UNITED STATES ARMY CORPS OF ENGINEERS
PITTSBURGH AND BALTIMORE DISTRICTS

FINAL ENVIRONMENTAL ASSESSMENT for the PENNSYLVANIA PIPELINE PROJECT CROSSING FEDERALLY OWNED PROPERTIES ADMINISTERED BY THE U.S. ARMY CORPS OF ENGINEERS (ASSOCIATED WITH CONEMAUGH RIVER LAKE, LOYALHANNA LAKE AND RAYSTOWN LAKE)

December 2016

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

TABLE **PAGE**

LIST OF FIGURES

FIGURE **PAGE**

LIST OF APPENDICES

LIST OF ACRONYMS

ABACT	Antidegradation Best Available Combination of Technologies
AOC	Areas of Concern
APE	Area of Potential Effect
AQCR	Air Quality Control Region
ATW	Approved Trout Water
BCA	Bat Conservation Area
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CMP	Compensatory Mitigation Plan
CO	carbon monoxide
CO2e	carbon dioxide equivalent
CREP	Conservation Reserve Enhancement Program
CWA	Clean Water Act
CWF	cold water fishery
E&S Plan	erosion and sedimentation control plan
EA	Environmental Assessment
EC	Engineer Circular
EI	Environmental Inspector
ESCGP-2	Erosion and Sedimentation Control General Permit
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
GHG	Greenhouse Gas
GVWR	gross vehicle weight rating
HDD	horizontal directional drill
IBAs	Important Bird Areas
IBCF	Indiana Bat Conservation Fund
kPa	Kilopascal
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGL	natural gas liquid
NHPA	National Historic Preservation Act
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	U.S. Occupational Health and Safety Administration
OTR	Ozone Transport Region
PAFBC	Pennsylvania Fish and Boat Commission
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PAG-10	Pennsylvania General-10 Permit

PaGWIS	Pennsylvania Groundwater Information System
Pb	lead
PGC	Pennsylvania Game Commission
PHMC	Pennsylvania Historical and Museum Commission
$PM_{2.5}$	particulate matter 2.5 (particles less than 2.5 micrometers in diameter)
PM_{10}	particulate matter 10 (particles less than 10 micrometers in diameter)
PNDI	Pennsylvania Natural Diversity Inventory
PPC	Preparedness, Prevention, and Contingency Plan
Project	Pennsylvania Pipeline Project
PRT	potential bat roost tree
ROW	Right-of-way
RTE	Rare, Threatened, and Endangered
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPLP	Sunoco Pipeline, Limited Partnership
STPs	shovel test pits
TAR	temporary access road
TPY	tons per year
TSS	Trout Stocked Stream
UNT	unnamed tributary
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compounds
WWF	warm water fishery
WOTUS	Waters of the U.S.

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 as amended, to address the potential environmental impacts associated with a proposed pipeline project easement on a few Federally-owned lands administered by the United States Army Corps of Engineers (USACE) Pittsburgh and Baltimore Districts. The Proposed Action would involve the USACE approval of Sunoco Pipeline Limited Partnership's (SPLP's) application for an easement allowing it to construct, install, and operate a portion (totaling approximately five [5] miles) of the Pennsylvania Pipeline Project (Project), traversing five (5) land parcels within the Pittsburgh District (associated with Loyalhanna Lake, and the Conemaugh River Lake in Westmoreland and Indiana counties, respectively); and one (1) land parcel in the Baltimore District (associated with Raystown Lake) in Huntingdon County, Pennsylvania. The entire Project consists of approximately 306 miles of two (2) parallel natural gas liquid (NGL) pipelines (maximum of 20-inches in diameter) within a 50-foot wide right-of-way (ROW) corridor from Houston, Washington County, Pennsylvania, to SPLP's Marcus Hook facility in Delaware County, Pennsylvania (Figure 1). The Project would transport natural gas liquids (NGLs) including propane, butane, and ethane. During construction, the 50-foot wide ROW would be used for workspace, and typically, an additional 25 feet of temporary workspace would be required; additional temporary workspace would also be required in some areas to support special construction techniques (such as for horizontal directional drilling). Pursuant to 30 U.S. Code Section 185 (n), granting of this right-of way/easement is limited to a maximum of 30 years, subject to renewal by USACE.

In addition to coordination with USACE on land ownership for these Federally-owned/USACE-administered lands, pursuant to Section 404 of the Clean Water Act (CWA), Section 10 of the Rivers and Harbors Appropriations Act of 1899, and PA Code Chapters 105 and 102, SPLP submitted a joint permit application to USACE and the Pennsylvania Department of Environmental Protection (PADEP), to address the project's proposed stream and wetland crossings and erosion and sedimentation control measures. A permit application was submitted to USACE for review of the entire pipeline project related to impacts arising from dredging and filling in Waters of the United States (WOTUS) and on navigable waterways, regulated by USACE. However, the scope of this EA is limited to those USACE-administered parcels affected by the Project at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. USACE will evaluate the Project in this EA using applicable law, regulations, and USACE policy including, but not limited to, NEPA, 40 CFR 1500 et. seq., 33 CFR 230, the CWA Section 404(b)(1) guidelines, as well as Policy and Procedural Guidance for Processing Requests to Alter USACE Civil Works Projects Pursuant to 33 USC Section 408 (Engineer Circular [EC] 1165-2-216 [30 September 2015]), and the applicable public comment period.

In order to grant permission under Section 408, USACE must determine that the action/Project proposed to alter a USACE project does not impair the usefulness of the USACE project, which includes retaining the project's authorized purpose, and is not injurious to the public interest (EC1165-2-216, section 7). The intent of Section 408 will be met by doing so. During this process, a determination will be made if Corps' higher headquarters review is required, and if so, a documented 408 decision will be issued pursuant to EC 1105-2-216. Factors that may be relevant to the public interest depend upon the type of USACE project being altered and may include, but

are not limited to, such things as conservation, economic development, historic properties, cultural resources, environmental impacts, water supply, water quality, flood hazards, flood plains, residual risk, induced damages, navigation, shore erosion or accretion, and recreation. USACE's evaluation considers information received from the interested parties, including tribes, agencies, and the public.

1.1 Background

USACE has jurisdiction under 33 USC Section 408 only over the specific activities or portions of activities that have the potential to alter USACE projects. Therefore, when a proposed alteration is part of a larger project (and/or its associated features) that extends beyond USACE project boundaries, USACE determines what portions or features of the larger project USACE has sufficient control and responsibilities over to warrant their inclusion in the environmental review process. The scope of analysis for the NEPA and environmental compliance evaluations for the Section 408 review, as they are presented in this document, are limited to the area of the alteration and those adjacent areas that are directly or indirectly affected by the alteration. For example, a pipeline can extend for many miles on either side of a USACE project boundary. In this case, the Section 408 scope of analysis would be limited to the effects of the pipeline within the USACE project boundary and would not address those portions of the pipeline beyond the USACE project boundary. Portions of the pipeline located outside of USACE owned/administered properties, would be regulated by USACE only where and to the extent that the proposed pipeline would impact WOTUS. NEPA and other environmental reviews for those proposed impacts will be evaluated through USACE's regulatory/permit process.

In January-February 2014, SPLP submitted a right of entry/application request for permission to access properties to USACE for the Project. To date, USACE has held several meetings with SPLP regarding the Project including in-person meetings on September 30, 2014 and on June 11, 2015. On-site meetings were held with the SPLP construction team on February 9, 2016 and on March 29, 2016. USACE has also held conference calls with SPLP on August 25, 2015, and weekly telephone conference calls thereafter since October 15, 2015. In addition, Project activities have included coordination with a number of other Federal and State agencies such as the United States Fish and Wildlife Service (USFWS), the Pennsylvania Department of Conservation and Natural Resources (DCNR), the Pennsylvania Game Commission (PGC), the Pennsylvania Fish and Boat Commission (PAFBC). Additional coordination with the Pennsylvania Historical Museum Commission (PHMC) has been ongoing since April 2013, and the U.S Department of Agriculture (USDA) since May 2016.

On October 11, 2016, a public Notice of Availability of the Draft EA was provided to Federal, State, and local agencies and stakeholders and was also posted on the USACE website at: http://www.lrp.usace.army.mil/Missions/Planning-Programs-Project-Management/Key-Projects/ and http://www.nab.usace.army.mil/Home/Public-Notices/Ops-Public-Notices/. In addition, the public notice was published in twelve local newspapers in the vicinity of the federally-owned properties addressed in this EA. Copies of the Draft EA were provided to nine public repositories, including local libraries and the administration buildings of the federally-owned properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. An electronic version of the complete EA was also made available on the USACE Baltimore District website.

A list of the agencies, Native American tribes, and other stakeholders to whom this notice was sent is included in Appendix A of this EA. In addition, on June 2, 2016, tribal notifications were also sent to the Absentee Shawnee Tribe of Oklahoma, the Cayuga Nation of New York, the Delaware Nation, the Delaware Tribe of Oklahoma, the Eastern Shawnee Tribe of Oklahoma, the Narragansett Indian Tribe, the Oneida Tribe of Indians of Wisconsin, the Oneida Indian Nation of New York, the Onondaga Nation, the Pamunkey Indian Tribe, the Saint Regis Mohawk Tribe, the Seneca Nation of Indians of New York, the Seneca Cayuga Tribe of Oklahoma, the Shawnee Tribe, the Shinnecock Indian Nation, the Stockbridge-Munsee Community of Mohican Indians, the Tonawanda Band of Seneca Indians of New York, and the Tuscarora Nation of New York, to notify them of the proposed Project and request any concerns/issues they may have related to the Project crossing USACE-owned property. Ten (10) letter responses have been received; however only two (2) of the comments received are applicable to the Project crossing USACE properties. These comments are included in Appendix A of this EA.

The public comment period was 30 days and ended November 11, 2016. The USACE did not receive any comments on the Draft EA during the 30-day comment period.

1.2 Purpose and Need

Currently there is a lack of infrastructure necessary to transport NGLs to the communities and port facilities across the Commonwealth of Pennsylvania. The purpose of this Project is to address this need and provide additional firm transportation service of NGLs to primary receipt points located in Pennsylvania and for distribution in local, domestic, and international markets.

The NGLs would provide fuel to local Pennsylvania distributors and consumers (in Pennsylvania and neighboring states) for power generation, heating and cooking, especially during peak demand periods. In addition, the Project would provide a supply of propane at various exit points along its route across Pennsylvania, also for use as heating and/or cooking fuel. At this time, SPLP's upstream customers extract NGLs in the form of methane from the Utica and Marcellus Shale formations for distribution to the community, but are currently limited by the shortage of available NGL transport systems. Therefore, the Project would provide additional transportation services of increased NGL supplies from Houston, Washington County to the existing Marcus Hook facility, Delaware County and various receipt points along the Project.

1.3 Description of the Proposed Action

The Proposed Action involves USACE approval of an easement allowing construction and operation of SPLP's Project on Federally-owned, USACE-administered land parcels within and surrounding Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. Specifically, the Project would involve the construction and installation of two (2) NGL pipelines including one (1) 20-inch diameter pipeline and a second, maximum 20-inch diameter pipeline for the transport of NGLs. The Proposed Action would include approximately five (5) miles of pipeline through all USACE-administered properties with a 50-foot wide ROW located adjacent/parallel to SPLP's existing ROW and other utility ROWs, to the extent possible [Note: the operation and use of the existing lines will not be affected/changed following construction of the new lines]. In addition, SPLP proposes to add additional piping (approximately 0.083 acre) at one (1) existing SPLP block valve station near Westinghouse Road to the west of the Conemaugh River Lake, and to construct one (1) new block valve near Seven Points Road at Raystown Lake.

1.4 Project Location

The proposed Project traverses a total of six (6) USACE-administered parcels in the Commonwealth of Pennsylvania, including one (1) at Loyalhanna Lake NRA, four (4) near/within the Conemaugh River Lake area, in Westmoreland and Indiana counties respectively; and one (1) USACE-owned parcel near/within Raystown Lake in Huntingdon County. As previously noted, the proposed pipeline ROW is located adjacent to an existing utility line ROW corridor along most of the distance across USACE properties. Table 1 below provides specific latitude and longitude and parcel/tract numbers of the Project crossing through the USACE-administered parcels. The Project's crossing of USACE-administered parcels, shown on U.S. Geological Survey (USGS) maps, and an aerial site plan are presented in Figures 2 through 7.

Table 1. Proposed Project Crossing Locations

Property Name	District	Latitude/ Longitude Enter	Latitude/ Longitude Exit	Tract Number	Total ROW Crossing Type & Length (approx. miles)
Loyalhanna Lake	Pittsburgh	40°26'11"N/ 79°27'15"W; 40°26'14"N/ 79°26'36"W	40°26'11"N/ 79°27'10"W; 40°26'16"N/ 79°26'10"W	PA-WM2-0064.0000	Open cut (0.07 mile); HDD (0.39 mile)
Parcel 1 west of Conemaugh River Lake	Pittsburgh	40°26'29"N/ 79°20'47"W	40°26'31"N/ 79°20'32"W	PA-WM2-0095.0000	HDD (0.22 mile)
Parcel 2 at Conemaugh River Lake Crossing	Pittsburgh	40°26'41"N/ 79°18'19"W	40°26'42"N/ 79°18'1"W	PA-WM2-0099.0000	Open Cut (0.14 mile); HDD (0.14 mile)
Parcel 3 east of Conemaugh River Lake	Pittsburgh	40°26'43"N/ 79°17'58"W; 40°26'50"N/ 79°17'15"W	40°26'43"N/ 79°17'52"W; 40°26'51"N/ 79°17'14"W	PA-IN-0000.0001	HDD (0.12 mile) Open Cut (0.01 mile)
Parcel 4 east of Conemaugh River Lake	Pittsburgh	40°27'12"N/ 79°13'46"W	40°27'12"N/ 79°13'45"W	PA-IN-00018.001	Open cut (0.01 mile)
Raystown Lake	Baltimore	40°23'52"N/ 78° 8'24"W; 40°23'21"N/ 78° 6'1"W	40°23'41"N/ 78° 7'30"W; 40°21'58"N/ 78° 3'22"W	PA-HU-20.0008	Open Cut (2.88 miles); Bore (0.02 mile); HDD (1.25 miles)
				Total Crossing Length	5.25 miles

1.5 Project Construction

For construction workspace, a typical width of 75 feet is required to install the pipelines, including the 50-foot wide easement and an additional 25 feet of temporary workspace. Additional

temporary workspace would also be required in some areas to support special construction techniques (such as for horizontal directional drilling).

Most construction will occur using conventional trenching methods. However, to reduce Project impacts SPLP will install the pipeline using horizontal directional drill (HDD) techniques at crossings of sensitive resources and recreational areas. Specifically, construction of the Project through USACE-administered properties will involve two crossings at Loyalhanna Lake including approximately 0.07 mile of conventional trenched construction methods and one (1) approximately 0.39 mile HDD crossing for a total of approximately 0.46 mile. Within and near the Conemaugh River Lake properties, the Project will utilize both conventional trenched construction methods (0.16 mile) and HDD (0.48 mile), for a total crossing length of approximately 0.64 mile. At Raystown Lake, the Project will involve a combination of conventional trenched construction methods (2.88 miles), boring (0.02 mile), and three (3) separate HDD crossings (1.25 miles), for a total crossing length of approximately 4.15 miles. Geotechnical surveys and assessments were conducted to assist with the planning and design of all the HDDs. Preliminary HDD drawings for USACE-administered parcels are provided in Figures 8 through 10.

SPLP also proposes to expand one (1) existing block valve station by 0.083-acre near Westinghouse Road to the west of the Conemaugh River Lake, and construct one (1) new 0.18-acre block valve station (and access road) near Seven Points Road to the west of the Raystown Lake crossing. These block valve stations are required to ensure the safe and successful operations of the pipeline by providing control over the contents of the pipeline for maintenance or in the event of an emergency. Site plans for both block valves are provided in Figures 11 and 12.

The integrity of the pipeline will be tested before being placed into service, using hydrostatic testing procedures. Hydrostatic testing involves filling the constructed pipeline with water and increasing the pressure in the pipeline to approximately 1.5 times its maximum allowable operating pressure and sustaining it for a specified period of time, while monitoring pipe integrity. HDD segments will be pre-tested aboveground before pulling into place, and then re-tested after being installed within the adjacent larger pipeline segments. Hydrostatic testing will be conducted by a certified and experienced contractor, who will be responsible for water withdrawals outside of USACE owned/administrated properties. Following construction and testing, the ROW will be restored, seeded, and revegetated to existing conditions or maintained as pollinator habitat. See additional information provided in Section 2.2

Construction on USACE-administered properties will be coordinated with USACE managers at each property and will be scheduled to avoid the summer recreational season, to the extent possible. This includes coordination with USACE staff for the use of existing roads on USACE properties for construction-related traffic and equipment access. USACE and SPLP representatives are in the process of developing a construction schedule that will address the needs of the primary stakeholders. In addition, the timing of construction and operation of the Proposed Action on USACE-administered parcels is dependent on the Project obtaining the necessary state and federal approvals/permits.

Raystown Lake

Conemaugh River Lake

Loyalhanna Lake

Sheet Identifier

Legend

- Pennsylvania State Border
- Alignment Centerline
- USACE Owned Properties

Figure 1. Pennsylvania Pipeline Project Overview.

0 10 20 30 40 50 Miles

Scale 1:1200

Prepared By: TETRA TECH

Date: 09/2016

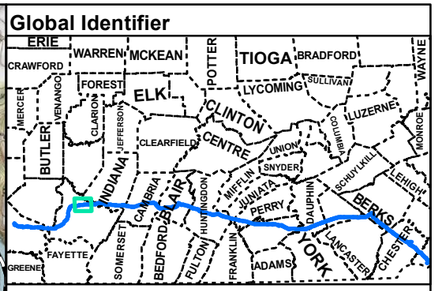
Base Map;
ESRI World Imagery, 5/14/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF-P:\GIS\PROJECTS\112G0598-PPP\MXD\PERMITS\FIGURE 1 - PROJECT LOCATION.MXD 9/26/2016 LN

USACE - Loyalhanna Lake



Legend

- Block Valve Location
- Proposed Pipelines
- USACE Loyalhanna Lake Property
- County Boundary

Figure 2 - Project ROW through USACE Loyalhanna Lake Westmoreland County, PA

0 0.4 0.8 1.2 1.6 Miles

Scale 1:48,000

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI AtcGIS Online
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Location: P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 2 - PROJECT ROW THROUGH LOYALHANA LAKE PROPERTY USGS TOPO.MXD 9/21/2016 LN

USACE - Conemaugh River Lake

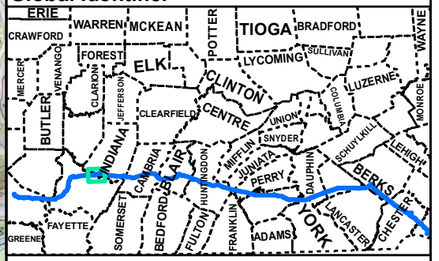
PA-WM2-0095.0000

PA-WM2-0099.0000

PA-IN-0000.0001

PA-IN-0018.0001

Global Identifier



Legend

- Block Valve Location
- Proposed Pipelines
- USACE Conemaugh River Properties
- County Boundary

Figure 3 - Project ROW through USACE Conemaugh River Lake Indiana and Westmoreland Counties, PA

0 0.4 0.8 1.2 1.6 Miles

Scale 1:48,000

Prepared By:

TETRA TECH

Date:

06/2016

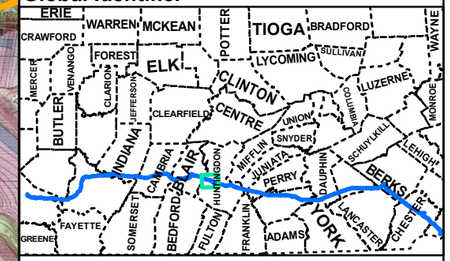
Base Map;
ESRI ArcGIS Online
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Location: P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 2 - PROJECT ROW THROUGH CONEMAUGH RIVER PROPERTIES.MXD 7/7/2016 LN

USACE - Raystown Lake



Legend

- Block Valve Location
- Proposed Pipelines
- USACE Raystown Lake Property
- County Boundary

Figure 4 - Project ROW through USACE Raystown Lake Huntingdon County, PA

0 0.4 0.8 1.2 1.6 Miles

Scale 1:48,000

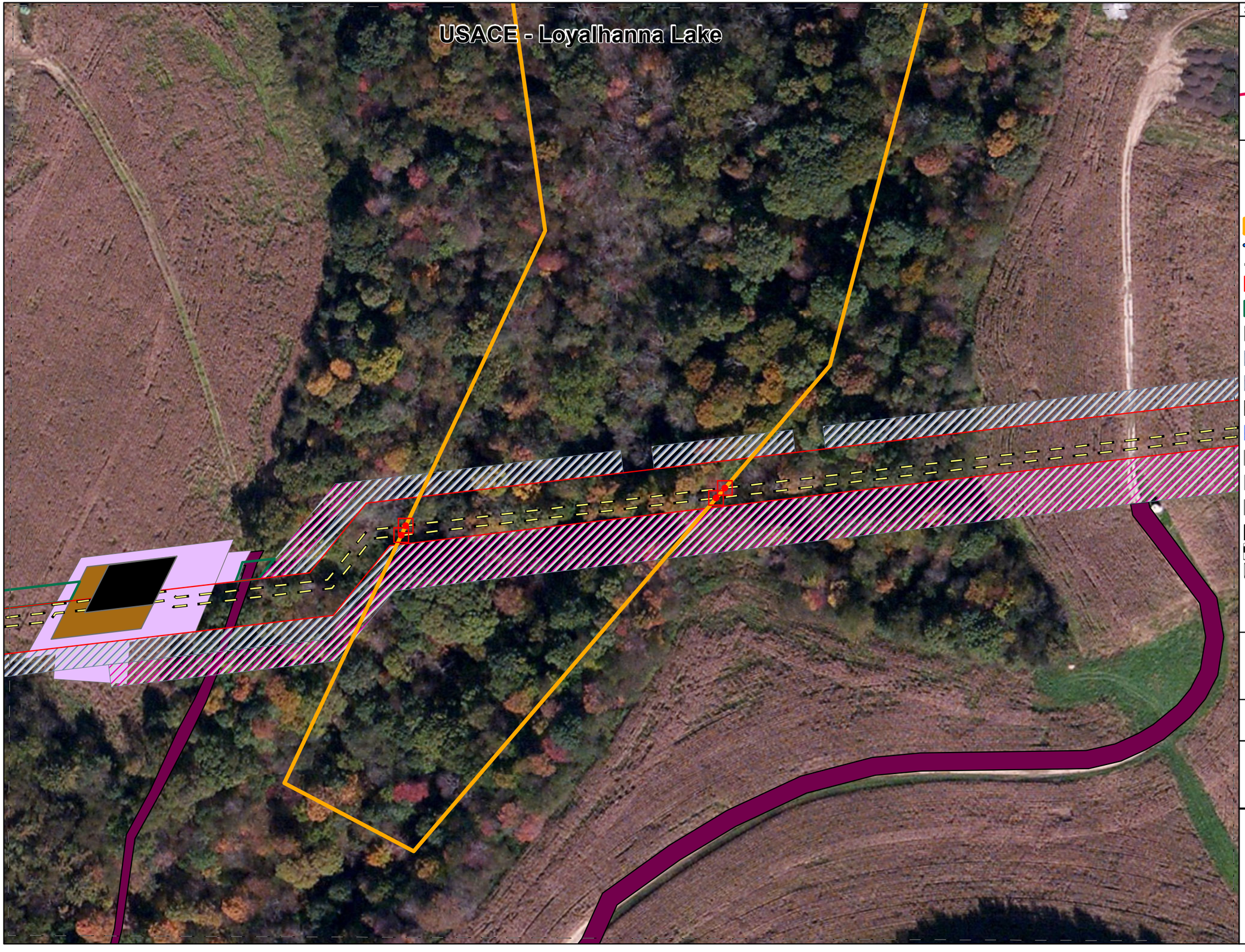
Prepared By: TETRA TECH

Date: 09/2016

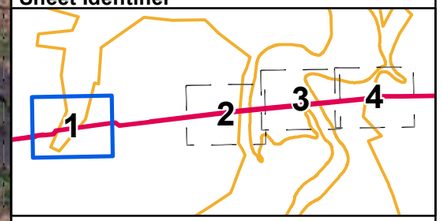
Base Map;
ESRI AtcGIS Online
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

Location: P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 4 - PROJECT ROW THROUGH RAYSTOWN LAKE PROPERTY USGS TOPO.MXD 9/21/2016 LN



Sheet Identifier



Legend

- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- Block Valve Site Layout
- Block Valve Permanent ROW
- ROW - Permanent Access Road
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 5 - Project Overview through USACE Loyalhanna Lake

0 50 100 150 200 Feet

Sheet 1 of 4 **Scale 1:1200**

Prepared By: TETRA TECH

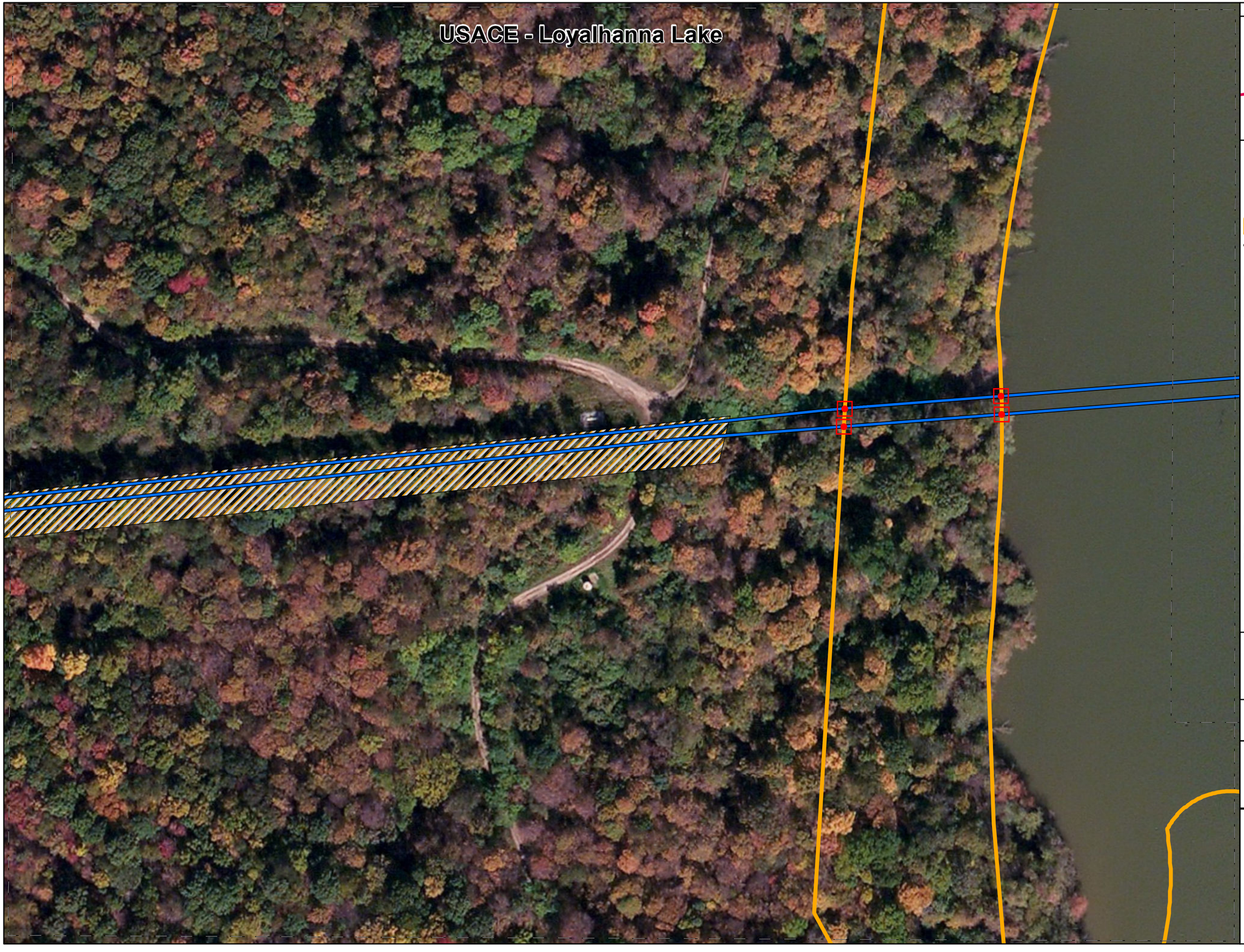
Date: 09/2016

Base Map;
ESRI World Imagery, 9/8/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

