street area.

Reports from by the Borough's SEO and completion of the sanitary surveys, indicate there is not an immediate need to provide improved wastewater collection, conveyance or treatment systems to areas of the Borough utilizing on-lot systems. Further, it is not financially feasible to extend public sanitary sewer service to these areas of the Borough. The least expensive alternative for extending sanitary system to the un-sewered areas of the borough has an estimated construction cost of \$79,000 per equivalent dwelling unit (EDU) and is prohibitively expensive. Due to these conditions, these alternatives were not examined further. Cost estimates

for the five (5) alternatives can be found in Section 6.0 of this Report. Maps of the structural collection alternatives which identify the proposed facilities are presented in Section 6.0 of this Report.

As a result, these areas will continue to utilize on-lot disposal systems while permissible and non-failing. Repairs to the two malfunctioning systems should be made a priority and a Sewage Management Ordinance should be adopted to protect the existing OLDS against future failure.

2.1.3 Continued use of Current Functional On-Lot Systems; Repair, Replacement, or Upgrade of Existing Malfunctioning Systems; and Adoption of a Sewage Management Program

This alternative proposes the continued use of the current functioning on-lot systems coupled with repair, replacement, or upgrade of the existing malfunctioning on-lot systems and the adoption of a Sewage Management Program within the borough. It was determined that extending sanitary sewer to the currently un-sewered areas within the Borough was prohibitively expensive. As a result, these areas will continue to utilize on-lot disposal systems while permissible and non-failing. Failing systems within the Borough must be repaired, replaced, or upgraded in alignment with the recommendations of the Borough's certified Sewer Enforcement Officer (SEO).

The Borough's certified SEO is authorized to require the repair of any on-lot malfunction by the following methods approved by Title 25, Chapter 73 of the Pennsylvania Code: cleaning, repair or replacement of components of the existing system, adding capacity or otherwise altering or replacing the system's treatment tank, expanding the existing disposal area, replacing the existing disposal area, replacing the gravity distribution system with a pressurized system, replacing the system with a holding tank, or other alternatives as appropriate for the specific site.

To ensure the proper operation and maintenance of OLDS within the Borough currently not proposed to be served by public sewer systems, Shinglehouse Borough shall adopt an ordinance governing municipal management of OLDS to provide management of the Borough's OLDS systems. This Ordinance provides requirements for the permitting, inspection, operation, maintenance, and rehabilitation of OLDS within the Borough.

2.2 Wastewater Treatment Plant Upgrade Alternatives

In addition to the No Action Alternative, three (3) wastewater treatment alternatives were evaluated in the Study. The alternatives considered include the following:

1. Alternative 1 - Existing WWTP Upgrade
2. Alternative 2 – Modified-Ludzack Ettinger (MLE)
3. Alternative 3 – Sequential Batch Reactor (SBR)

Maps of the structural WWTP alternatives which identify the proposed facilities are presented in Section 6.0 of this Report. Table 2.3.1 provides the basis of design criteria used for the evaluation of the respective wastewater treatment alternatives.

Table 2.2.1 - Wastewater Alternatives Basis of Design

Parameter	Influent	Effluent	Units
Influent Flow Rate (MMAF)	0.16		MGD
BOD ₅ Concentration	220	10	mg/L
TSS Concentration	220	10	mg/L
TKN ¹ Concentration	40		mg/L
NH ₃ -N Concentration	NA ³	1.0	mg/L
Wastewater Temp Min/Max	10/20		°C
Primary Clarifier BOD/TSS Removal	45/67 @ 20°C		%
Secondary Clarifier TSS Removal	67 @ 20°C		%

2.2.1 No Action Alternative

The No Action Alternative is the continued use of the compromised wastewater treatment plant within the Borough. This alternative has several obvious and deleterious impacts including the degradation of public water supplies, disease proliferation, the loss of recreational use of waterways, environmental hazards, fish kills, and other tragedies. Economically, the no action alternative could result in substantial fines and/or penalties and restrict or prohibit growth to the County's Rural Growth Areas. The No Action Alternative was briefly considered and rejected.

2.2.2 Alternative 1 - Existing Wastewater Treatment Plant Upgrade

This alternative outlines upgrades to the existing wastewater treatment plant within the Borough.

The following process unit equipment were considered as part of this alternative to warrant a reliable and sustainable treatment process that would meet the design criteria stated in Table 2.3.1:

1. Headworks. Upgrades to include:
 - a. Provision of a Raw Wastewater Influent Screen
 - b. Replacement of existing raw sewage pumps
 - c. Replacement of existing level control instrumentation
2. Grit Removal System:
 - a. None considered due to existing site and hydraulic limitations
3. Primary Clarifier. Upgrades to include:
 - a. Replacement of existing scraper mechanism and drive in kind
 - b. Replacement of existing primary sludge pump
4. Trickling Filters. Upgrades to include:
 - a. Replacement of the existing filters' media
 - b. Replacement of the existing cover and addition of a cover

- c. Replacement of the recirculation pumps
- 5. Secondary Clarifier. Upgrades to include:
 - a. Replacement of the existing scraper mechanism and drive in kind
 - b. Replacement of the existing secondary sludge pump
- 6. New Denitrification Filter System BNR System
- 7. Inclusion of existing Chlorine Disinfection System (no upgrades to the existing system)
- 8. Effluent Pump Station. Upgrades to include:
 - a. Replacement of existing effluent pumps
 - b. Replacement of existing level control instrumentation
- 9. Inclusion of existing Aerobic Digesters
- 10. Use of existing chemical feed system located at the Control Building

It should be noted, that disadvantages of this alternative include:

- 1) maintaining only one (1) primary and final clarifier (no-redundancy)
- 2) treatment during construction impacted as there is currently no redundancy
- 3) ability to consistently meet water quality effluent goals impacted during cold weather
- 4) lack of flexibility of treatment process to meet any future nutrient reduction goals

2.2.3 Alternative 2 - Modified Ludzback-Ettinger (MLE)

This alternative outlines the construction of a new Modified Ludzback-Ettinger style wastewater treatment plant for the borough. An improved grit removal system is included in this alternative that was not presented in Alternative 1 due to existing site and hydraulic limitations. This system will improve performance and extend the life of the system and is necessary due to the removal of the existing primary clarifier. This alternative also presents an option to upgrade and relocate the existing headworks equipment. This option, presented as Alternative 2B, utilizes submersible sewage pumps, level control instrumentation, wet well, and an electrical room and relocates the headworks equipment into a new on-site building.

The following process unit equipment were considered as part of this alternative to warrant a reliable and sustainable treatment that would meet the design criteria stated in Table 2.3.1:

- 1. Inclusion of existing Headworks (Option A). Similar to Alternative 1, the following upgrades will be included:
 - a. Provision of a Raw Wastewater Influent Screen
 - b. Replacement of existing raw sewage pumps
 - c. Replacement of existing level control instrumentation
- 2. New Headworks Building (Option B) to include the following equipment:
 - a. One (1) Raw Wastewater Influent Screen
 - b. Two (2) Submersible raw sewage pumps
 - c. Level control instrumentation
 - d. Wet Well
 - e. Electrical Room
- 3. New Grit Removal System
- 4. Elimination of the existing Primary Clarifier

5. Elimination of the existing Trickling Filters
6. Inclusion of the Secondary Clarifier. Similar to Alternative 1, the following upgrades will be included:
 - a. Replacement of the existing rake mechanism in kind
 - b. Replacement of the existing secondary sludge pump
7. New Oxidation Ditch (MLE) System
8. Inclusion of existing Chlorine Disinfection System (with no upgrades)
9. Inclusion of existing Effluent Pump Station. Similar to Alternative 1, the following upgrades will be included:
 - a. Replacement of existing effluent pumps
 - b. Replacement of existing level control instrumentation
10. Inclusion of existing Aerobic Digesters
11. Use of existing chemical feed system with minor improvements

2.2.4 Alternative 3 - Sequential Batch Reactor (SBR)

This alternative outlines the construction of a new Sequential Batch Reactor style wastewater treatment plant for the borough. An improved grit removal system is included in this alternative that was not presented in Alternative 1 due to existing site and hydraulic limitations. This system will improve performance and extend the life of the system and is necessary due to the removal of the existing primary clarifier. This alternative also presents an option to upgrade and relocate the existing headworks equipment. This option, presented as Alternative 3B, utilizes submersible sewage pumps, level control instrumentation, wet well, and an electrical room and relocates the headworks equipment into a new on-site building.

The following process unit equipment was considered as part of this alternative to warrant a reliable and sustainable treatment that would meet the design criteria stated in Table 2.3.1:

1. Inclusion of existing Headworks (Option A). Similar to Alternative 1, the following upgrades will be included:
 - a. Provision of a Raw Wastewater Influent Screen
 - b. Replacement of existing raw sewage pumps
 - c. Replacement of existing level control instrumentation
2. New Headworks Building (Option B) to include the following equipment:
 - a. One (1) Raw Wastewater Influent Screen
 - b. Two (2) Submersible raw sewage pumps
 - c. Level control instrumentation
 - d. Wet Well
 - e. Electrical Room
3. New Grit Removal System
4. Elimination of the existing Primary Clarifier
5. Elimination of the existing Trickling Filters
6. Elimination of the Secondary Clarifier.
7. New Sequential Batch Reactor (SBR) System
8. Inclusion of existing Chlorine Disinfection System (with no upgrades)

9. Inclusion of existing Effluent Pump Station. Similar to Alternative 1, the following upgrades will be included:
 - a. Replacement of existing effluent pumps
 - b. Replacement of existing level control instrumentation
10. Inclusion of existing Aerobic Digesters
12. Use of existing chemical feed system yet relocated to Grit Building

2.3 Comparative Costs - Wastewater Treatment Plant Upgrade Alternatives

A 20-year present worth analysis was completed for alternatives 2 and 3 of the WWTP Alternatives including Headworks Option B. The estimated opinion of probable construction costs are shown in Table 2.3.1(a), including a 30% percent contingency and a 15% contingency for engineering and administrative costs associated with the preliminary design. It does not include an allowance for the contractor's overhead and profit. The operation and maintenance costs are shown in Table 2.4.1(b). A comparison of total present worth for the alternatives is presented in Table 2.3.1 (c).

Alternative 1 possessed a number of notable drawbacks and was ultimately determined to be an inadequate solution for addressing the current and future need of the Borough. For this reason, Alternative 1 was excluded from the comparative cost analysis.

Table 2.3.1 (a) - Alternatives' Estimated Opinion of Probable Construction Costs

Alternative 2 (Option A)	Alternative 2 (Option B)	Alternative 3 (Option A)	Alternative 3 (Option B)
\$2,795,000	\$3,438,000	\$3,115,000	\$3,763,000

Table 2.3.1(b) - Alternatives' Annual Operation and Maintenance Costs ¹

Description	Alternative 2 (Options A, B)	Alternative 3 (Options A,B)
Power ²	\$71,270	\$58,900
Chemicals ³	\$11,320	\$17,450
Labor ⁴	\$4,680	\$4,680
Maintenance ⁵	\$6,118	\$4,976
Total O&M	\$93,390	\$86,010
20-Year O&M PW ⁶	\$1,550,000	\$1,420,000

Notes: ¹Disposal cost of dewatered sludge was not considered as part of the PW analysis; ² Electric costs were based on \$0.14 per kW-hr per Shinglehouse Borough Staff; ³ Based following chemical cost: MicroC \$2.0/lb_{wet}, DelPAC \$0.2/lb_{wet}, Sodium Hypochlorite (12.5% Solution) \$3.0/gal; ⁴ Operator labor costs were estimated to be \$30.00 per hour including benefits; ⁵ Assumed as a percentage of their total equipment cost using a fixed value of 0.5%; ⁶ Present worth costs were developed with an annual rate of inflation of 3% and an annual interest rate of 4% in Year 2017 US Dollars.

Table 2.3.1(c) - Alternatives' Total Present Worth Comparison

Description	Alternative 2 (Option A)	Alternative 2 (Option B)	Alternative 3 (Option A)	Alternative 3 (Option B)
Capital Cost	\$2,795,000	\$3,438,000	\$3,115,000	\$3,763,000
20-Year O&M	\$1,550,000	\$1,550,000	\$1,420,000	\$1,420,000
Total PW	\$4,345,000	\$4,988,000	\$4,535,000	\$5,183,000

Table 2.3.1(a) demonstrates that Alternative 2, Option A, provides the lowest capital cost alternative and the second lowest operation and maintenance cost alternative, making this alternative the lowest total present worth alternative. However, with an estimated tankage total tankage of 4,118 ft², this alternative possesses the largest footprint among all of the alternatives. Furthermore, this alternative integrates the secondary clarifier as part of its process configuration, potentially presenting a hydraulic challenge during the design and construction phases of the project. Provision of new final clarifier(s) should be considered during preliminary design of the WWTP Upgrade Project.

Alternative 3, Option A, provides with the second lowest capital cost and the lowest operation and maintenance cost, making this alternative the second lowest total present worth alternative.

Based on the discussion above, the following are recommendations for the wastewater planning needs of Shinglehouse Borough.

- 1. It is recommended that the Borough proceed with implementation of Alternative 2a which has the lowest estimated 20-year present worth cost.**

This alternative includes installation of a vertical fine screen and rehabilitation of the influent pump station and control building; new grit removal system; new oxidation basin that would replace the existing primary clarifier and trickling filters; rehabilitation of the final clarifier; and rehabilitation of the disinfection system.

The recommended alternative should be completed in multiple phases in order to capitalize on existing grant programs and minimize the impact to the small rate base. Water Quality Management Part II Permitting through the PA DEP is required for the recommended improvements.

- 2. Shinglehouse Borough shall adopt an Ordinance governing the management of on-lot disposal systems (OLDS) within the Borough.**

Based on reports by the Borough's SEO and completion of the sanitary surveys, there is not immediate need to provide improved wastewater collection, conveyance or treatment systems to areas of the Borough utilizing on-lot systems. Further, it is not financially feasible to extend public sanitary sewer service to these areas of the Borough. As a result, these areas will continue to utilize on-lot disposal systems while permissible and non-failing. Repairs to the two

malfunctioning systems should be made a priority and a Sewage Management Ordinance should be adopted to protect the existing OLDS against future failure.

2.4 Funding Alternatives for the Recommended Wastewater Treatment Plant Alternative

In sewer projects, initial design and construction costs represent the most significant investment that will be required to make in the improvements. Nevertheless, the annual operation and maintenance costs must be considered when evaluating the economic feasibility of proposed alternatives.

The most significant challenge for a sewerage project is the identification of a financing plan which residents and businesses can afford. The revenue needed to plan and construct a sewerage project can be separated into two (2) general categories. The first category, referred to as up-front revenues, is the total revenue that can be reasonably collected in the initial stages of the project. Up-front revenues typically consist of reserved local funds, government grants, developer contributions and capital charges fees. Up-front revenues are used to offset the costs of planning and constructing the project. In most cases, these revenues are insufficient to cover the total costs of the project and additional revenue is needed. The second category of revenue is financing, which generates the revenue needed to pay for the remainder of the project. Several options are available for financing, including government grants or loans, private loans, or bond issues.

2.4.1 Sources of Up-Front Revenue

It is critical for the Borough to obtain as much up-front revenue as possible for upgrading the wastewater treatment plant in order to reduce the amount of the project that must be financed. In the past, there were several federal programs that provided grants for these types of projects. Over the years, these programs have been gradually eliminated as the federal government has transferred most of the financial responsibility for these programs to the state and local level. Consequently, competition for these funds is strong and the majority of available grant money is generally funneled to the most economically distressed communities. As a result, most up-front revenue is now generated locally through tapping fees and contributions by land developers. A summary of the various sources of up-front revenue the Borough should consider is provided as follows:

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program was established by the Pennsylvania State Legislature to address the health risks posed by inadequate water and wastewater facilities within the Commonwealth. The principle mission of the PENNVEST program is to provide financial assistance for projects that protect the public health and promote economic development in Pennsylvania. Since its inception, this program has developed into primarily a low cost revolving loan program. Grants are rare and are only made when PENNVEST has determined that the financial condition of the

recipient is so poor that the repayment of a loan is unlikely, and that the project will not be able to proceed without a direct grant. The recent Growing Greener Initiative has allowed PENNVEST to allocate greater amounts of loans and grants for infrastructure development projects making them more affordable for the users who ultimately must pay for them.

Recent initiatives by the current administration have indicated a priority of funding toward infrastructure projects tied to economic development. As such, the future of funding for projects not involving economic development is uncertain.

B. Developer Contributions

Contributions by land developers are becoming a relatively common source for up-front revenue. The funds provided by the developer are directly related to the benefits that the development will derive from the use of the public facilities. In some cases, the developer may actually construct the necessary improvements at his expense and then transfer ownership of the improvements to the local municipality. In other cases, in lieu of actually constructing the improvements, the developer may make a cash payment to the municipality to offset a portion of the costs for the improvements. As previously stated, no land development plans are proposed within the Planning Area.

C. Capital Charges Fees

Capital charges fees, or tapping fees, are an equitable means by which a system can assess a portion of the capital costs of constructing the new facilities to all users of the proposed system. The imposition of these fees is based upon the concept that all users of the system derive a benefit from this use, and that the costs of this benefit should be allocated among all users without prejudice or penalty. For this reason, tapping fees are usually based on a measure of the total flow contributed by the service connection or lateral.

PA Act 57 of 2003 contains extensive provisions regarding calculation and types of fees that may be charged by municipalities and authorities. Each community must establish its own fee criteria in accordance with this Act. Capital charges fees are an established method for raising up-front revenue and would be an appropriate part of the community's financing plan for the proposed project.

Connection and tapping fees have the greatest financial impact on residents of existing homes. Unlike new residential development, where the connection and tapping fee costs are included in total construction costs and financed accordingly, existing residents must pay these fees from their own resources or by securing a loan from a local bank. In addition to these fees, the residents must also pay the costs to extend a sewer lateral from the lateral stub provided to the point of interconnection with the building sewer.

2.4.2 Sources of Financing

After all sources of up-front revenue have been identified, a reasonable forecast of the amount of

the project that must be financed can be determined. There are several alternatives for financing a public sewer project. Not all of these alternatives are equally suitable for application to the project. The choice of financing method varies from project to project, and is dependent upon the financial specifics of each situation and the amount to be borrowed. A summary of the various means of financing public sewer projects follows.

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program offers grants and below market interest financing for financing public sewer projects in the Commonwealth of Pennsylvania. The PENNVEST Authority may receive funds from the following sources:

1. State funds appropriated to the Municipality;
2. Federal funds appropriated to or granted to the State or Municipality; and
3. Proceeds from the sale of bonds.

PENNVEST is also required to establish a Water Pollution Control Revolving Fund, which is administered in accordance with the requirements of the Water Quality Act of 1987. PENNVEST's Board may also establish non-revolving funds and accounts. The monies deposited with PENNVEST as repayment of the principal and interest due on loans issued from the program are used to pay PENNVEST's indebtedness. The criteria considered by the PENNVEST Board when evaluating applications are summarized as follows:

1. The project's ability to improve the health, safety, welfare, or economic wellbeing of the citizens of the Commonwealth.
2. The project's ability to lead to an effective or complete solution to the problems of the system and bring it into compliance with state and federal regulations.
3. The cost-effectiveness of the proposed project when compared with other alternatives.
4. The consistency of the project with state and regional resource management and economic development plans.
5. Demonstration of the applicant's ability to operate and maintain the project in the proper manner.
6. The ability to promote consolidation of water and wastewater systems where consolidation would provide more effective service of the customers.
7. The availability of other sources of funds at reasonable rates to finance all or portions of the project.

During the preparation of the Act 537 Plan, Cap Interest Rates for PENNVEST loans in Potter County were listed at 1% for years 1 to 20 on the PENNVEST Website. This loan may cover the entire project costs or only a portion of the total costs at the discretion of PENNVEST, and based on community need. Applications are received, and funding granted four times per year.

PENNVEST financing offers several advantages in addition to below-market interest rates and possible grants. For example, PENNVEST funding is available to pay for engineering and planning costs prior to the completion of the final design under their advance loan procedure. Construction inspection costs are also eligible under the PENNVEST program. Participation in this program does, however, impose additional responsibilities upon the municipality. Good accounting and administrative procedures must be followed and the use of funds from this program is subject to audit at any time by the State Comptroller's office. Additionally, PENNVEST relies on PA DEP to evaluate the cost effectiveness of the proposed project and verify that PENNVEST funds are being utilized in the appropriate manner. PA DEP will conduct occasional site visits on PENNVEST's behalf and they also provide input to PENNVEST on whether or not to approve payment for changes made during construction.

In order for PENNVEST to maximize the use of its funds, public sewerage projects must meet federal requirements as well as state requirements since PENNVEST receives funds from the federal government to capitalize the Water Pollution Control Revolving Loan Fund. In addition to an approved Act 537 Plan, the following additional planning assessments and investigations must be completed:

1. Assessment of innovative and alternative technologies.
2. Investigation of open space and recreational opportunities in conjunction with the public sewer project.
3. Alternative evaluation that provides thorough justification for the selected alternative.
4. Environmental assessment to assure that the project complies with the Water Quality Act and will undergo a review in accordance with the National Environmental Policy Act (NEPA).
5. Public participation.