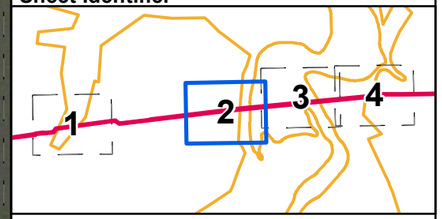
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF_P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 5 - PROJECT OVERVIEW THROUGH USACE LOYALHANNA LAKE PROPERTY.MXD 9/28/2016 LN



Sheet Identifier



Legend

- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- Block Valve Site Layout
- Block Valve Permanent ROW
- ROW - Permanent Access Road
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 5 - Project Overview through USACE Loyalhanna Lake

0 50 100 150 200 Feet

Sheet 2 of 4 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 9/8/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

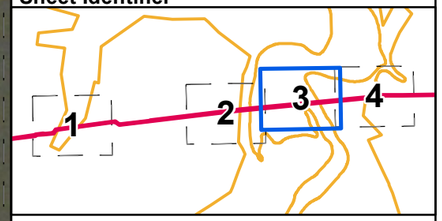
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF_P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 5 - PROJECT OVERVIEW THROUGH USACE LOYALHANNA LAKE PROPERTY.MXD 9/28/2016 LN

USACE - Loyalhanna Lake

Sheet Identifier



Legend

- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- Block Valve Site Layout
- Block Valve Permanent ROW
- ROW - Permanent Access Road
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 5 - Project Overview through USACE Loyalhanna Lake

0 50 100 150 200 Feet

Sheet 3 of 4 **Scale 1:1200**

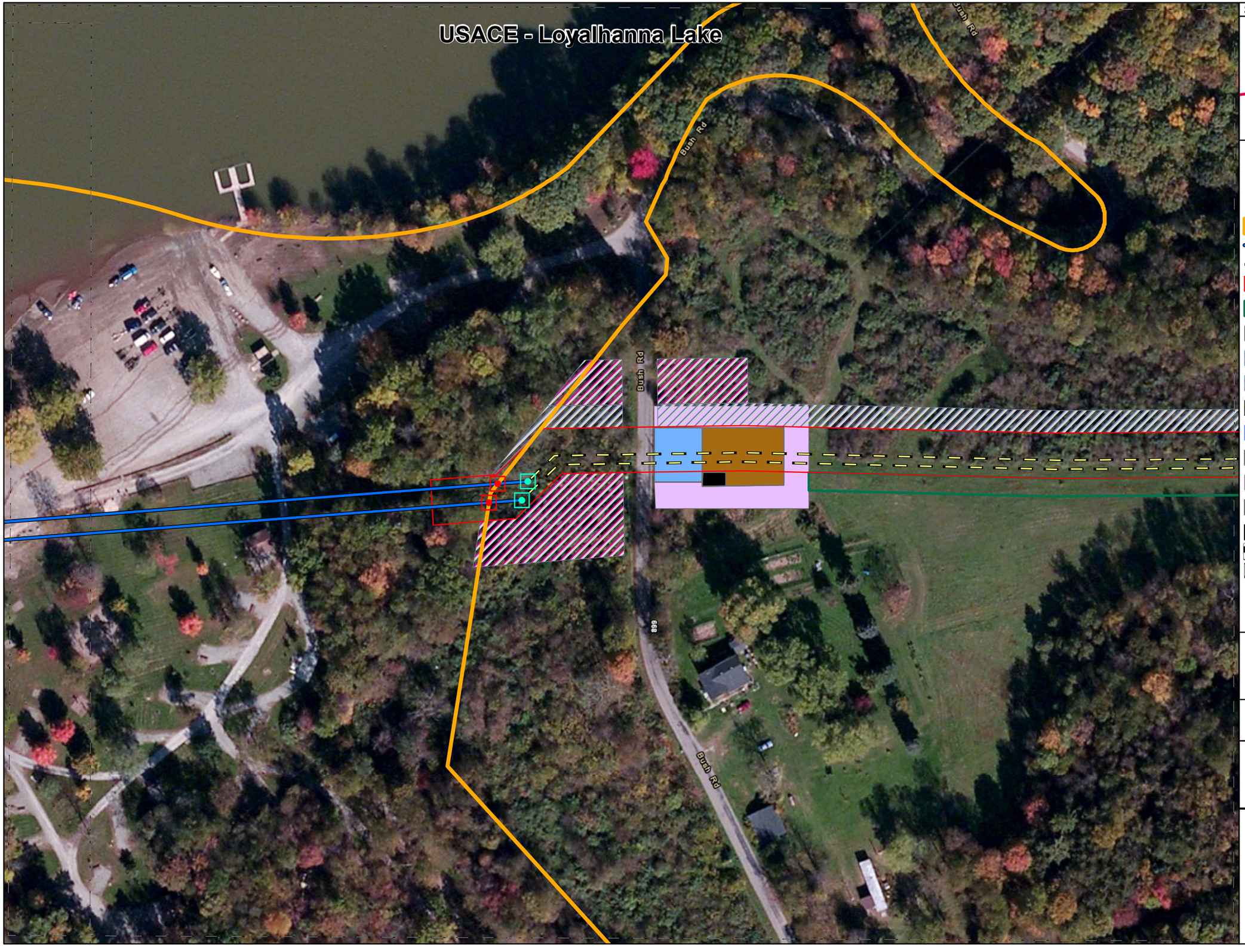
Prepared By: TETRA TECH

Date: 09/2016

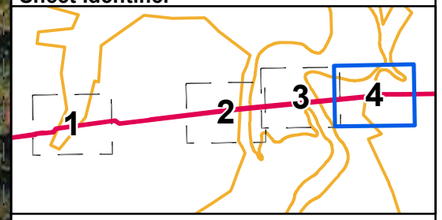
Base Map;
ESRI World Imagery, 9/8/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N



Sheet Identifier



Legend

- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- Block Valve Site Layout
- Block Valve Permanent ROW
- ROW - Permanent Access Road
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 5 - Project Overview through USACE Loyalhanna Lake

0 50 100 150 200 Feet

Sheet 4 of 4 **Scale 1:1200**

Prepared By: TETRA TECH

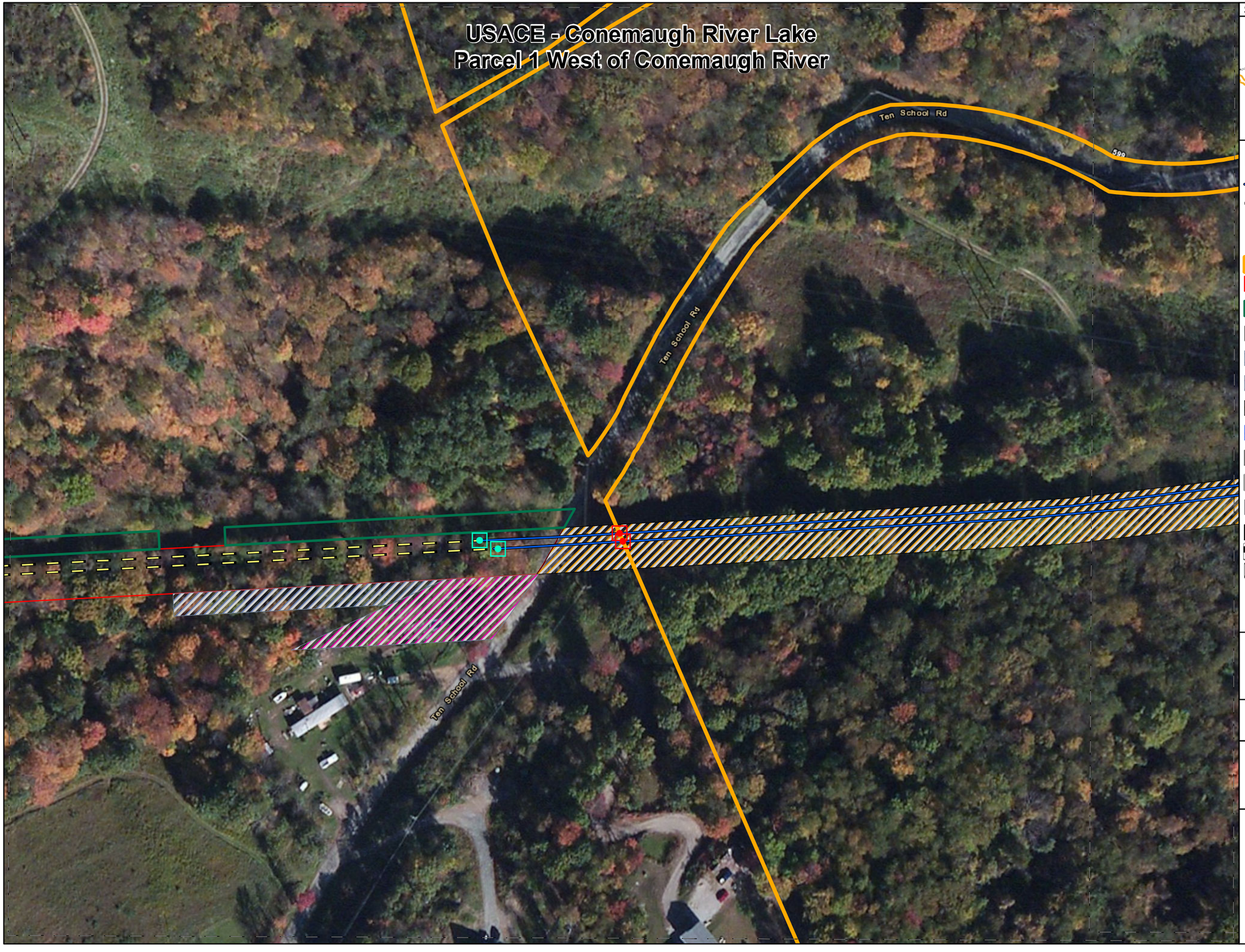
Date: 09/2016

Base Map;
ESRI World Imagery, 9/8/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

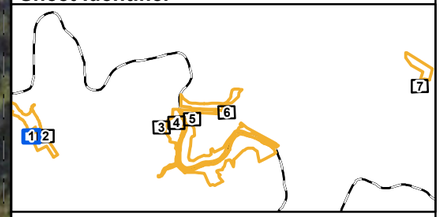
USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Conemaugh River Lake
Parcel 1 West of Conemaugh River



Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 1 of 7 **Scale 1:1200**

Prepared By: TETRA TECH

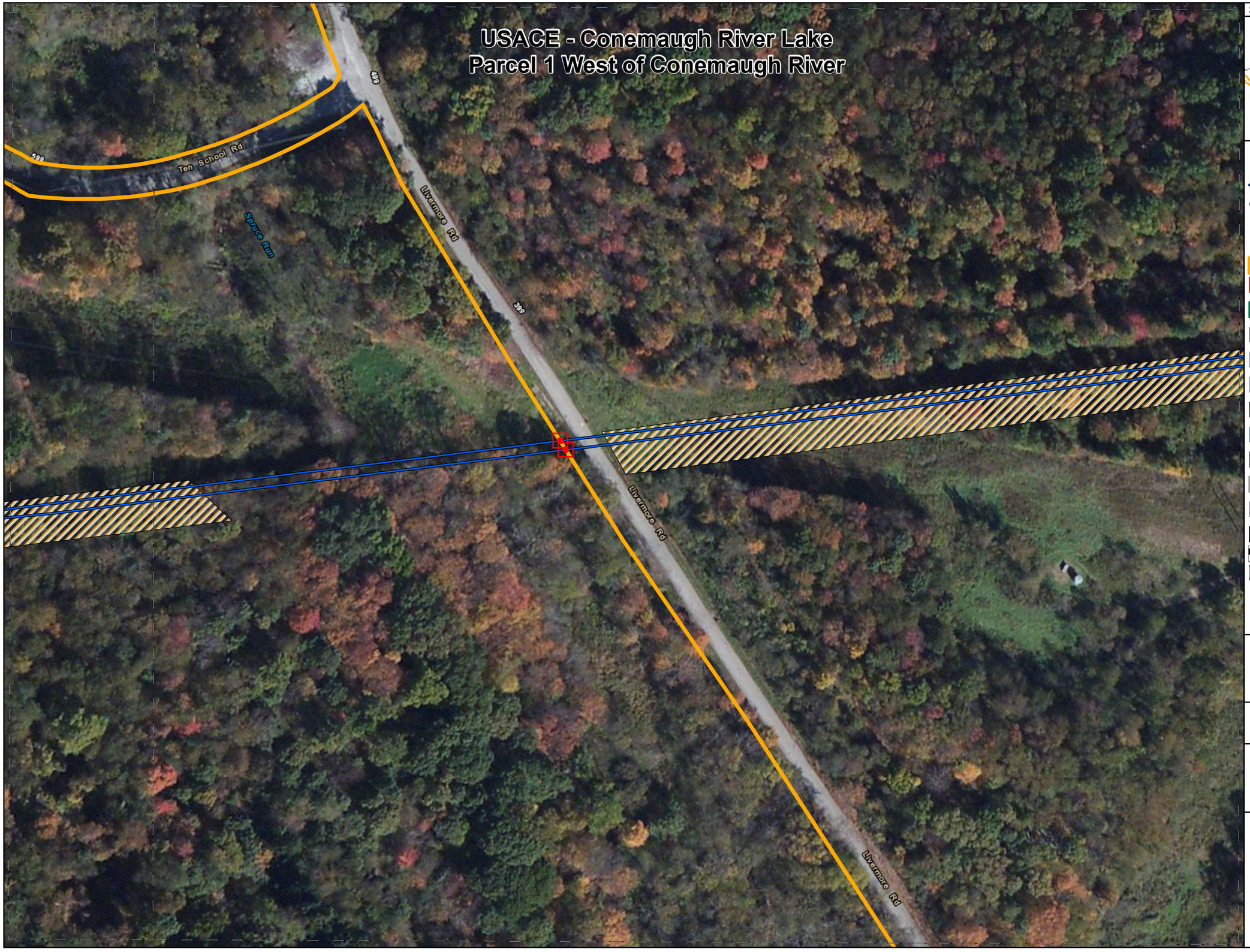
Date: 09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

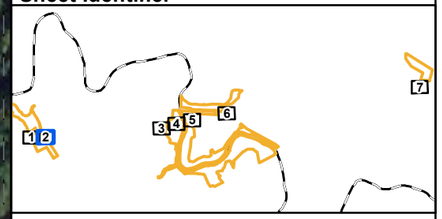
USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Conemaugh River Lake
Parcel 1 West of Conemaugh River



Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 2 of 7 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

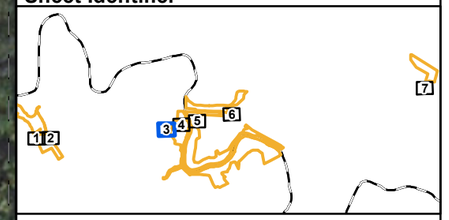
USACE - Conemaugh River Lake
Parcel 2 at Conemaugh River Crossing

Westinghouse Rd

Westinghouse Rd

Westinghouse Rd

Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 3 of 7 **Scale 1:1200**

Prepared By:

TETRA TECH

Date:

09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

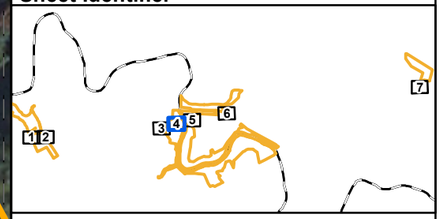
USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Conemaugh River Lake
Parcel 2 at Conemaugh River Crossing

Westinghouse

Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 4 of 7 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

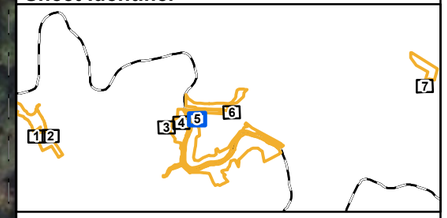
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF-P:\GIS\PROJECTS\112C0988\PPPMXD\PERMITS\FIGURE 6 - PROJECT OVERVIEW THROUGH USACE CONEMAUGH RIVER PROPERTY.MXD

USACE - Conemaugh River Lake
Parcel 3 East of Conemaugh River

Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 5 of 7 **Scale 1:1200**

Prepared By: TETRA TECH

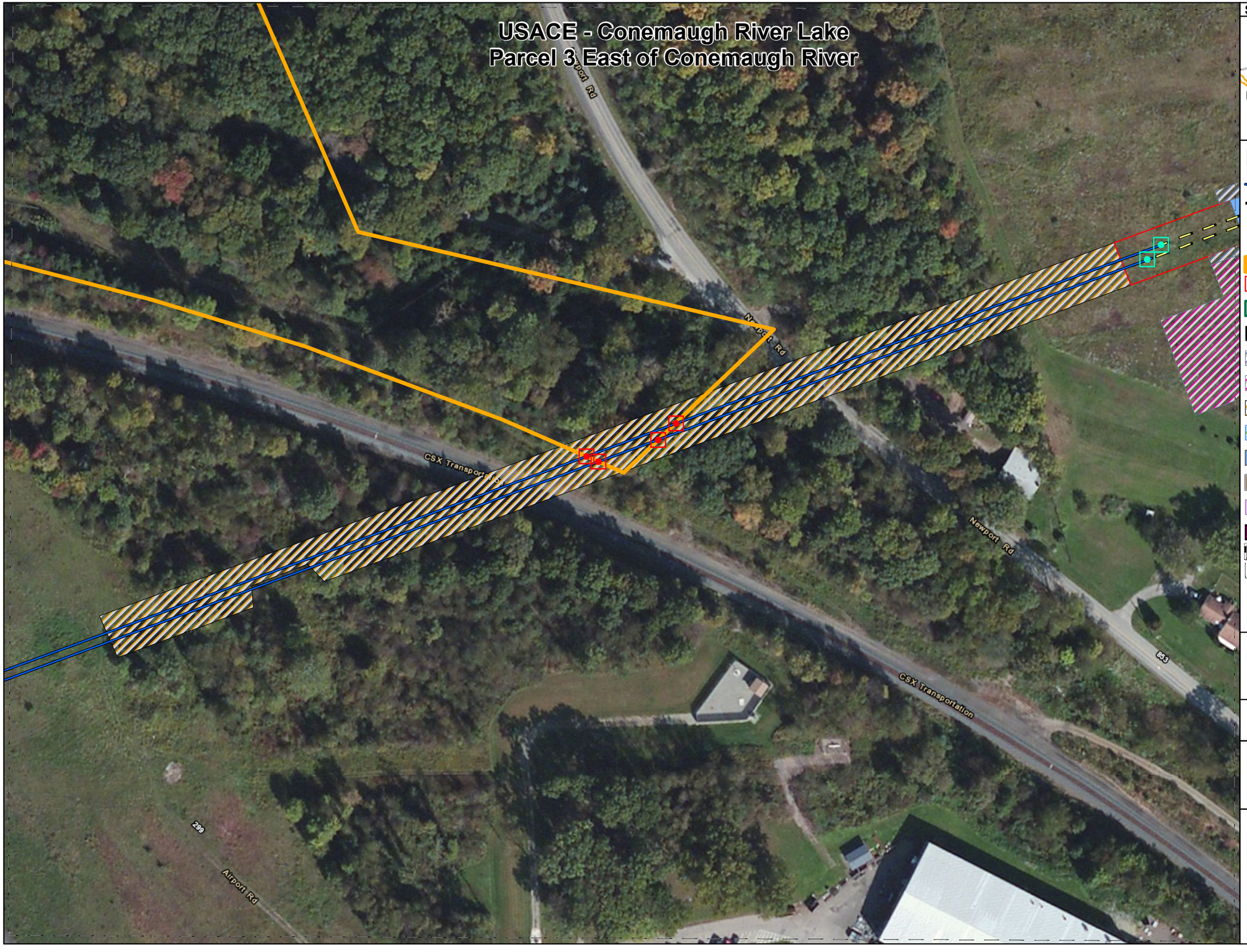
Date: 09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

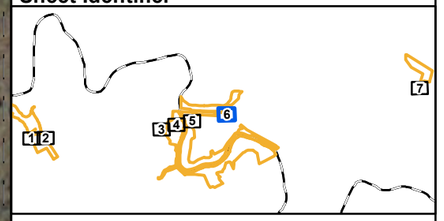
USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Conemaugh River Lake
Parcel 3 East of Conemaugh River



Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 6 of 7 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

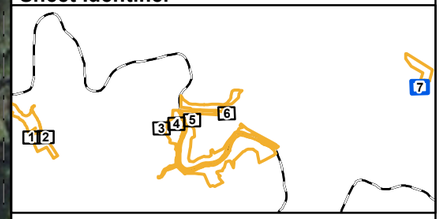
Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Conemaugh River Lake
Parcel 4 East of Conemaugh River

Sheet Identifier



Legend

- HDD
- Proposed Pipelines
- HDD Entry/Exit
- USACE Entry/Exit
- USACE Property
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- County Boundary
- Sheet Boundaries

Figure 6 - Project Overview through USACE Conemaugh River Lake

0 50 100 150 200 Feet

Sheet 7 of 7 **Scale 1:1200**

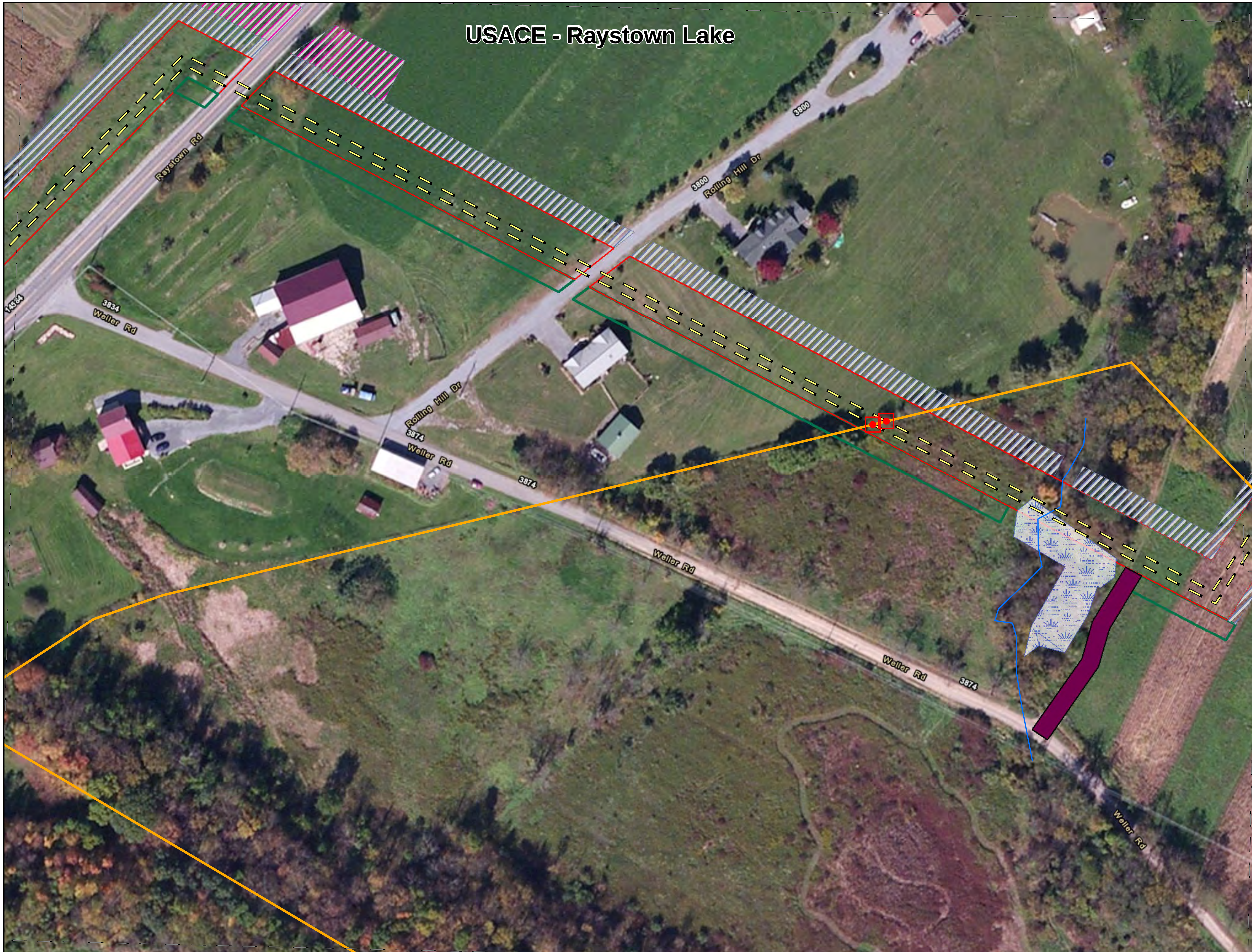
Prepared By: TETRA TECH

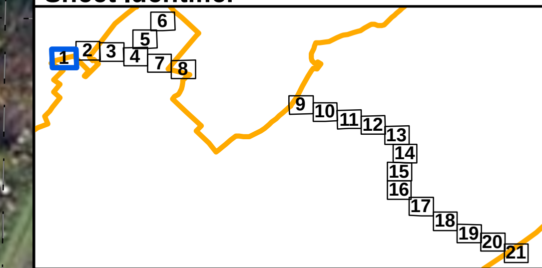
Date: 09/2016

Base Map;
ESRI World Imagery, 9/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N





Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 1 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

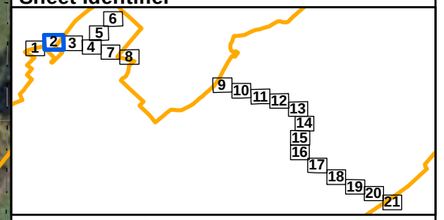
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF:P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN

USACE - Raystown Lake

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 2 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

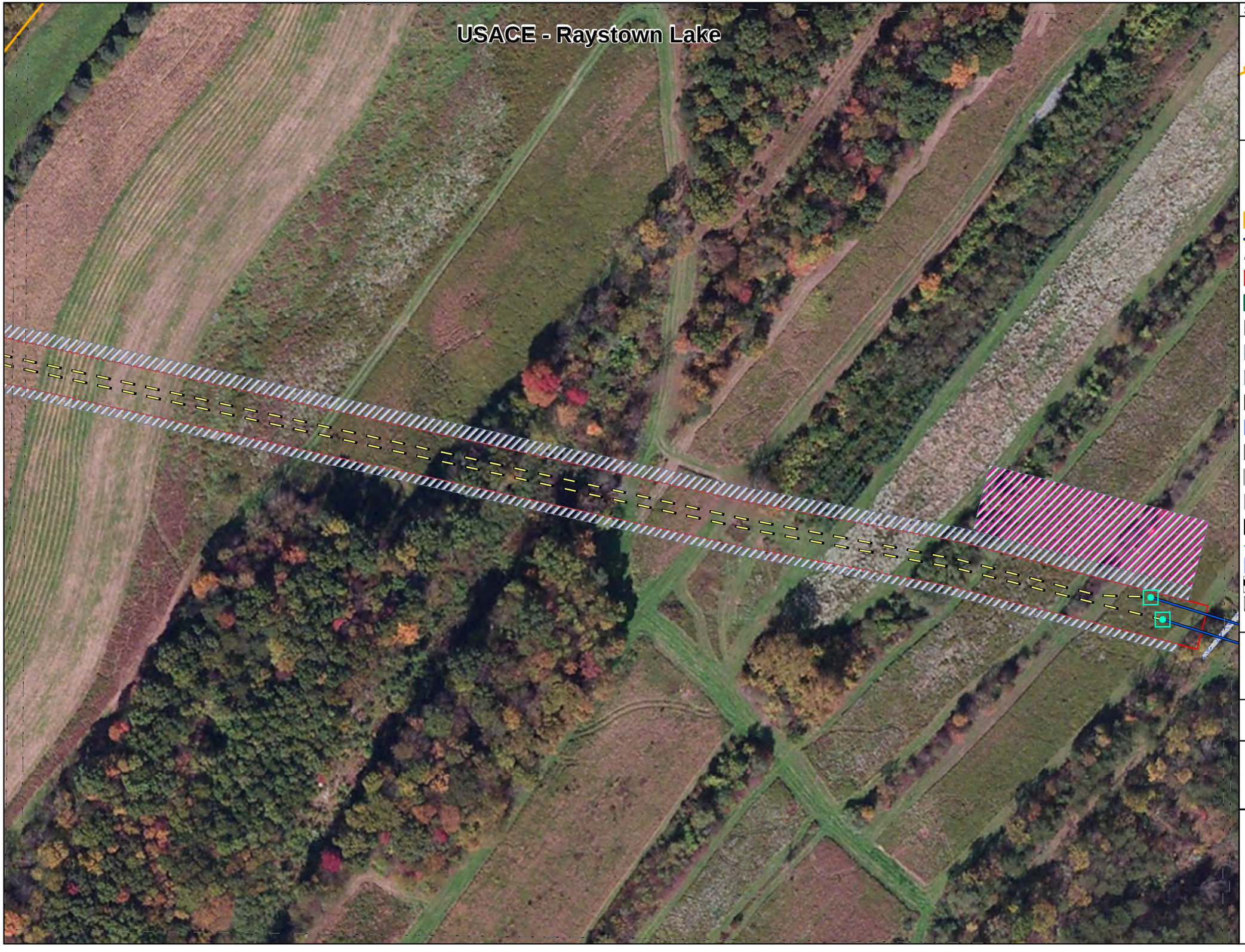
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