Other special requirements of the PENNVEST program include the following:

1. A value engineering review of all projects having an estimated treatment works construction cost exceeding \$10 million to verify that the proposed work is cost-effective.
2. The applicant must have an adequate user charge system, sewer use ordinance, and financial capability. The applicant must demonstrate sufficient legal, institutional, managerial, and financial capability to construct, operate, and maintain the proposed project.

3. The applicant must comply with the federal Davis-Bacon Act regarding labor wage rates.
4. The applicant must comply with MBE/WBE/DBE affirmative action steps.
5. One year after the completion of construction and the initiation of operation, the applicant must certify that the treatment facility meets all design specifications and effluent limitations stipulated in its operation permit.

To initiate a request for PENNVEST financial assistance, an application form must be completed. The information provided in this application would be the basis by which PENNVEST makes its decision on whether the project is eligible for funding.

The decision to seek PENNVEST funding must be analyzed on an individual basis depending on the terms and interest rate of the loan. If a decision is made to seek PENNVEST funding, the implementing party must be prepared to comply with the regulatory requirements that are inherent to the program. Delays in the application review and loan approval process are common and the documentation requirements are quite extensive.

B. Rural Utility Service (RUS) – U.S. Department of Agriculture

The R.U.S. Loan Program makes funding available for the development of water and waste disposal systems in rural areas and towns with populations not in excess of 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and corporations not operated for profit. R.U.S. also guarantees water and waste disposal loans made by banks and other eligible lenders.

Three interest rates are used. They are set periodically based on an index of current market yields for municipal obligations. The rates are as follows:

1. The *Poverty Rate* interest rate applies when:
 - a. The primary purpose of the loan is to upgrade existing facilities or construct new facilities required to meet applicable health or sanitary standards; and
 - b. The median household income (MHI) of the service area is below the poverty line for a family of four or below 80 percent of the Statewide Nonmetropolitan MHI (SNMHI).
2. The *Market Rate* is set quarterly based on the average of the "Bond Buyer" 1-Bond Index over a four week period prior to the beginning of the quarter. It applies to loans for projects where the MHI of the service area exceeds the SNMHI.

3. The *Intermediate Rate* is the poverty rate plus half of the difference between the poverty rate and the market rate, but not to exceed 7 percent. It applies to loans that do not meet the criteria for either the poverty rate or the market rate.

The law authorizing the R.U.S. program allows a maximum repayment period of 40 years. However, the repayment period cannot exceed the useful life of the facilities financed or any statutory limitation on the applicants borrowing authority.

To initiate a request for R.U.S. financial assistance, an application form must be completed and filed with the USDA Rural Development office serving the applicant's area. The information provided in this application would be the basis by which R.U.S. makes its decision on whether the project is eligible for funding.

C. Municipal Bond Issue

There are several types of bonds, some are taxable and some are tax-exempt. The general classification of municipal bonds usually refers to tax-exempt bonds. There are three (3) types of municipal bonds generally used to finance public works projects:

1. *General Obligation Bonds* are tax-free bonds that are secured by the pledge of the full faith, credit, and taxing power of the issuing municipality. This means that this type of bond is backed by all of the taxes on real estate and personal property within the jurisdiction of the issuing municipality. It involves minimum risk to the investor and, therefore, can be issued at a lower rate of interest than other types of bonds.
2. *Dedicated Tax Bonds* are payable only from the proceeds from a special tax and they are not guaranteed by the full faith, credit, and taxing power of the issuing agency. An example of a special dedicated tax is the special assessment against property, which is adjacent to, and the principal beneficiary of the improvement. The gasoline tax used to finance highway construction is another example.
3. *Revenue Bonds* are payable from revenues derived from the use of the improvement such as tolls, sewer bills, or rent paid by users of the improvement and do not otherwise represent an obligation of the issuing municipality. Revenue Bonds are not ordinarily subject to statutory or constitutional debt limitations. They are often issued by commissions, authorities, and other public agencies created for the specific purpose of financing, constructing, and operating essential public projects.

Typically, municipal bonds are sold to an investment-banking firm, which then resells the bonds to individual investors. The advantage of municipal bonds to the investor is their tax-free status. A bond discount (a percentage of the total bond issue) serves as the investment banker's commission. Before bonds are sold, they must be rated on the basis of the risk to the investor by a rating agency such as Standard and Poor's or Moody's. The higher the rating, the lower the risk to the investor and, consequently, the lower the interest rate that must be paid on the bond. The legal instrument that sets forth the rules that must be observed by the issuing agency is the

Trust Indenture. The Trust Indenture is prepared by the Bond Counsel and must be printed along with the bonds. Due to specific requirements as to the denominations of the bonds and the methods and materials used to print the bonds and Trust Indenture, the printing costs can be substantial. A Trustee is required to administer the bond issue and ensure the terms of the Trust Indenture are observed. For these services, the Authority will incur an annual Trustee fee.

Interest rates on bond issues vary depending upon market trends, the rating of the issuing agency, and other factors. The longer the repayment period is extended the lower the annual debt service and the higher the total amount of interest that must be paid.

A municipal bond issue offers the advantage of long-term fixed rate financing and the opportunity for local investment. The financing arrangement and approval period is shorter than what it is with the PENNVEST program and the Authority would retain more flexibility for future borrowing. The disadvantage of a municipal bond issue is that the interest rates are often higher than the maximum PENNVEST interest rates. Since there are no grants involved, the cost of the bond issue is 100% locally funded. The additional costs incurred to prepare the Trust Indenture, pay the Trustee Fees, fund the cover percentage, and to establish a Debt Service Reserve Fund must also be considered. The financial services costs associated with the issuance of a municipal bond issue are also much higher than the costs for PENNVEST funding.

D. Bank Loan

Because of favorable interest rates, bank loans can be a viable source for funding small to medium sized public works projects. As a general rule, they are not available for projects \$10 million or greater, and the attractiveness of the terms of the loan may vary depending upon the bank and the amount of money to be borrowed. The interest rate available from banks varies depending upon market conditions; however, the rate available to municipalities will generally be at a discount due to the tax advantages received by the bank. Terms and conditions of bank loans vary in a manner similar to personal loans and home mortgages.

The principle advantage of a bank loan is that it can usually be obtained at a favorable interest rate without the cumbersome requirements of a bond issue. The financial service costs associated with obtaining the loan are also much less than for a similar bond issue. Since these financial service costs are generally included in the total project costs, the impact of these charges on the overall project costs can be minimized. Another advantage of the bank loan is that it does not have restrictive coverage requirements, trustee fees, and Trust Indenture preparation charges, as does a bond issue.

2.4.3 Funding Considerations

The funding options available to finance the proposed upgrades to the existing wastewater treatment facility have been briefly examined in this section; however, the Shinglehouse Borough should involve their solicitors and financial advisor(s) to determine the most viable method of financing the project.

Based on the discussion above, the following is the recommended financing plan for the selected alternative.

The estimated project cost for the selected alternative, Alternative 2A – MLE/Oxidation Ditch is \$2,795,000.

To complete this plant upgrade while maintaining a reasonable user rate, a financing plan consisting of substantial up-front revenue and a low interest financing source will be required. Upon final alternative selection and prior to preliminary design, a detailed financial and funding investigation should be undertaken to examine all funding and financing options available in detail. Funding scenarios studied should include (1) grant monies, and other potential capital contributions to offset the capital costs of the project; (2) the ability to combine debt service and operation and maintenance costs into a reasonable rate structure, and (3) combinations of funding options.

Considering obtaining a \$979,000 grant through the Community Development Block Grant (CDBG) Program, the Borough would need to finance approximately \$1,816,000. Due to the average income level of the Planning Area, the Borough is fully grant eligible through PENNVEST although it is rare that any project get entirely grant funded. A minimum 60% pro-rated PENNVEST grant would be necessary to maintain a user rate of \$32.75 per month or \$393 annually based on projected operation and maintenance costs. Detailed financing estimates for each WWTP alternative is included in Section 6.0 of this Report.

Due to the complexities associated with funding of the Project, the Borough intends to implement the selected alternative in a minimum of two (2) phases. The first phase would include the necessary improvements to the Headworks, installation of a grit removal system, rehabilitation of the chlorine contact tank, and minor modifications to the chemical feed (disinfection) system. This phase is intended to be implemented using the CDBG funding. The second phase would include the construction of the MLE/oxidation ditch, rehabilitation of the secondary/final clarifier and replacement of the sludge pumps.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECTS

Reasonable Alternative

As discussed throughout this Report, the primary reasons for implementing upgrades to the Shinglehouse Borough WWTP are to replace aged and deteriorated equipment, most of which is over 50 years old, and to provide a treatment process with the flexibility to meet more stringent water quality parameters in the future, if necessary.

Based upon the alternatives evaluated for wastewater treatment the recommended alternative is Alternative 2A.

Alternative 2, Option A, exhibits the lowest capital cost and the second lowest operation and maintenance cost making it the lowest total present worth alternative.

Some advantages of this technology are:

- Lower Capital Cost
- Simple operation and maintenance
- Mature Technology with good track record
- Control system to minimize required operator attention to process
- Easy adapted for future nutrient reduction measures, if necessary

To implement an alternative the following facilities would need to be constructed, modified, or abandoned:

1. Provision of a Raw Wastewater Influent Screen
2. Replacement of existing raw sewage pumps
3. Replacement of existing level control instrumentation
4. New Grit Removal System
5. Elimination of the existing Primary Clarifier
6. Elimination of the existing Trickling Filters
7. Inclusion of the Secondary Clarifier. The following upgrades will be included:
 - a. Replacement of the existing rake mechanism in kind
 - b. Replacement of the existing secondary sludge pump
8. New Oxidation Ditch (MLE) System
9. Inclusion of existing Chlorine Disinfection System with rehabilitation of the baffle and tank walls.
10. Inclusion of existing Effluent Pump Station. The following upgrades will be included:
 - a. Replacement of existing effluent pumps
 - b. Replacement of existing level control instrumentation
11. Inclusion of existing Aerobic Digesters
12. Use of existing chemical feed system with minor improvements

This alternative would address the deficiencies associated with the existing WWTP and provide the Borough with flexibility to meet nutrient reduction goals with minor capital investment, if required in the future.

Description of the Affected Area

Impacts from the construction of the proposed alternative will be confined to the Borough of Shinglehouse's wastewater treatment plant located at P.O. Box 156, Shinglehouse Pennsylvania. Although the WWTP is located on approximately 3.0 acres, the actual disturbance will be approximately 0.03 acres.

Environmental Consequences of the Reasonable Alternatives

The potential environmental consequences of the reasonable alternatives include direct, indirect, and cumulative effects. Direct effects are consequences directly related to project

activity. These typically include vegetation clearing, earth disturbance, and stream crossings. Indirect effects occur later in time or removed in distance from the project area and include community growth, population density changes, altered land use practices, and other changes in the natural environment. Cumulative effects are the total changes to the environment resulting from the selected alternative when added to other past, present, and future actions.

The direct impacts of the proposed alternative are limited in scope and are to be contained within the project area. Direct disturbance will be confined to approximately 0.03 acres within the existing WWTP facility. Population growth estimates for Shinglehouse Borough predict no increased community growth or population density as a result of the recommended alternative. There are no foreseeable detrimental impacts on the natural environment from the implementation of the recommended alternative. Once completed, the proposed project may enhance water quality in the Planning Area by improving the Borough's wastewater treatment plant's capacity to meet effluent limits.

An Erosion and Sedimentation (E&S) Plan will be established and submitted to the Potter County Conservation District to ensure the preservation of surrounding natural environments. In order to minimize the potential for soil erosion and resulting sediment pollution from leaving the construction site, a construction sequence will be outlined in the E&S Plan. The contractor shall minimize the area of disturbed soil at any one time by following the construction sequence, and shall prevent sediment pollution by installing pollution control measures as detailed in the E&S Plan.

3.1 Land Use/Important Farmland/Formally Classified Lands

3.1.1 Land Use

The Potter County Comprehensive Plan (PCCP), adopted in 2005, has classified the Shinglehouse Borough as a Rural Growth Area where compact growth in areas that are served by public water and sewer are promoted. The Comprehensive Plan contains objectives and recommendations for future land use, housing, transportation, and community facilities and utilities. Overall, the current plans for Potter County Sewage Facilities are to sewer all unsewered villages and provide extensions and facilities to support those extensions from the existing public sewer systems into problem areas and potential development areas.

The Potter County Comprehensive Plan, adopted in 2005, identifies the entire Planning Area (Shinglehouse Borough) as a Rural Growth Area. The Plan states that a rural growth area is typically smaller in size than a high growth area, but still includes low to high density residential, smaller scale commercial and industrial uses and services, and generally has good to excellent accessibility to local highways. Rural growth areas serve sub-regions of a larger geographic area, and are served by public water and sewer with limited reserve capacity for future growth.

Most of the recent development within the Planning Area has been limited to residential redevelopment and infill of lots within the Borough's public sewer service area. Proposed or

Future Subdivisions and Land Developments known to the Borough during the preparation of this Act 537 Plan include residential infill, residential redevelopment, and trailer park expansion.

Minimal to no future growth is expected to occur outside of the existing public sewer service area. Undeveloped lots are located throughout the Borough and are indicative of areas where development may occur within the next 5-15 years and is consistent with the concepts outlined in the Potter County Comprehensive Plan.

3.1.2 Important Farmland

Prime farmland, as defined by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), is the land that is best suited for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and water supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. According to the NRCS, prime farmlands generally include Class I and II soils, which produce the highest yields with minimal inputs of energy and economic resources. Qualities that characterize prime agricultural soils include high permeability to water and air, few or no rocks, optimum levels of acidity and alkalinity, 0 to 8 percent slopes, and the absence of flooding during the growing season. These soils may currently be utilized for crops, pasture, woodland, or land covers other than urban land or water areas.

The following soils are considered to be prime agricultural soils in the Borough:

- Basher silt loam (BdA)
- Castile gravelly silt loam (CbB)
- Chenango gravelly loam (ChB)
- Delaware fine sandy loam (DeA)
- Mardin channery silt loam (MkB)
- Middlebury silt loam (MpA)
- Scio silt loam (ScA)
- Tioga fine sandy loam (TaA)
- Tioga gravelly loam (TgA)
- Tunkhannock gravelly loam (TuB)
- Unadilla silt loam (UnA)
- *Atherton silt loam (AhA), if drained

The following soils are considered to be farmlands of statewide importance in the Borough:

- Mardin channery silt loam (MkC)
- Volusia channery silt loam (VoB, VoC)
- Wildin channery silt loam (WmC)

Map 4 contained in Exhibit A displays the location of Prime Agricultural Soils in Shinglehouse Borough. As can be seen from Map 4, prime agricultural soils are located within the existing WWTP property. Construction of any structural alternative to upgrade the WWTP will result in

minimal disturbance of these soils, if any; however, approval from the Agricultural Land Condemnation Approval Board may need to be secured.

3.1.3 Formally Classified Lands

The proposed projects will have no impact within one mile of any national or state parks, forests, or trails. Furthermore, the proposed structural alternatives will have no impact within one mile of any registered and/or eligible national monuments and landmarks. Refer to Section 3.4 of this Report in reference to the Cultural Resource Notice request sent to the Bureau of Historic Preservation for identification of potential impacts within the Planning Area.

3.2 Floodplains

Floodplains are located along the Oswayo and Honeoye Creek, as well as some of their tributaries. In accordance with the policies and procedures of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has prepared mapping of the 100-year floodplains for the Oswayo and Honeoye Creek, as well as some of their tributaries (see Map 2 in Appendix B).

The majority of the properties in the Planning Area are located outside of the 100-year floodplains of the Borough; however there are some properties in the Planning Area within the 100-year floodplains of the Oswayo and Honeoye Creek. The 100-year floodplain is an area based on past experience and high statistical probability that a destructive flood event will occur.

Based on Map 2 and the FEMA Firmette included in Exhibit B, the selected wastewater treatment alternative will result in the construction of facilities within the 100-year floodplain but outside of the 100-year floodway. Due to its location, no Chapter 105 Water Obstruction and Encroachment Permit shall be required. However, a Chapter 106 Floodplain Management Site Restoration Permit shall be obtained prior to any construction activities. No local floodplain ordinances exist for this area.

3.3 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and other areas that exhibit the three criteria for defining a wetland area: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

As more information has become available about the beneficial aspects of wetland habitats, scientists, engineers, environmental interest groups, and governmental agencies have worked to protect and maintain the unique environments. Along with the traditional uses of wetlands as fish and wildlife habitat, wetlands are now being used for stormwater management and wastewater treatment.

Wetlands are a critical component in many ecological processes and are consequently protected by the federal government. Wetlands provide the following benefits or functions:

- Fish and Wildlife Habitat
- Water Quality Maintenance
- Pollution Filter
- Oxygen Production
- Nutrient Recycling
- Chemical and Nutrient Absorption
- Aquatic Productivity
- Flood Control
- Recreational Land Preservation
- Educational Opportunities
- Microclimate Regulation
- World Climate Regulation
- Sediment Removal
- Energy Source (Peat)
- Open Space Preservation

The National Wetlands Inventory (NWI) mapping, as compiled by the U.S. Fish and Wildlife Service, is useful as a background source of information regarding wetland locations. The maps are prepared through the use of color infrared aerial photographs, and the quality of the maps varies dependent upon the time of year that the photos were taken and other factors. Field investigation, conducted by a trained scientist or engineer, is necessary to determine the actual presence or absence of wetland areas.

The following wetland types (NWI mapping codes) are found in the Planning Area:

- PEM1A – Palustrine, Emergent, Persistent, Temporarily Flooded
- PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded
- PFO1/SS1A – Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
- PFO1/SS1C – Palustrine, Forested, Broad-Leaved Deciduous, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded
- PFO1A – Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
- PFO1C – Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
- PSS1/EM1C – Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Emergent, Persistent, Seasonally Flooded
- PSS1A – Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded
- PSS1C – Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded

Some wetlands identified above may be encountered during construction of the selected alternative(s) in the Planning Area. A formal wetlands survey and delineation will be done prior to the commencement of design activities to minimize wetland encroachments.

Wetlands will be avoided to the maximum extent possible. If wetland impacts are unavoidable during construction, these areas will be restored to preconstruction conditions once construction of the sewer facilities is complete. The wetland soil will be stockpiled during any excavation and restored to the appropriate seed mix for the surrounding native vegetation. If permanent impacts to wetlands are proposed and mitigation is necessary, a full mitigation plan will be developed in accordance with the latest PA DEP and United States Army Corps of Engineers (USACE) guidelines. All required permits will be obtained prior to the start of construction.

3.4 Historic Resources

The Pennsylvania Historic and Museum Commission (PHMC) was consulted to identify the potential impacts of the alternative(s) evaluated in this Act 537 Plan. A Cultural Resource Notice request and supporting documentation was sent to the Bureau of Historic Preservation for a list of known historical sites and identification of potential impacts on known archaeological and historic sites in the Planning Area within the Township by implementation of the recommended alternative. Copies of the request and PHMC correspondence are included in Section 6.0 of this Report.

3.5 Sensitive Biological Resources

The Pennsylvania Natural Diversity Inventory (PNDI) was evaluated for adverse effects resulting from the implementation of the alternative(s) proposed in this Act 537 Plan. Requests to the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Forestry, Pennsylvania Fish and Boat Commission, US Fish and Wildlife Services, and Pennsylvania Game Commission were submitted for the Planning Area in the Township. Copies of this request and the appropriate responses are included in Section 6.0 of this Report. Mitigation measures include as follows:

- PA Department of Conservation and Natural Resources
 - No adverse impacts are anticipated; therefore, no mitigation is necessary.
- PA Game Commission
 - No adverse impacts are anticipated; therefore, no mitigation is necessary.
- PA Fish and Boat Commission
 - No adverse impacts are anticipated; See agency comments.
 - The natural flow regime and water quality in this watershed are important to maintaining habitats occupied by rare fish and mussels. PFBC recommends that you take measures to maintain a natural flow regime, high water quality, and quantity. Maintenance or restoration of the riparian corridor will aid in connecting habitats and improving water quality and quantity for fish and mussels. PFBC recommends retaining (or restoring, if not already present) a riparian buffer (100 to 300 feet, if possible) on each side of the

waterway (river, stream, creek). This buffer should be vegetated with native plant species. When adequately vegetated, this upland buffer will act to stabilize the streambanks (preventing or minimizing erosion), and filter pollutants (e.g., sediment, fertilizers, pesticides, road salt, oil). Where streambanks have become badly eroded (e.g., due to previous removal of native riparian vegetation), streambank fencing and/or bioengineering restoration techniques are recommended (geotextile, root wads, vegetative stabilization), rather than riprapping the streambanks; removing gravel bars; or attempting to dredge, ditch, channelize, or widen the stream. Use stringent erosion and sedimentation controls before, during, and after project implementation to ensure that sediment and contaminants do not enter any waterway(s) (rivers, creeks, streams, tributaries) or waterbodies (lakes, ponds). PFBC Species:

Table 3.5.1 – PFBC Species in the Project Area

Scientific Name	Common Name	Current Status
Fusconaia subrotunda	Long-solid	Special Concern Species
Pleurobema sintoxia	Round Pigtoe	Special Concern Species

- U.S. Fish and Wildlife Service
 - No adverse impacts are anticipated; therefore, no mitigation is necessary.