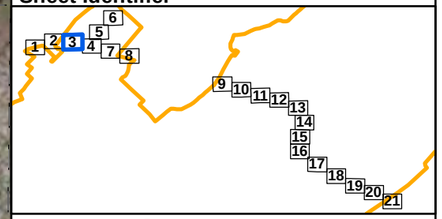
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF-P:\GIS\PROJECTS\112\205958-PPP\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 3 of 21 **Scale 1:1200**

Prepared By:

TETRA TECH

Date:

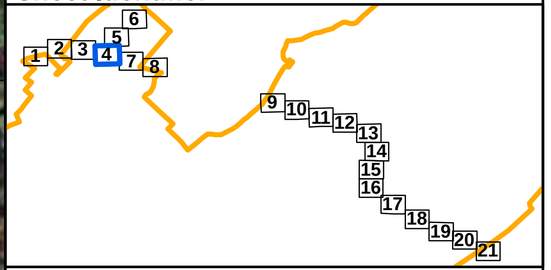
09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 4 of 21

Scale 1:1200

Prepared By: TETRA TECH

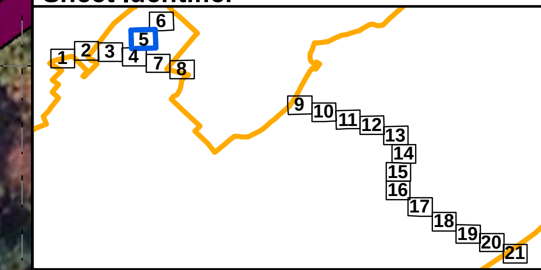
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 5 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

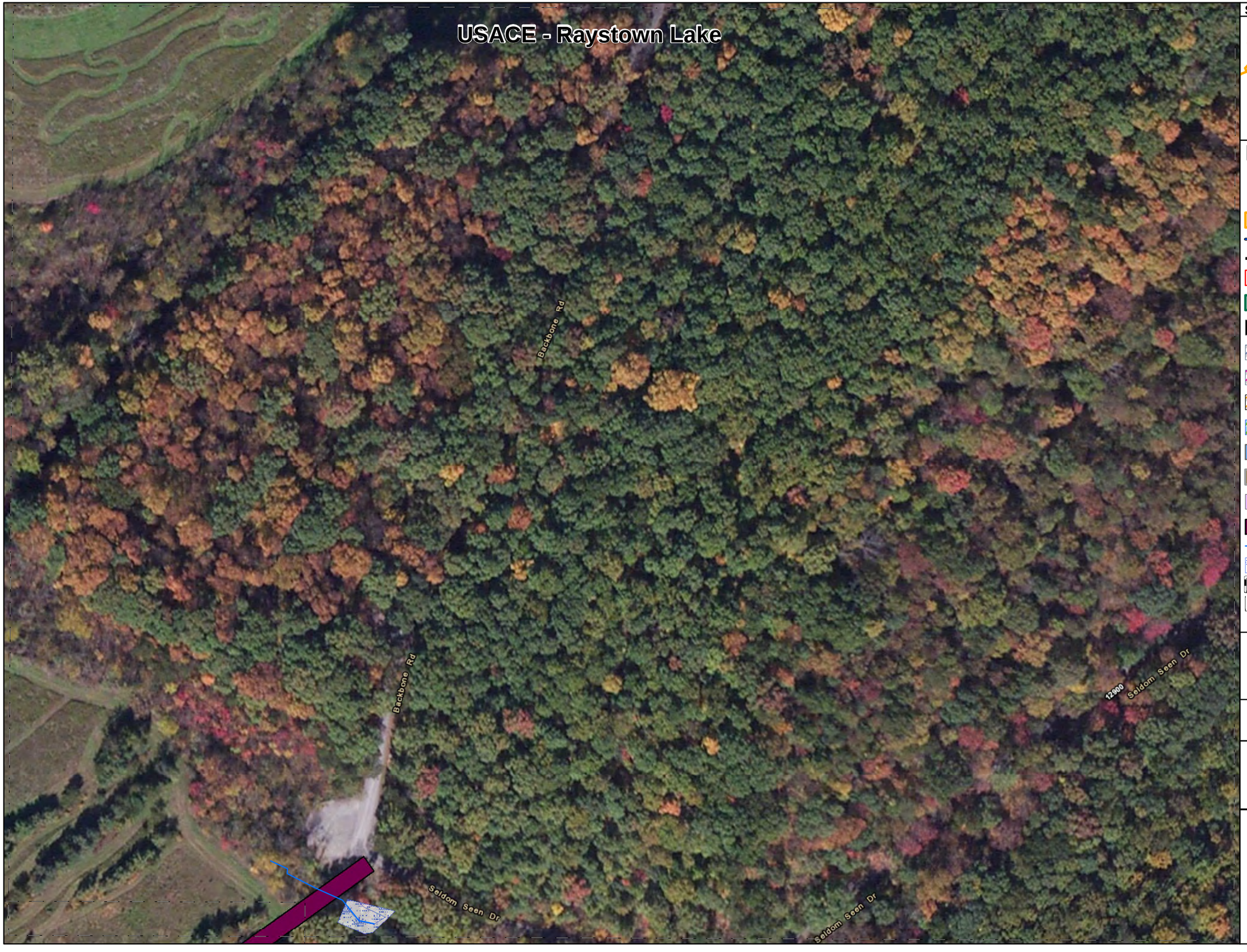
Date: **09/2016**

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

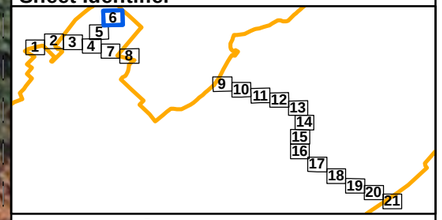
USACE Parcels:
County Assessment
GIS Shapefiles

N

BUF:P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 6 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

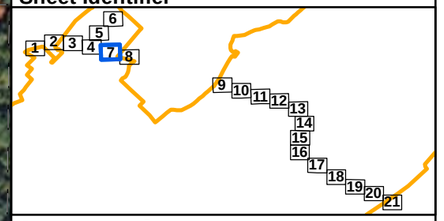
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Raystown Lake

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 7 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

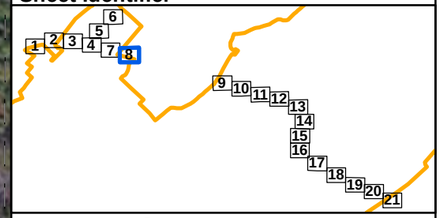
USACE - Raystown Lake

Hollow Rd

Hollow Rd

Hollow Rd

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 8 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

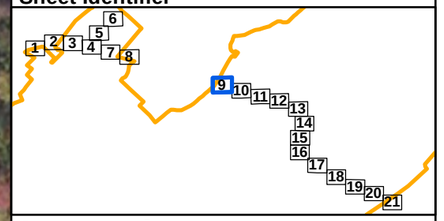
BUF-P:\GIS\PROJECTS\112205958-PPM\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN

USACE - Raystown Lake

Upper Corners Rd

Conventional Bore Crossing

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 9 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

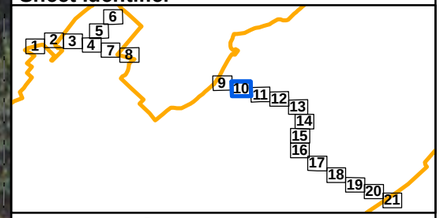
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Raystown Lake

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 10 of 21 **Scale 1:1200**

Prepared By:

TETRA TECH

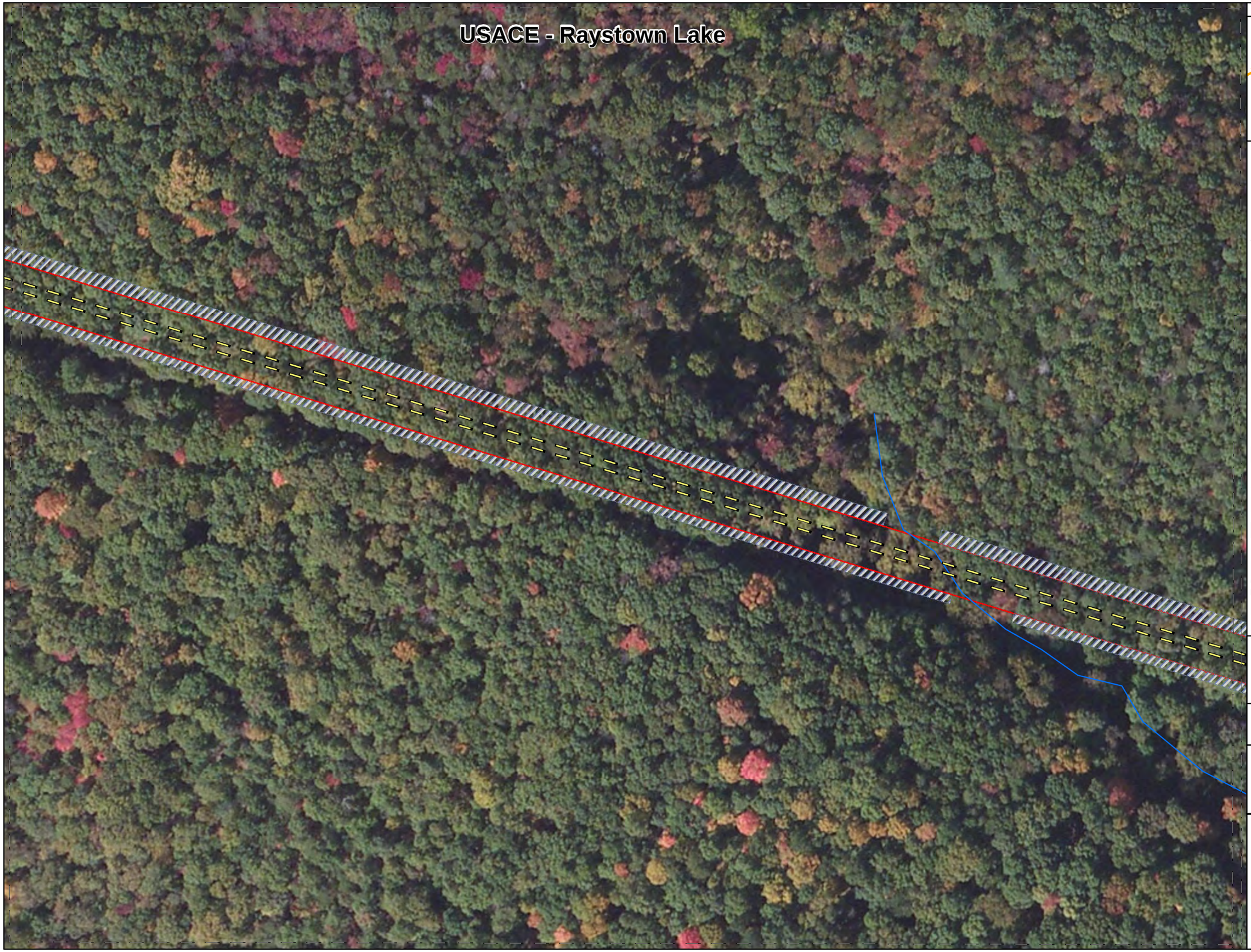
Date:

09/2016

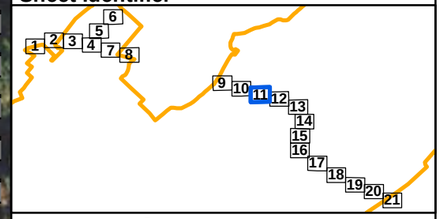
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 11 of 21 **Scale 1:1200**

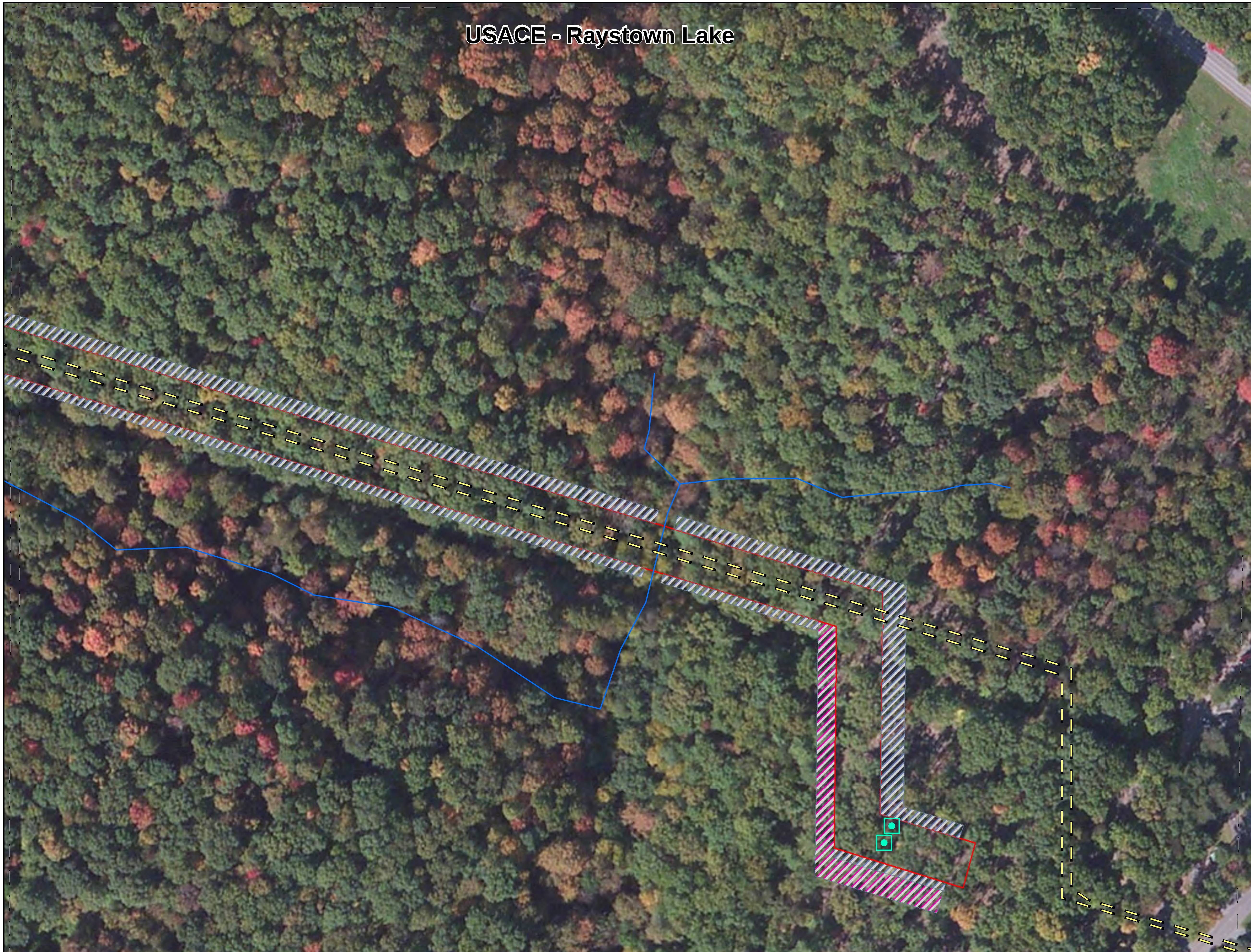
Prepared By: TETRA TECH

Date: 09/2016

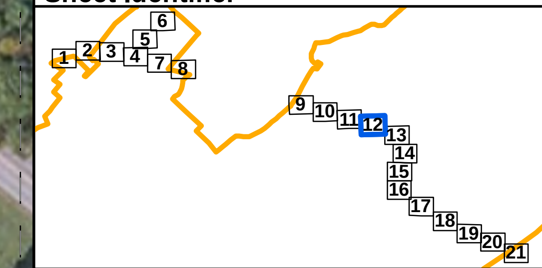
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 12 of 21

Scale 1:1200

Prepared By: TETRA TECH

Date: 09/2016

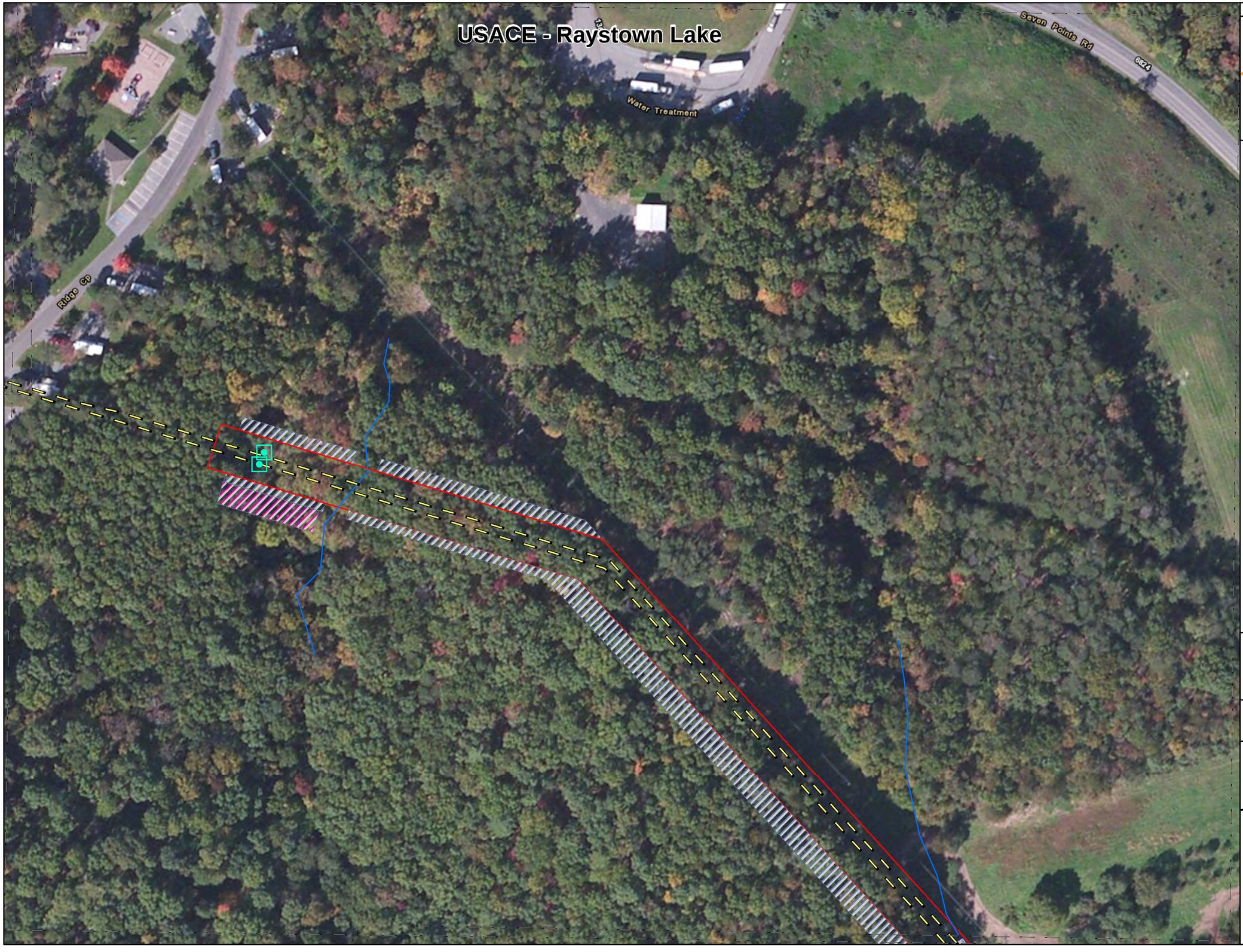
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

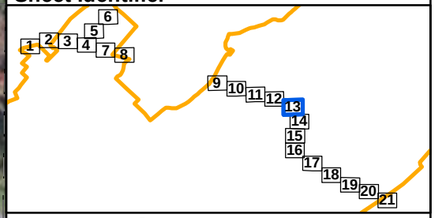
N

BUF:P:\GIS\PROJECTS\112C05958-PPP\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN

USACE - Raystown Lake



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 13 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

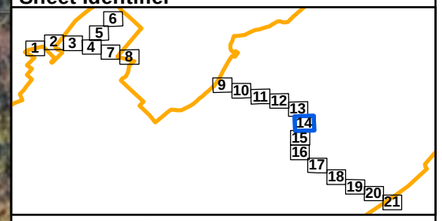
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Raystown Lake

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 14 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

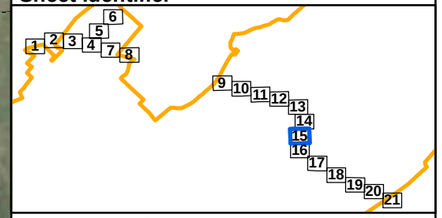
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 15 of 21 **Scale 1:1200**

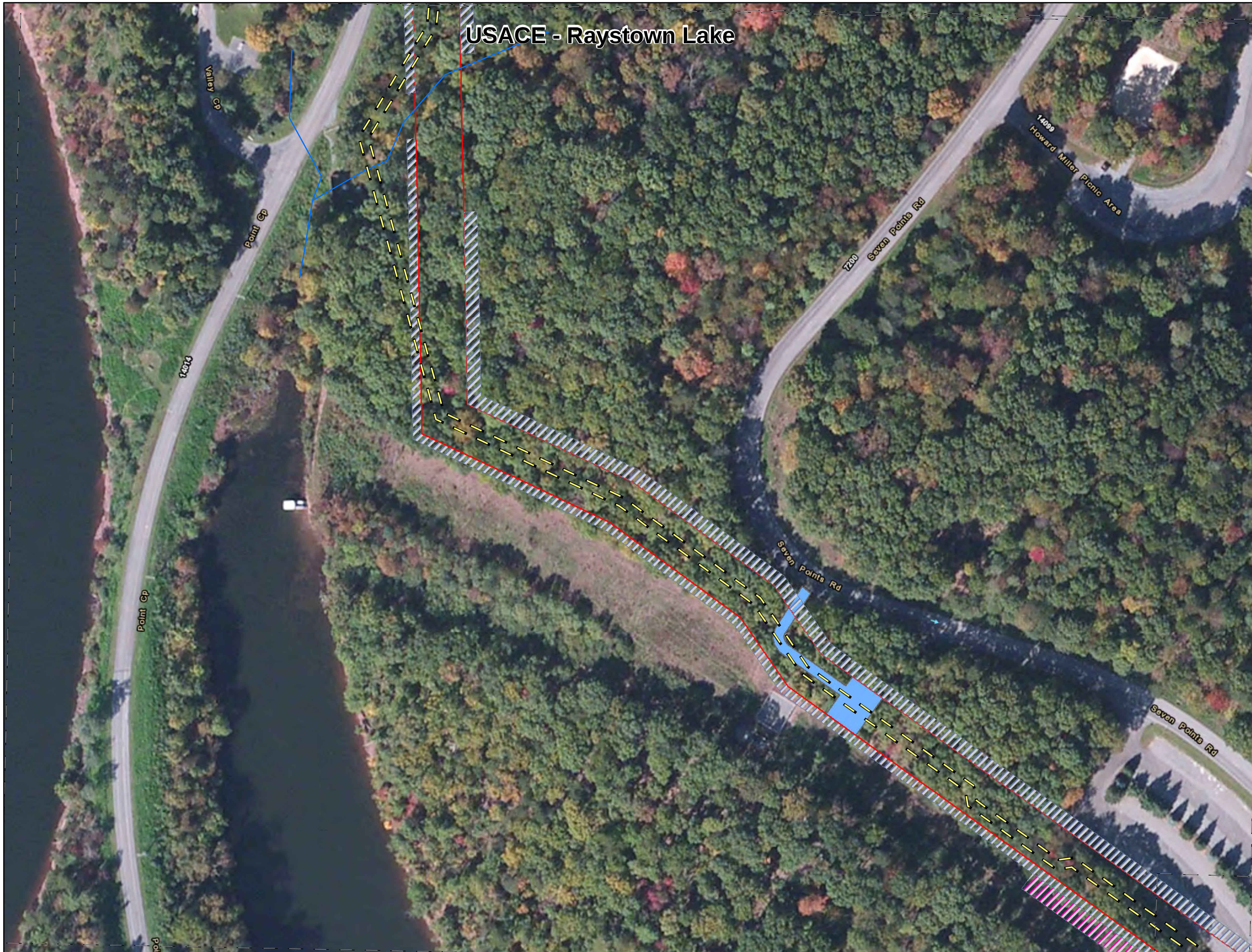
Prepared By: TETRA TECH

Date: 09/2016

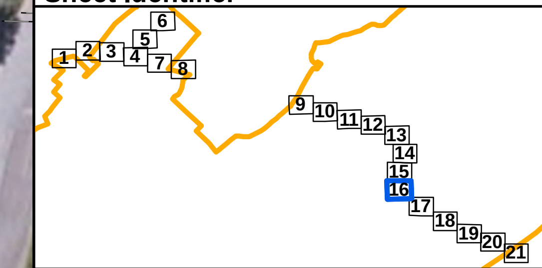
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 16 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

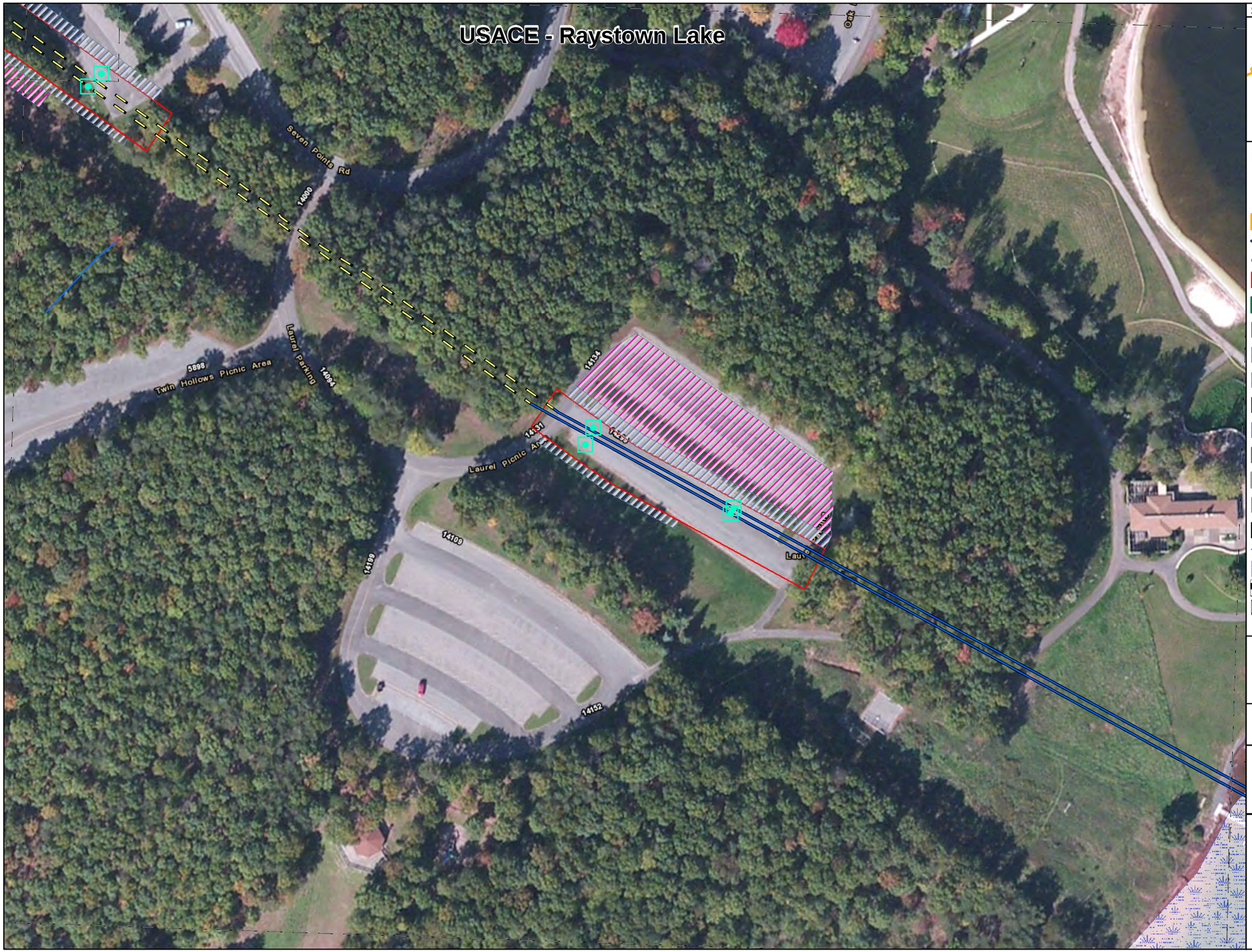
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

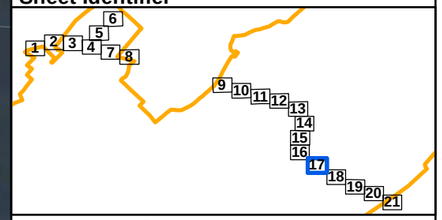
USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Raystown Lake



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 17 of 21 **Scale 1:1200**

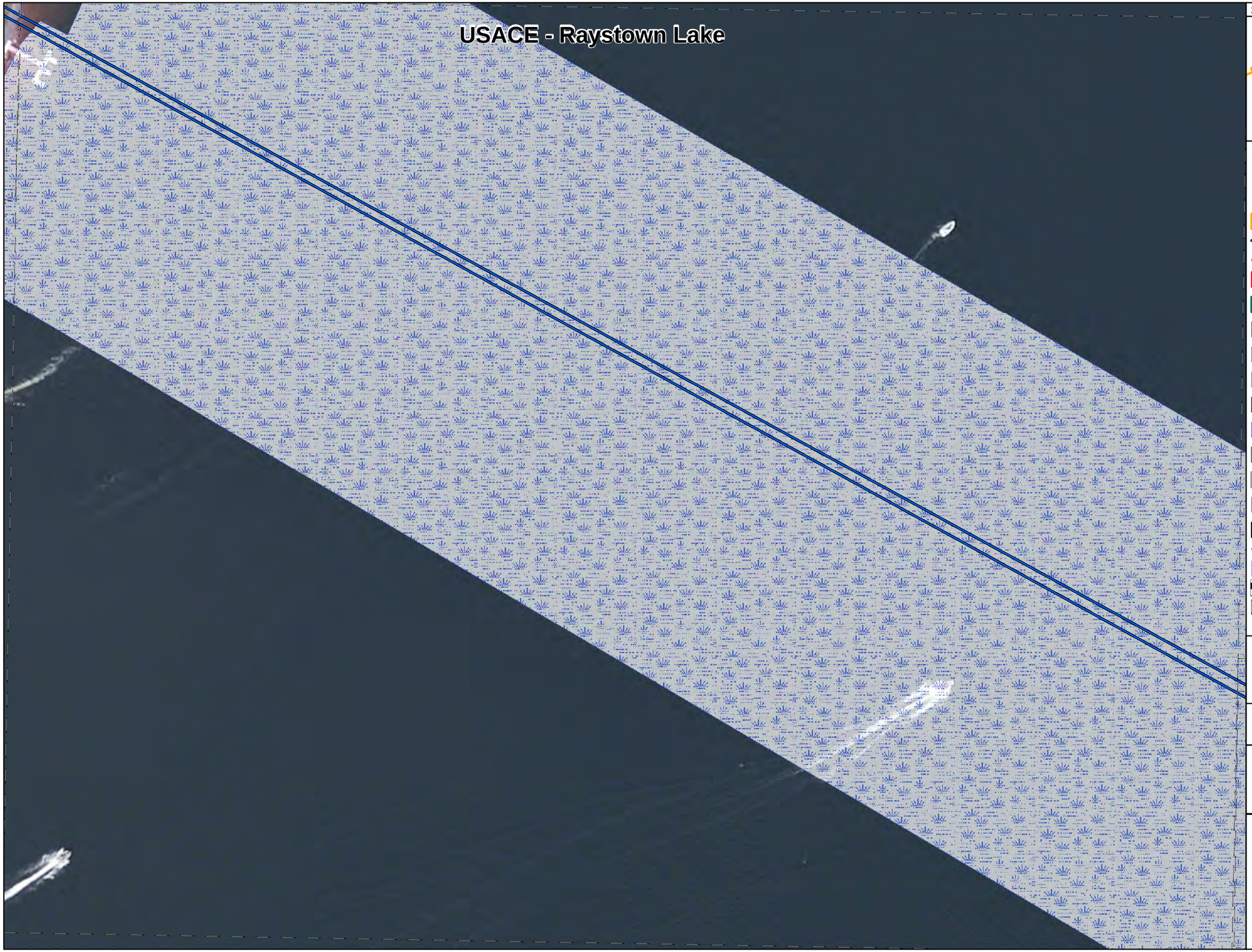
Prepared By: TETRA TECH

Date: 09/2016

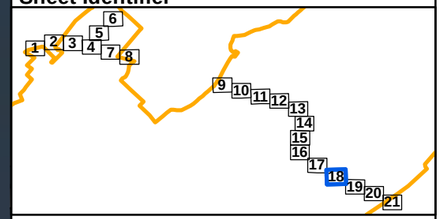
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N



Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 18 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

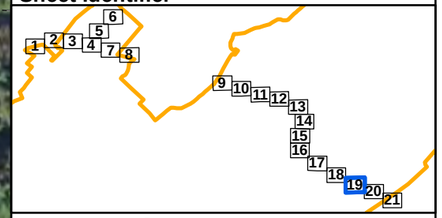
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 19 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

Date: 09/2016

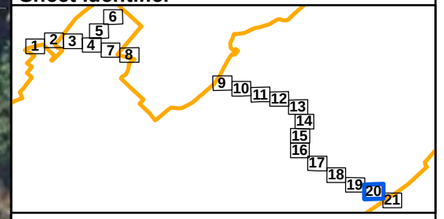
Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

USACE - Raystown Lake

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 20 of 21 **Scale 1:1200**

Prepared By:

TETRA TECH

Date:

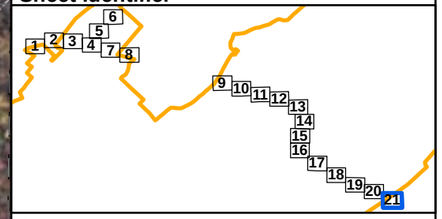
09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

Sheet Identifier



Legend

- USACE Entry/Exit
- HDD Entry/Exit
- USACE Property
- HDD
- Proposed Pipelines
- 50-foot ROW
- 20 Foot Spoil Space
- Asbuilt Valve
- Temporary Construction Workspace
- ROW - ATWS
- ROW - Drive-Through - Clearing Only
- ROW - Drive-Through - Travel Only
- ROW - Permanent Access Road
- Block Valve Site Layout
- Block Valve Site Permanent ROW
- ROW - Temporary Access Road
- Stream
- Wetland
- County Boundary
- Sheet Boundaries

Figure 7 - Project Overview through USACE Raystown Lake

0 50 100 150 200 Feet

Sheet 21 of 21 **Scale 1:1200**

Prepared By: TETRA TECH

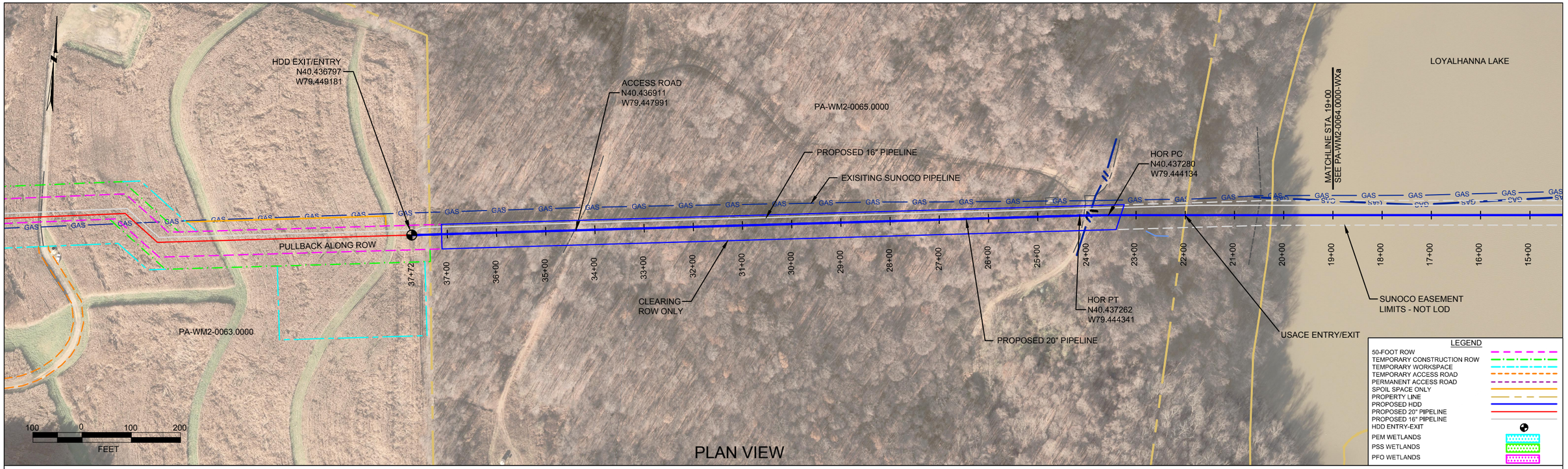
Date: 09/2016

Base Map;
ESRI World Imagery, 5/24/2015
Coordinate System NAD 83
Stateplane, PA South, Feet

USACE Parcels:
County Assessment
GIS Shapefiles

N

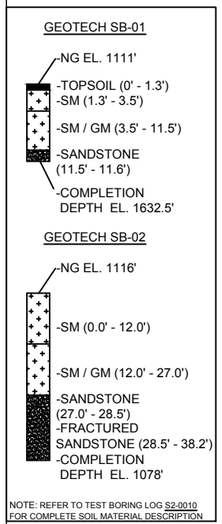
BUF-P:\GIS\PROJECTS\112C05998\PPP\MXD\PERMITS\FIGURE 7 - PROJECT OVERVIEW THROUGH USACE RAYSTOWN LAKE PROPERTIES.MXD 9/28/2016 LN



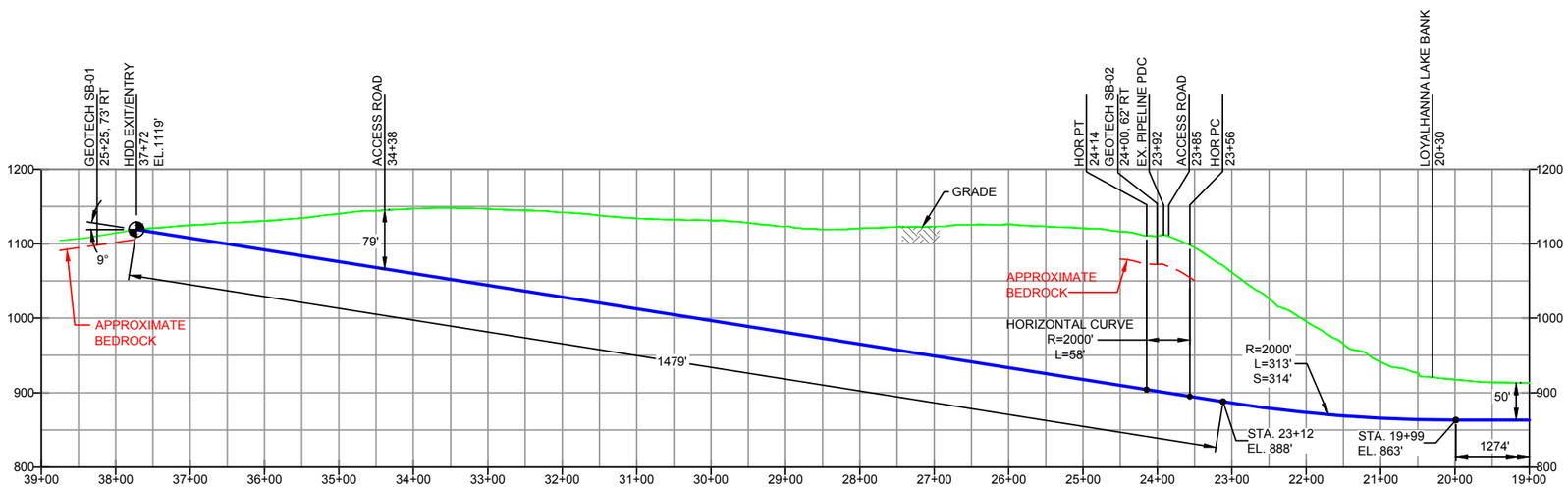
PLAN VIEW

PROFILE VIEW

WESTMORELAND COUNTY, PENNSYLVANIA - LOYALHANNA TOWNSHIP
S2-0010B



NOTE: REFER TO TEST BORING LOG S2-0010 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):3772'
   HDD PIPE LENGTH (S=):3806'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

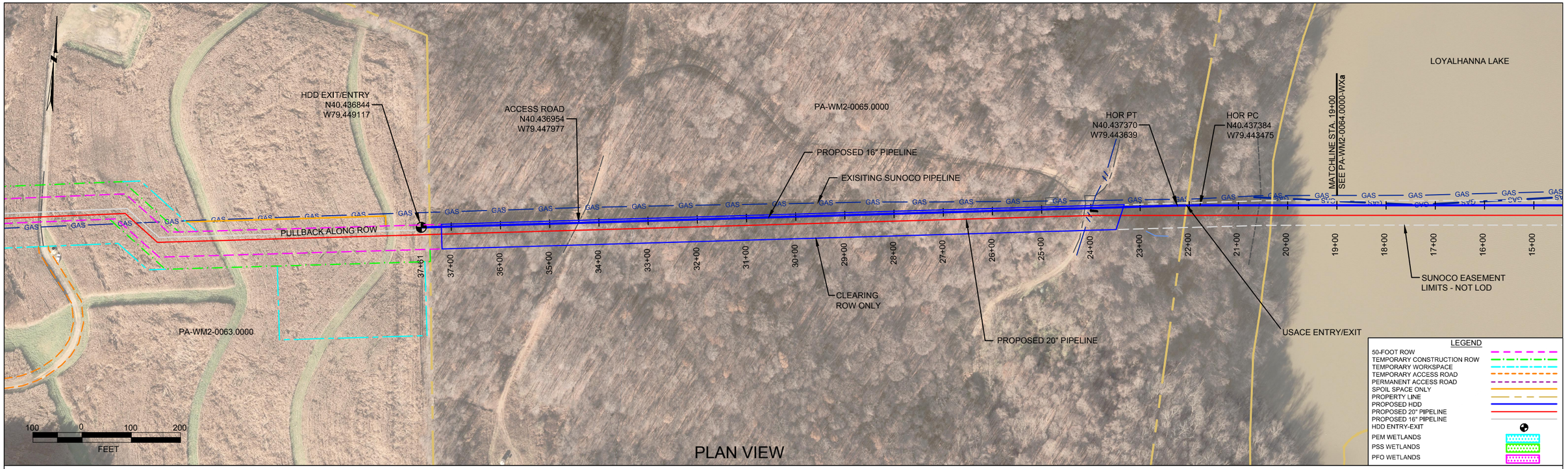
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 8 - HORIZONTAL DIRECTIONAL DRILL
LOYALHANNA LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

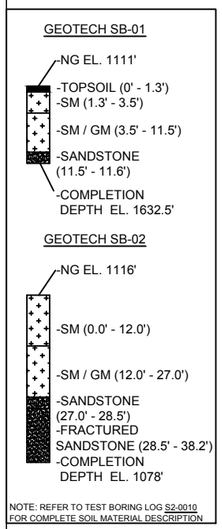
DWG. NUMBER: PA-WM2-0064.0000-WXb



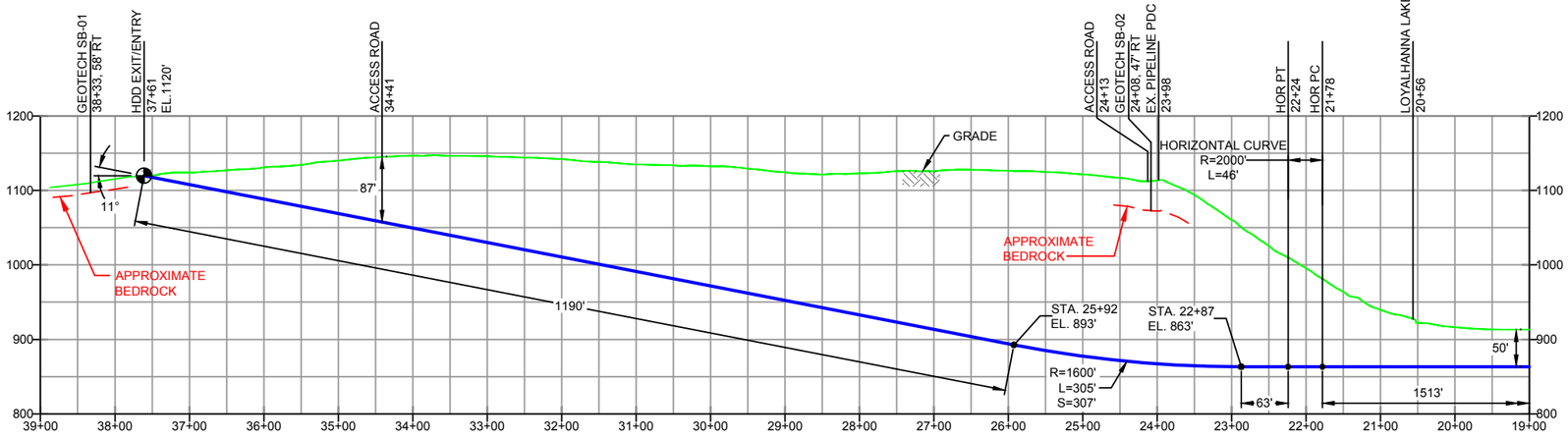
PLAN VIEW

PROFILE VIEW

WESTMORELAND COUNTY, PENNSYLVANIA - LOYALHANNA TOWNSHIP
S2-0010B-16



NOTE: REFER TO TEST BORING LOG S2-0010 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):3761'
   HDD PIPE LENGTH (S=):3799'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

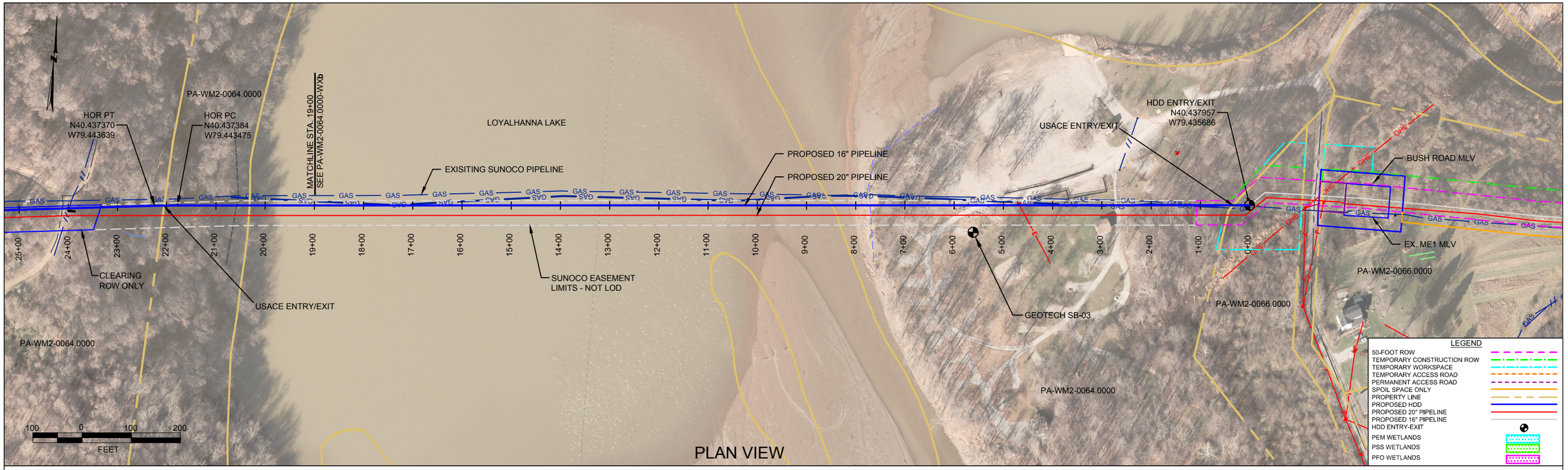
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 8 -HORIZONTAL DIRECTIONAL DRILL
LOYALHANNA LAKE
PENNSYLVANIA PIPELINE PROJECT

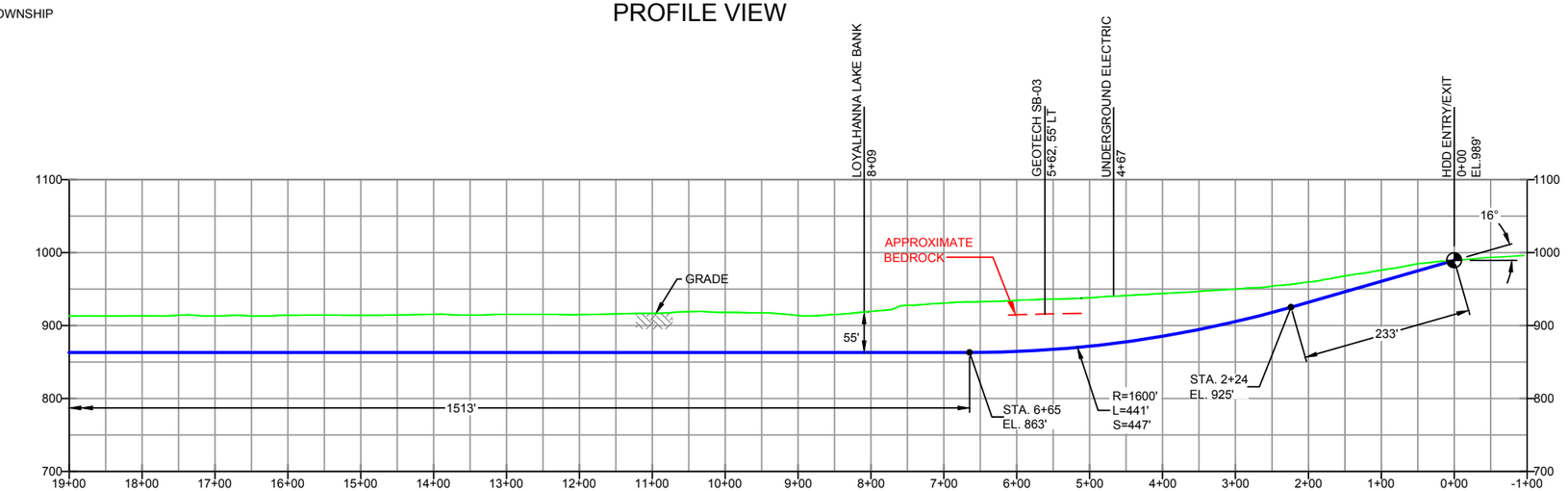
SCALE: 1"=200'

DWG. NO: PA-WM2-0064.0000-WXb-16



PLAN VIEW

PROFILE VIEW



WESTMORELAND COUNTY, PENNSYLVANIA - LOYALHANNA TOWNSHIP
S2-0010A-16

GEOTECH SB-03

-NG EL. 938'
-TOPSOIL (0' - 0.5')
-CL/SC (0.5' - 11.5')
-SM (11.5' - 18.0')
-SANDSTONE (18.0' - 21.4')
-COMPLETION DEPTH EL. 916'

NOTE: REFER TO TEST BORING LOG S2-0010 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):3761'
   HDD PIPE LENGTH (S=):3799'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
4	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
3	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
2	MLV NAME UPDATE	DLM	04/07/16	RMB	04/07/16	AAW	04/07/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

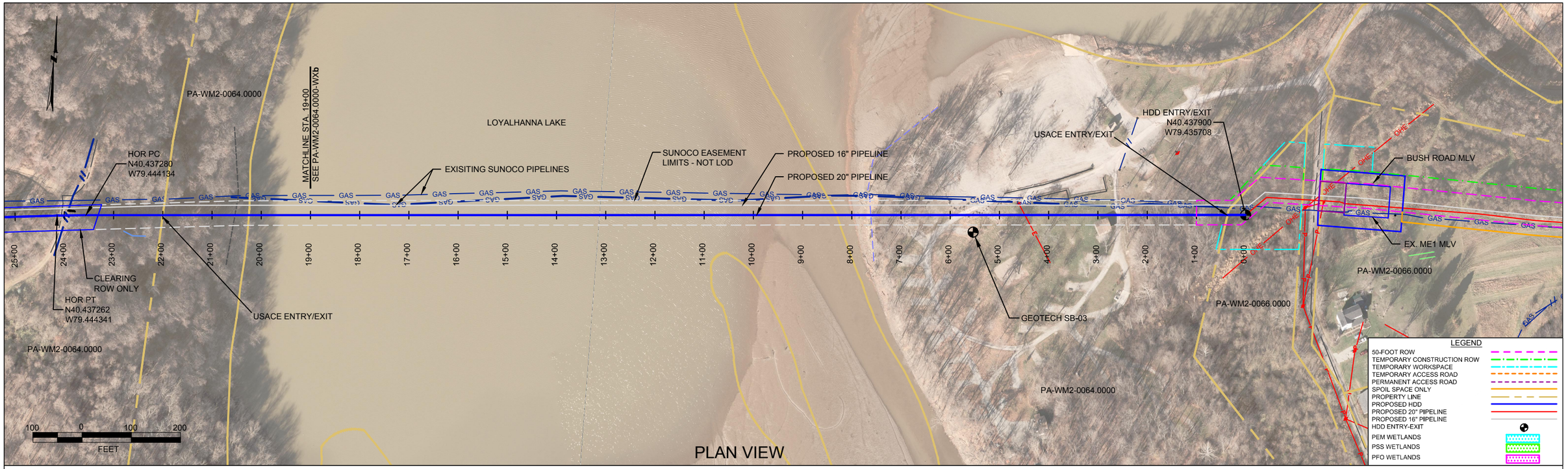
Sunoco Logistics Partners L.P.

TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

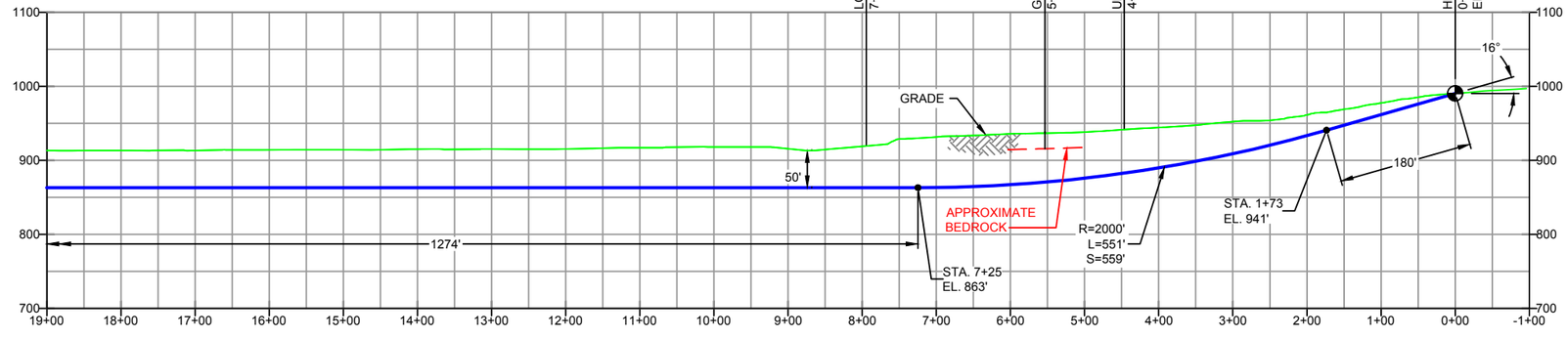
FIGURE 8 - HORIZONTAL DIRECTIONAL DRILL
LOYALHANNA LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200' | DWG. NO: PA-WM2-0064.0000-WXa-16



PLAN VIEW

PROFILE VIEW



WESTMORELAND COUNTY, PENNSYLVANIA - LOYALHANNA TOWNSHIP
S2-0010A

GEOTECH SB-03

-NG EL. 938'
-TOPSOIL (0' - 0.5')
-CL/SC (0.5' - 11.5')
-SM (11.5' - 18.0')
-SANDSTONE (18.0' - 21.4')
-COMPLETION DEPTH EL. 916'

NOTE: REFER TO TEST BORING LOG S2-0010 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HOR2. LENGTH (L=):3772'
   HDD PIPE LENGTH (S=):3806'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
4	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
3	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
2	MLV NAME UPDATED	DLM	04/07/16	RMB	04/07/16	AAW	04/07/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

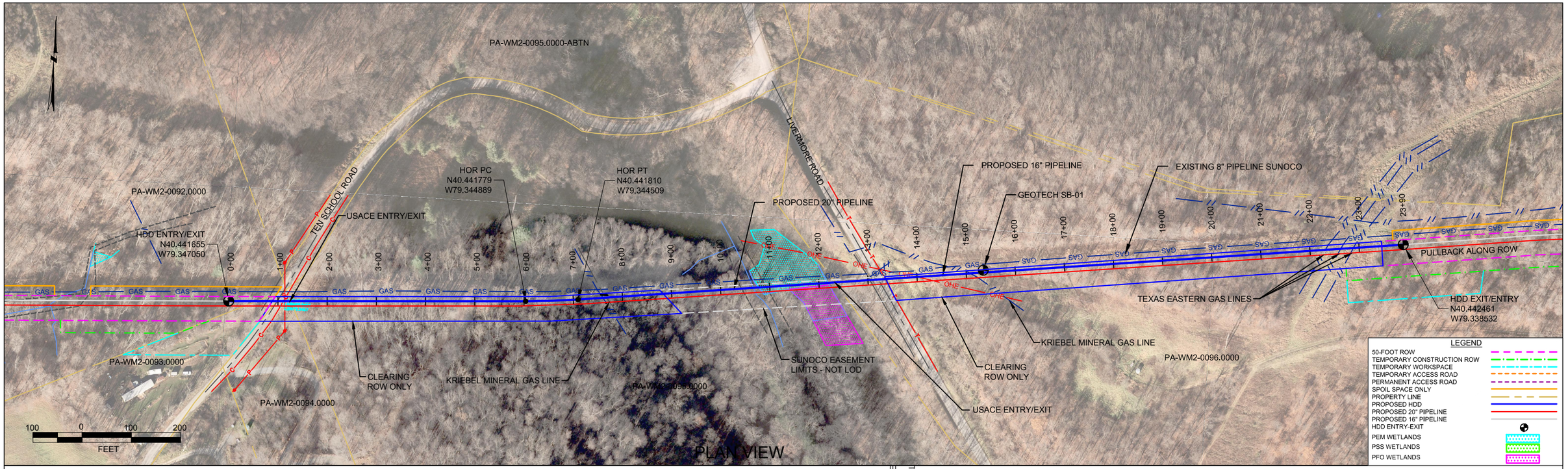
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 8 - HORIZONTAL DIRECTIONAL DRILL
LOYALHANNA LAKE
PENNSYLVANIA PIPELINE PROJECT

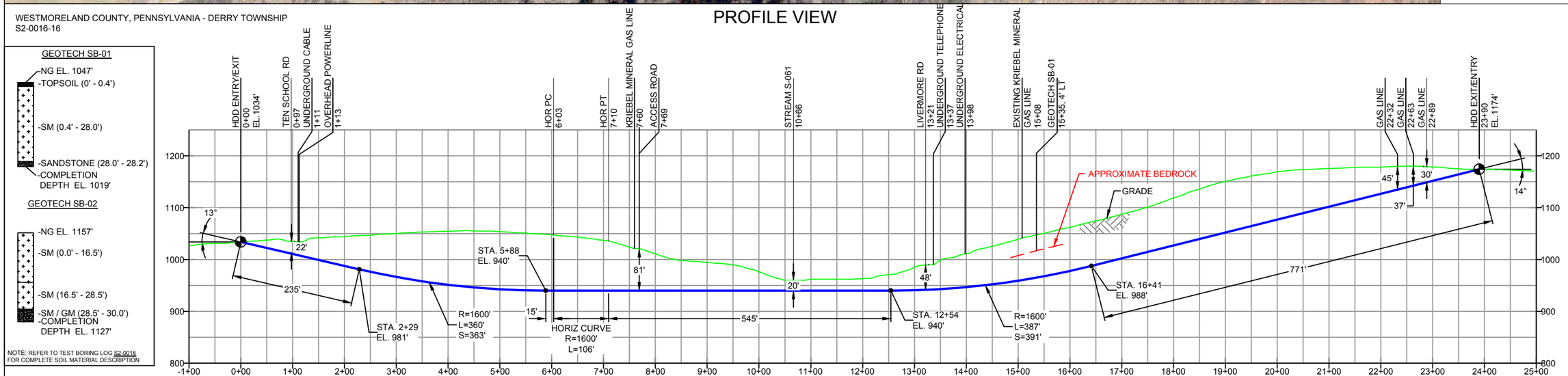
SCALE: 1"=200'

DWG. NUMBER: PA-WM2-0064.0000-WXa



WESTMORELAND COUNTY, PENNSYLVANIA - DERRY TOWNSHIP
S2-0016-16

PROFILE VIEW



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):2390'
   HDD PIPE LENGTH (S=):2426'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

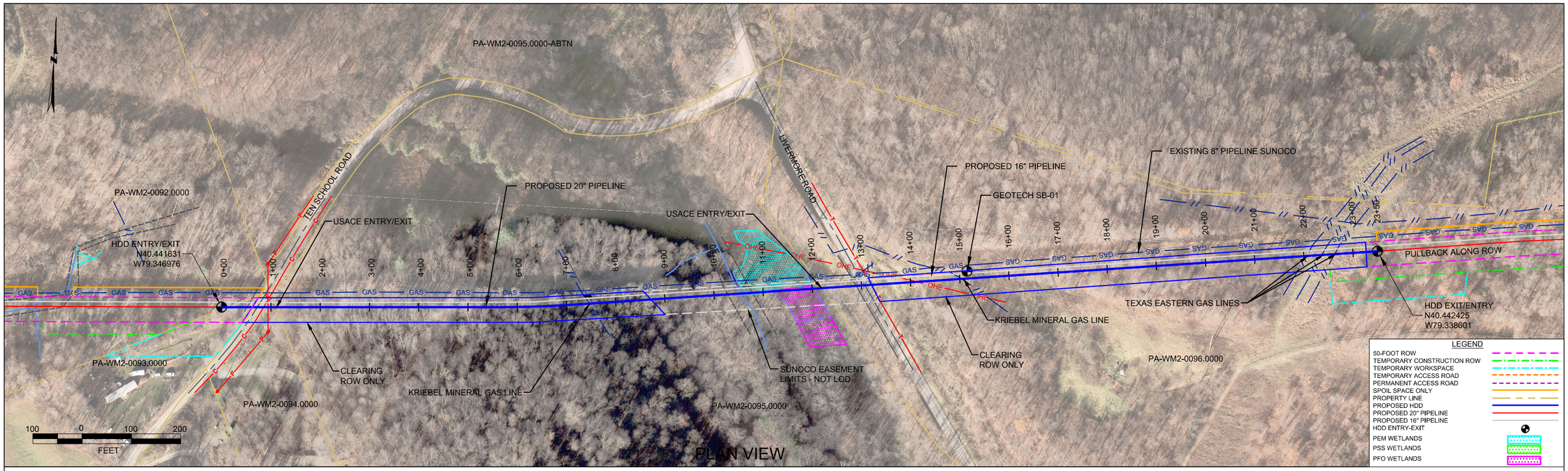
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 9 - HORIZONTAL DIRECTIONAL DRILL
LIVERMORE ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

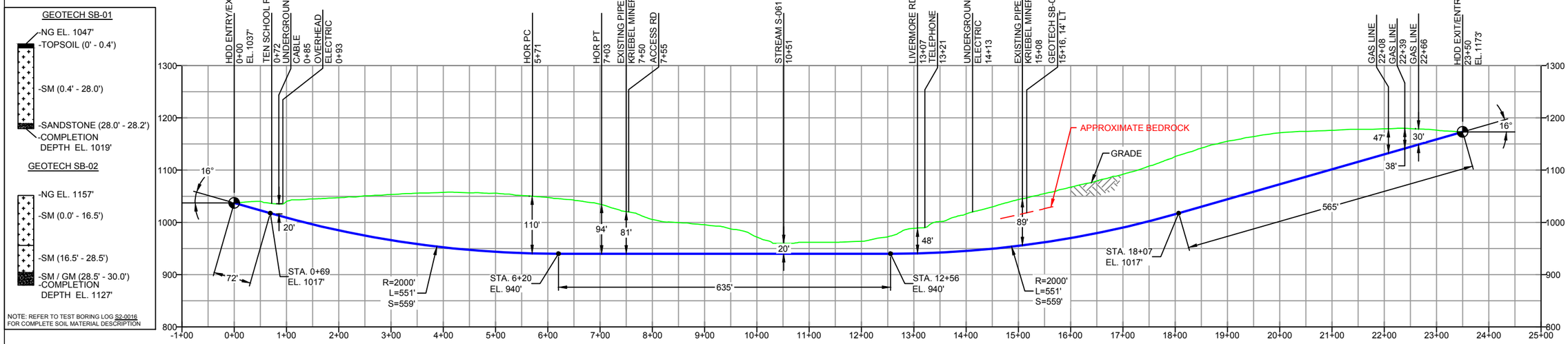
DWG. NO: PA-WM2-0093.0000-RD-16



PLAN VIEW

WESTMORELAND COUNTY, PENNSYLVANIA - DERRY TOWNSHIP
S2-0016

PROFILE VIEW



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):2350'
   HDD PIPE LENGTH (S=):2390'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED "CLEARING ROW ONLY" ANNOTATION	MRS	03/24/16	RMB	03/24/16	AAW	03/24/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

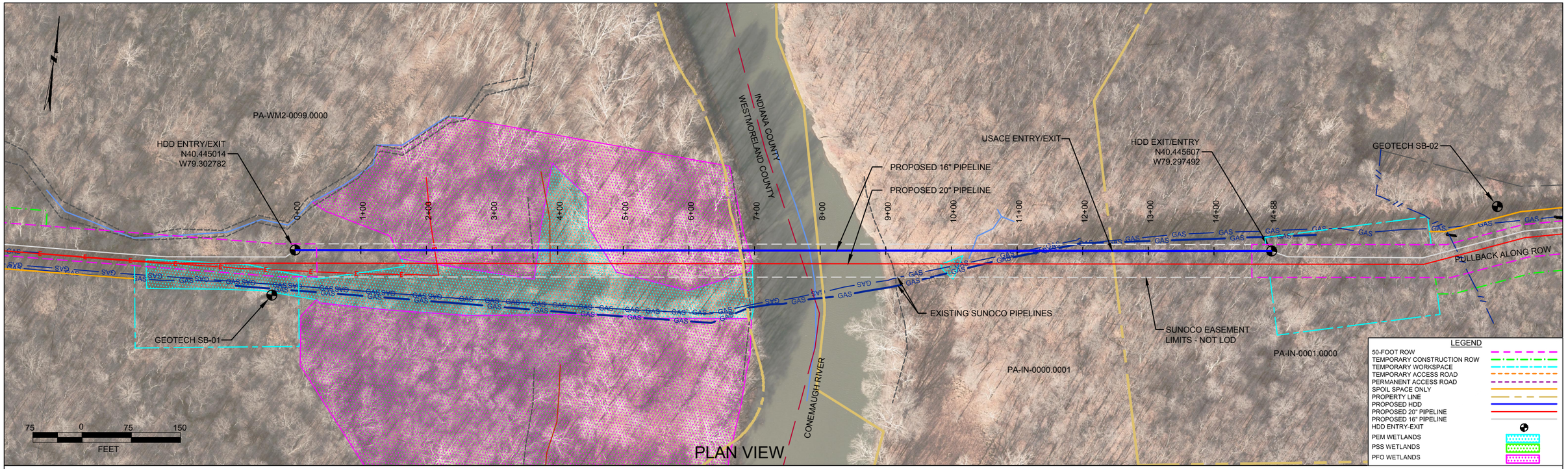
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 9 - HORIZONTAL DIRECTIONAL DRILL
LIVERMORE ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

DWG. NUMBER: PA-WM2-0093.0000-RD



PLAN VIEW

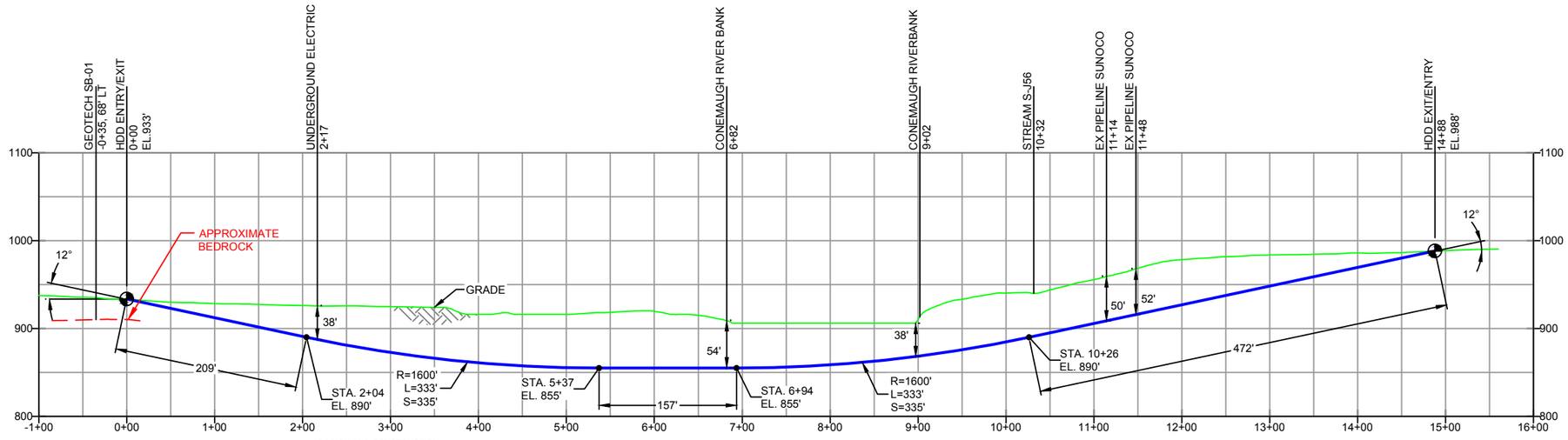
PROFILE VIEW

WESTMORELAND COUNTY, PENNSYLVANIA - DERRY TOWNSHIP
INDIANA COUNTY, PENSYLVANIA - BURRELL TOWNSHIP
S2-0020-16

GEOTECH SB-01
- NG EL. 937'
- TOPSOIL (0' - 0.3')
- SM (0.3' - 6.5')
- GROUNDWATER (14.0')
- ML (6.5' - 19.0')
- SM / GM (19.0' - 24.0')
- SANDSTONE (24.0' - 24.2')
- COMPLETION DEPTH EL. 913'

GEOTECH SB-02
- NG EL. 1000'
- TOPSOIL (0' - 0.3')
- SM (0.3' - 13.8')
- SANDSTONE (13.8' - 15.1')
- COMPLETION DEPTH EL. 985'

NOTE: REFER TO TEST BORING LOG S2-0020 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:
1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 1488'
   HDD PIPE LENGTH (S=): 1508'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES
1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
2	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
1	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

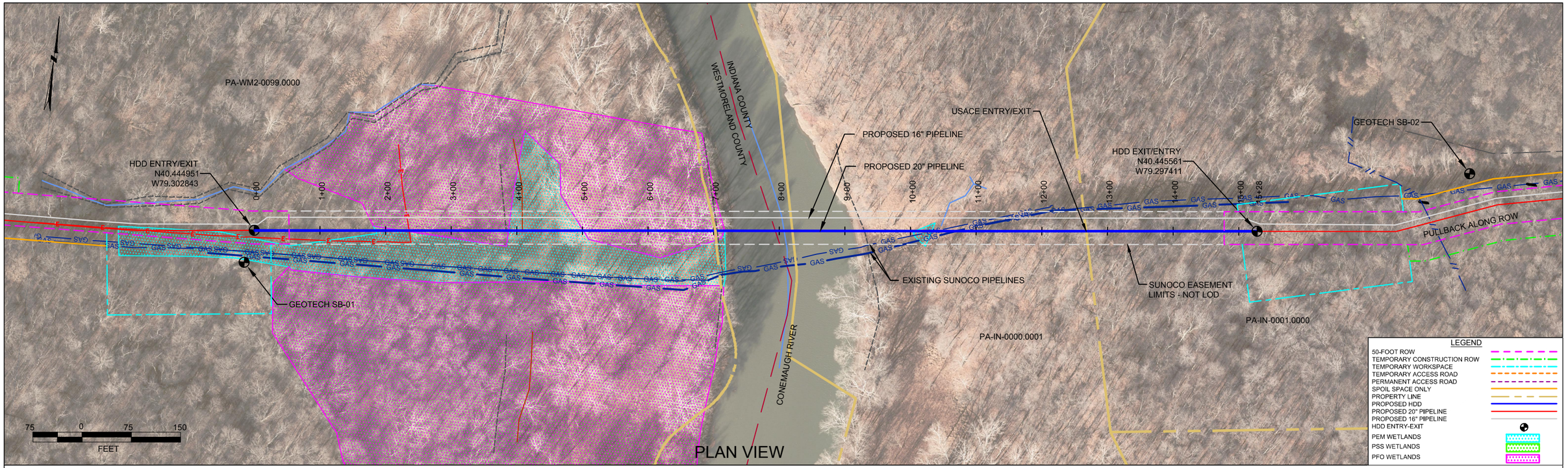
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 9 - HORIZONTAL DIRECTIONAL DRILL
CONEMAUGH RIVER
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=150'

DWG. NO: PA-IN-0000.0001-WX-16



PLAN VIEW

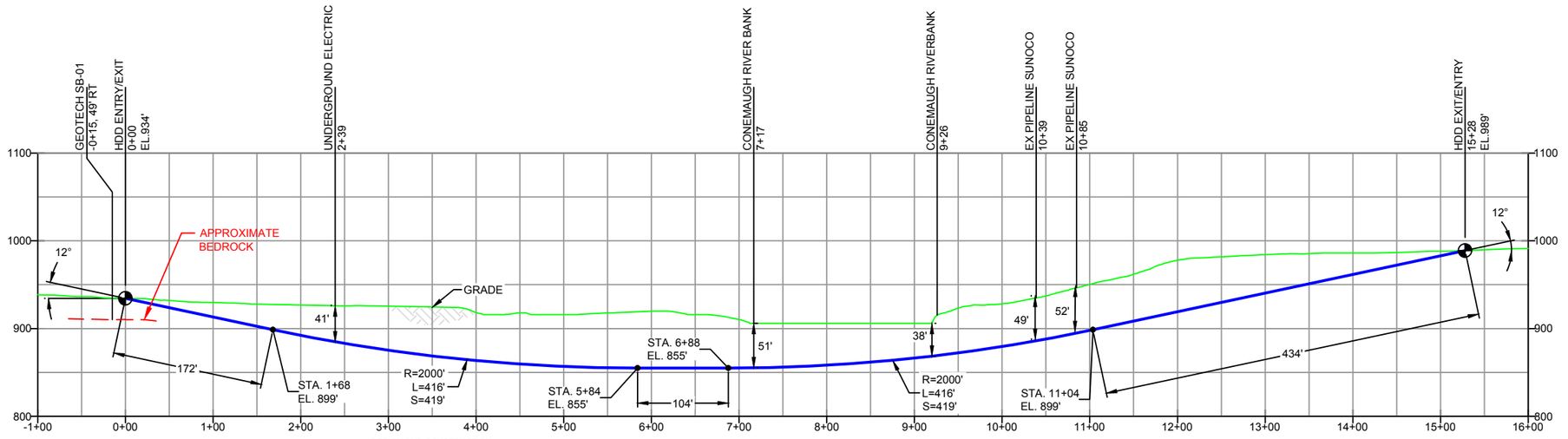
PROFILE VIEW

WESTMORELAND COUNTY, PENNSYLVANIA - DERRY TOWNSHIP
INDIANA COUNTY, PENNSYLVANIA - BURRELL TOWNSHIP
S2-0020

GEOTECH SB-01
- NG EL. 937'
- TOPSOIL (0' - 0.3')
- SM (0.3' - 6.5')
- GROUNDWATER (14.0')
- ML (6.5' - 19.0')
- SM / GM (19.0' - 24.0')
- SANDSTONE (24.0' - 24.2')
- COMPLETION DEPTH EL. 913'

GEOTECH SB-02
- NG EL. 1000'
- TOPSOIL (0' - 0.3')
- SM (0.3' - 13.8')
- SANDSTONE (13.8' - 15.1')
- COMPLETION DEPTH EL. 985'

NOTE: REFER TO TEST BORING LOG S2-0020 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:
1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 1528'
   HDD PIPE LENGTH (S=): 1548'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.

NOTES
1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
2	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
1	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
0	ISSUED FOR CONSTRUCTION	MRS	12/21/15	RMB	12/21/15	AAW	12/21/15

Sunoco Logistics Partners L.P.

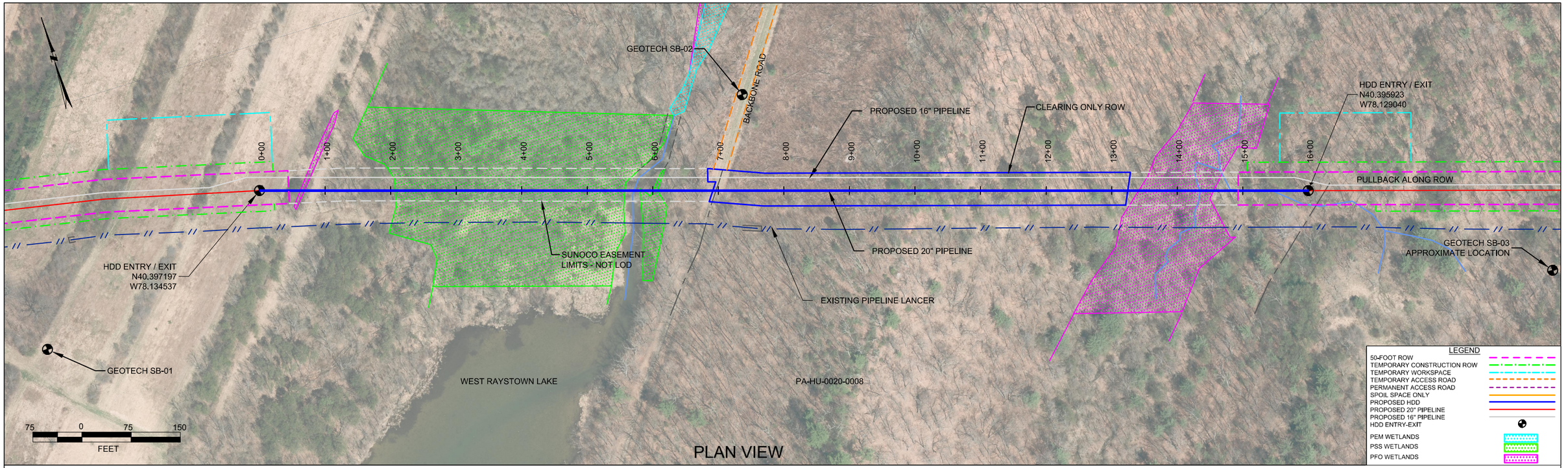
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 9 - HORIZONTAL DIRECTIONAL DRILL
CONEMAUGH RIVER
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=150'

DWG. NUMBER: PA-IN-0000.0001-WX



PLAN VIEW

PROFILE VIEW

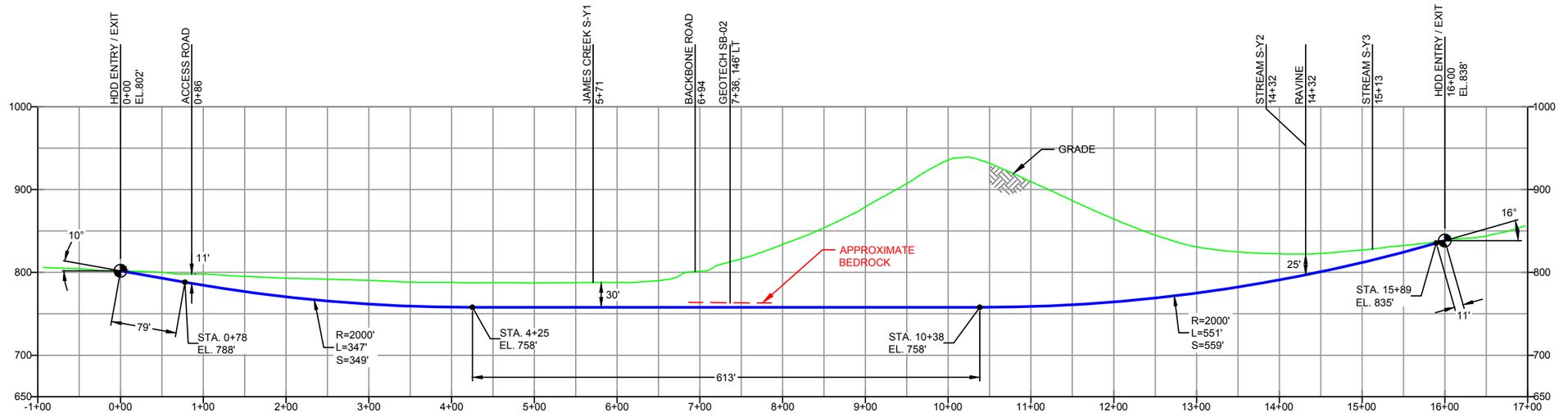
HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0147

GEOTECH SB-01
-NG EL. 810'
-TOPSOIL (0' - 0.3')
-SM (0.3' - 9.6')
-GROUNDWATER (11.0')
-SILTSTONE (9.6' - 17.2')
-COMPLETION DEPTH EL. 793'

GEOTECH SB-02
-NG EL. 803'
-SM/SC (0.0' - 23.5')
-GROUNDWATER (18.0')
-WEATHERED SILTSTONE (23.5' - 29.0')
-FRACTURED SILTSTONE (29.0' - 37.0')
-COMPLETION DEPTH EL. 866'

GEOTECH SB-03
-NG EL. 1121'
-TOPSOIL (0' - 0.2')
-SM (0.2' - 6.0')
-WEATHERED SILTSTONE (6.0' - 10.1')
-COMPLETION DEPTH EL. 793'

NOTE: REFER TO TEST BORING LOG S2-0147 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:
1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):1600'
   HDD PIPE LENGTH (S=):1611'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES
1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
2	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
1	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

Sunoco Logistics Partners L.P.