3.6 Water Quality Issues

The treatment alternatives identified and evaluated in this Report were selected based on their ability to provide adequate treatment of wastewater for the Planning Area. The recommended WWTP alternatives will be capable of meeting existing effluent limits for direct discharge.

No permanent, deleterious water quality issues are anticipated to occur as a result of implementation of the selected alternative(s) in the Planning Area. During construction activities, sedimentation to surface waters will be controlled by accepted erosion and sedimentation control methods outlined in an approved E&S Control Plan. Once completed, the proposed project may enhance water quality in the Planning Area by improving the Borough's wastewater treatment plant's capacity to meet effluent limits.

Water supplies, both public and private, will not be negatively impacted by the selected alternatives proposed in this Act 537 Plan. In fact, water supplies may be positively impacted through elimination of pollution entering the groundwater from existing malfunctioning on-lot systems.

3.7 Coastal Resources

There are no coastal areas within Shinglehouse Borough; therefore, no impacts to coastal resources are expected.

3.8 Socio-Economic Issues

The proposed alternative is anticipated to promote community viability, improve public health, and to protect property investments.

The locations of the wastewater treatment facility is based entirely upon the topography of the land with no consideration given to race or household income. The proposed projects will have no unjust impacts on minorities or disadvantaged populations.

3.9 Recreation and Open Space

The alternatives recommended by the Act 537 Plan will not themselves create any new recreational or open space opportunities.

3.10 Air Quality

The alternatives recommended by the Act 537 Plan will not in themselves create any new recreational or open space opportunities since the alternatives presented are modifications to the existing WWTP within the current property.

3.11 Transportation

There will be no permanent impact on transportation. There will be minimal disruption of traffic patterns during construction of the recommended structural alternative. All traffic control and construction methods will be permitted as required by the Pennsylvania Department of Transportation and Londonderry Township.

3.12 Noise Abatement and Control

Noise will only be an issue during construction activities. Noise will be controlled by best management practices and engineering controls outlined in the construction contract. Construction noise is of a fixed duration and ceases at the completion of the construction phase of the project. Noise from construction vehicles differs from normal vehicular traffic noise in that it is usually limited to normal working hours (8 a.m. to 5 p.m.), whereas traffic noise is usually continuous.

3.13 Wild and Scenic Rivers

There are no Pennsylvania or Federally designated Scenic Rivers in Shinglehouse Borough according to the Pennsylvania Scenic Rivers Program.

3.14 Miscellaneous Environmental Considerations

There are no other environmental issues, such as biosolids generation, treatment, and disposal; impacts on or from local landfills; impacts on or from Superfund/HSCA sites; and generation of hazardous, explosive, flammable, toxic, radioactive materials which pertain to the projects proposed by the Borough's Act 537 Plan.

Appropriate state and federal permits, where required, will be obtained prior to the construction of the proposed projects.

4.0 SUMMARY OF MITIGATION

The natural flow regime and water quality in this watershed are important to maintaining habitats occupied by rare fish and mussels. PFBC recommends that you take measures to maintain a natural flow regime, high water quality, and quantity. Maintenance or restoration of the riparian corridor will aid in connecting habitats and improving water quality and quantity for fish and mussels. PFBC recommends retaining (or restoring, if not already present) a riparian buffer (100 to 300 feet, if possible) on each side of the waterway (river, stream, creek). This buffer should be vegetated with native plant species. When adequately vegetated, this upland buffer will act to stabilize the streambanks (preventing or minimizing erosion), and filter pollutants (e.g., sediment, fertilizers, pesticides, road salt, oil). Where streambanks have become badly eroded (e.g., due to previous removal of native riparian vegetation), streambank fencing and/or bioengineering restoration techniques are recommended (geotextile, root wads, vegetative stabilization), rather than riprapping the streambanks; removing gravel bars; or attempting to dredge, ditch, channelize, or widen the stream. Use stringent erosion and sedimentation controls before, during, and after project implementation to ensure that sediment and contaminants do not enter any waterway(s) (rivers, creeks, streams, tributaries) or waterbodies (lakes, ponds).

PFBC Species:

Scientific Name	Common Name	Current Status
<i>Fusconaia subrotunda</i>	Long-solid	Special Concern Species
<i>Pleurobema sintoxia</i>	Round Pigtoe	Special Concern Species

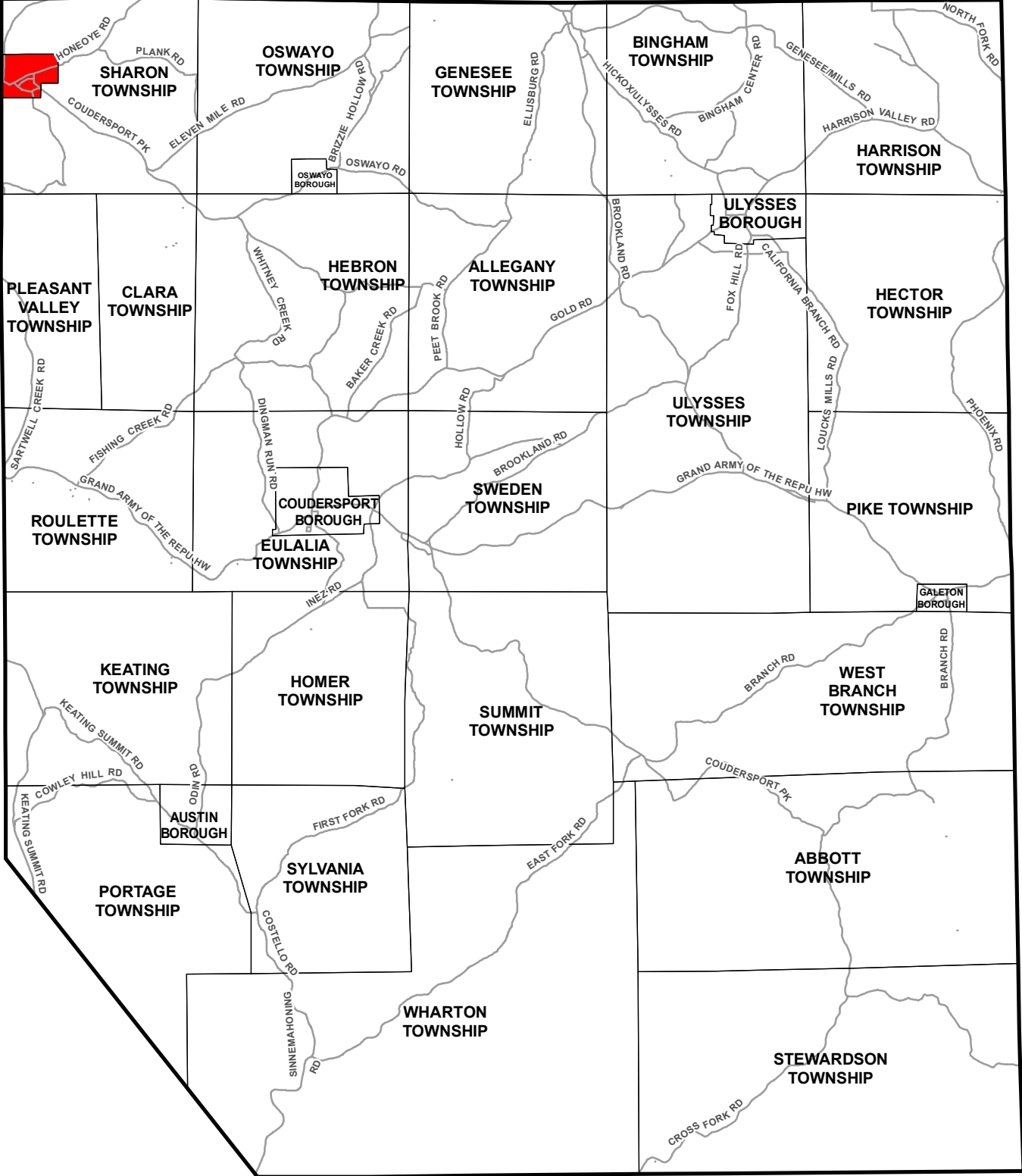
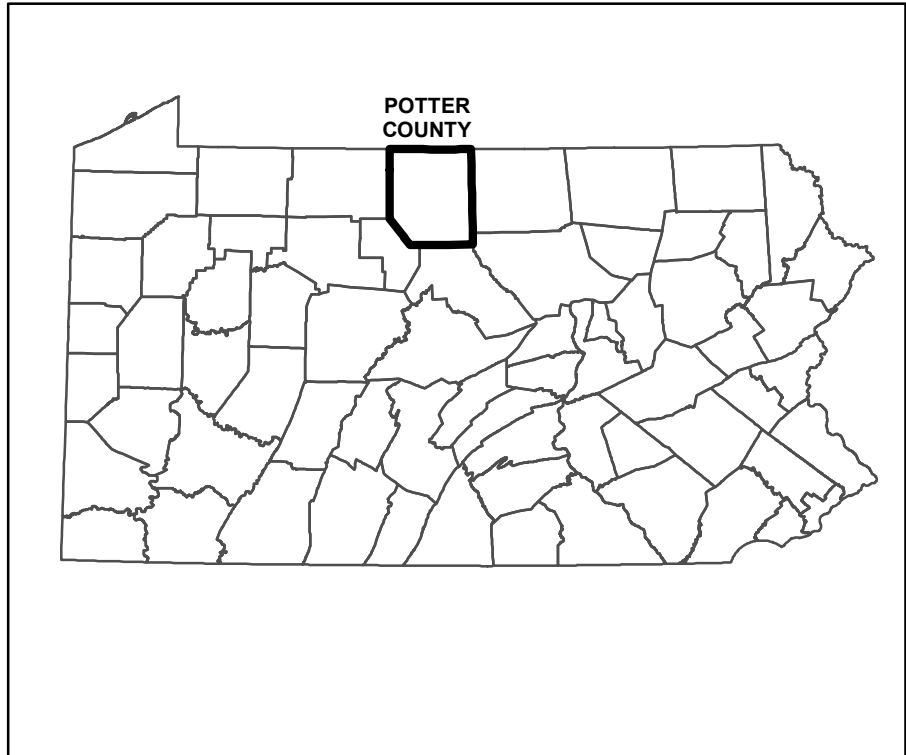
5.0 PUBLIC PARTICIPATION

As part of the Act 537 Planning process, a 30-day public comment period was advertised and held. During this time, the public can review and submit written comments in regard to the Act 537 Plan. Additionally, public meetings were held to allow the public to participate in the planning process.

6.0 EXHIBITS

The following exhibits have been included in this Environmental Report:

EXHIBIT A – ACT 537 BOROUGH MAPS
EXHIBIT B – ON-LOT SANITARY SEWAGE SURVEY SUMMARY
EXHIBIT C – STRUCTURAL COLLECTION ALTERNATIVES
EXHIBIT D – STRUCTURAL WWTP ALTERNATIVES
EXHIBIT E – COST ESTIMATES FOR WWTP ALTERNATIVES
EXHIBIT F – PFMC CORRESPONDENCE
EXHIBIT G – PNDI CORRESPONDENCE



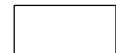
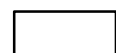


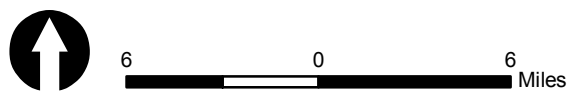
Map 1

General Location

Shinglehouse Borough

Potter County, Pennsylvania

-  State Road
-  Planning Area
-  Municipal Boundary
-  County Boundary



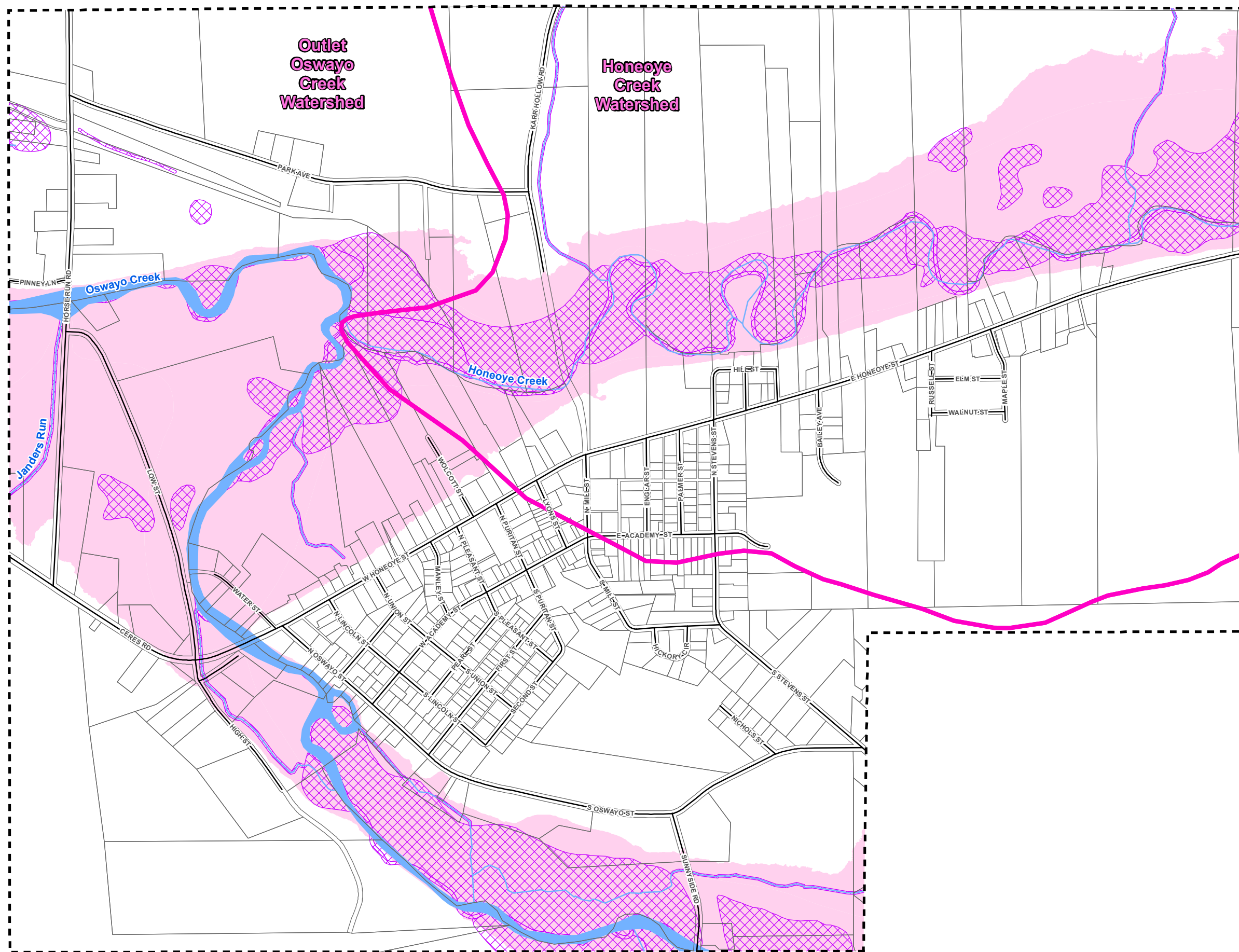
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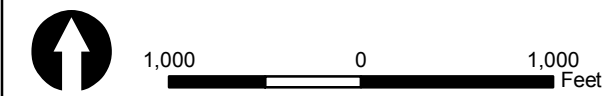
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Map 2 Surface Water Resources and Floodplains Shinglehouse Borough Potter County, Pennsylvania



- Road
-  NWI Wetlands
-  Water
-  FEMA 100 Year Floodplain
-  HUC 12 Watershed
-  Parcel
-  Municipal Boundary



Mapping derived from data provided by USGS, USFWS, FEMA, and Potter County.

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National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

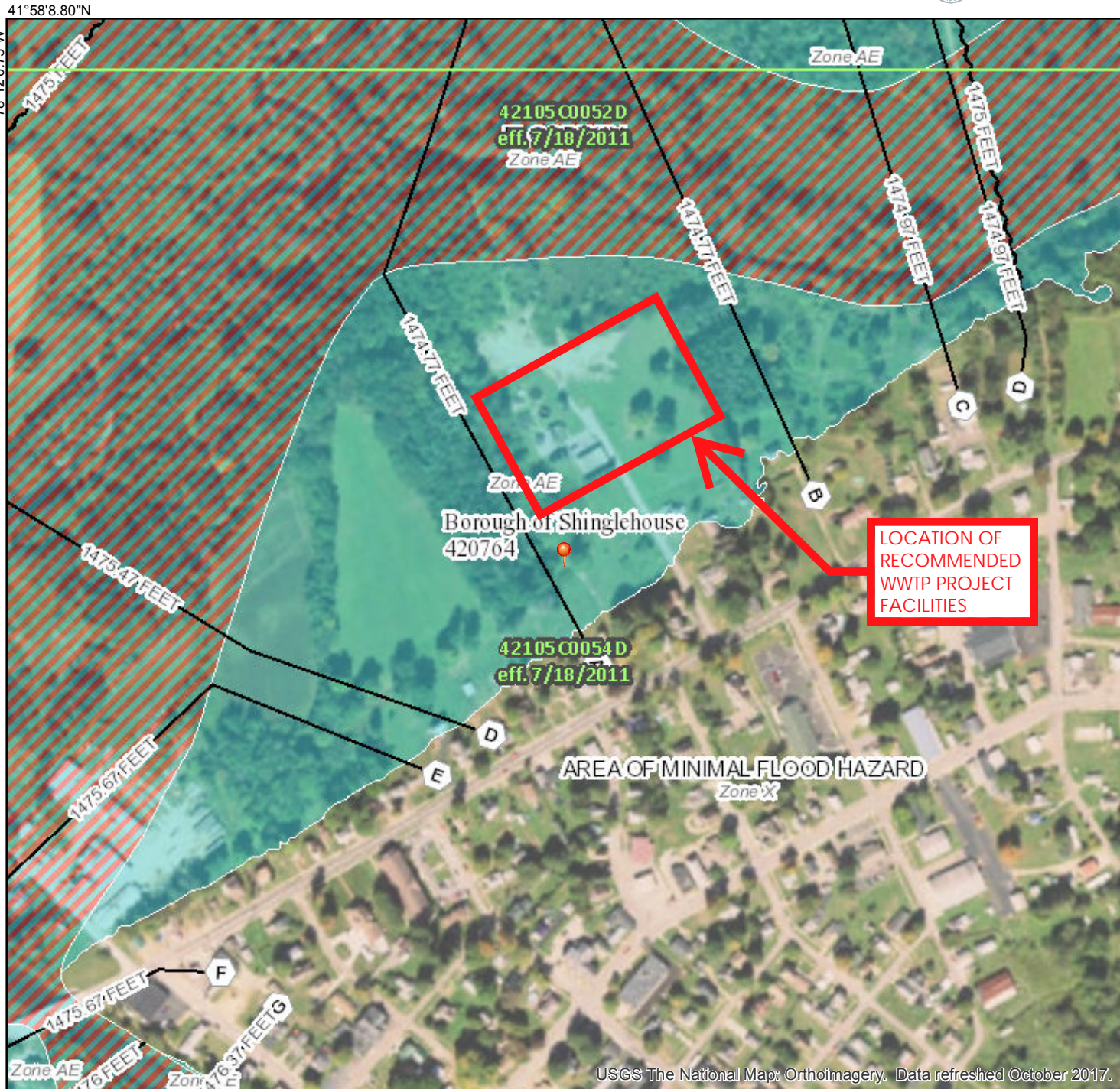


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/17/2018 at 9:01:58 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



41°58'8.80"N
78°12'0.73"W

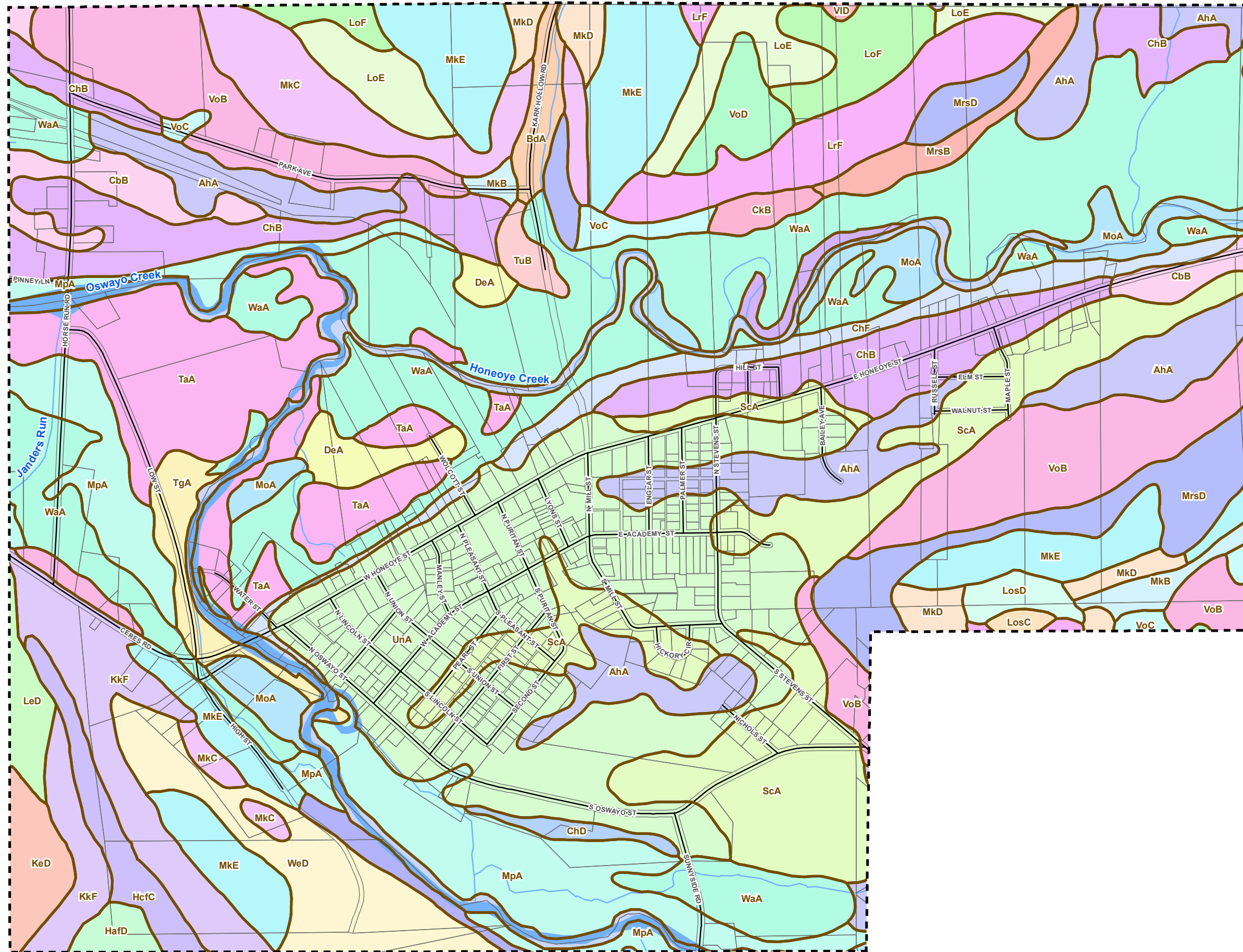
USGS The National Map: Orthoimagery. Data refreshed October 2017.