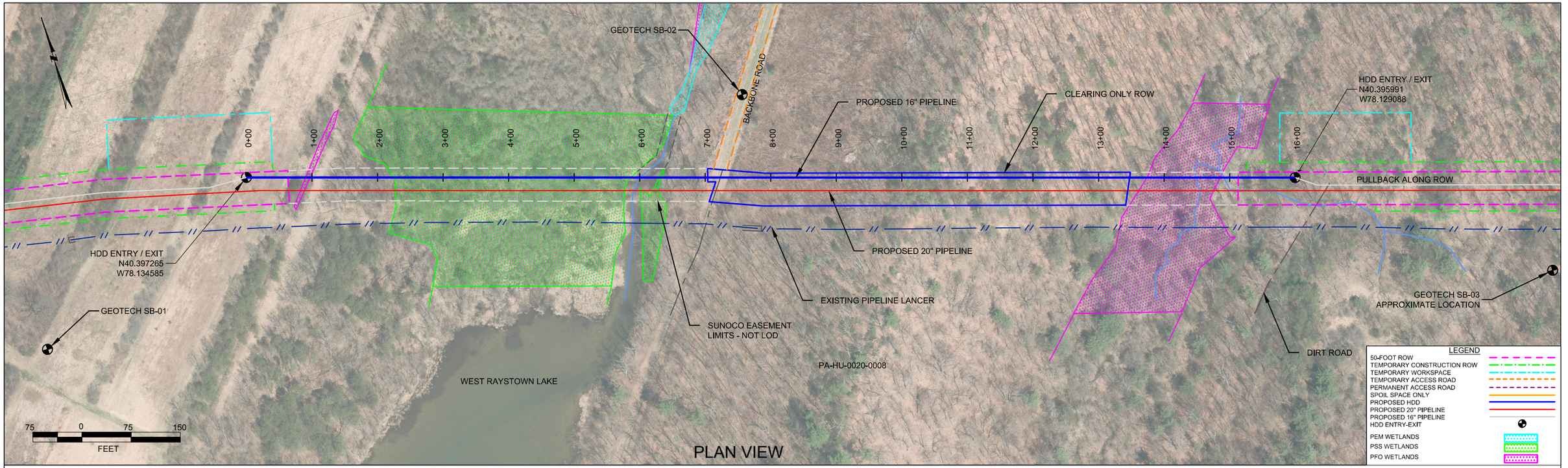
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
WEST RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=150'

DWG. NUMBER: PA-HU-0020.0008-SR



PLAN VIEW

PROFILE VIEW

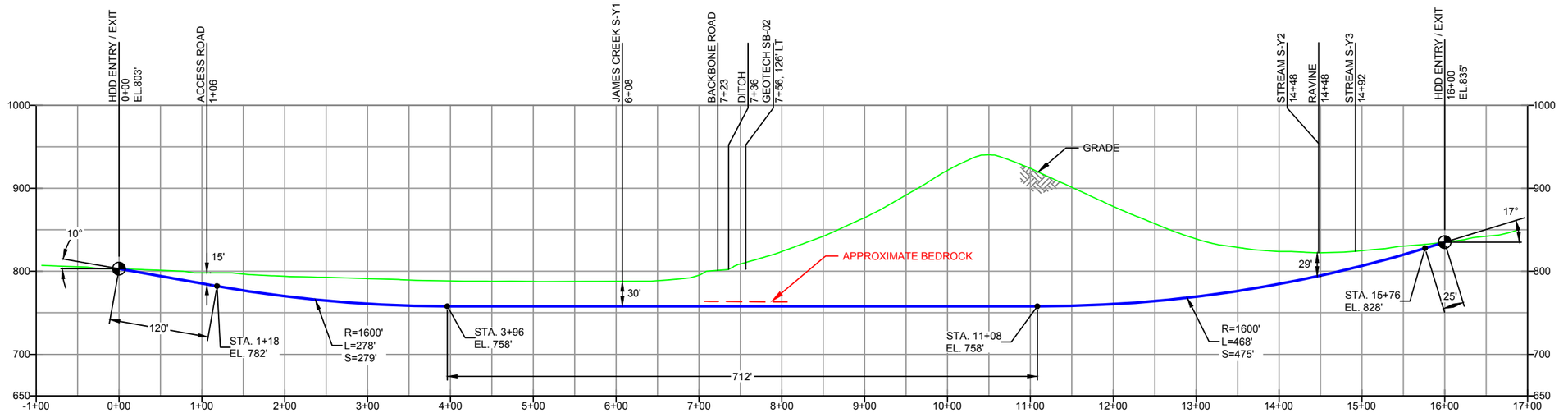
HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0147-16

GEOTECH SB-01
-NG EL. 810'
-TOPSOIL (0' - 0.3')
-SM (0.3' - 9.6')
-GROUNDWATER (11.0')
-SILTSTONE (9.6' - 17.2')
-COMPLETION DEPTH EL. 793'

GEOTECH SB-02
-NG EL. 803'
-SM/SC (0.0' - 23.5')
-GROUNDWATER (18.0')
-WEATHERED SILTSTONE (23.5' - 29.0')
-FRACTURED SILTSTONE (29.0' - 37.0')
-COMPLETION DEPTH EL. 866'

GEOTECH SB-03
-NG EL. 1121'
-TOPSOIL (0' - 0.2')
-SM (0.2' - 6.0')
-WEATHERED SILTSTONE (6.0' - 10.1')
-COMPLETION DEPTH EL. 793'

NOTE: REFER TO TEST BORING LOG S2-0147 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:
1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):1600'
   HDD PIPE LENGTH (S=):1611'
   16" x 0.438" W.T., X-70, APISL, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGH FACTOR 0.50).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES
1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
2	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
1	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

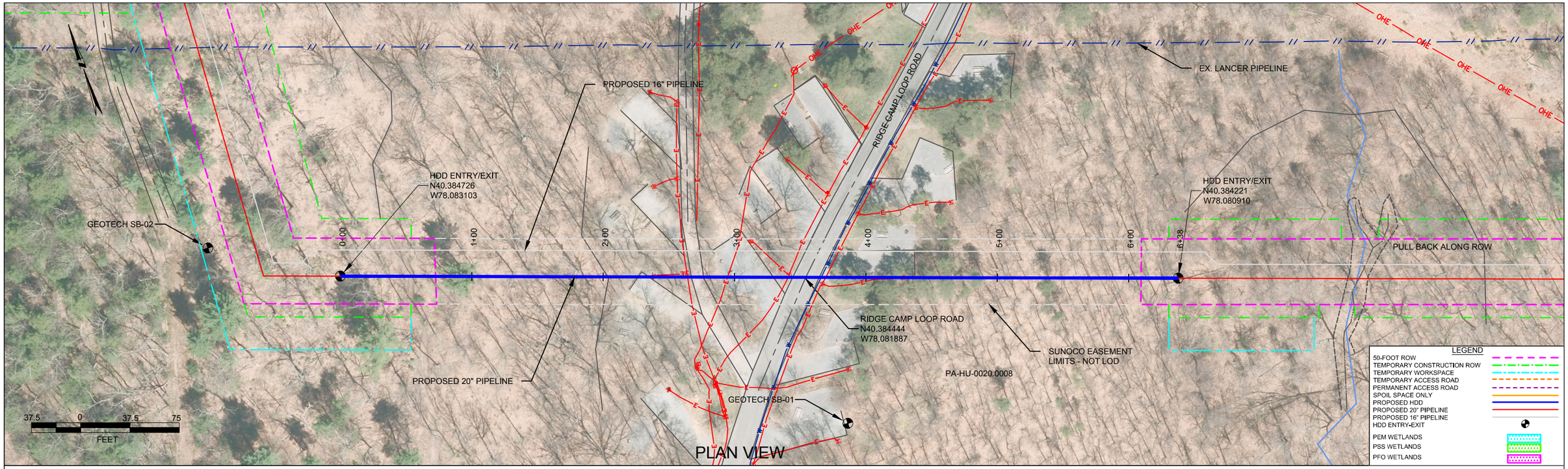
Sunoco Logistics Partners L.P.

TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
WEST RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

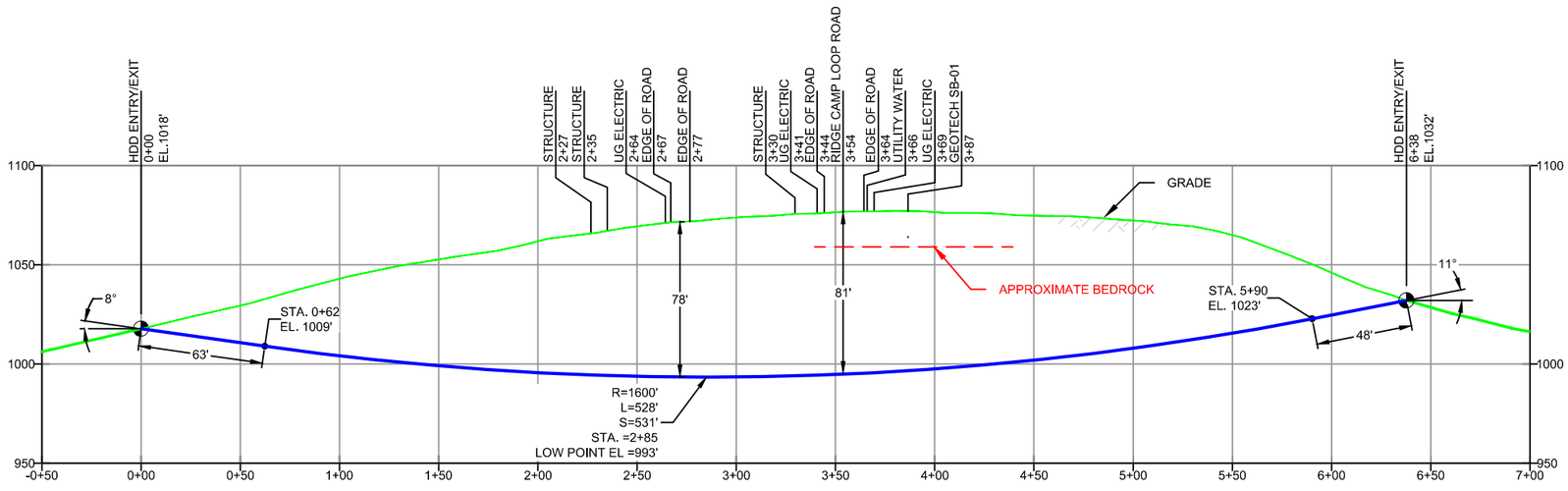
SCALE: 1"=150' | DWG. NO: PA-HU-0020.0008-SR-16



PLAN VIEW

PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0146



GEOTECH SB-01

-NG EL. 1064'
-ML (0.0' - 6.5')
-SM (6.5' - 8.0')
-WEATHERED SHALE (8.5' - 23.5')
-SAND \ GRAVEL CONGLOMERATE (23.5' - 30.0')
-COMPLETION DEPTH EL. 1034'

GEOTECH SB-02

-NG EL. 993'
-SM (0.0' - 7.0')
-WEATHERED SANDSTONE (7.0' - 18.0')
-FRACTURED SILTSTONE \ SANDSTONE (18.0' - 20.5')
-COMPLETION DEPTH EL. 972'

NOTE: REFER TO TEST BORING LOG S2-0146 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 638'
   HDD PIPE LENGTH (S=): 643'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED GEOTECH INFO	MRS	07/19/16	RMB	07/19/16	AAW	07/19/16
0	ISSUED FOR CONSTRUCTION	DLM	04/18/16	RMB	04/18/16	AAW	04/18/16

Sunoco Logistics Partners L.P.

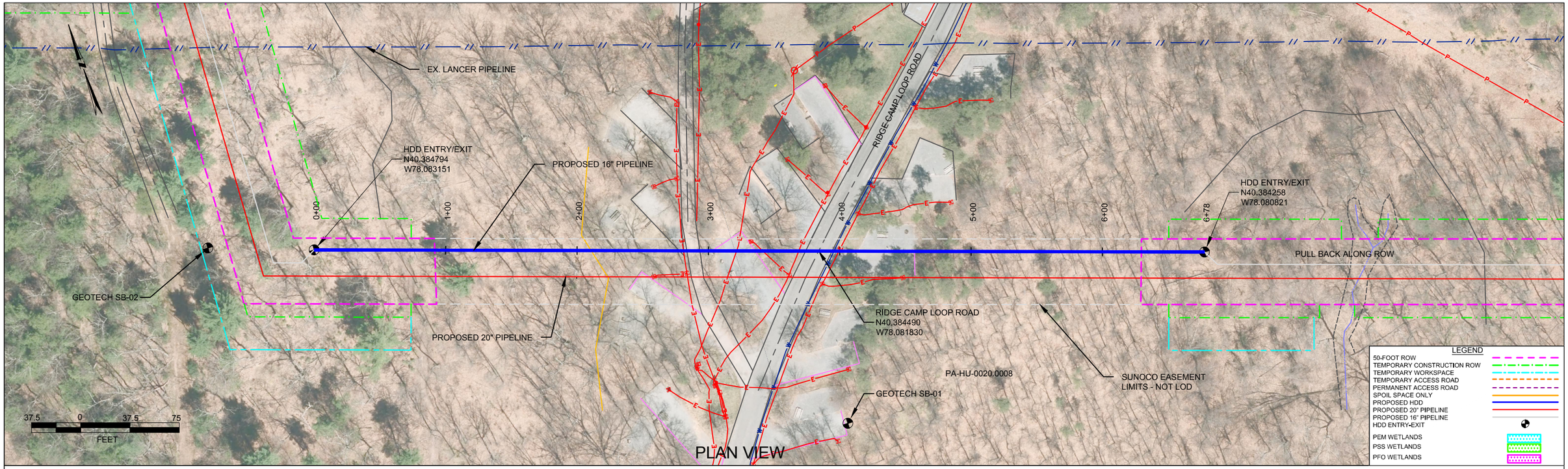
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RIDGE CAMP LOOP ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=75'

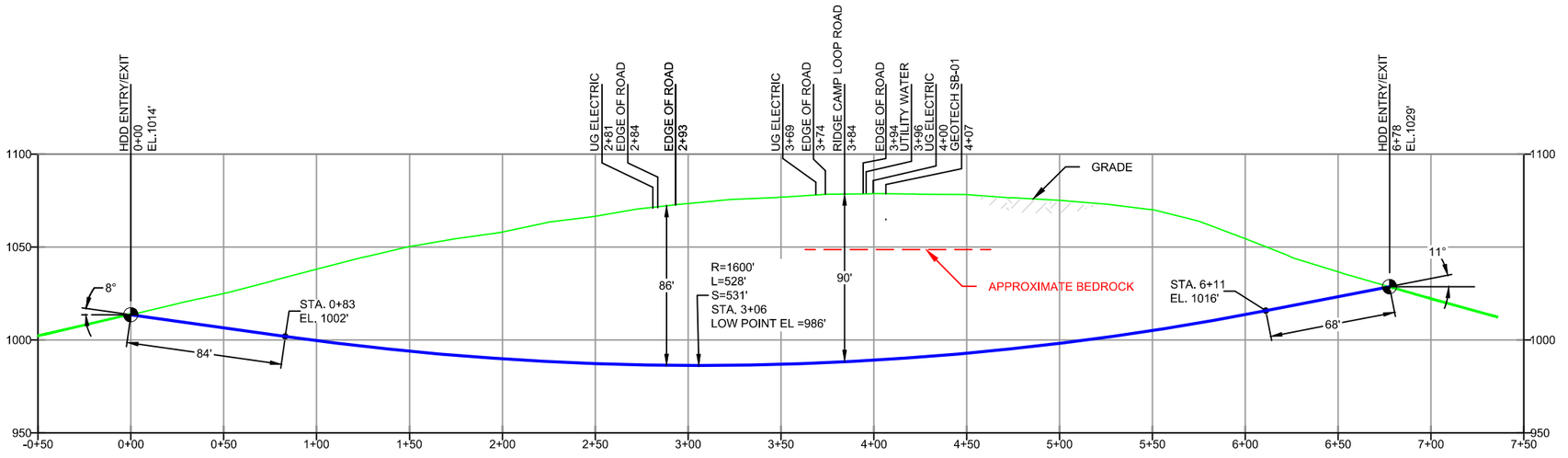
DWG. NUMBER: PA-HU-0020.0007-RD



PLAN VIEW

PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0146-16



GEOTECH SB-01

-NG EL. 1064'
-ML (0.0' - 6.5')
-SM (6.5' - 8.0')
-WEATHERED SHALE (8.5' - 23.5')
-SAND \ GRAVEL CONGLOMERATE (23.5' - 30.0')
-COMPLETION DEPTH EL. 1034'

GEOTECH SB-02

-NG EL. 993'
-SM (0.0' - 7.0')
-WEATHERED SANDSTONE (7.0' - 18.0')
-FRACTURED SILTSTONE \ SANDSTONE (18.0' - 20.5')
-COMPLETION DEPTH EL. 972'

NOTE: REFER TO TEST BORING LOG S2-0146 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 678'
   HDD PIPE LENGTH (S=): 683'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED GEOTECH INFO	MRS	07/19/16	RMB	07/19/16	AAW	07/19/16
0	ISSUED FOR CONSTRUCTION	DLM	04/18/16	RMB	04/18/16	AAW	04/18/16

Sunoco Logistics Partners L.P.

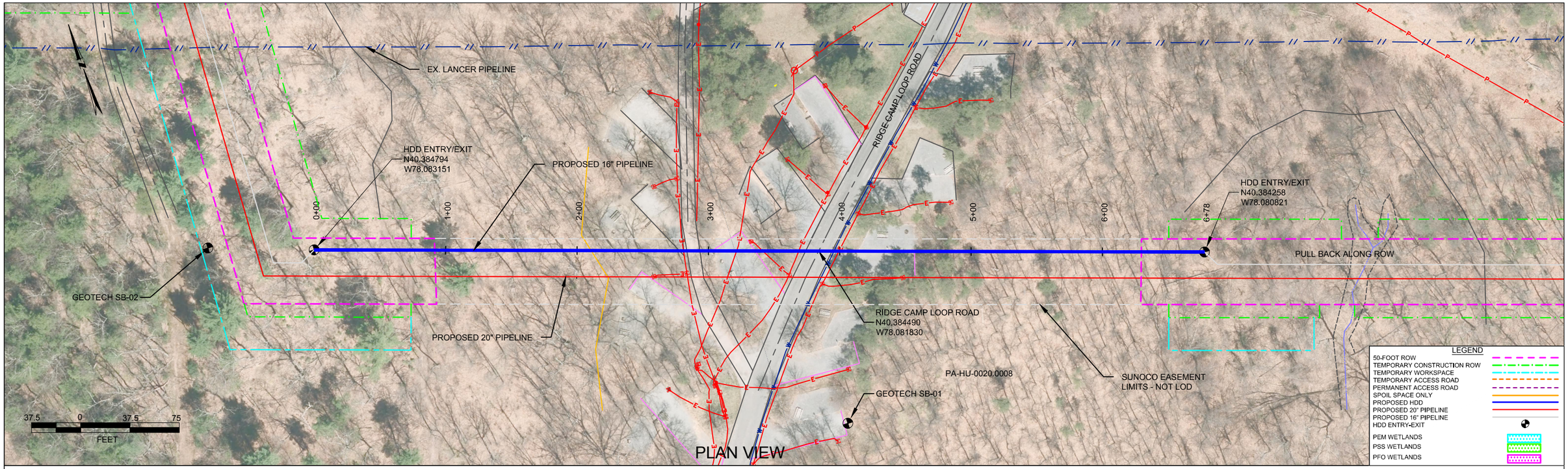
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RIDGE CAMP LOOP ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=75'

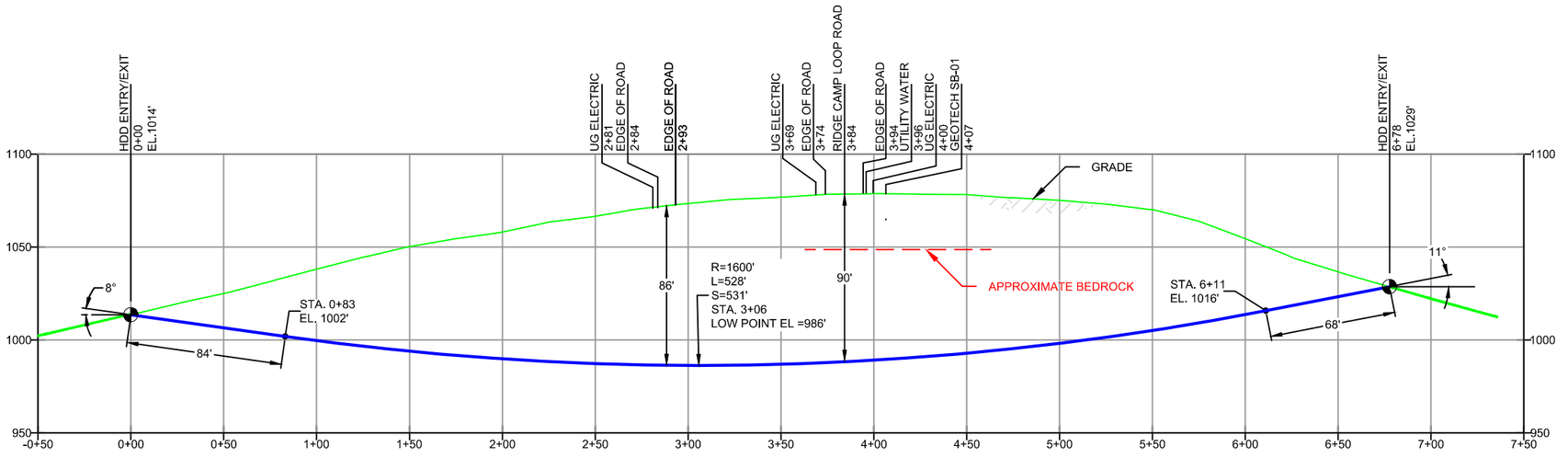
DWG. NO: PA-HU-0020.0007-RD-16



PLAN VIEW

PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0146-16



GEOTECH SB-01

-NG EL. 1064'
-ML (0.0' - 6.5')
-SM (6.5' - 8.0')
-WEATHERED SHALE (8.5' - 23.5')
-SAND \ GRAVEL CONGLOMERATE (23.5' - 30.0')
-COMPLETION DEPTH EL. 1034'

GEOTECH SB-02

-NG EL. 993'
-SM (0.0' - 7.0')
-WEATHERED SANDSTONE (7.0' - 18.0')
-FRACTURED SILTSTONE \ SANDSTONE (18.0' - 20.5')
-COMPLETION DEPTH EL. 972'

NOTE: REFER TO TEST BORING LOG S2-0146 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 678'
   HDD PIPE LENGTH (S=): 683'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED GEOTECH INFO	MRS	07/19/16	RMB	07/19/16	AAW	07/19/16
0	ISSUED FOR CONSTRUCTION	DLM	04/18/16	RMB	04/18/16	AAW	04/18/16

Sunoco Logistics Partners L.P.

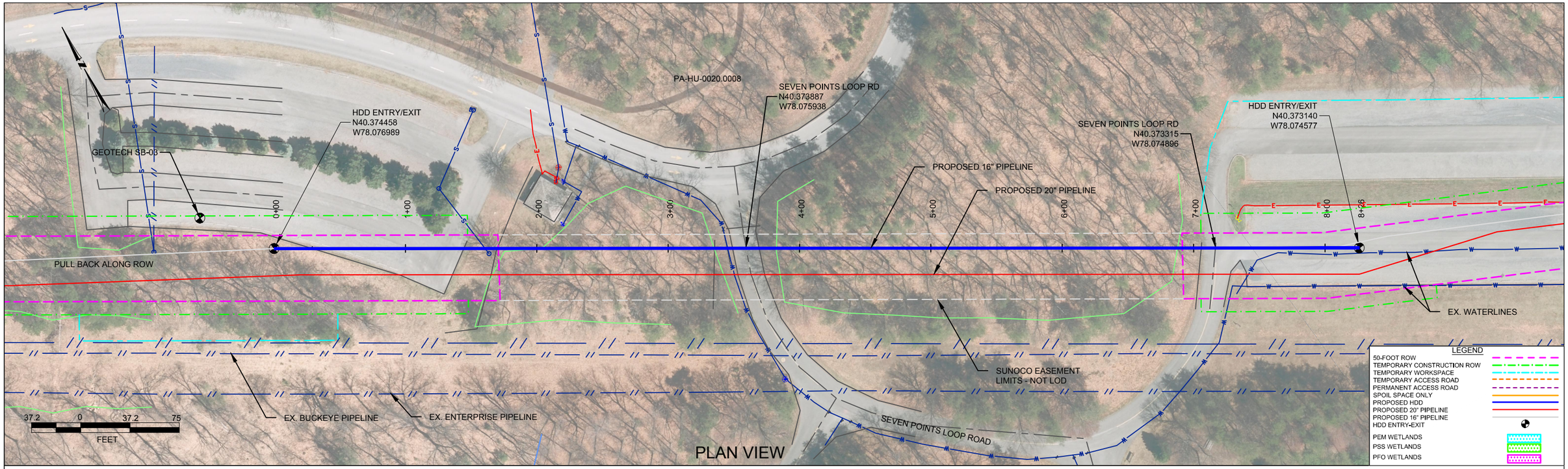
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RIDGE CAMP LOOP ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=75'

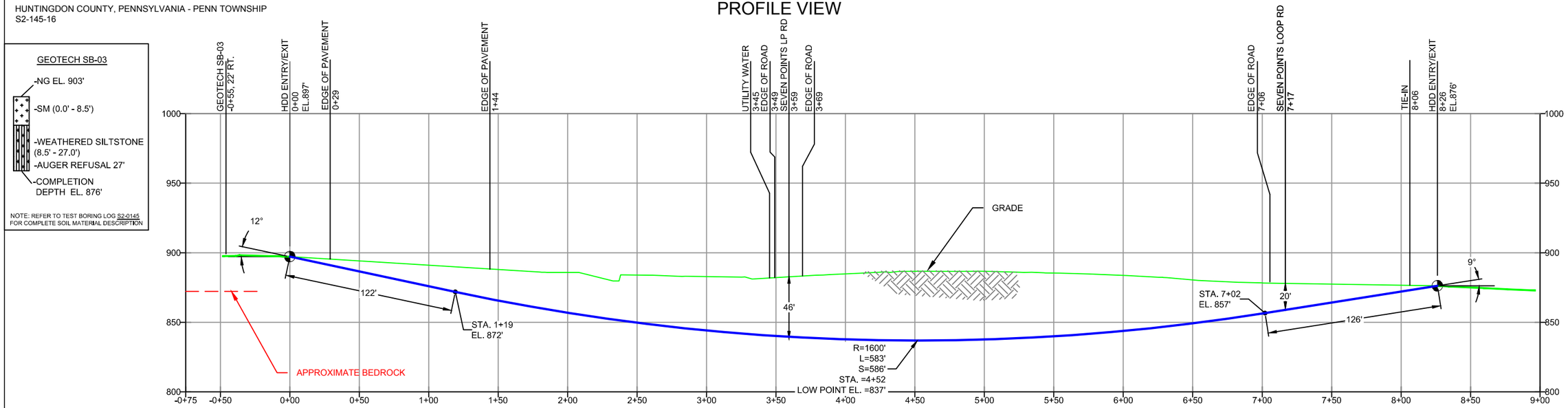
DWG. NO: PA-HU-0020.0007-RD-16



PLAN VIEW

PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-145-16



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 826'
   HDD PIPE LENGTH (S=): 835'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	ADDED GEOTECH INFO	MRS	07/19/16	RMB	07/19/16	AAW	07/19/16
0	ISSUED FOR CONSTRUCTION	DLM	04/18/16	RMB	04/18/16	AAW	04/18/16

Sunoco Logistics Partners L.P.

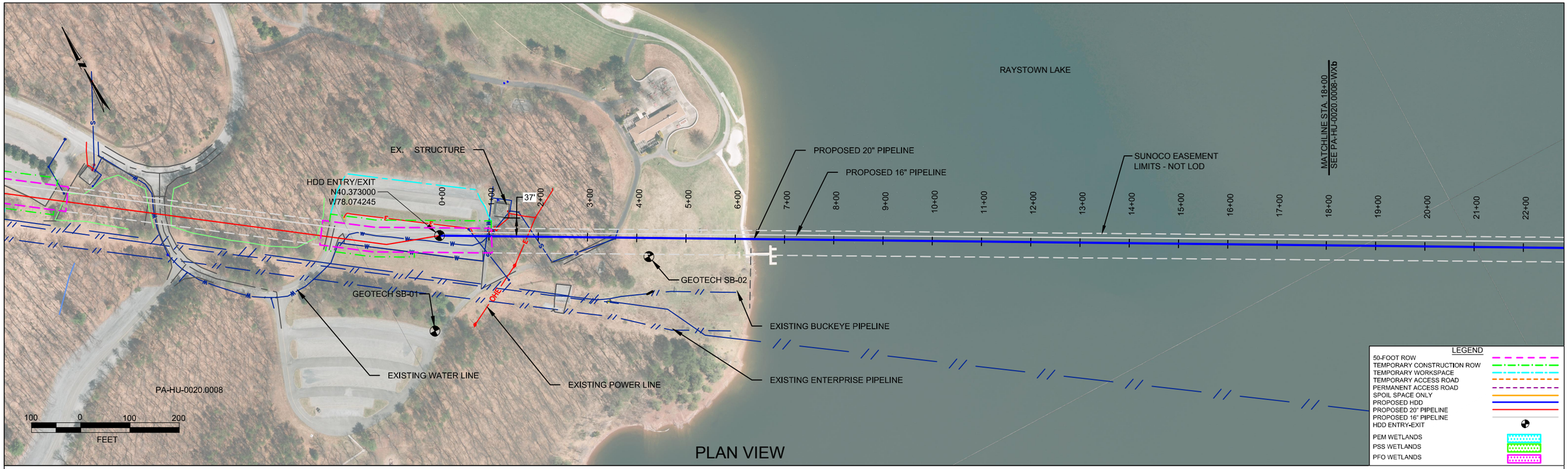
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
SEVEN POINT LOOP ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

DWG. NO: PA-HU-0025.0000-RD3-16



PLAN VIEW

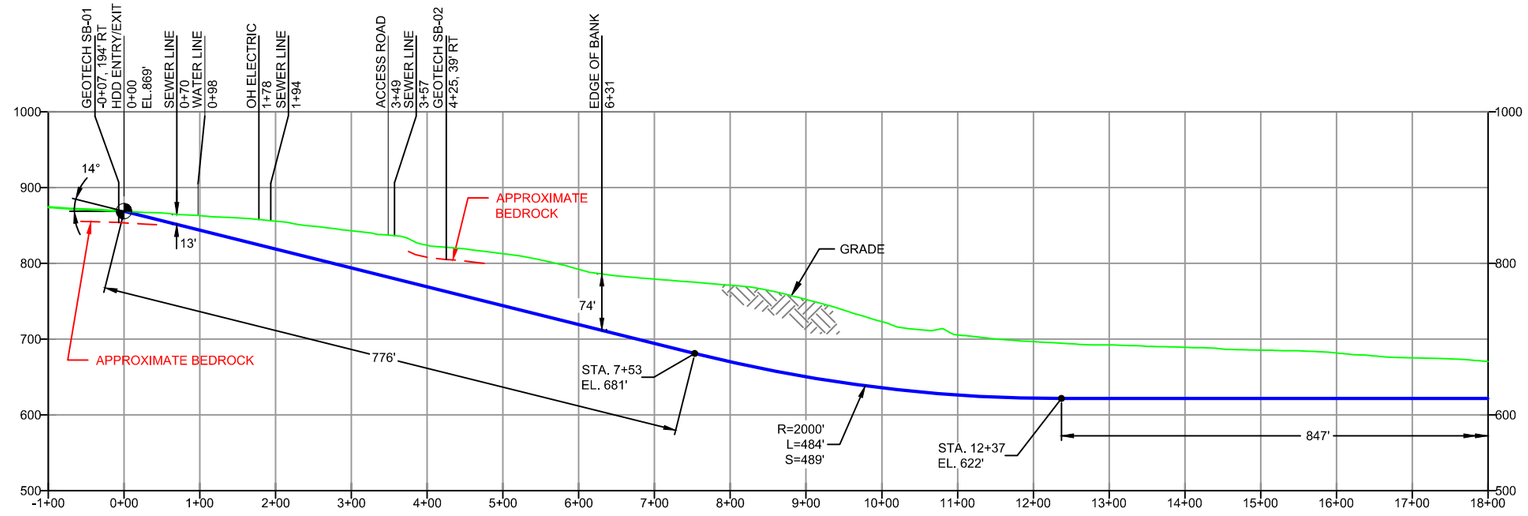
HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0150A

PROFILE VIEW

GEOTECH SB-01
-NG EL. 882'
-TOPSOIL (<0.1')
-SM (0.0' - 12.5')
-SILTSTONE (12.5' - 14.0')
-COMPLETION DEPTH EL. 868'

GEOTECH SB-02
-NG EL. 824'
-TOPSOIL (0.0' - 0.3')
-SM (0.3' - 5.0')
-SILTSTONE (5.0' - 16.0')
-COMPLETION DEPTH EL. 808'

NOTE: REFER TO TEST BORING LOG S2-0150 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 3650'
   HDD PIPE LENGTH (S=): 3780'
   20" x 0.456" W.T., X-65, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	DESIGN CHANGE	MRS	04/04/16	RMB	04/04/16	AAW	04/04/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

Sunoco Logistics Partners L.P.

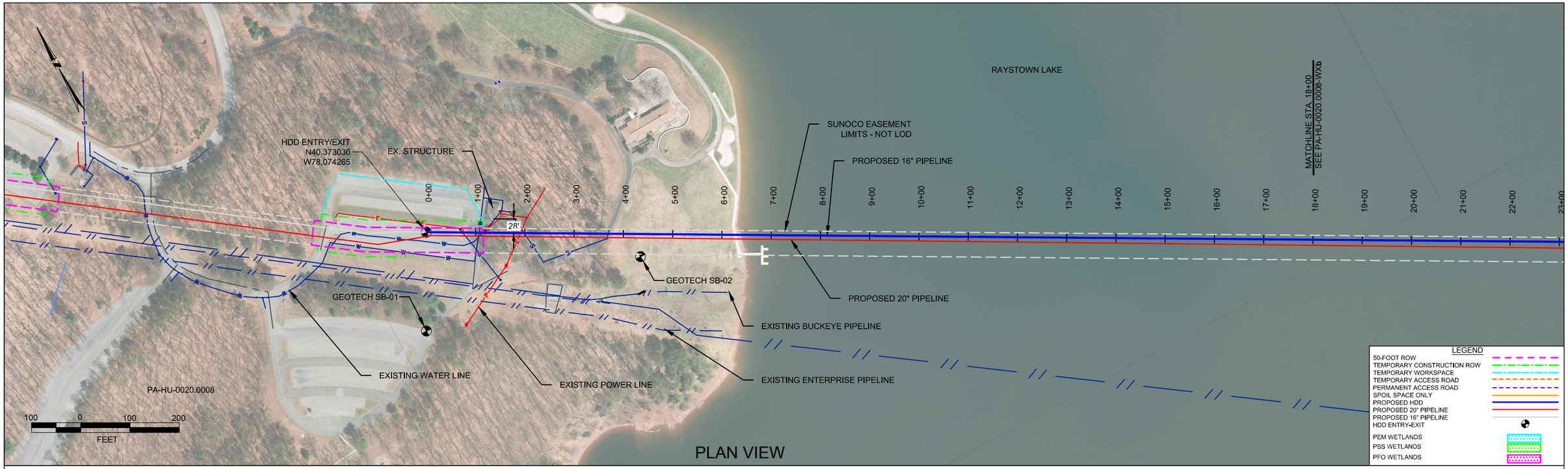
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

DWG. NUMBER: PA-HU-0020.0008-WXa



PLAN VIEW

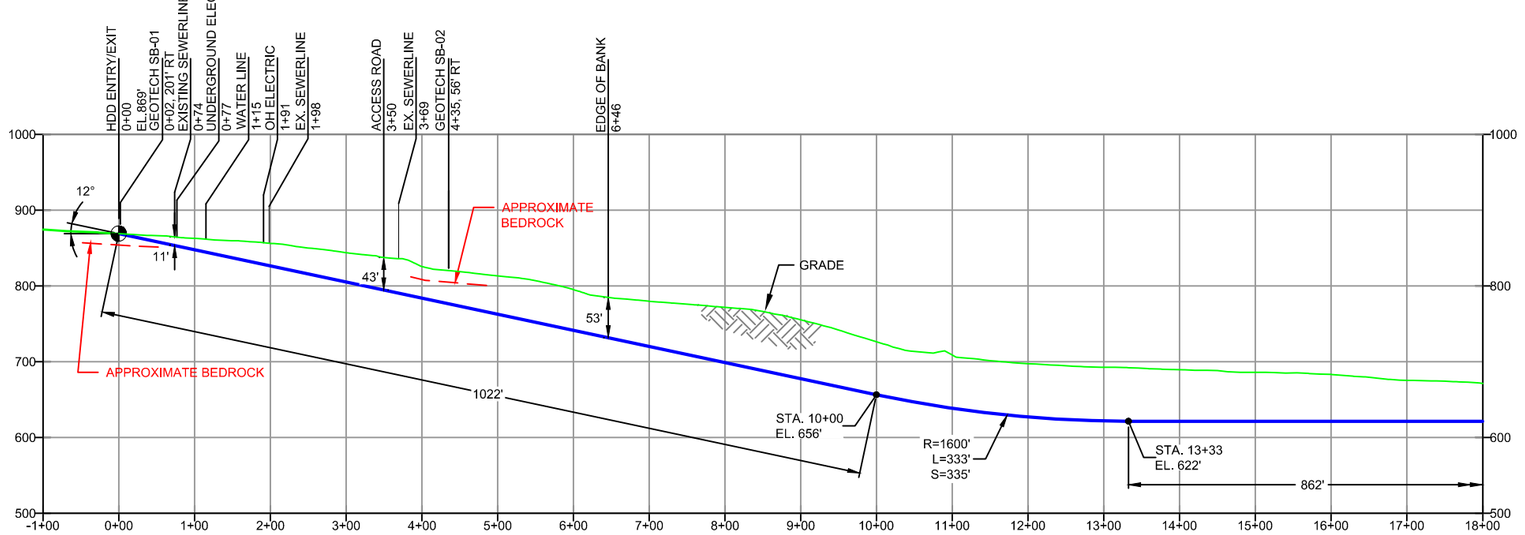
PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0150A-16

GEOTECH SB-01
- NG EL. 882'
- -TOPSOIL (<0.1')
- -SM (0.0' - 12.5')
- -SILTSTONE (12.5' - 14.0')
- -COMPLETION DEPTH EL. 868'

GEOTECH SB-02
- NG EL. 824'
- -TOPSOIL (0.0' - 0.3')
- -SM (0.3' - 5.0')
- -SILTSTONE (5.0' - 16.0')
- -COMPLETION DEPTH EL. 808'

NOTE: REFER TO TEST BORING LOG S2-0150 FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:
1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 3680'
   HDD PIPE LENGTH (S=): 3808'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES
1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	DESIGN CHANGE	MRS	04/04/16	RMB	04/04/16	AAW	04/04/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

Sunoco Logistics Partners L.P.

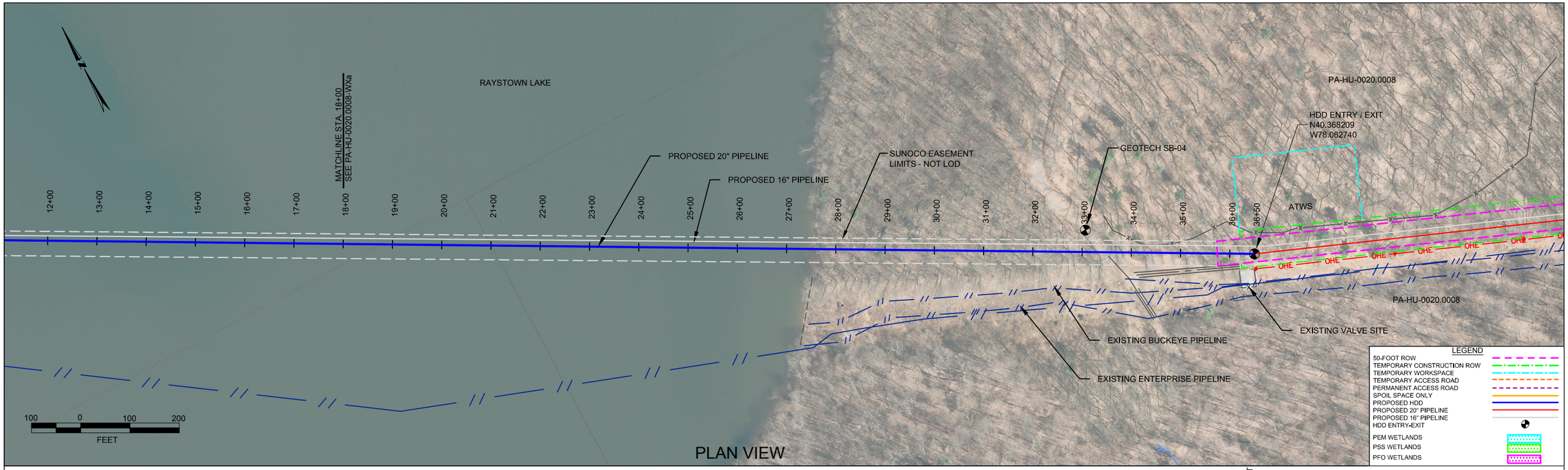
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

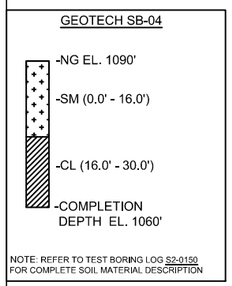
DWG. NO: PA-HU-0020.0008-WXa-16



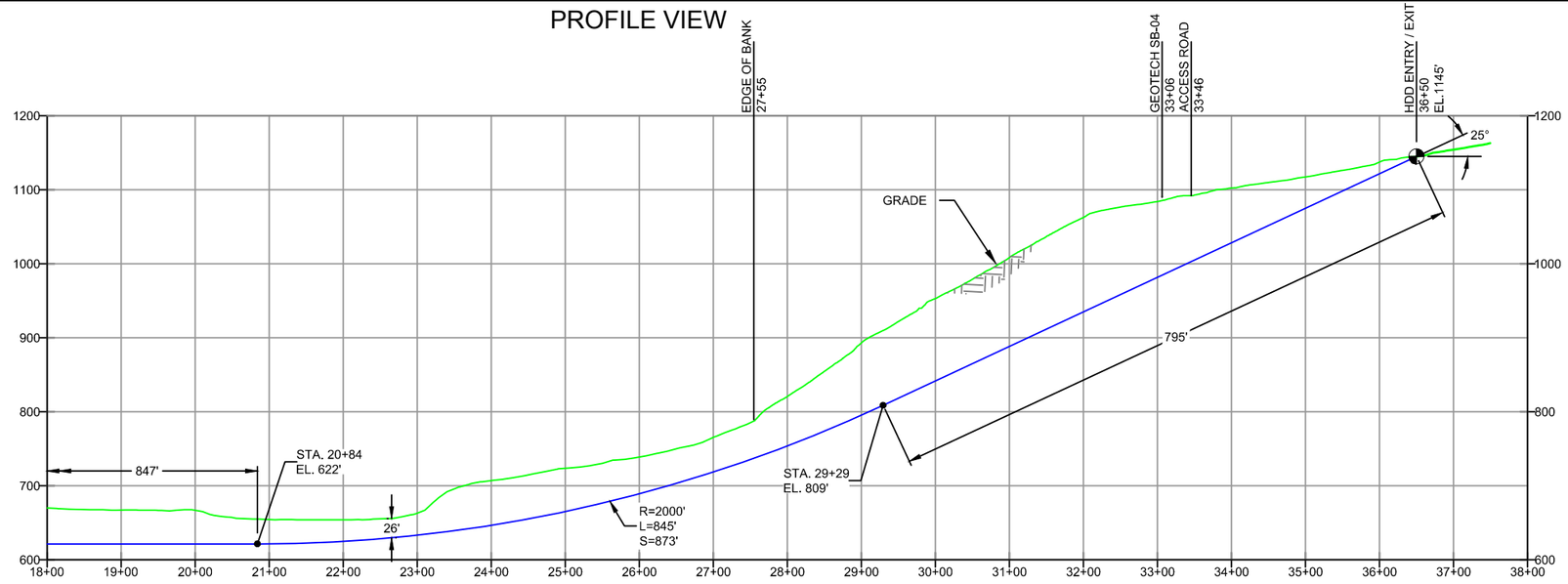
PLAN VIEW

PROFILE VIEW

HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNHIP
S2-0150B



NOTE: REFER TO TEST BORING LOG S2-0150
FOR COMPLETE SOIL MATERIAL DESCRIPTION



DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=):
   HDD PIPE LENGTH (S=): 3650'
   20" x 0.456" W.T., X-65, API 5L PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	MRS	08/26/16	RMB	08/26/16	AAW	08/26/16
1	DESIGN CHANGE	MRS	04/04/16	RMB	04/04/16	AAW	04/04/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

Sunoco Logistics Partners L.P.

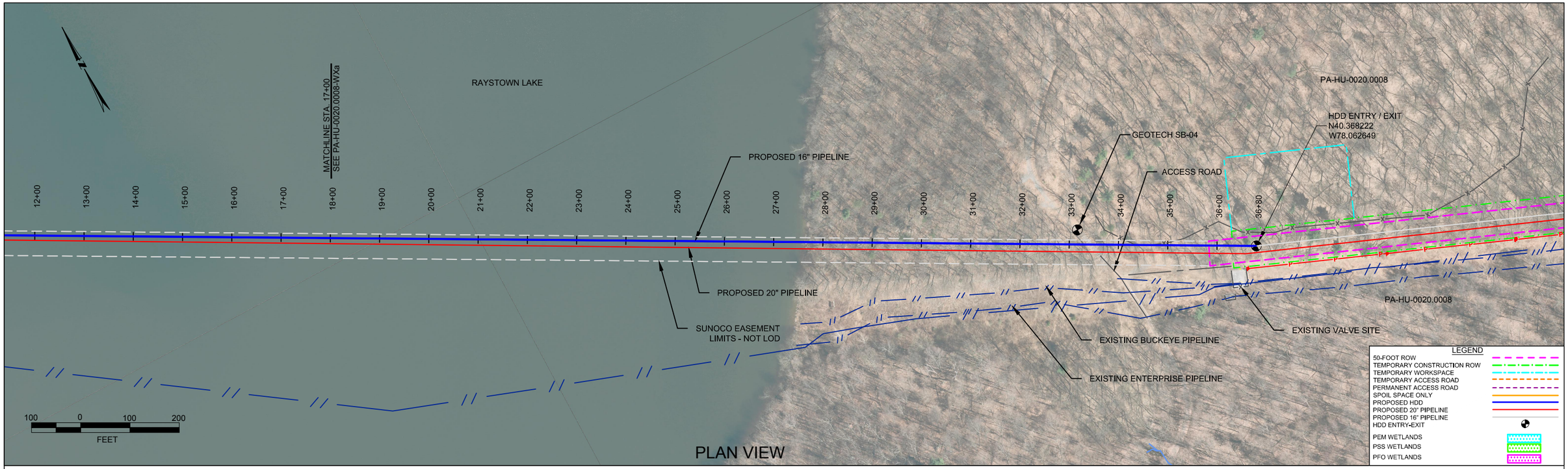
TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

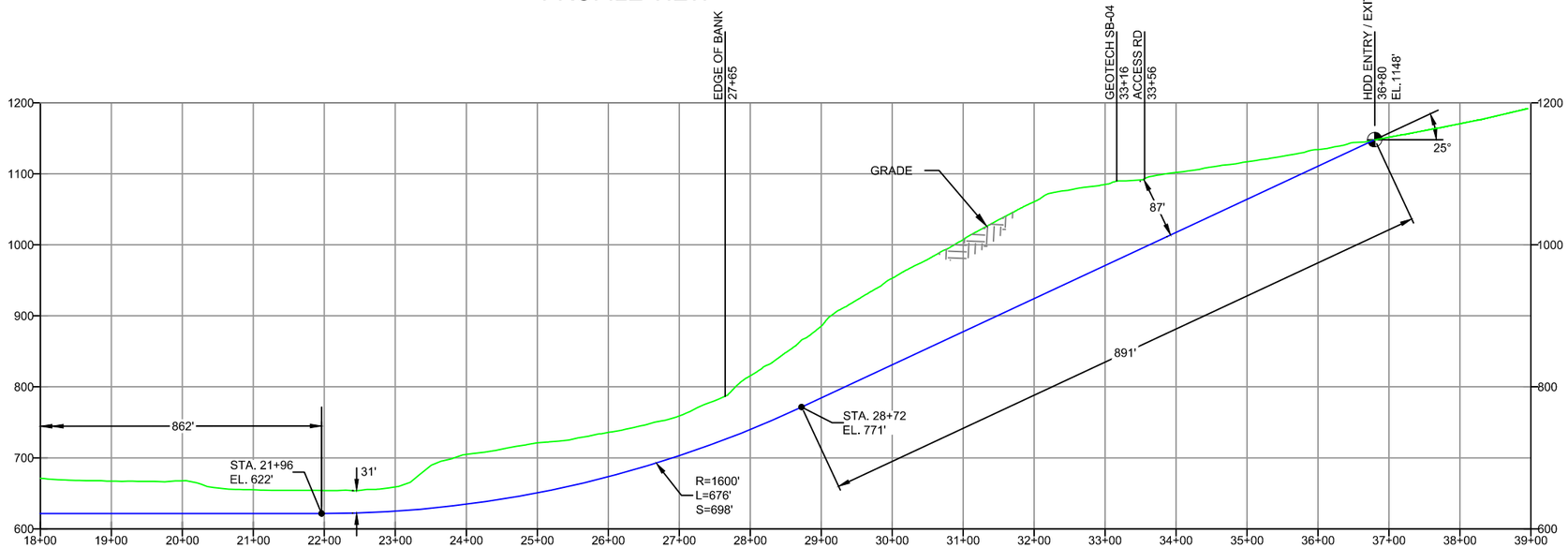
SCALE: 1"=200'

DWG. NUMBER: PA-HU-0020.0008-WXb



PLAN VIEW

PROFILE VIEW



HUNTINGDON COUNTY, PENNSYLVANIA - PENN TOWNSHIP
S2-0150B-16

GEOTECH SB-04

-NG EL. 1090'

-SM (0.0' - 16.0')

-CL (16.0' - 30.0')

-COMPLETION DEPTH EL. 1060'

NOTE: REFER TO TEST BORING LOG S2-0150 FOR COMPLETE SOIL MATERIAL DESCRIPTION

DESIGN AND CONSTRUCTION:

1. CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXITING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
2. THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
3. DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
4. CROSSING PIPE SPECIFICATION:
   HDD HORZ. LENGTH (L=): 3680'
   HDD PIPE LENGTH (S=): 3808'
   16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
   COATING: 14-16 MILS FBE WITH 40 MILS MIN. ARO (POWERCRETE R95)
5. INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50 (HOOP STRESS)).
6. INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
7. PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
8. CARRIER PIPE NOT ENCASED.
9. PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
11. SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
12. SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
13. SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
2. STATIONING IS BASED ON HORIZONTAL DISTANCES.
3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP, FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

REVISIONS

NO.	DESCRIPTION	BY	DATE	CHK	DATE	APP	DATE
3	REVISED PER US ARMY CORPS COMMENTS 9/29/16	MRS	09/29/16	RMB	09/29/16	AAW	09/29/16
2	REVISED PER ENGINEERING COMMENTS	DLM	08/26/16	RMB	08/26/16	AAW	08/26/16
1	DESIGN CHANGE	MRS	04/04/16	RMB	04/04/16	AAW	04/04/16
0	ISSUED FOR CONSTRUCTION	MRS	12/22/15	RMB	12/22/15	AAW	12/22/15

Sunoco Logistics Partners L.P.

TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

FIGURE 10 - HORIZONTAL DIRECTIONAL DRILL
RAYSTOWN LAKE
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=200'

DWG. NO: PA-HU-0020.0008-WXb-16

PA-WM2-0099.0000

EXISTING GAS LINE
EXISTING DOMINION PIPELINE
EXISTING PETROLEUM SERVICES PIPELINE
EXISTING OVERHEAD POWER LINE (TYP)
PROPOSED FENCE
BLOCK VALVE TURNAROUND AND PAD SITE
ACCESS ROAD
12' SWING GATE (TYP)
BERM
EXISTING PIPELINE
USACE PROPERTY BOUNDARY
EXISTING CONTROL BUILDING
EXISTING 8" SUNOCO PIPELINE
LIMITS OF DISTURBANCE BOUNDARY (LOD)
EXISTING PAD SITE
WESTINGHOUSE ROAD
STEPS
OPS BUILDING

2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219

0+00 N: 408719.20 E: 1535586.77
1+00
2+00 N: 408737.82 E: 1535785.77
L1 L2 L3

Point Table		
Point #	Northing	Easting
2201	408702.2839	1535594.7771
2202	408736.9854	1535603.7684
2203	408740.9945	1535660.1720
2204	408765.8767	1535657.3057
2205	408780.8570	1535778.3242
2206	408746.3834	1535782.4947
2207	408755.3893	1535859.5871
2208	408731.0698	1535862.2615
2209	408696.5223	1535818.7684
2210	408687.8197	1535789.1927

Point Table		
Point #	Northing	Easting
2211	408674.7763	1535703.9443
2212	408673.2614	1535667.9744
2213	408706.8914	1535664.1004
2214	408756.9731	1535668.4725
2215	408768.4167	1535767.8155
2216	408698.8766	1535775.8261
2217	408688.3439	1535705.7844
2218	408702.4095	1535705.1382
2219	408699.4119	1535674.9991

ALIGNMENT LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	50.64'	N88° 10' 24"E
L2	34.97'	N83° 34' 56"E
L3	114.39'	N83° 25' 44"E

N

PLAN
SCALE 1" = 10'
10' 0' 10' 20'
WHEN PLOTTED AT 24"x36"

TETRA TECH ROONEY
(303) 792-5911

REV.	DATE	APP#	DESCRIPTION	APPROVAL
B	11/30/15	3840-00555	ISSUED FOR BID	DK US ZB
A	05/29/15	-	ISSUED FOR REVIEW	PK US ZB

ENGINEERING RECORD	
DRAWN BY	P.KOWALKE
CHECKED BY	U.SOWELL
APPROVED BY	Z.BAUER
DATE	2015/05/29
SCALE	1"=10'
REI PROJECT #	02959

Sunoco Logistics Partners L.P.

FIGURE 11
PROPOSED EXPANSION
CONEMAUGH RIVER LAKE
BLOCK VALVE SITE PLAN

DERRY WESTMORELAND, PA

OLD DRAWING NO.