0 250 500 1,000 1,500 2,000 Feet 1:6,000 41°57'42.04"N

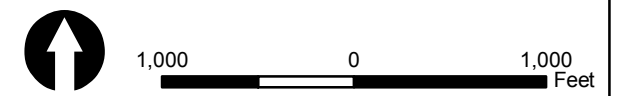
78°12'23.28"W

Map 3 Soils

Shinglehouse Borough Potter County, Pennsylvania



- Road
 - ▭ Soil Boundary
 - ▭ Water
 - ▭ Parcel
 - - - Municipal Boundary
- Soils**
- | | |
|------|------|
| AhA | LrF |
| BdA | MkB |
| CbB | MkC |
| CeB | MkD |
| ChB | MkE |
| ChD | MoA |
| ChF | MpA |
| CkB | MrsB |
| DeA | MrsD |
| HafD | OqsF |
| HcfC | ScA |
| KeD | TaA |
| KkF | TgA |
| LeD | TuB |
| LoE | UnA |
| LoF | VID |
| LosC | VoB |
| LosD | VoC |
| | VoD |
| | W |
| | WaA |
| | WeD |
| | WyA |



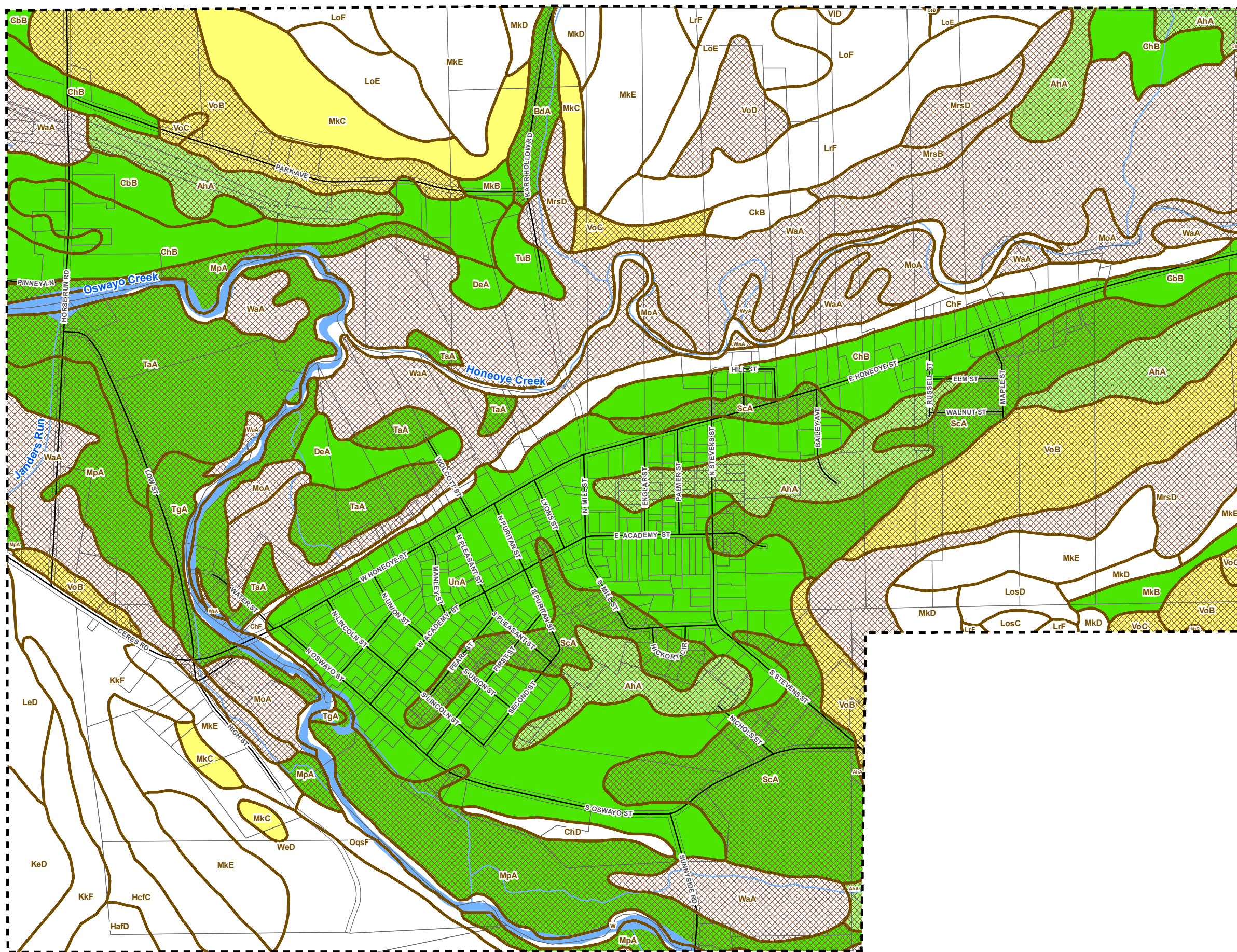
Mapping derived from data provided by USGS, NRCS, and Potter County.

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Map 4 Soil Designations Shinglehouse Borough Potter County, Pennsylvania



- Road
- Soil
- Farmland of Statewide Importance
- Prime Agricultural Soils
- Prime Agricultural Soils If Drained
- Hydic Soil
- Water
- Parcel
- Municipal Boundary



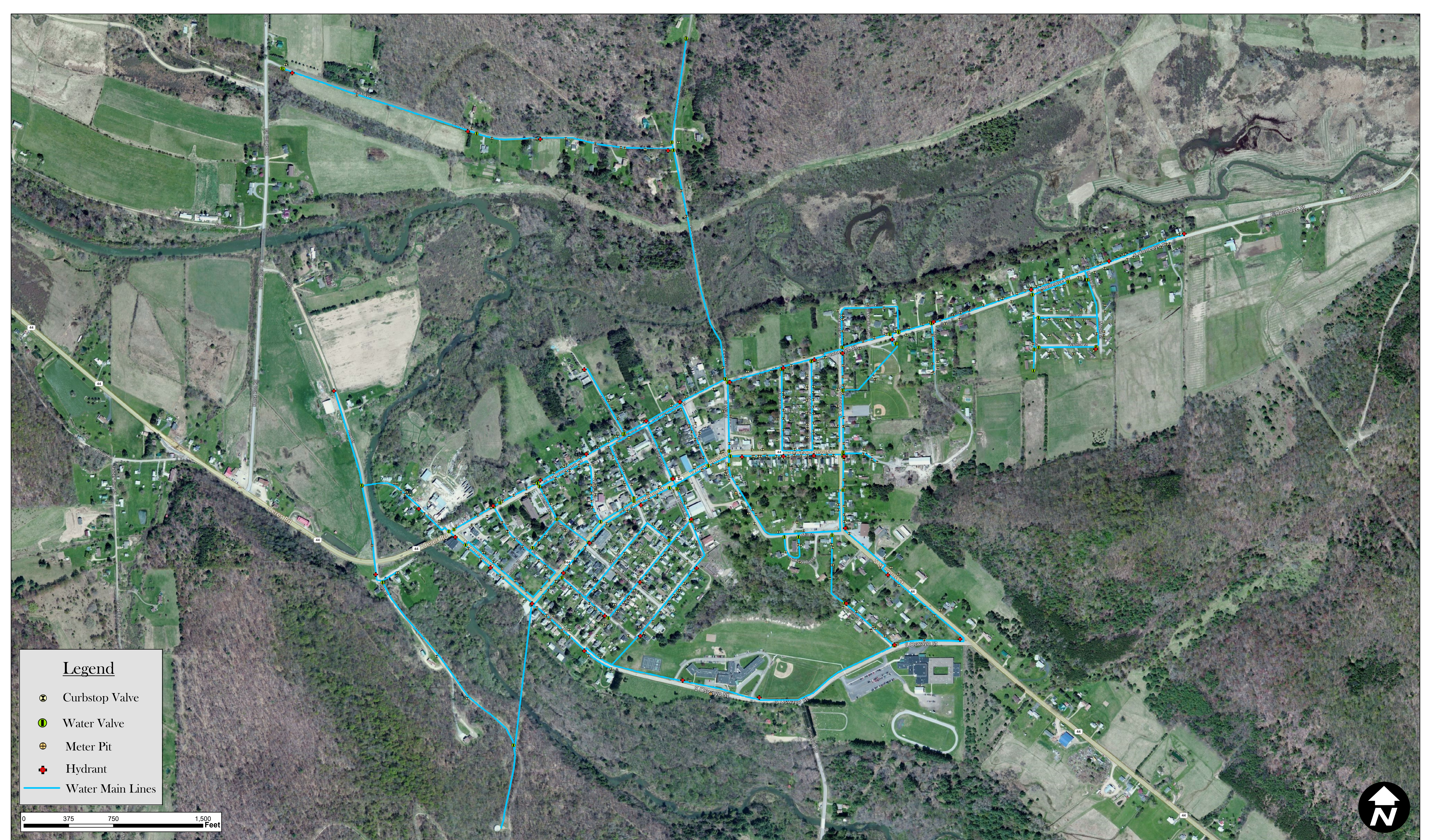
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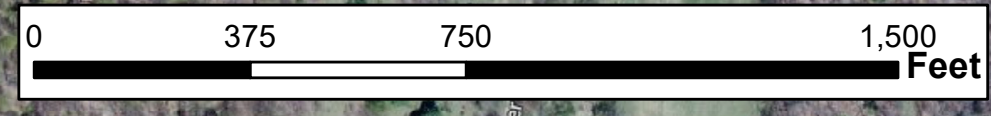
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Legend










-  Curbstop Valve
-  Water Valve
-  Meter Pit
-  Hydrant
-  Water Main Lines

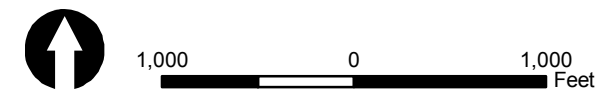
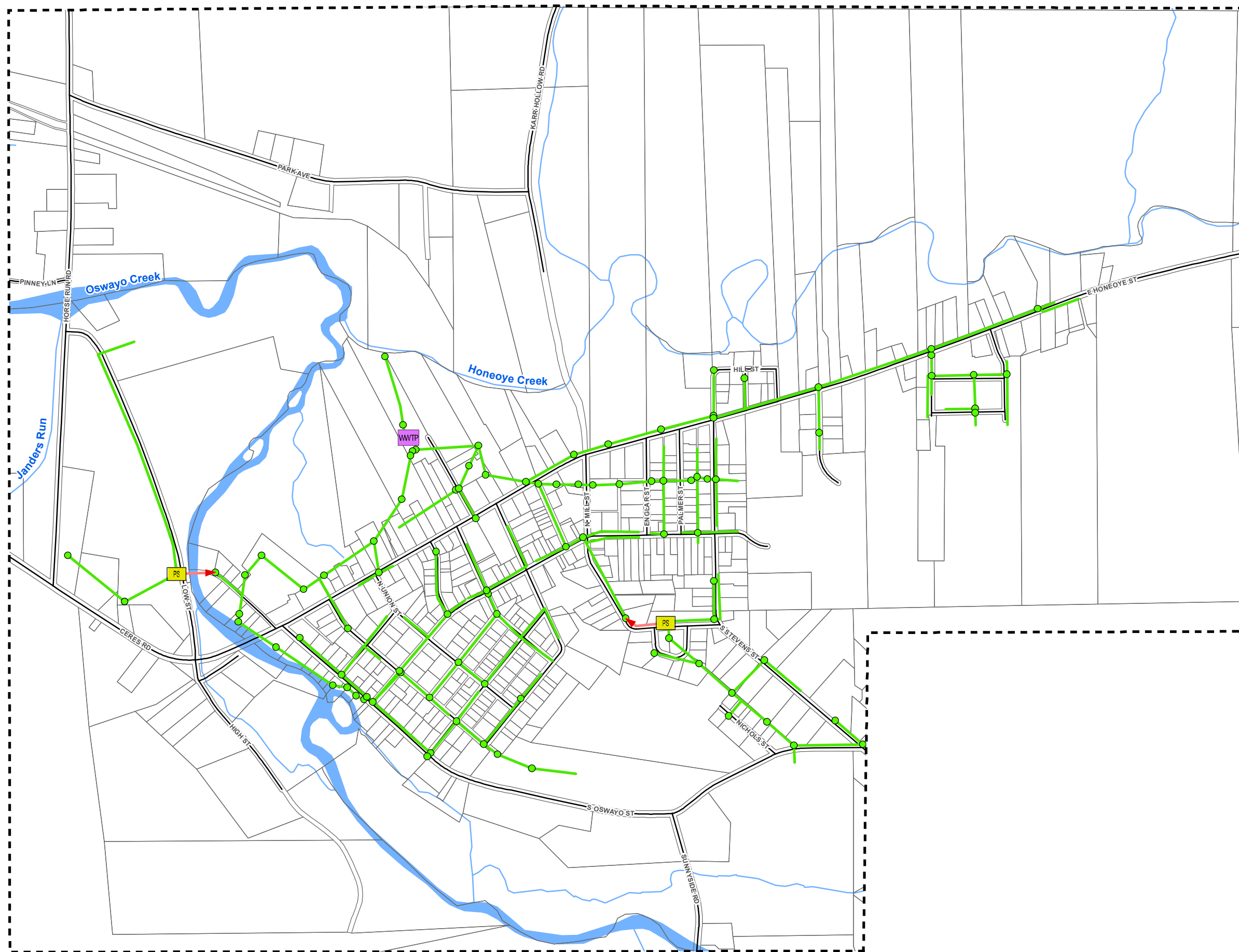


Shinglehouse Borough
 Drinking Water System
 Potter County, Pennsylvania

Approved By: JI
Drawn By: SL
Scale: 1:4,000
Date: 7/25/2017

Map 10 Sewer System Shinglehouse Borough Potter County, Pennsylvania

-  Sanitary Manhole
-  Sanitary Pumpstation
-  Wastewater Treatment Plant
-  Sanitary Sewer Line
-  Sanitary Forcemain
-  Road
-  Water
-  Parcel
-  Municipal Boundary



Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

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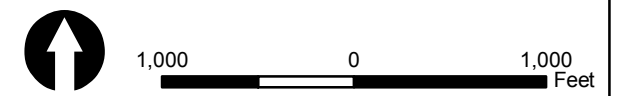
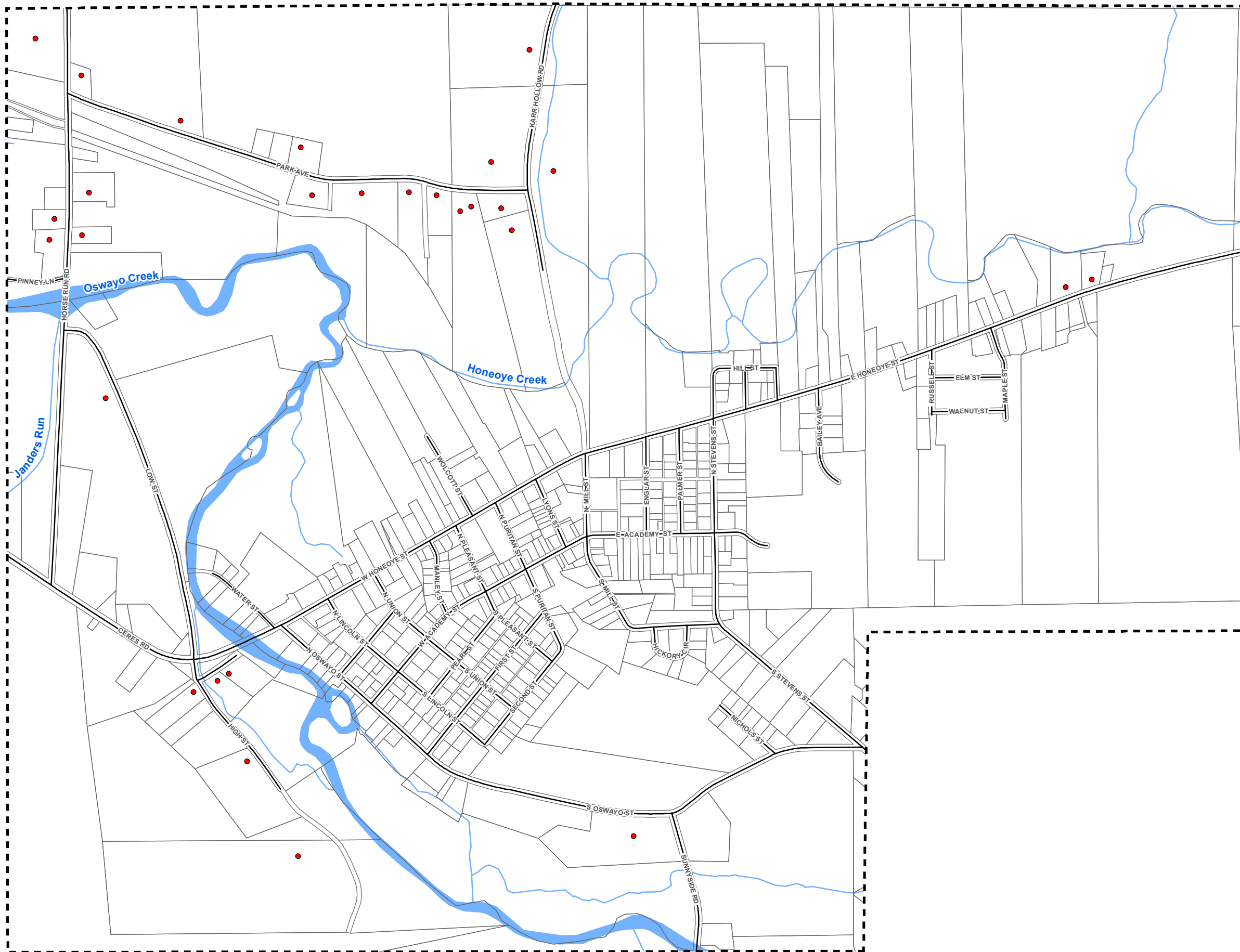
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Map 11

On-Lot Disposal Systems

Shinglehouse Borough Potter County, Pennsylvania

- Existing On-Lot Disposal System
- Road
- Water
- Parcel
- Municipal Boundary



Mapping derived from data provided by USGS and Potter County.

2/22/2018 | PM: JTF | GIS: BLS | QA: HSH | R004004.00431

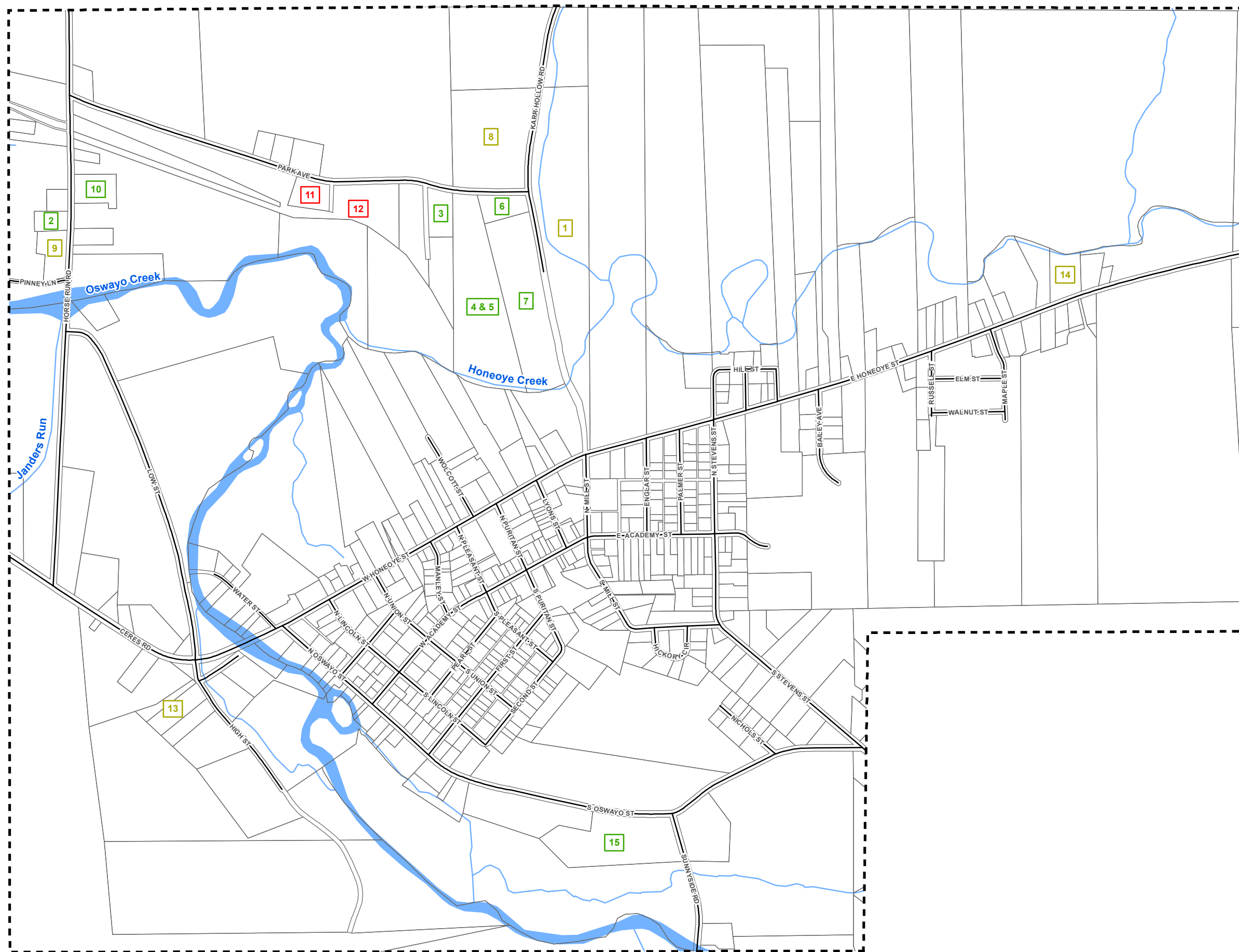









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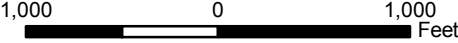
OLDS Malfunction Exhibit

Shinglehouse Borough

Potter County, Pennsylvania



-  Road
-  Water
-  Parcel
-  Municipal Boundary
- DEP Malfunction Classification**
-  No Malfunction
-  Potential Malfunction
-  Confirmed Malfunction

Mapping derived from data provided by Potter County and USGS.

4/18/2018 | PM: JTF | GIS: HMG | QA: BLS | R004004.0431


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Map Number	Address	Sample Number	DEP Malfunction Classification**	Reason	Field Inspection Completion Date	Water Supply	Well Type	Well Depth (ft)	Cased	Distance from Drain Field (ft)	Well Location from Septic	Water Treatment	Water Tested	Date	Results	Lot Size (acres)	Dwelling Units	# of OLDS	OLDS Type	Graywater Discharge	OLDS Age (years)	Permitted	Reported OLDS Problems	System Pumped
240-001-006-5	348 Karr Hollow Road	1	Potential Malfunction	Soil Restrictions	4/12/2018	Public										14.5	1	1	Septic Tank / Drain Field	Same as Sewage	38	Yes	None	Yes
240-001-016	427 Horse Run Road	2	No Malfunction		4/12/2018	Well	Drilled	Unknown	Yes	325'	Uphill	None	No			1	1	1	Septic Tank / Drain Field	Same as Sewage	16	Yes	None	Yes
240-001-007	328 Park Avenue	3	No Malfunction		4/12/2018	Public										1.4	1	1	Septic Tank / Drain Field	Same as Sewage	3	Yes	None	No
240-001-006E	348 & 350 Park Avenue	4 & 5	No Malfunction		4/12/2018	Public										10.9	2	2	Septic Tank / Drain Field	Same as Sewage	34	Yes	None	Yes
240-001-006-3-1	370 Park Avenue	6	No Malfunction		4/12/2018	Public										1.75	1	1	Septic Tank / Drain Field	Same as Sewage	17	Yes	None	Yes
240-001-006-3A	239 Karr Hollow Road	7	No Malfunction		4/12/2018	Public										11	1	1	Septic Tank/Drain Field	Same as Sewage	41	Yes	None	Yes
240-001-006-2	Box 10 (Karr Hollow Road)	8	Potential Malfunction	Soil Restrictions	4/12/2018	Public										12	1	1	Septic Tank/Drain Field	Same as Sewage	42	Yes	1976	Yes
240-001-014-1	413 Horse Run Road	9	Potential Malfunction	Unknown Permitting	Not Permitted to Inspect	Well	Drilled	20+	Unknown	100+	Downhill	None	Yes	Unknown	No Bacteria / No Nitrates	1.77	1	1	Septic Tank/Drain Field	Same as Sewage	30	Unknown	None	Yes
240-001-011-1-1	434 Horse Run Road	10	No Malfunction		4/12/2018	Well	Drilled	60	Yes	100+	No Grade Change	Water Softener & Filters	No			1.27	1	1	Septic Tank/Drain Field	Same as Sewage	16	Yes	None	No
240-001-009-1	260 Park Avenue	11	Confirmed Malfunction	Direct Pipe Discharge to Surface, Unknown Permitting	4/12/2018	Public										2	1	1	Septic Tank / Drain Ditch / Piped Discharge to Surface	Same as Sewage	Unknown	No	None	Yes
240-001-009C	290 Park Avenue	12	Confirmed Malfunction	Direct Pipe Discharge to Surface, Unknown Permitting	4/12/2018	Public										4	1	1	Septic Tank / Drain Ditch / Piped Discharge to Surface	Same as Sewage	Unknown	No	None	Yes
240-005-001	114 High Street	13	Potential Malfunction	Unknown Permitting, Soil Restrictions	4/12/2018	Public										2	1	1	Septic Tank / Drain Field	Same as Sewage	50	No	None	Yes
240-004-016	1153 E Honeoye Street	14	Potential Malfunction	Potential Soil Restrictions	4/12/2018	Public										2.25	1	1	Septic Tank / Drain Field	Same as Sewage	34	Yes	None	Yes
240-001-023	289 S Oswayo Street	15	No Malfunction		4/12/2018	Public										5.5	0	1	Septic Tank / Drain Field	None	16	Yes	None	Yes

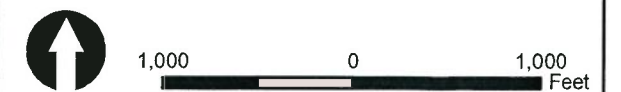
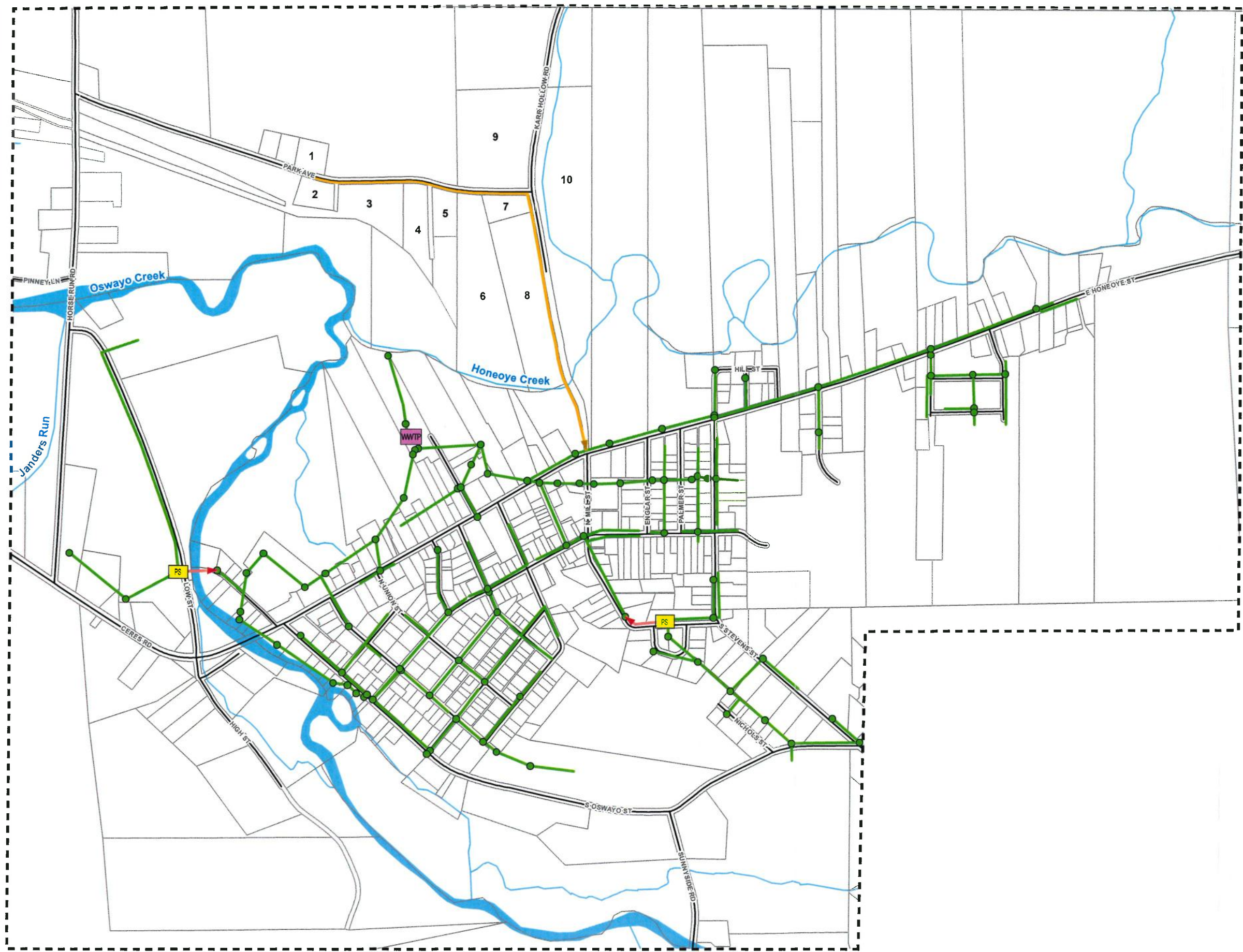
Sample Number	DEP Malfunction Classification**	Reason	How Often Pumped	Last Time	OLDS Repair	When Repaired	Repair Permitted	Part Repaired/Replaced	Nitrate Results (mg/L)	Total Coliform (bacteria/100 ml)	Fecal Coliform (bacteria/100 ml)	Notes from On-lot Inspection
1	Potential Malfunction	Soil Restrictions	Every 3-4 years	2015	No				1.1	N.D.	N.D.	No visual signs of malfunctioning OLDS
2	No Malfunction				No							No visual signs of malfunctioning OLDS
3	No Malfunction				Yes	2015	Yes	New Tank, line, and Drain Field replaced Cesspool				New 1,000 gal septic tank, line, and drain field replaced malfunctioning cesspool. No visual signs of malfunctioning OLDS
4 & 5	No Malfunction		Every 5 Years	2016	No							350 Park Avenue currently vacant. Drain field for 350 Park Avenue flooded during public water service break. No issues since drain field dried out.
6	No Malfunction		Every 3-4 Years	2015	No							No visual signs of malfunctioning OLDS
7	No Malfunction		Every 2 Years	2017	No							No visual signs of malfunctioning OLDS
8	Potential Malfunction	Soil Restrictions	Every 2-3 Years	2015	No							No visual signs of malfunctioning OLDS
9	Potential Malfunction	Unknown Permitting	Every 2-3 Years	2016	No				1.9	N.D.	N.D.	Did not permit inspection of OLDS system
10	No Malfunction				No							No visual signs of malfunctioning OLDS
11	Confirmed Malfunction	Direct Pipe Discharge to Surface, Unknown Permitting	Unknown	Unknown	No							Piped discharge to surface just uphill from Honeoye Creek identified. No odors present or signs of solids. Pipe actively dripping water.
12	Confirmed Malfunction	Direct Pipe Discharge to Surface, Unknown Permitting	Unknown	Unknown	No							Piped discharge to surface just uphill from Honeoye Creek identified. No odors present or signs of solids. Pipe actively dripping water.
13	Potential Malfunction	Unknown Permitting, Soil Restrictions	Unknown	Unknown	No							Drain Field was identified to be in seasonably wet area
14	Potential Malfunction	Potential Soil Restrictions	Every 3 years	2015	No							OLDS System appears to be located before major grade change heads to Creek
15	No Malfunction		Every 2-3 Years	2015	No							Restroom that serves the Park and is only seasonally used.



**EXHIBIT C – STRUCTURAL COLLECTION
ALTERNATIVES**

Structural Alternative 1A Park Ave Sewer Extension LP to Karr Hollow Shinglehouse Borough Potter County, Pennsylvania

- Sanitary Manhole
- PS Sanitary Pumpstation
- WWTP Wastewater Treatment Plant
- Sanitary Sewer Line
- Sanitary Forcemain
- Proposed Sanitary Low Pressure Main
- Road
- Water
- Parcel
- Municipal Boundary













Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

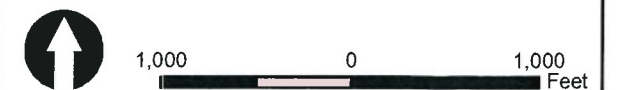
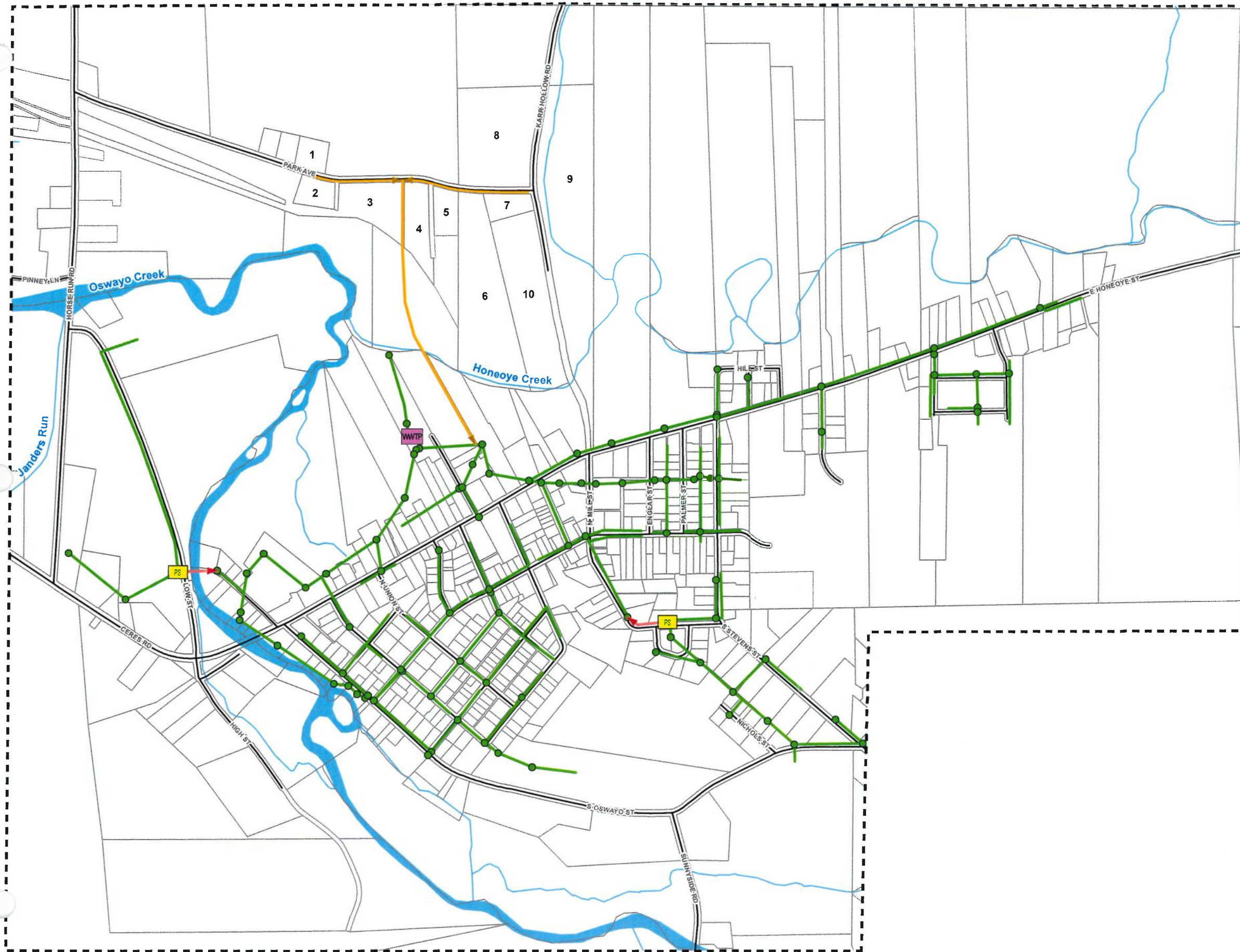
4/18/2018 | PM: JTF | GIS: HMG | QA: BLS | R004004.0431



474 Windmere Drive
Suite 100
State College, PA 16801
814.238.7117 [phone]
814.238.7126 [fax]
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Structural Alternative 1B Park Ave Sewer Extension LP to WWTP Shinglehouse Borough Potter County, Pennsylvania

-  Sanitary Manhole
-  Sanitary Pumpstation
-  Wastewater Treatment Plant
-  Sanitary Sewer Line
-  Sanitary Forcemain
-  Proposed Sanitary Low Pressure Main
-  Road
-  Water
-  Parcel
-  Municipal Boundary



Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

4/18/2018 | PM: JTF | GIS: HMG | QA: BLS | R004004.0431

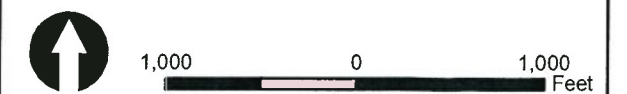
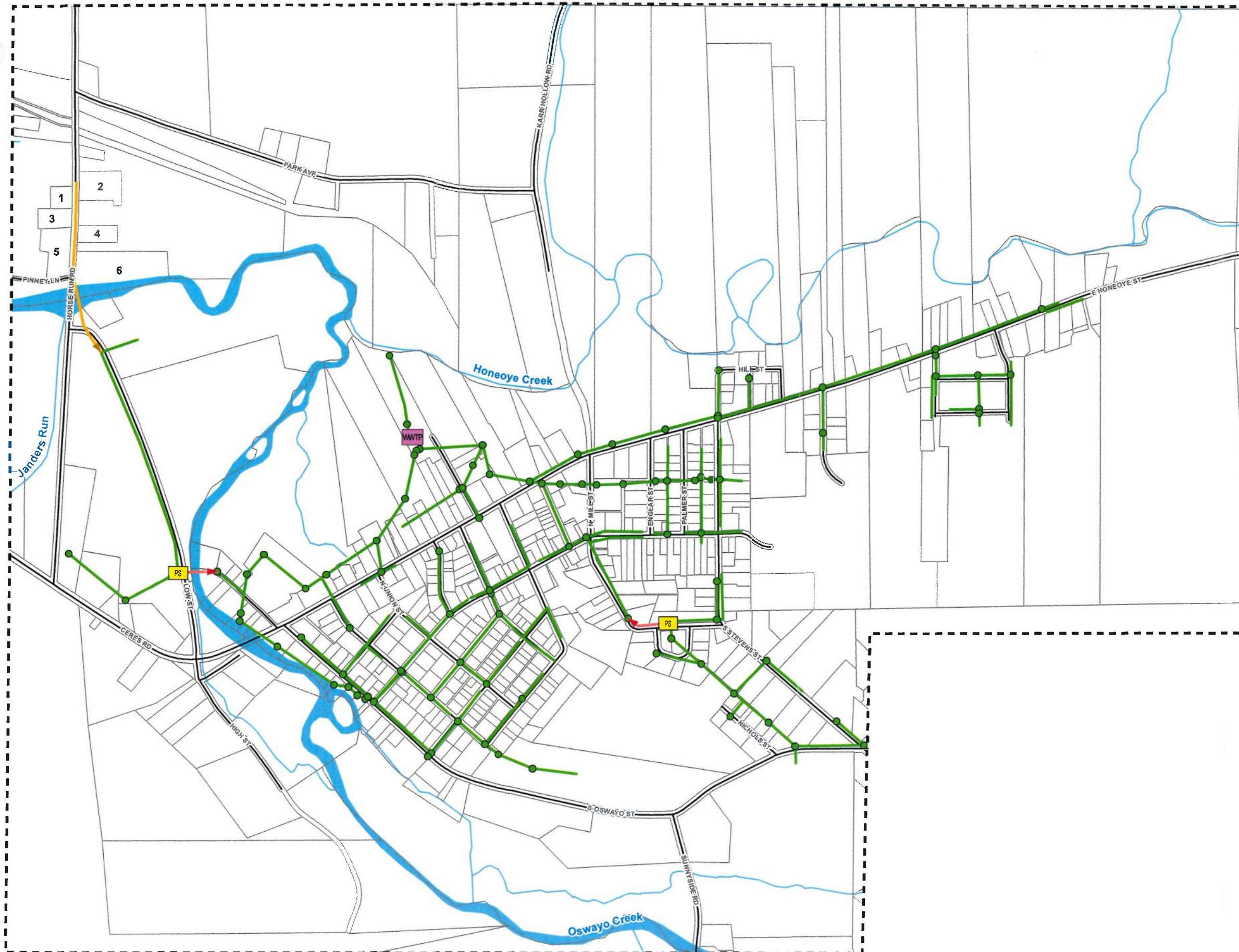


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814.238.7117 [phone]
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Structural Alternative 2A Horse Run Sewer Extension LP to Low St PS Shinglehouse Borough Potter County, Pennsylvania

- Sanitary Manhole
- PS Sanitary Pumpstation
- WWTP Wastewater Treatment Plant
- Sanitary Sewer Line
- ▶ Sanitary Forcemain
- ▶ Proposed Sanitary Low Pressure Main
- Road
- Water
- Parcel
- Municipal Boundary



Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

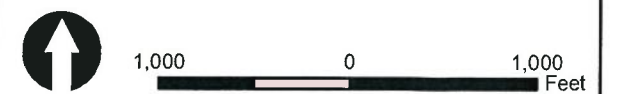
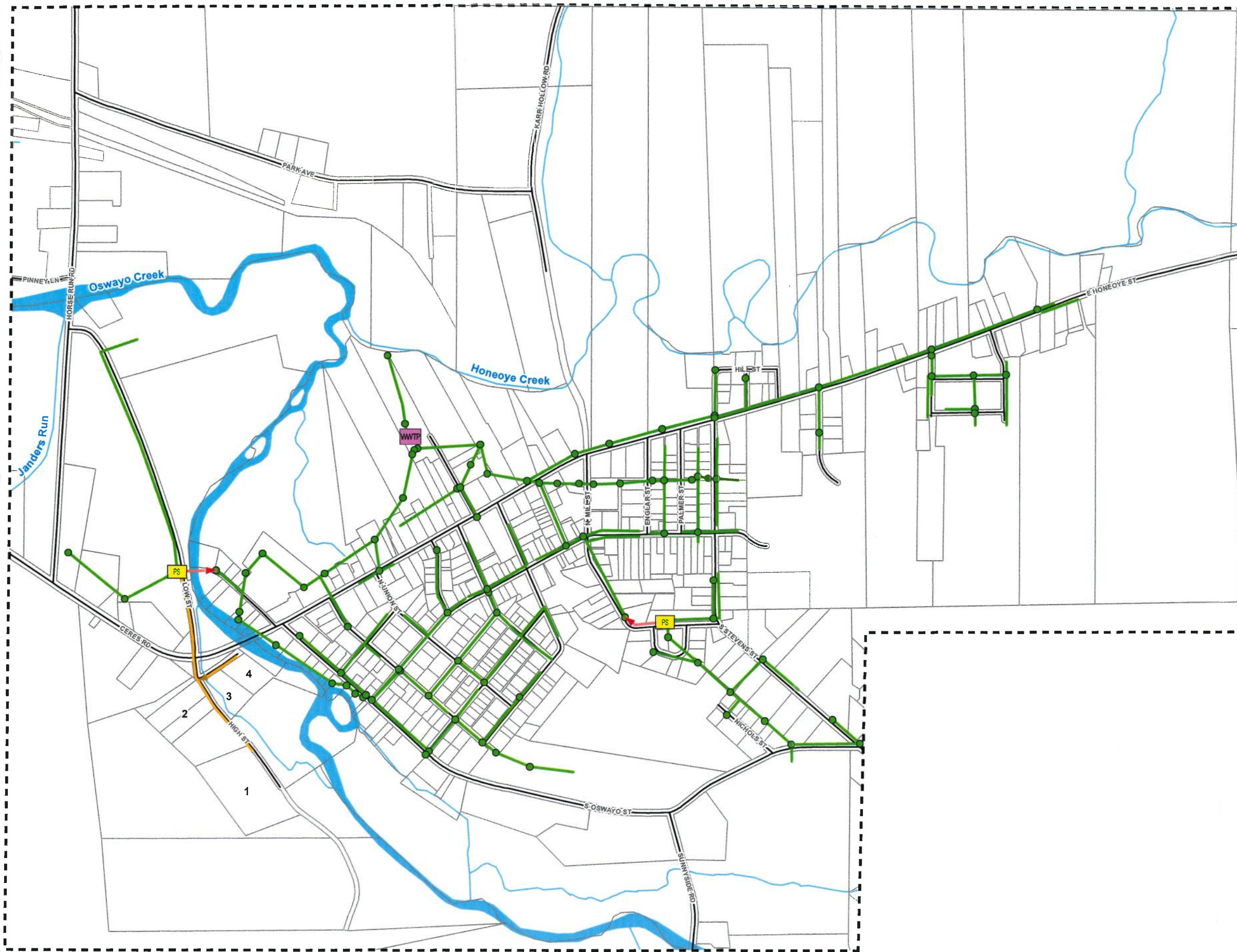
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Suite 100
State College, PA 16801
814.238.7117 [phone]
814.238.7126 [fax]
www.hrg-inc.com

Structural Alternative 3A High St Sewer Extension LP to Low St PS Shinglehouse Borough Potter County, Pennsylvania

- Sanitary Manhole
- PS Sanitary Pumpstation
- WWTP Wastewater Treatment Plant
- Sanitary Sewer Line
- Sanitary Forcemain
- Proposed Sanitary Low Pressure Main
- Road
- Water
- Parcel
- Municipal Boundary



Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

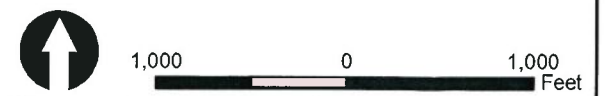
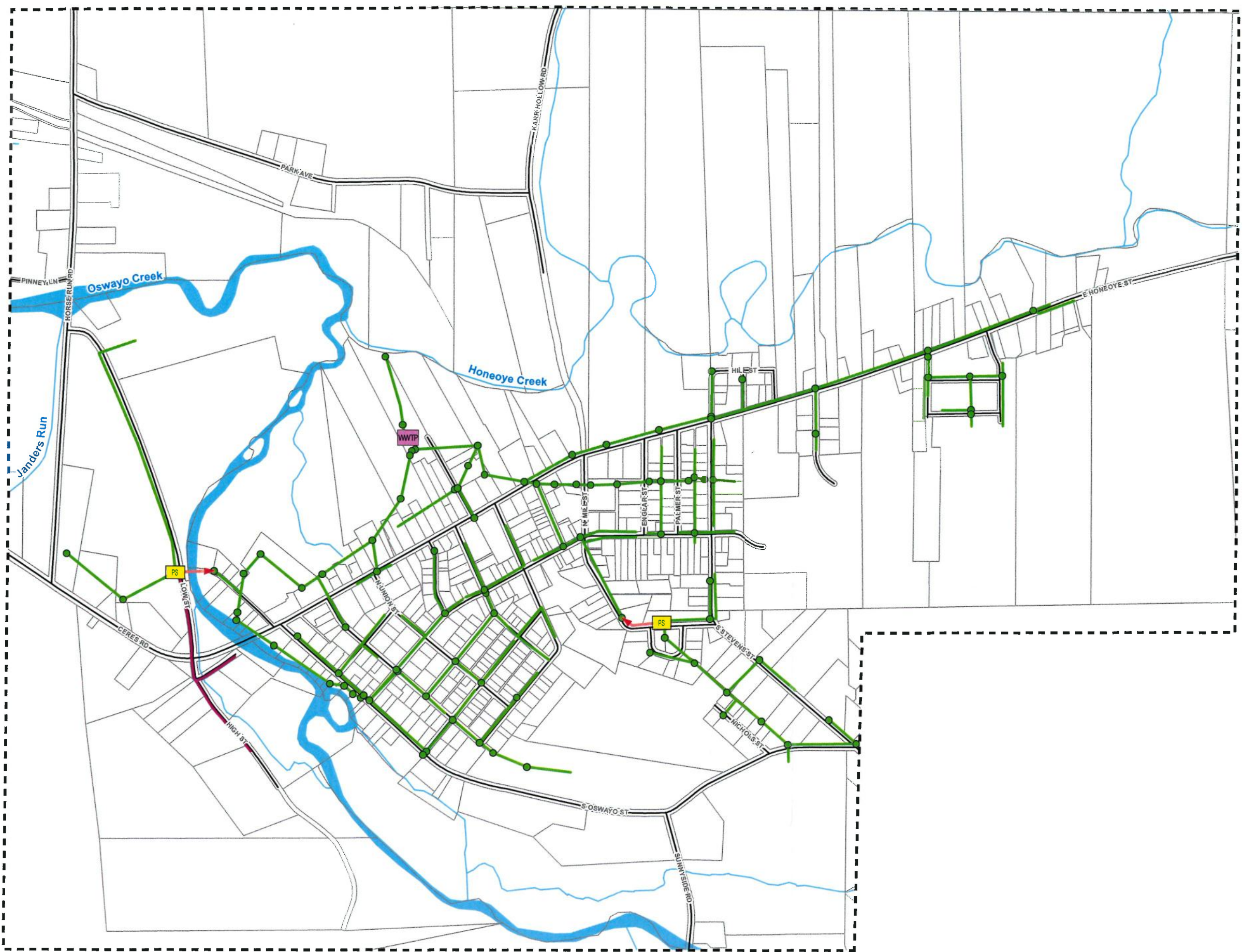
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State College, PA 16801
814.238.7117 [phone]
814.238.7126 [fax]
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Structural Alternative 3B High St Sewer Extension Gravity to Low St PS Shinglehouse Borough Potter County, Pennsylvania

- Sanitary Manhole
- PS Sanitary Pumpstation
- WWTP Wastewater Treatment Plant
- Sanitary Sewer Line
- Sanitary Forcemain
- Proposed Sanitary Gravity Main
- Road
- Water
- Parcel
- Municipal Boundary



Mapping derived from data provided by Potter County, USGS, and Shinglehouse Borough.

4/18/2018 PM: JTF GIS: HMG QA: BLS R004004.0431



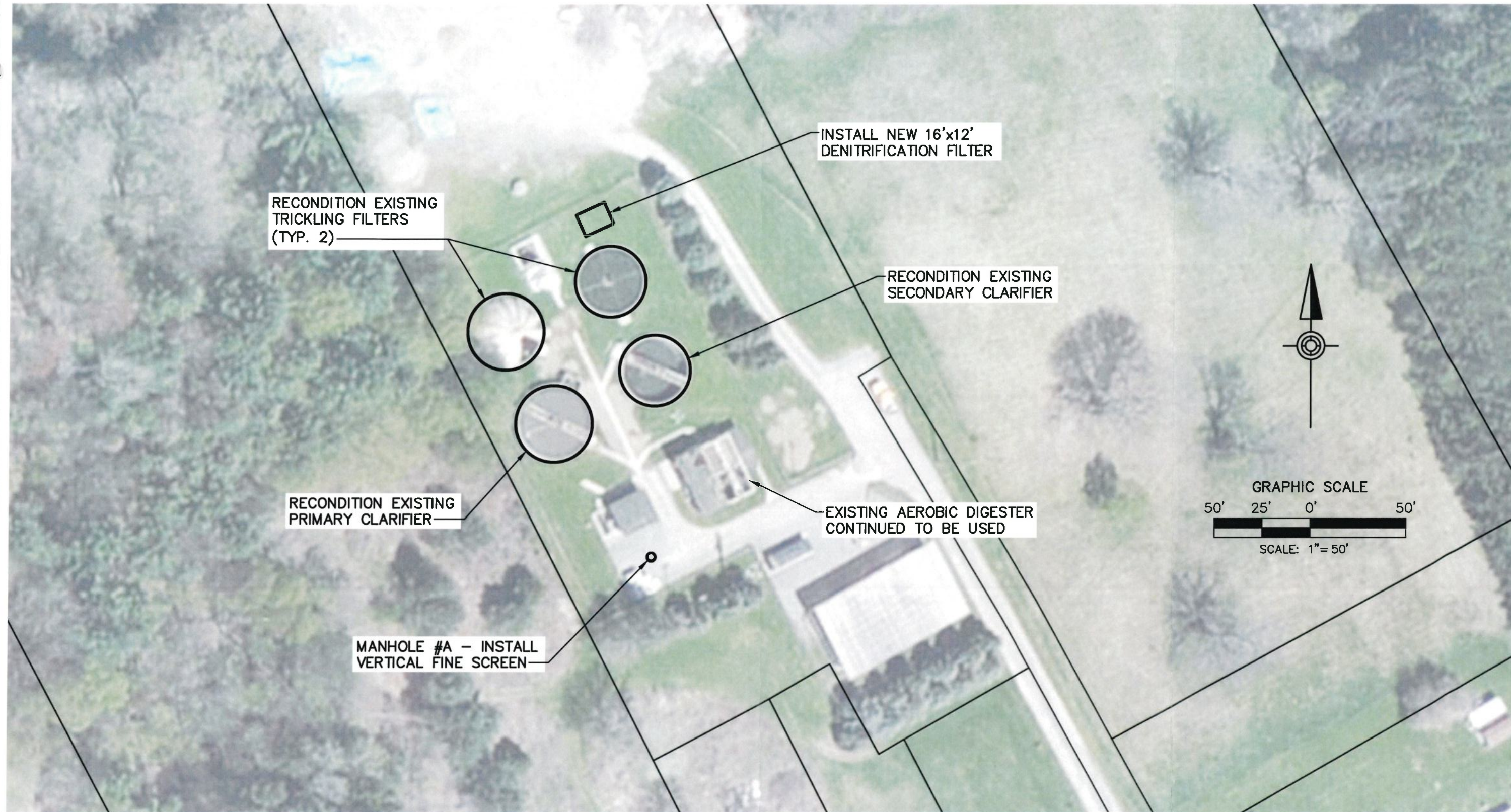
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Suite 100
State College, PA 16801
814.238.7117 [phone]
814.238.7126 [fax]
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**EXHIBIT D – STRUCTURAL WWTP
ALTERNATIVES**

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 Harrisburg, PA 17111
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 hrg@hrg-inc.com
 www.hrg-inc.com

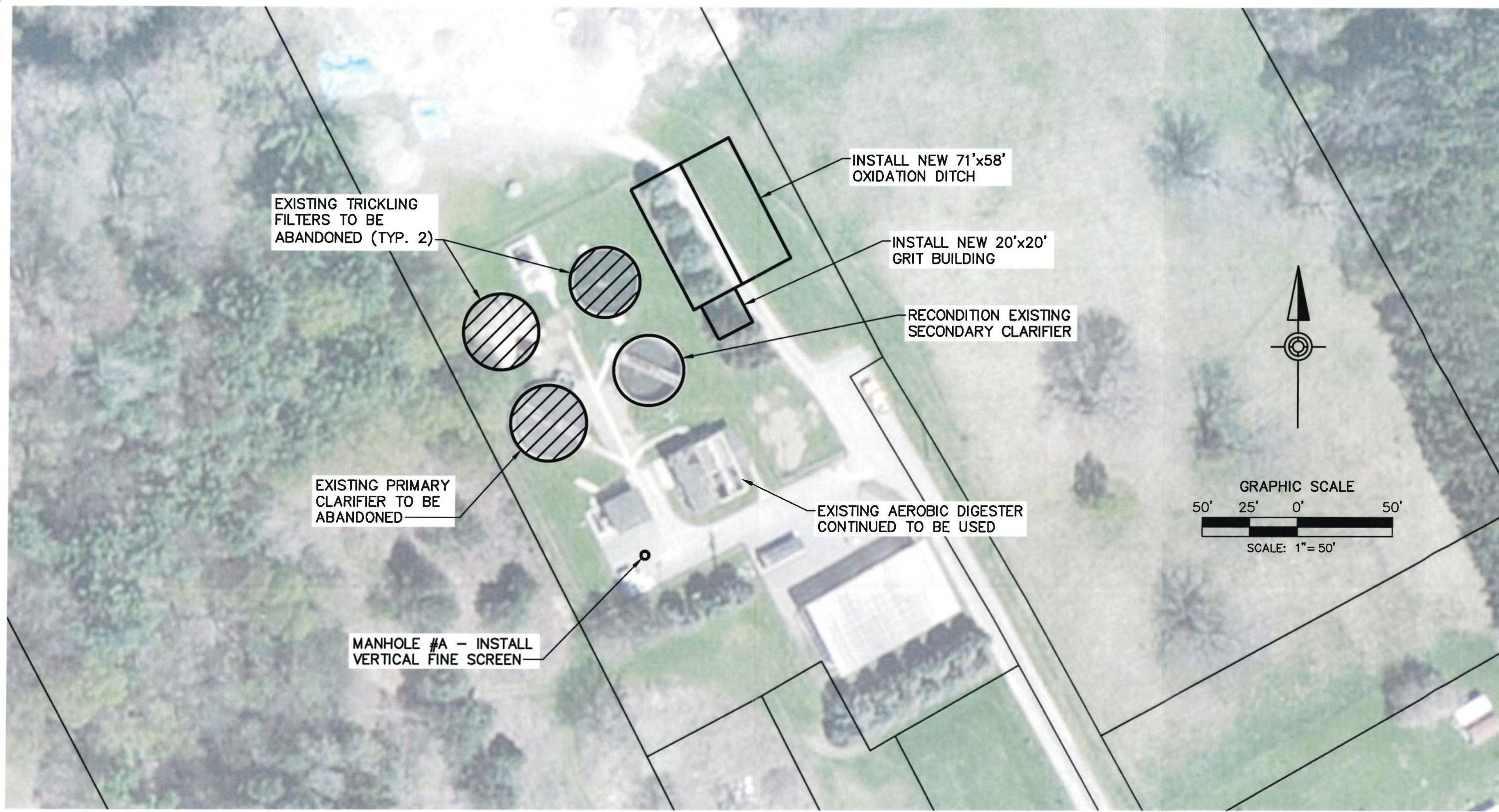
SHINGLEHOUSE BOROUGH
 P.O. BOX 156
 SHINGLEHOUSE, PA 16748

ALTERNATIVE 1
 EXISTING WWTP
 FOR
 SHINGLEHOUSE BOROUGH

PROJ. MGR. - JTF
DESIGN- RES
CADD- RSF
CHECKED-
SCALE- 1" = 50'
DATE- OCT. 2016

DRAWING NO.
1
SHEET NO.
1 OF 1
PROJECT 004004.0426

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Harrisburg, PA 17111
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Fax (717) 564-1158
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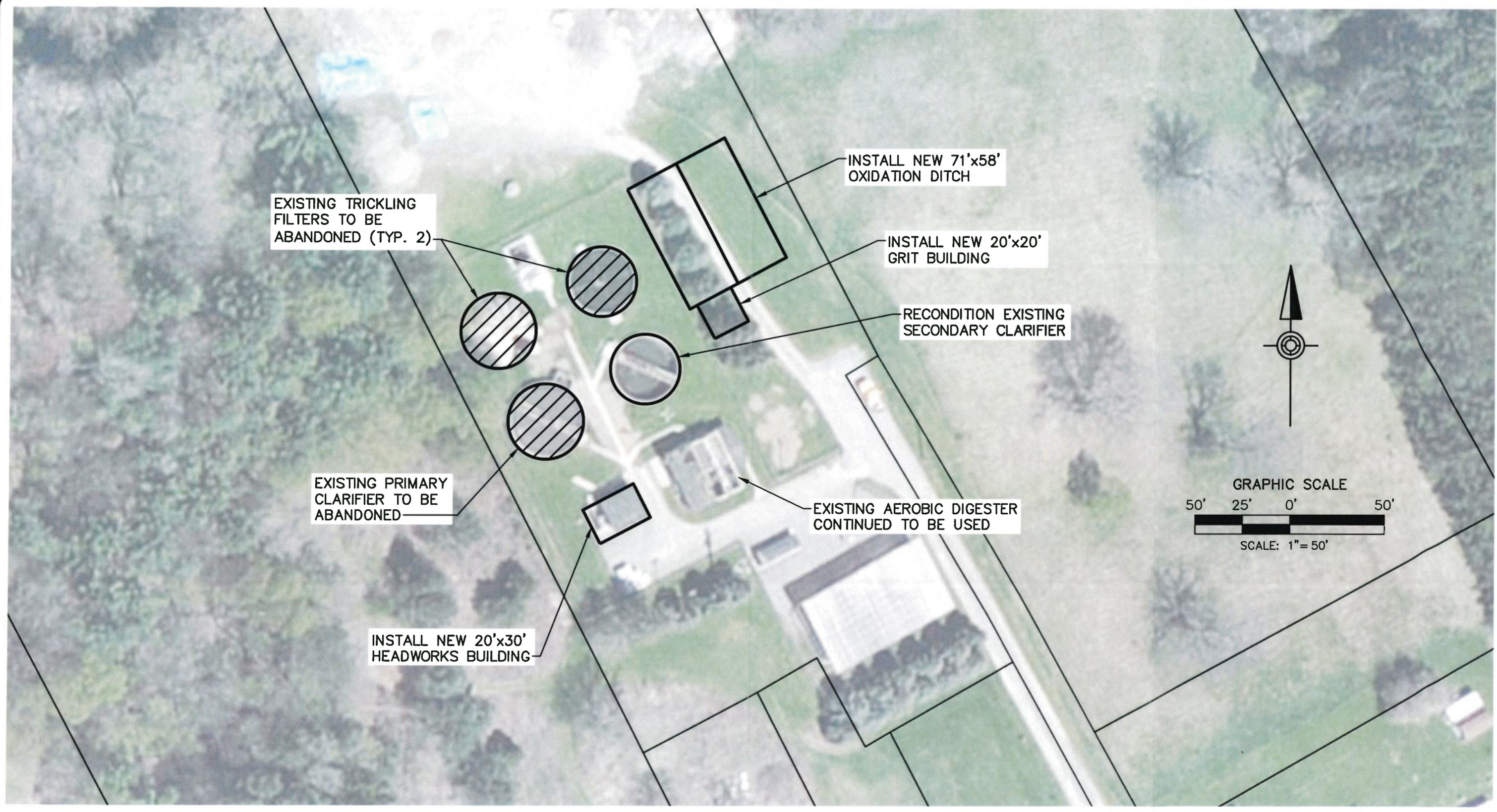
SHINGLEHOUSE BOROUGH
P.O. BOX 156
SHINGLEHOUSE, PA 16748

ALTERNATIVE 2 - OPTION A
MLE (OXIDATION DITCH)
FOR
SHINGLEHOUSE BOROUGH

PROJ. MGR. - JTF
DESIGN- RES
CADD- RSF
CHECKED-
SCALE- 1" = 50'
DATE- OCT. 2016

DRAWING NO. 1
SHEET NO. 1 OF 1
PROJECT 004004.0426

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 Harrisburg, PA 17111
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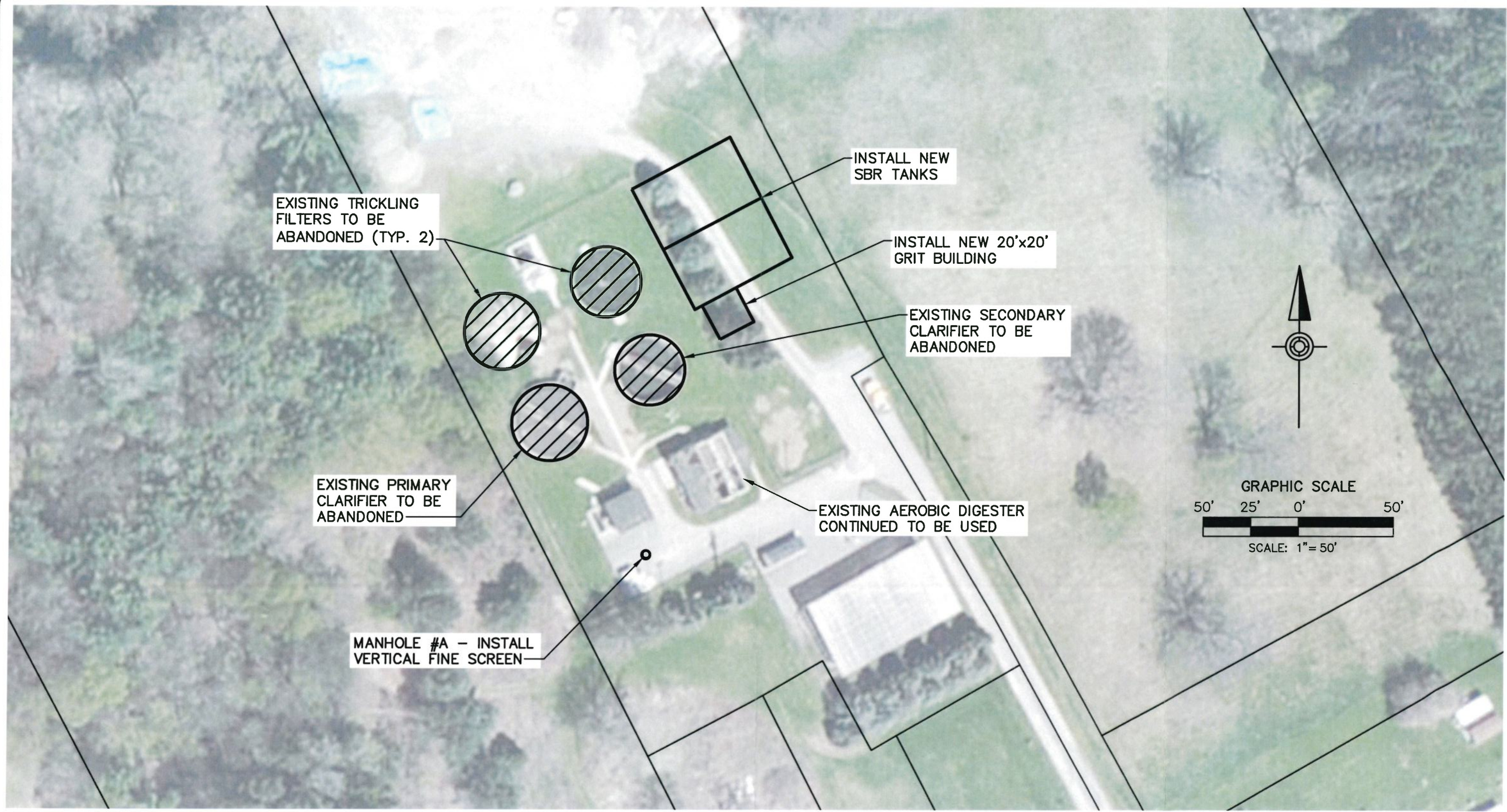
SHINGLEHOUSE BOROUGH
 P.O. BOX 156
 SHINGLEHOUSE, PA 16748

ALTERNATIVE 2 - OPTION B
 MLE (OXIDATION DITCH)
 FOR
 SHINGLEHOUSE BOROUGH

PROJ. MGR. - JTF
DESIGN- RES
CADD- RSF
CHECKED-
SCALE- 1" = 50'
DATE- OCT. 2016

DRAWING NO. 1
SHEET NO. 1 OF 1
PROJECT 004004.0426

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Fax (717) 564-1158
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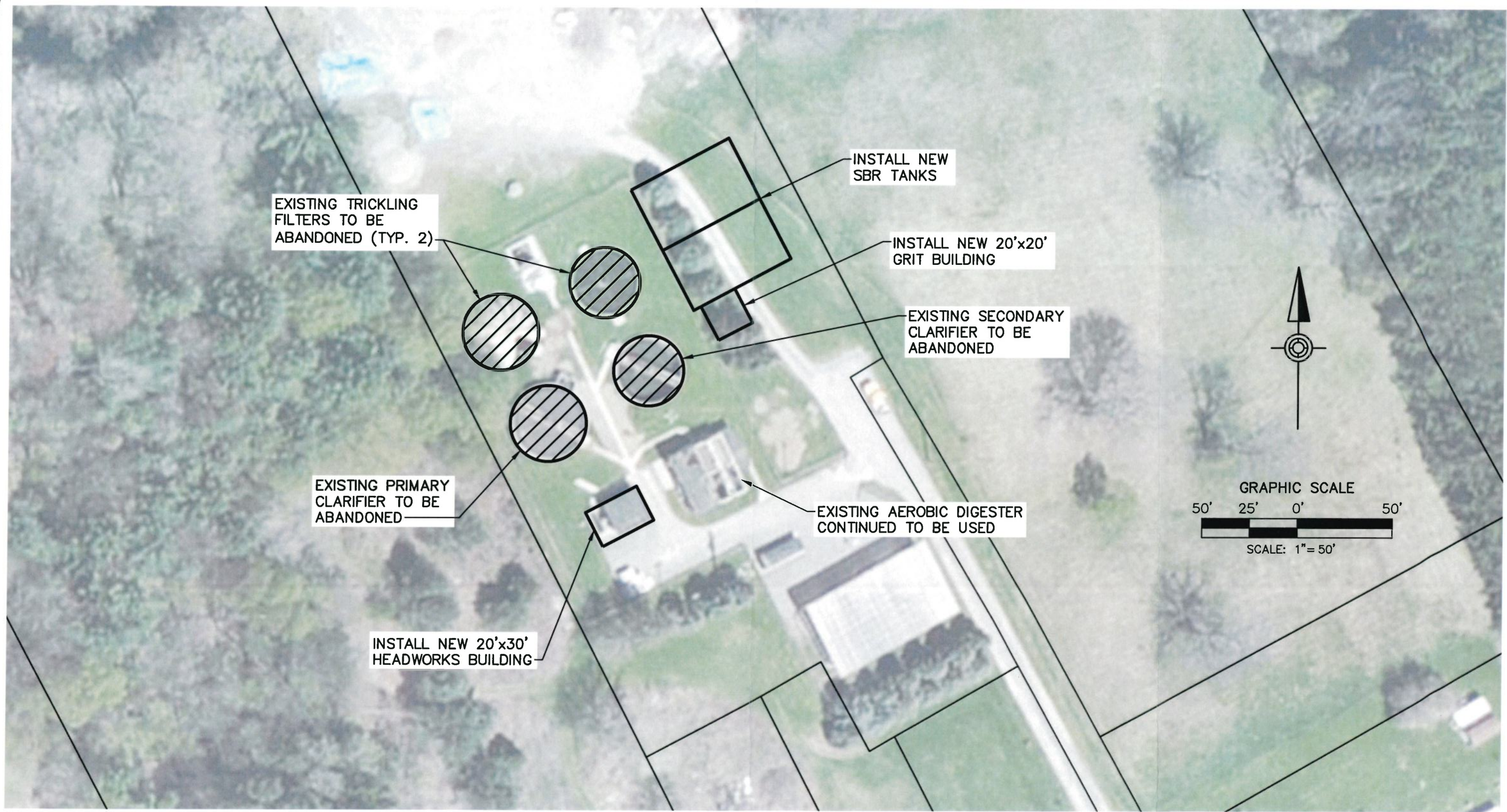
SHINGLEHOUSE BOROUGH
P.O. BOX 156
SHINGLEHOUSE, PA 16748

ALTERNATIVE 3 - OPTION A
SBR
FOR
SHINGLEHOUSE BOROUGH

PROJ. MGR. - JTF
DESIGN- RES
CADD- RSF
CHECKED-
SCALE- 1" = 50'
DATE- OCT. 2016

DRAWING NO. 1
SHEET NO. 1 OF 1
PROJECT 004004.0426

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 Harrisburg, PA 17111
 (717) 564-1121
 Fax (717) 564-1158
 hrg@hrg-inc.com
 www.hrg-inc.com

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 P.O. BOX 156
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ALTERNATIVE 3 - OPTION B
 SBR
 FOR
 SHINGLEHOUSE BOROUGH

PROJ. MGR. - JTF
DESIGN- RES
CADD- RSF
CHECKED-
SCALE- 1" = 50'
DATE- OCT. 2016

DRAWING NO. 1
SHEET NO. 1 OF 1
PROJECT 004004.0426



**EXHIBIT E – COST ESTIMATES FOR WWTP
ALTERNATIVES**



369 East Park Drive
 Harrisburg, PA 17111
 Phone: (717) 564-1121
 Fax: (717) 564-1158

OPINION OF PROBABLE CONSTRUCTION COST ESTIMATE

FOR

**ALTERNATIVE 1a - EXISTING WWTP RETROFIT (WITH DENITRIFICATION FILTER SYSTEM)
 BOROUGH OF SHINGLEHOUSE
 SEPTEMBER 2016**

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENSION
GENERAL					
1	MOBILIZATION/PROJECT MANAGEMENT (5%)	1	L.S.	\$ 119,000.00	\$ 119,000.00
2	BONDS & INSURANCES (2%)	1	L.S.	\$ 48,000.00	\$ 48,000.00
3	DEMOLITION (EXISTING FLOOR MOUNTED DIFFUSERS)	1	L.S.	\$ 36,000.00	\$ 36,000.00
CIVIL					
4	EXCAVATION	78	CY	\$ 10.00	\$ 784.14
5	BACKFILL	49	CY	\$ 30.00	\$ 1,481.49
STRUCTURAL					
6	WALL CONCRETE	0	CY	\$ 1,200.00	\$ -
ARCHITECTURAL					
7	BUILDING	0	SF	\$ 200.00	\$ -
EQUIPMENT					
8	PRIMARY CLARIFIER'S COMPONENTS RETROFIT	1	L.S.	\$ 157,500.00	\$ 157,500.00
9	SECONDARY CLARIFIER'S COMPONENT'S RETROFIT	1	L.S.	\$ 157,500.00	\$ 157,500.00
10	RAW SEWAGE PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
11	CLARIFIER'S SLUDGE TRANSFER PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
12	TRICKLING FILTERS RECIRCULATON PUMPS	2	EA	\$ 4,500.00	\$ 9,000.00
13	EFFLUENT PUMP STATION	2	EA	\$ 4,750.00	\$ 9,500.00
14	TRICKLING FILTER'S COVER	1	L.S.	\$ 247,125.00	\$ 247,125.00
15	TRICKLING FILTER MEDIA REPLACEMENT	1	L.S.	\$ 84,625.00	\$ 84,625.00
16	RAW SEWAGE FINE SCREEN	1	EA	\$ 223,500.00	\$ 223,500.00
17	DENITRIFICATION FILTER SYSTEM	1	L.S.	\$ 1,440,000.00	\$ 1,440,000.00
ELECTRICAL SYSTEMS					
11	ELECTRICAL	1	L.S.	\$ 129,000.00	\$ 129,000.00
SUBTOTAL					\$ 2,705,515.64
CONTINGENCY (25%)					\$ 676,378.91
ENGINEERING (15%)					\$ 405,827.35
TOTAL					\$ 3,787,721.89
SAY					\$ 3,788,000.00

ASSUMPTIONS:

Trickling Filters' Cover have passive ventilation



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 Phone: (717) 564-1121
 Fax: (717) 564-1158

OPINION OF PROBABLE CONSTRUCTION COST ESTIMATE
FOR
ALTERNATIVE 2a - BIO-DENIPHO OXIDATION DITCH (KRUGER-VEOLIA, no HEADWORKS)
BOROUGH OF SHINGLEHOUSE
SEPTEMBER 2016

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENSION
GENERAL					
1	MOBILIZATION/PROJECT MANAGEMENT (5%)	1	L.S.	\$ 63,000.00	\$ 63,000.00
2	BONDS & INSURANCES (2%)	1	L.S.	\$ 26,000.00	\$ 26,000.00
3	DEMOLITION (EXISTING FLOOR MOUNTED DIFFUSERS)	1	L.S.	\$ 26,000.00	\$ 26,000.00
CIVIL					
4	EXCAVATION	949	CY	\$ 10.00	\$ 9,493.33
5	BACKFILL	136	CY	\$ 30.00	\$ 4,077.04
STRUCTURAL					
6	OXIDATION DITCH TANK	348	CY	\$ 1,200.00	\$ 418,133.33
7	HEADWORKS	0	CY	\$ 1,200.00	\$ -
ARCHITECTURAL					
8	HEADWORKS BUILDING	0	SF	\$ 200.00	\$ -
9	GRIT BUILDING	420	SF	\$ 200.00	\$ 84,000.00
EQUIPMENT					
10	OXIDATION DITCH EQUIPMENT	1	EA	\$ 630,000.00	\$ 630,000.00
11	RAW SEWAGE PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
12	EFFLUENT PUMP STATION	2	EA	\$ 4,750.00	\$ 9,500.00
13	RAW SEWAGE FINE SCREEN	1	L.S.	\$ 223,500.00	\$ 223,500.00
14	GRIT REMOVAL SYSTEM	1	L.S.	\$ 369,000.00	\$ 369,000.00
ELECTRICAL SYSTEMS					
11	ELECTRICAL	1	L.S.	\$ 112,000.00	\$ 112,000.00
SUBTOTAL					\$ 1,995,953.70
CONTINGENCY (25%)					\$ 498,988.43
ENGINEERING (15%)					\$ 299,393.06
TOTAL					\$ 2,794,335.19
SAY					\$ 2,795,000.00

ASSUMPTIONS:

Be able to use and retrofit existing blowers with VFD's



Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

AN EMPLOYEE-OWNED COMPANY

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Phone: (717) 564-1121
Fax: (717) 564-1158

OPINION OF PROBABLE CONSTRUCTION COST ESTIMATE

FOR

**ALTERNATIVE 2b - BIO-DENIPHO OXIDATION DITCH (KRUGER-VEOLIA, with HEADWORKS)
BOROUGH OF SHINGLEHOUSE
SEPTEMBER 2016**

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENSION
GENERAL					
1	MOBILIZATION/PROJECT MANAGEMENT (5%)	1	L.S.	\$ 70,000.00	\$ 70,000.00
2	BONDS & INSURANCES (2%)	1	L.S.	\$ 28,000.00	\$ 28,000.00
3	DEMOLITION (EXISTING FLOOR MOUNTED DIFFUSERS)	1	L.S.	\$ 28,000.00	\$ 28,000.00
CIVIL					
4	EXCAVATION	2,549	CY	\$ 10.00	\$ 25,493.33
5	BACKFILL	1,203	CY	\$ 30.00	\$ 36,077.04
STRUCTURAL					
6	OXIDATION DITCH TANK	348	CY	\$ 1,200	\$ 418,133.33
7	HEADWORKS	126	CY	\$ 1,200.00	\$ 151,111.11
ARCHITECTURAL					
8	HEADWORKS BUILDING	600	SF	\$ 200.00	\$ 120,000.00
9	GRIT BUILDING	420	SF	\$ 200.00	\$ 84,000.00
EQUIPMENT					
10	OXIDATION DITCH EQUIPMENT	1	EA	\$ 630,000.00	\$ 630,000.00
11	RAW SEWAGE PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
12	EFFLUENT PUMP STATION	2	EA	\$ 4,750.00	\$ 9,500.00
13	RAW SEWAGE FINE SCREEN	1	L.S.	\$ 362,100.00	\$ 362,100.00
14	GRIT REMOVAL SYSTEM	1	L.S.	\$ 369,000.00	\$ 369,000.00
ELECTRICAL SYSTEMS					
11	ELECTRICAL	1	L.S.	\$ 103,000.00	\$ 103,000.00
SUBTOTAL					\$ 2,455,664.81
CONTINGENCY (25%)					\$ 613,916.20
ENGINEERING (15%)					\$ 368,349.72
TOTAL					\$ 3,437,930.74
SAY					\$ 3,438,000.00

ASSUMPTIONS:

Be able to use and retrofit existing blowers with VFD's



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Engineering & Related Services

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Harrisburg, PA 17111
Phone: (717) 564-1121
Fax: (717) 564-1158

OPINION OF PROBABLE CONSTRUCTION COST ESTIMATE

FOR

ALTERNATIVE 3a - SEQUENTIAL BATCH REACTOR (AQUA-AEROBICS, no HEADWORKS)

BOROUGH OF SHINGLEHOUSE

SEPTEMBER 2016

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENSION
GENERAL					
1	MOBILIZATION/PROJECT MANAGEMENT (5%)	1	L.S.	\$ 68,000.00	\$ 68,000.00
2	BONDS & INSURANCES (2%)	1	L.S.	\$ 27,000.00	\$ 27,000.00
3	DEMOLITION (EXISTING FLOOR MOUNTED DIFFUSERS)	1	L.S.	\$ 27,000.00	\$ 27,000.00
CIVIL					
4	EXCAVATION	1,516	CY	\$ 10.00	\$ 15,155.63
5	BACKFILL	579	CY	\$ 30.00	\$ 17,378.79
STRUCTURAL					
6	SBR PRECAST CONCRETE TANK	1	CY	\$ 479,740	\$ 479,740
7	HEADWORKS	0	CY	\$ 1,200.00	\$ -
ARCHITECTURAL					
8	HEADWORKS BUILDING	0	SF	\$ 200.00	\$ -
9	GRIT BUILDING	420	SF	\$ 200.00	\$ 84,000.00
EQUIPMENT					
8	SBR SYSTEM EQUIPMENT	1	L.S.	\$ 657,144.00	\$ 657,144.00
9	POST EQUALIZATION BASIN EQUIPMENT	1	L.S.	\$ 67,770.00	\$ 67,770.00
10	RAW SEWAGE PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
11	EFFLUENT PUMP STATION	2	EA	\$ 4,750.00	\$ 9,500.00
12	RAW INFLUENT FINE SCREEN	1	EA	\$ 223,500.00	\$ 223,500.00
13	GRIT REMOVAL SYSTEM	1	L.S.	\$ 369,000.00	\$ 369,000.00
ELECTRICAL SYSTEMS					
14	ELECTRICAL	1	L.S.	\$ 158,000.00	\$ 158,000.00
SUBTOTAL					\$ 2,224,438.41
CONTINGENCY (25%)					\$ 556,109.60
ENGINEERING (15%)					\$ 333,665.76
TOTAL					\$ 3,114,213.77
SAY					\$ 3,115,000.00

ASSUMPTIONS:

Tanks are half way buried



369 East Park Drive
 Harrisburg, PA 17111
 Phone: (717) 564-1121
 Fax: (717) 564-1158

OPINION OF PROBABLE CONSTRUCTION COST ESTIMATE
FOR
ALTERNATIVE 3b- SEQUENTIAL BATCH REACTOR (AQUA-AEROBICS, with HEADWORKS)
BOROUGH OF SHINGLEHOUSE
SEPTEMBER 2016

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENSION
GENERAL					
1	MOBILIZATION/PROJECT MANAGEMENT (5%)	1	L.S.	\$ 75,000.00	\$ 75,000.00
2	BONDS & INSURANCES (2%)	1	L.S.	\$ 30,000.00	\$ 30,000.00
3	DEMOLITION (EXISTING FLOOR MOUNTED DIFFUSERS)	1	L.S.	\$ 30,000.00	\$ 30,000.00
CIVIL					
4	EXCAVATION	3,116	CY	\$ 10.00	\$ 31,155.63
5	BACKFILL	1,646	CY	\$ 30.00	\$ 49,378.79
STRUCTURAL					
6	SBR PRECAST CONCRETE TANK	1	CY	\$ 479,740	\$ 479,740
7	HEADWORKS	126	CY	\$ 1,200.00	\$ 151,111.11
ARCHITECTURAL					
8	HEADWORKS BUILDING	600	SF	\$ 200.00	\$ 120,000.00
9	GRIT BUILDING	420	SF	\$ 200.00	\$ 84,000.00
EQUIPMENT					
8	SBR SYSTEM EQUIPMENT	1	L.S.	\$ 657,144.00	\$ 657,144.00
9	POST EQUALIZATION BASIN EQUIPMENT	1	L.S.	\$ 67,770.00	\$ 67,770.00
10	RAW SEWAGE PUMPS	2	EA	\$ 10,625.00	\$ 21,250.00
11	EFFLUENT PUMP STATION	2	EA	\$ 4,750.00	\$ 9,500.00
12	RAW INFLUENT FINE SCREEN	1	EA	\$ 362,100.00	\$ 362,100.00
13	GRIT REMOVAL SYSTEM	1	L.S.	\$ 369,000.00	\$ 369,000.00
ELECTRICAL SYSTEMS					
14	ELECTRICAL	1	L.S.	\$ 150,000.00	\$ 150,000.00
SUBTOTAL					\$ 2,687,149.52
CONTINGENCY (25%)					\$ 671,787.38
ENGINEERING (15%)					\$ 403,072.43
TOTAL					\$ 3,762,009.33
SAY					\$ 3,763,000.00

ASSUMPTIONS:

Tanks are half way buried



1. Evaluate various BNR Removal Systems
 2. Develop operating and maintenance costs for each alternative.

Alternative Number

Alternative 1a - Existing WWTP Retrofit

Alternative 1b

Alternative 2 - Modified Ludzack-Ettlinger (MLE)

Alternative 2a,b - Oxidation Ditch

Alternative 3a,b - Sequential Batch Reactor (SBR) - Aqua-Aerobics

Operating Time (hrs/day)

HP

Item

Operating Time (hrs/day)

HP

Item

Operating Time (hrs/day)

HP

Item

Operating Time (hrs/day)

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Operating Time (hrs/day)

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Item

Operating Time (hrs/day)

Annual Power Usage (kWh/yr)

Annual Average Electrical Cost

Annual Average Chemical Consumption

MicroC

Chlorine

Total Annual Chemical Consumption Costs

Annual Major Cost

Annual Minor Cost

Total Annual Equipment Maintenance Costs

Summary of Annual Operating and Maintenance Costs

Annual Average Electrical Cost

Annual Average Chemical Cost

Annual Average Maintenance Cost

Total Annual Average Operating and Maintenance Costs

Assumptions

Parameter

Value

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8/22/2016

Shinghouse WWTP

Subject

WVTP Plant Study

Evaluation

AEC

Cons. By

10/10/2016

12:35 PM



EXHIBIT F – PHMC CORRESPONDENCE



369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

**VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

August 10, 2017

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
400 North Street, Second Floor
Harrisburg, PA 17120-0093

Re: **Borough of Shinglehouse
WWTP Phase 1 Improvements Project
Shinglehouse Borough, Potter County**

Dear Sir or Madam:

Attached is the Cultural Resource Notice and supplemental material relative to the above referenced project. Please review and comment at your earliest convenience.

Please contact me if you have any questions or need further information. I look forward to hearing from you.

Very truly yours,

Herbert, Rowland & Grubic, Inc.

Joshua T. Fox, P.E.
Regional Service Group Manager

JSR/JTF/rb
R004004.0428
P:\0040\004004_0428\Admin\Permits\WQM Part II\PHMC\PHMC Letter.doc

c: Mark Meacham, Shinglehouse Borough
File

ER No.	2017 - 2081 - 105-A
The project will have NO EFFECT on historic properties	
Date	08/17/17
Reviewer	





369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

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RETURN RECEIPT REQUESTED**

August 10, 2017

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400 North Street, Second Floor
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Very truly yours,

Herbert, Rowland & Grubic, Inc.

Joshua T. Fox, P.E.
Regional Service Group Manager

JSR/JTF/rb
R004004.0428
P:\0040\004004_0428\Admin\Permits\WQM Part II\PHMC\PHMC Letter.doc

c: Mark Meacham, Shinglehouse Borough
File

**CULTURAL RESOURCE NOTICE**

Read the instructions before completing this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name Shinglehouse Borough
 Street Address P.O. Box 156
 City Shinglehouse State PA Zip 16748
 Telephone Number 814-697-6711

Project Title WWTP Phase 1 Improvements Project**SECTION B. LOCATION OF PROJECT**Municipality Shinglehouse Borough County Name Potter DEP County Code 53**SECTION C. PERMITS OR APPROVALS**Name of Specific DEP Permit or Approval Requested: Water Quality Management Part II Permit

Anticipated federal permits:

- Surface Mining 404 Water Quality Permit
 Army Corps of Engineers Federal Energy Regulatory Commission
 401 Water Quality Certification Other: _____

SECTION D. GOVERNMENT FUNDING SOURCES

- State: (Name) _____ Local: (Name) _____
 Federal: (Name) CDBG Grant Other: (Name) _____

SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

- DEP Regional Office Responsible for Review of Permit Application Central Office (Harrisburg)
 Southeast Regional Office (Norristown) Northeast Regional Office (Wilkes-Barre)
 Southcentral Regional Office (Harrisburg) Northcentral Regional Office (Williamsport)
 Southwest Regional Office (Pittsburgh) Northwest Regional Office (Meadville)
 District Mining Office: _____ Oil & Gas Office: _____

SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District Potter County Telephone Number, if known _____

SECTION G. CONSULTANT

Consultant, if applicable Herbert, Rowland & Grubic, Inc. c/o Joshua T. Fox, P.E.
 Street Address 369 East Park Drive
 City Harrisburg State PA Zip 17111
 Telephone Number 717-564-1121

SECTION H. PROJECT BOUNDARIES AND DESCRIPTION

REQUIRED

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity.

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

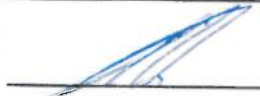
Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

REQUESTED

Attach photographs of any building over 40 years old.

Attach site map, if available.

SECTION I. SIGNATURE BLOCK


Applicant's Signature

8/10/2017

Date of Submission of Notice to PHMC

**Borough of Shinglehouse
WWTP Phase 1 Improvements Project
PHMC Request**

Project Narrative

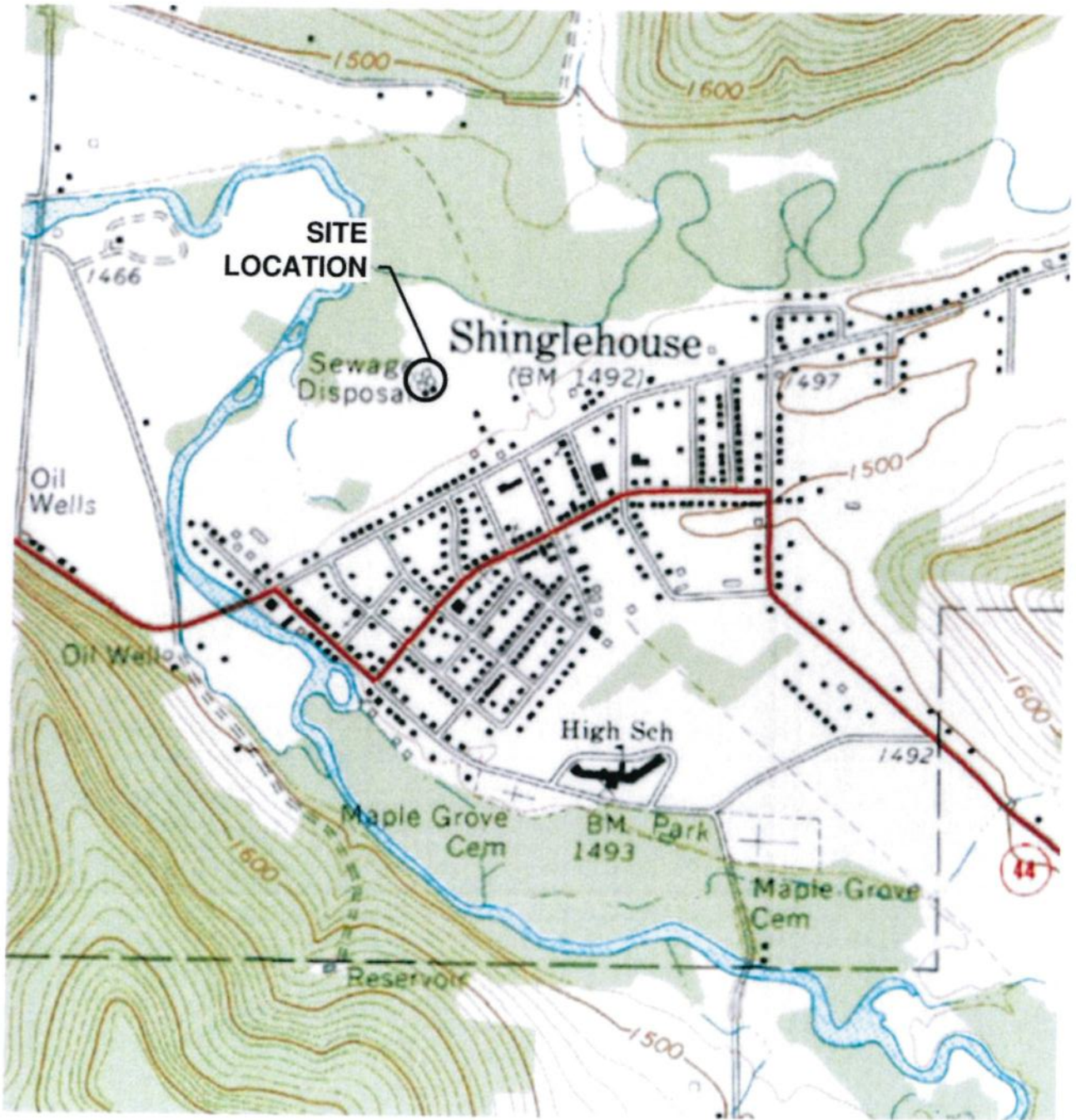
The Borough of Shinglehouse is currently preparing to submit a Water Quality Management Part II Permit application for an upgrade to the Borough's Wastewater Treatment Plant (WWTP). The Project involves the permitting and construction of an upgrade to the Borough's WWTP located at P.O. Box 156, Shinglehouse, Pennsylvania, to include the following improvements:

- Installation of a new vertical fine screen
- Rehabilitation of the existing influent pump station
- Installation of a new grit removal facility
- Replacement of the chemical feed equipment for disinfection
- Rehabilitation of the existing chlorine contact tank

The purpose of these upgrades is to address aging equipment and effectively remove grit and other debris (such as rags and refuse) from the WWTP prior to the biological and chemical processing of the wastewater. The upgraded WWTP will continue to serve the existing Borough service areas. All proposed work will take place at the existing WWTP in Shinglehouse Borough.

The existing WWTP was built in 1966 and has no historic value.

The total area includes the boundaries of the existing WWTP which is approximately 3.0 acres. The actual disturbance will be approximately 0.03 acres.



LOCATION MAP
SCALE: 1"=1000'



File Name: P:\0400\040004_0428\0428\WTP\0400040428-CV.dwg Layer: LOCATION MAP Jul 14, 2017 - 8:48am herry

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
Fax (717) 564-1158
hrg@hrg-inc.com
www.hrg-inc.com

PROJECT LOCATION MAP
FOR
SHINGLEHOUSE BOROUGH
WWTP PHASE 1 IMPROVEMENTS PROJECT
SHINGLEHOUSE BOROUGH POTTER COUNTY PENNSYLVANIA

PROJ. MOR. - JTF
DESIGN -
CADD - KEC
CHECKED -
SCALE - AS NOTED
DATE - JULY 2017

DRAWING NO.
1
SHEET NO.
1 OF 1
PROJECT 004004.0428



369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

*VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED*

August 10, 2017

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
400 North Street, Second Floor
Harrisburg, PA 17120-0093

Re: **Borough of Shinglehouse
WWTP Phase 1 Improvements Project
Shinglehouse Borough, Potter County**

Dear Sir or Madam:

Attached is the Cultural Resource Notice and supplemental material relative to the above referenced project. Please review and comment at your earliest convenience.

Please contact me if you have any questions or need further information. I look forward to hearing from you.

Very truly yours,

Herbert, Rowland & Grubic, Inc.

A handwritten signature in blue ink, appearing to read "Joshua T. Fox", is written over a faint, light blue circular stamp.

Joshua T. Fox, P.E.
Regional Service Group Manager

JSR/JTF/rb
R004004.0428
P:\0040\004004_0428\Admin\Permits\WQM Part I\PHMC\PHMC Letter.doc

c: Mark Meacham, Shinglehouse Borough
File

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
 Domestic Mail Only

For delivery information, visit our website at www.usps.com.

OFFICIAL USE

Certified Mail Fee
 \$ _____

Extra Services & Fees (check box, add fee as appropriate)

<input type="checkbox"/> Return Receipt (hardcopy)	\$ _____
<input type="checkbox"/> Return Receipt (electronic)	\$ _____
<input type="checkbox"/> Certified Mail Restricted Delivery	\$ _____
<input type="checkbox"/> Adult Signature Required	\$ _____
<input type="checkbox"/> Adult Signature Restricted Delivery	\$ _____

Postage
 \$ _____

R00400.0428 01 / K
 Pennsylvania Historical &
 Museum Commission
 Bureau of Historic Preservation
 400 North Street, Second Street
 Harrisburg, PA 17120-0093

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 5211 6558



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Susan A. Burchfield</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>WJ</i> C. Date of Delivery <i>11 2017</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes if YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to: R00400.0428 01 / K Pennsylvania Historical & Museum Commission Bureau of Historic Preservation 400 North Street, Second Street Harrisburg, PA 17120-0093</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Adult Signature Restricted Delivery <input checked="" type="checkbox"/> Certified Mail® <input checked="" type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Registered Mail Restricted Delivery <input checked="" type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label) 7016 1970 0000 5211 6558</p>	<p>9590 0402 2104 6132 4169 90</p>



EXHIBIT G – PNDI CORRESPONDENCE

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
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
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
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Brandon Meyers
Company/Business Name: HRG-Inc
Address: 369 East Park Drive
City, State, Zip: Harrisburg PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: BMeyers@HRG-Inc.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

5/4/17
date

1. PROJECT INFORMATION

Project Name: **4004.0428 Ph 1 Tk K - Shinglehouse WWTP Improvements**

Date of Review: **5/4/2017 07:57:55 AM**

Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Wastewater treatment plant (construction, expansion or modification)**

Project Area: **1.83 acres**

County(s): **Potter**

Township/Municipality(s): **SHINGLEHOUSE**

ZIP Code: **16748**

Quadrangle Name(s): **SHINGLEHOUSE**

Watersheds HUC 8: **Upper Allegheny**

Watersheds HUC 12: **Outlet Oswayo Creek**

Decimal Degrees: **41.966265, -78.195091**

Degrees Minutes Seconds: **41° 57' 58.5538" N, 78° 11' 42.3288" 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	Conservation Measure	No Further Review Required, See Agency Comments
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

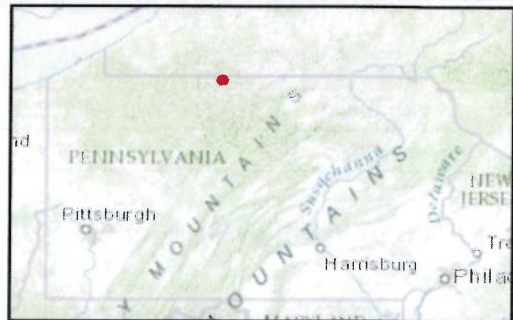
Pennsylvania Natural Diversity Inventory (PNDI) records indicate that while threatened and endangered and/or special concern species and resources are in the project vicinity and that recommended Conservation Measures should be implemented in their entirety to avoid and minimize impacts to these species, no further coordination is required with the jurisdictional agencies. If a DEP permit is required for this project, DEP has the discretion to incorporate one or more Conservation Measures into its permit. This response does not reflect potential agency concerns regarding potential impacts to other ecological resources, such as wetlands.

4004.0428 Ph 1 Tk K - Shinglehouse WWTP Improvements



- Project Boundary
- Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



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:

Conservation Measure: The natural flow regime and water quality in this watershed are important to maintaining habitats occupied by rare fish and mussels. PFBC recommends that you take measures to maintain a natural flow regime, high water quality, and quantity. Maintenance or restoration of the riparian corridor will aid in connecting habitats and improving water quality and quantity for fish and mussels. PFBC recommends retaining (or restoring, if not already present) a riparian buffer (100 to 300 feet, if possible) on each side of the waterway (river, stream, creek). This buffer should be vegetated with native plant species. When adequately vegetated, this upland buffer will act to stabilize the streambanks (preventing or minimizing erosion), and filter pollutants (e.g., sediment, fertilizers, pesticides, road salt, oil). Where streambanks have become badly eroded (e.g., due to previous removal of native riparian vegetation), streambank fencing and/or bioengineering restoration techniques are recommended (geotextile, root wads, vegetative stabilization), rather than riprapping the streambanks; removing gravel bars; or attempting to dredge, ditch, channelize, or widen the stream. Use stringent erosion and sedimentation controls before, during, and after project implementation to ensure that sediment and contaminants do not enter any waterway(s) (rivers, creeks, streams, tributaries) or waterbodies (lakes, ponds).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
<i>Fusconaia subrotunda</i>	Long-solid	Special Concern Species*
<i>Pleurobema sintoxia</i>	Round Pigtoe	Special Concern Species*

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.

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
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
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
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: _____
Company/Business Name: _____
Address: _____
City, State, Zip: _____
Phone:(_____) _____ Fax:(_____) _____
Email: _____

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

date

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U.S. Fish and Wildlife Service

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State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission

Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission

Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: _____
Company/Business Name: _____
Address: _____
City, State, Zip: _____
Phone:(_____) _____ Fax:(_____) _____
Email: _____

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

date