E WSTN C100000 B

C:\pwworking\rei\dms10577\E_WSTN_C100000.dwg Darren.Kirk Thu, 12/17/15 9:01 AM

Point Table		
Point #	Northing	Easting
2201	379791.3307	1877000.8826
2202	379784.3380	1877010.6346
2203	379752.1215	1876972.7085
2204	379745.2871	1876982.6326
2205	379737.8314	1876980.8769
2206	379737.6258	1876967.8516
2207	379723.9327	1876974.6495
2208	379731.3332	1876984.9320
2209	379687.6934	1877045.7908
2210	379676.6272	1877039.5960
2211	379655.8333	1877026.1270

Point Table		
Point #	Northing	Easting
2212	379630.2692	1877059.7676
2213	379622.4119	1877055.5751
2214	379572.6342	1877124.9939
2215	379620.4420	1877159.2751
2216	379695.5144	1877054.5808
2217	379813.1920	1876983.5976
2218	379630.5169	1877238.3522
2219	379494.1648	1877140.5791
2220	379530.9362	1877089.3188
2221	379724.2664	1876919.8323

N

PLAN
SCALE 1" = 20'
20' 0' 20' 40'
WHEN PLOTTED AT 24"x36"

REV.	DATE	APP#	DESCRIPTION	APPROVAL
B	11/02/15	3840-00555	ISSUED FOR BID	JS US ZB
A	05/29/15	3840-00555	ISSUED FOR REVIEW	PK US ZB

ENGINEERING RECORD	
DRAWN BY	P.KOWALKE
CHECKED BY	U.SOWELL
APPROVED BY	Z.BAUER
DATE	2015/08/20
SCALE	1" = 20'
REI PROJECT #	02959

TETRA TECH ROONEY
(303) 792-5911

Sunoco Logistics Partners L.P.

FIGURE 12
PROPOSED RAYSTOWN LAKE BLOCK VALVE SITE PLAN

PENN HUNTINGDON, PA

OLD DRAWING NO.

E□SEVE□C100000

B

C:\pwworking\rei\dms09894\E_SEVE_C100000.dwg Darren.Kirk Wed, 12/16/15 8:40 AM

2.0 ALTERNATIVES CONSIDERED

To the extent practicable, SPLP proposes to collocate the Project adjacent or parallel to SPLP's existing ROW and other existing pipeline/utility line ROWs for the majority of the pipeline route. In addition to this overall routing strategy, SPLP considered several alternatives at USACE owned/administered properties such as the No Action Alternative; an existing pipeline ROW alternative (Alternative 1), a Ridge Camp reroute alternative (Alternative 2), and a block valve station alternative at Raystown Lake (Alternative 3); and, an open cut construction method alternative at both Loyalhanna Lake (Alternative 4) and Conemaugh River Lake (Alternative 5) as described in the following subsections. A tabular summary of impacts associated with the alternatives evaluated is provided in Table 2 at the end of this section.

2.1 No Action Alternative

In accordance with USACE Engineering Circular 1165-2-216, 7(c)(3)(c)(v), "reasonable alternatives must be those that are feasible, and such feasibility must focus on the accomplishment of the underlying purpose and need (of the requester) that would be satisfied by the proposed federal action (granting of permission for the alteration). For Section 408 requests, reasonable alternatives should focus on two scenarios: 1) no action and 2) action."

Under the No Action Alternative, USACE would not allow additional SPLP pipeline ROW on USACE-owned properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. SPLP would not be able to provide additional firm transportation service of NGLs, and service would remain similar to existing flows and rates, unless SPLP routed the new pipeline on an alignment that avoids USACE properties. SPLP conducted a preliminary analysis of reroutes (alternative alignments) around USACE owned/administered properties and determined that reroutes were not reasonable based on a variety of factors including environmental, technical, and economic. For example, potential reroutes around Loyalhanna Lake would result in two (2) miles of additional pipeline mileage (*i.e.*, both to the north or to the south), through previously undisturbed areas, including forested habitat, agricultural, and residential uses. Reroutes around the Conemaugh River Lake to the north would also result in additional pipeline mileage including potential recreational impacts to the W. Penn Trail, additional impacts to Conemaugh River Lake (as it would require two [2] crossings), and potentially increased aquatic resource impacts. A reroute to the south of the Conemaugh River Lake area would result in additional impacts including traffic/access impacts to the William Penn Highway (US-22) and the heavily developed borough of Blairsville. Furthermore, instead of an expansion of the existing block valve in the Conemaugh River Lake area, a new block valve would likely have to be built, resulting in potentially increased environmental impacts to previously undisturbed areas. For similar reasons, reroutes around Raystown Lake were considered not feasible.

The No Action Alternative would avoid Project-related environmental impacts on USACE-owned parcels associated with Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake, but would likely result in potentially greater adverse impacts on aesthetics, biological resources, floodplains/wetlands, recreational uses, traffic, and health/safety impacts if the Project were rerouted to the areas to the north and/or south. This discussion is presented in Section 3.0. Affected Environment and Environmental Impacts.

While the No Action Alternative would not preclude SPLP from finding alternative routes to provide additional NGL transport services, reroutes around USACE properties would not represent the least environmentally damaging practicable alternative. SPLP and its customers would likely find alternative means to transport NGLs produced in the central Marcellus fairway to accessible markets. Construction of other pipelines and the associated environmental impacts would likely be necessary because the existing infrastructure is currently not sufficient to provide firm transportation service for the large volumes required to be transported. In addition, alignments around USACE-owned properties would involve more environmental impacts associated with cutting more forested/undisturbed areas, stream crossings, and developed/residential areas. As such, the No-Action Alternative would perpetuate the status quo on federal property, but other off-site alternatives are expected to result in more environmental impacts.

2.2 Preferred Alternative – Proposed Project

The Preferred Alternative (also referred to herein as the Project) involves the approval of the Proposed Action, as described in Section 1.0, and the construction and operation of approximately five (5) miles of pipeline through USACE owned-parcels in Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake properties. This Alternative would fulfill the Project's purpose and need and provide additional NGL transport services across the Commonwealth. Under the Preferred Alternative, the Project would site the Project ROW parallel to and overlapping SPLP's existing ROW at Loyalhanna Lake and Conemaugh River Lake. However, at Raystown Lake, the Preferred Alternative would veer north of SPLP's existing ROW to parallel other utility ROWs (i.e., the Lancer Pipeline and Raystown Lake Park utility lines). Colocation of the Project with existing ROWs and other utility ROWs was preferred as it would result in minimal tree clearing, limited changes in existing land uses, minimal change in the existing visual/aesthetic resources, reduced impacts to wetlands/streams, and minimal potential impacts to threatened and endangered bat species on USACE properties. To further reduce aquatic resource impacts, the Preferred Alternative would also incorporate the use of HDD construction methods under major waterbody crossings. In consultation with USACE, HDD construction methods would also be employed to avoid recreational areas and parking areas, to further minimize potential recreational, aesthetic/visual, and traffic impacts. This Alternative would also include restoration/mitigation involving the reforestation and revegetation of both temporary and 50-foot workspaces within the Project ROW with similar existing forest types and a USACE approved Xerces pollinator seed mix in support of USACE's goals and Presidential directives. Nonetheless, this Alternative would result in disturbance to approximately 1.4 acres of a newly established BCA at Raystown Lake. Therefore, this alternative would require compensatory mitigation including the installation of six (6) artificial roost structures and girdling of 20 trees, and invasive species control to improve/create bat habitat on the property and minimize the Preferred Alternative's potential impacts to bat habitat. In addition, the Preferred Alternative would require setting aside funds for the IBCF. Overall, the Preferred Alternative was identified as the most environmentally and economically feasible alternative that supports the purpose and need of the proposed Project.

2.3 Alternative 1 - Existing SPLP Pipeline ROW (Raystown Lake)

SPLP initially considered routing the new pipelines along the existing SPLP pipeline ROW approximately 0.33 mile south of the Preferred Alternative route, through the same USACE-administered parcels near Raystown Lake as shown in Figure 13. Specifically, this alternative would enter Raystown Lake at/near Weller Road and cross one (1) bay of Raystown Lake until it

exits less than 0.10 mile (approximately 500 feet) west of Hollow Road. The pipeline would then re-enter Raystown Lake at Upper Corners Road (near Trail's Campground) and traverse southeast on the existing ROW, until it crosses a small bay of Raystown Lake and continues southeast past Seven Points Road towards the northern edge of the marina.

This Alternative was considered because it would parallel an existing pipeline owned by SPLP. However, due to the location of the existing pipelines/structures in this area, the new pipelines would have to be located on the south side of the existing ROW, requiring two (2) crossings of open water areas of Raystown Lake (Figure 13). Depending on the amount of rainfall in the area, and due to the proximity of the construction workspace near the lake and surrounding terrain, this alternative would limit construction timing, and result in an increase in potential health and safety hazards to those working on the Project. This Alternative would also potentially require a total of three (3) crossings through Raystown Lake (open water crossing about 1,000 feet longer than the Preferred Alternative) until the Project exits Raystown Lake approximately 0.3 mile west of Buck Run Road. Similar to the Preferred Alternative, this alternative would require crossing through approximately 1.4 acres of a BCA at Raystown Lake. This alternative would result in increased environmental impacts including water/lake crossing impacts, increased erosion/sedimentation concerns, increased potential for health and safety impacts, and potential impacts to recreational activities occurring near Trail's Campground and at the marina. The Preferred Alternative parallels a different existing ROW and was deemed to be the environmentally preferable route. Thus, this Alternative was eliminated from further consideration.

2.4 Alternative 2 – Ridge Camp South Minor Reroute (Raystown Lake)

Under this Alternative, the pipeline ROW through Raystown Lake would be the same route as the Preferred Alternative except for a short deviation near Ridge Camp (Figure 14). The alternative route would deviate from the Preferred Alternative route and travel south of the existing utility line corridor before Ridge Camp (Figure 14), then head east towards Seven Points Road. Similar to the Preferred Alternative route, this alternative would avoid impacts to recreational activities at Ridge Camp, which has been identified as one of the more heavily occupied campgrounds in Seven Points Campground; however, this Alternative would result in increased construction impacts as the ROW would require the clearing and construction/excavation of previously undisturbed areas, including heavily forested and shrub areas, which was not considered environmentally preferable. There would also be potential for adverse cultural resource impacts pending additional survey in the area and consultation/coordination with the State Historic Preservation Office (SHPO)/PHMC. Therefore, this alternative was not considered preferable, and was eliminated from further consideration. Instead of this Alternative, the Preferred Alternative would continue to parallel the existing ROW, and would install the pipeline via horizontal bore near Ridge Camp to avoid surface disturbances to the camp area.

2.5 Alternative 3 - Block Valve Station Alternative (Raystown Lake)

An alternative location adjacent to an existing block valve station for an 8-inch line that is currently owned by SPLP was considered for the proposed new block valve at Raystown Lake. The alternative location is located near the intersection of Point Camp Road and Seven Points Road (Figure 15) and would sit further on top of the hill overlooking Raystown Lake, to the west of the visitor's center. Although this block valve location would fulfill the objective of providing an emergency shut-off location near a major waterbody (Raystown Lake), this location was rejected

from consideration due to the engineering constraints identified in the area. Specifically, this location would require the construction of a 20-foot retaining wall due to the slope of the area. A new block valve in this area would also be more visible to recreational users of the lake, within recreational and parking areas, and particularly to visitors traveling to the visitor's center and/or heading south on Seven Points Road. Due to the sparse amount of vegetation located near the intersection, visual impacts of the new block valve station would be greater when compared with the Preferred Alternative. Consequently, this block valve station alternative was eliminated from further consideration.

2.6 Alternative 4 – Loyalhanna Lake Crossing Alternative (Open Cut Construction)

This alternative would involve the use of conventional pipeline trenching (open cut construction) methods at waterbody crossings through Loyalhanna Lake instead of the HDD construction method proposed for the Preferred Alternative. This alternative would result in reduced construction costs for the Project and would be more economically feasible; however, this alternative would result in increased clearing, grading, and excavation leading up to and throughout the waterbody crossings, resulting in increased surface and water disturbance and potential for increased environmental impacts to sensitive resources. Specifically, this method would result in increased biological impacts to aquatic resources, increased impacts to geology/soils, erosion sedimentation and runoff/water quality impacts, health and safety impacts, and aesthetic and recreational impacts to the public. Accordingly, this alternative was not considered an environmentally preferable alternative and was eliminated from further consideration.

2.7 Alternative 5 – Conemaugh River Lake Crossing Alternative (Open Cut Construction)

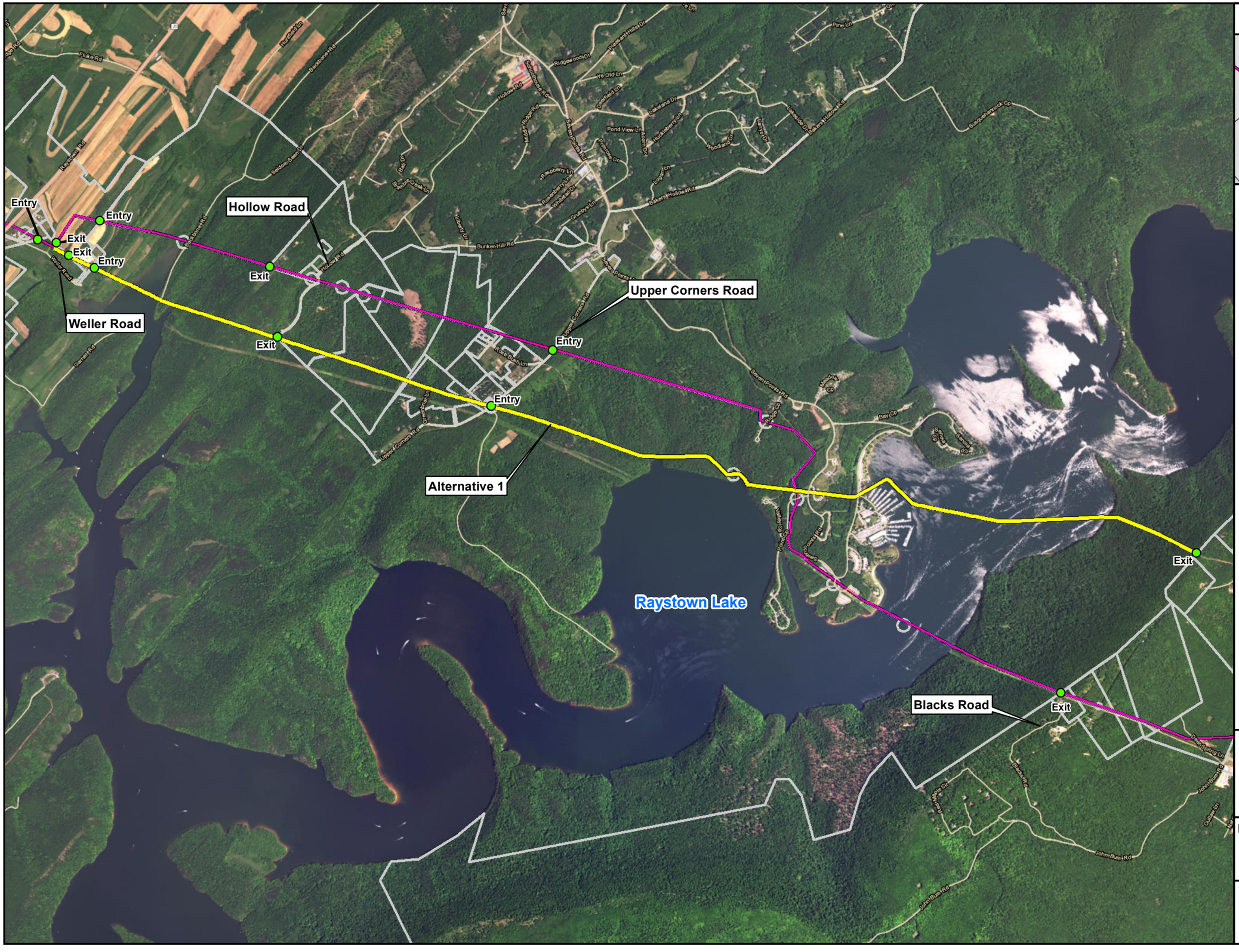
Similar to Alternative 4, this alternative involves open cut construction methods along the proposed Project ROW, including all waterbodies at Conemaugh River Lake. The pipelines' route would be the same as the Preferred Alternative; however, the open-cut construction method would result in increased environmental impacts. Under this Alternative, conventional pipeline trenching would be used at waterbody crossings through Conemaugh River Lake, instead of HDD. While this alternative would cost less to construct when compared to the proposed HDD installation methods identified for the Preferred Alternative, this alternative would require additional land/tree clearing, grading, and excavation leading up to and throughout the waterbody crossings, resulting in increased surface and water disturbance and the potential for increased environmental impacts to sensitive resources during construction. Specifically, this method would result in increased biological impacts to aquatic resources, increased impacts to geology/soils, erosion sedimentation and runoff/water quality impacts, health and safety impacts, and aesthetic and recreational impacts to the public. Accordingly, this alternative was not considered viable and was eliminated from further consideration.

Table 2. Alternatives Analysis Impacts Summary

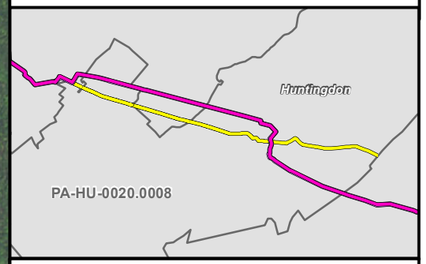
	No Action Alternative	Preferred Alternative – Proposed Project	Alternative 1 – Existing SPLP ROW (Raystown Lake)	Alternative 2 – Ridge Camp South Alternative (Raystown Lake)	Alternative 3 – Block Valve Station Alternative (Raystown Lake)	Alternative 4 – Loyalhanna Lake Crossing Alternative (Open Cut Construction)	Alternative 5 – Conemaugh River Lake Crossing Alternative (Open Cut Construction)
Geology/Soils	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)
Water Resources	None	Minimal (temporary)	Potentially Adverse (temporary)	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)
Vegetation	None	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Biological Resources	None	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)
Cultural Resources	None	None	None	Potentially Adverse	None	None	Potentially Adverse
Land Use	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Recreational Uses	None	Minimal (temporary)	Potentially Adverse (temporary)	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)

Aesthetics	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)
Air Quality & Climate Change	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Noise	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Transportation	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Health and Safety	None	Minimal (temporary)	Potentially Adverse (temporary)	Minimal (temporary)	Minimal (temporary)	Potentially Adverse (temporary)	Potentially Adverse (temporary)
Environmental Justice	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)
Socioeconomics	None	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)	Minimal (temporary)

Notes:
Minimal Impact = Minor
Adverse Impacts = Moderate/Significant



PROJECT LOCATION



Legend

- Proposed Centerline - Line 1
- Alternative 1
- Parcel Boundary
- USACE Property Entry/Exit

N

0 1,100 2,200 Feet

Figure 13. Alternative 1, Existing SPLP Pipeline ROW (Raystown Lake).

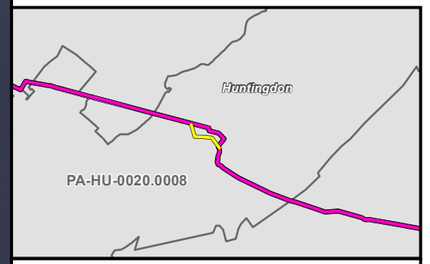
Prepared By:	Date:
TETRA TECH	09/2016

Base Map;
ESRI World Imagery, May 2015

Coordinate System: WGS 84

P:\GIS\projects\112C005938-PPP\MXD\EA\Figure13_Alternative1_Rev1.mxd LN

PROJECT LOCATION



Legend

- Proposed Centerline - Line 1
- Alternative 2
- Parcel Boundary
- Enter USACE Property
- End USACE Property

N

0 750 1,500 Feet

Figure 14. Alternative 2, Ridge Camp South Minor Reroute (Raystown Lake).

Prepared By: TETRA TECH

Date: 09/2016

Base Map;
ESRI World Imagery, May 2015

Coordinate System: WGS 84

P:\GIS\projects\112C05968-PPP-MXD\EA\Figure14_Alternative2.mxd LN

Enter USACE Property #2 Raystown Lake

Existing Block Valve Expansion Alternative
See Inset

Proposed New Block Valve Station
See Inset

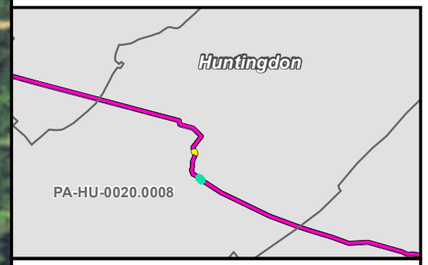
Raystown Lake

Exit USACE Property #2 Raystown Lake

Inset

1 inch = 500 feet

PROJECT LOCATION



Legend

- Proposed Centerline - Line 1
- Alternative 3
- Proposed New Station
- Parcel Boundary
- Enter USACE Property
- End USACE Property

N

0 500 1,000 Feet

Figure 15. Alternative 3, Existing Block Valve Station Expansion Alternative (Raystown Lake).

Prepared By:	Date:
TETRA TECH	09/2016

Base Map;
ESRI World Imagery, May 2015

Coordinate System: WGS 84

P:\GIS\projects\112C05958-PPFM\MXD\EA\Figure15_Alternative3.mxd LN

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

For purposes of this EA, environmental impacts described as temporary are those that are short-term in nature (i.e., during construction) whereas permanent impacts would occur over the long-term (i.e., during the operational life of the Project). Environmental impacts discussed as minimal are equivalent to impacts that are considered minor, and impacts described as adverse are equivalent to impacts that may be considered moderate or significant. The terms "effects' and "impacts" are also used synonymously throughout this EA.

3.1 Geology/Soils

3.1.1 Affected Environment

Geology

The Project ROW on USACE-owned properties is located in within the Pittsburgh Low Plateau Section of the Appalachian Plateaus Province and the Appalachian Mountain Section of the Ridge and Valley Physiographic Province (PADCNR 2000). The dominant topography within the Project ROW ranges from rolling foothills to ridges and valleys. Most of the Project ROW would be located parallel and adjacent to SPLP's (or other utilities') existing ROW and no known geologic hazards would be encountered. Furthermore, based on review of the Pennsylvania Natural Heritage Program and Pennsylvania Natural Diversity Inventory (PNDI) databases, no unique and unusual geologic sites and features are located within Westmoreland, Indiana, and Huntingdon counties. As such, no listed unique or unusual geologic sites are located within the Project ROW on USACE-owned properties.

Soils

Shallow Depth to Bedrock

The depth to bedrock in the Project area ranges from 10 to 99 inches in depth within the entire Project area depending on location (USDA/NRCS 2015). Table 3 lists the approximate depths to bedrock on USACE owned/administered properties. As shown, shallow bedrock may be encountered along much of the Project ROW, given that trench depths would be approximately 60 inches to install the pipelines (with maximum 20-inch wide pipelines buried with a minimum of 3 feet of cover). As such, SPLP anticipates that either ripping or blasting may be required in areas where shallow bedrock is encountered. SPLP will provide advance notice to USACE if blasting is anticipated during the course of construction. In addition, SPLP will procure all required blasting permits and follow standard blasting specifications in accordance with state and federal safety standards (*i.e.*, PA Administrative Code of 1929 [Section 1917-A] and 25 PA Code Chapter 211, and 30 PA. C.S. § 2906), including contacting the Pennsylvania One Call System to prevent damage and promote safety. Where blasting is necessary, blasting controls would be implemented as needed to limit stresses on parallel pipelines and other nearby facilities and non-commercial structures. Furthermore, SPLP's contractor will develop specific blasting operation and monitoring plans to address site-specific variables such as location, terrain, soil and rock types, type of explosives, charge weight and configuration, depth of charge, spacing between charges, simultaneous detonation or microsecond delays, horizontal and slant distance to the nearest structure, and placement of blasting mats and other controls, if needed. In addition, the blasting

plan will include any environmental precautions that need to be addressed on a site-specific basis including, but not limited to, avoidance of sensitive periods of time (*i.e.*, spawning) and limiting/focusing the blast area to minimize impacts.

Table 3. Approximate Depth to Bedrock within USACE Parcels at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake

Soil Mapping Unit – Unit Name	Approximate Depth to Bedrock (Inches)	Approximate Distance Crossed (feet)
Loyalhanna Lake (PA-WM2-0064.0000) – Westmoreland County		
ErB Ernest silt loam, 3 to 8 percent slopes	N/A	17.77
ErC - Ernest silt loam, 8 to 15 percent slopes	N/A	145.13
GoF - Gilpin Rock outcrop complex, 45 to 100 percent slopes	20 to 40	142.19
GwF - Gilpin Rock outcrop complex, 45 to 100 percent slopes	10 to 40	85.07
Lo - Lobdell silt loam, 0 to 3 percent slopes	N/A	252.33
MoC - Monongahela silt loam, 8 to 15 percent slopes	N/A	609.56
West of Conemaugh River Lake – Parcel 1 (PA-WM2-0095.0000) – Westmoreland County		
GuC - Gilpin-Upshur complex, 8 to 15 percent slopes	30 to 84	537.09
GuD - Gilpin-upshur complex, 15 to 25 percent slopes	30 to 84	45.11
Lo - Lobdell silt loam, 0 to 3 percent slopes	N/A	332.30
VaC - Vandergrift silt loam, 8 to 15 percent slopes	40 to 80	51.63
WrC - Wharton silt loam, 8 to 15 percent slopes	40 to 71	261.65
Conemaugh River Lake – Parcel 2 (PA-WM2-0099.0000) – Westmoreland County		
GcB - Gilpin channery silt loam, 3 to 8 percent slopes	30 to 36	124.53
Lo - Lobdell silt loam, 0 to 3 percent slopes	N/A	230.64
MoB - Monongahela silt loam, 3 to 8 percent slopes	N/A	583.99
WeA - Weinbach silt loam, 0 to 2 percent slopes	N/A	606.09
Conemaugh River Lake – Parcel 3 (PA-IN-0000.0001) – Indiana County		
AhB2 - Allegheny silt loam, 3 to 8 percent slopes	N/A	39.36
MoC2 - Monongahela silt loam, 6 to 12 percent slopes	N/A	23.56
WkF2 - Gilpin-Weikert channery silt loams, 15 to 25 percent slopes	10 to 40	462.88
Conemaugh River Lake – Parcel 4 (PA-IN-0018.0001) – Indiana County		
GcC2 - Gilpin channery silt loam, 8 to 15 percent slopes	30 to 36	70.15
Raystown Lake – Parcel (PA-HU-20.0008) – Huntingdon County		
AbB - Albrights silt loam, 3 to 8 percent slopes	N/A	1,095.23
At - Atkins silt loam	60 to 99	224.13
BkB - Berks channery silt loam, 3 to 8 percent slopes	20 to 40	81.27
BkC - Berks channery silt loam, 8 to 15 percent slopes	20 to 40	426.88
BMF - Berks-Weikert association, steep	10 to 40	6,138.05
BoB - Blairton silt loam, 2 to 8 percent slopes	20 to 40	495.63
BoC - Blairton silt loam, 8 to 15 percent slopes	20 to 40	138.61
BrB - Brinkerton silt loam, 3 to 8 percent slopes	N/A	354.22
BuC - Buchanan gravelly loam, 8 to 15 percent slopes	N/A	432.72
CaB - Calvin shaly silt loam, 3 to 8 percent slopes	20 to 40	604.10
CaC - Calvin shaly silt loam, 8 to 15 percent slopes	20 to 40	3,273.97
CaD - Calvin shaly silt loam, 15 to 25 percent slopes	20 to 40	3,430.57
EgC - Edom-Weikert complex, 8 to 15 percent slopes	10 to 72	44.14

Soil Mapping Unit – Unit Name	Approximate Depth to Bedrock (Inches)	Approximate Distance Crossed (feet)
HcC3 - Hagerstown silty clay loam, 8 to 15 percent slopes	48 to 84	110.24
HcD3 - Hagerstown silty clay loam, 15 to 25 percent slopes	40 to 79	136.45
HhC - Hazleton channery loam, 8 to 15 percent slopes	40 to 84	87.11
HxC - Hublersburg cherty silt loam, 8 to 15 percent slopes	N/A	195.81
HxD - Hublersburg cherty silt loam, 15 to 25 percent slopes	N/A	235.67
KlC - Klinesville haly silt loam, 8 to 15 percent slopes	10 to 20	78.50
MkD - Meckesville very stony silt loam, 8 to 25 percent slopes	N/A	1,296.36
Ne - Newark silt loam	N/A	493.78
VaD - Vanderlip loamy sand, 5 to 15 percent slopes	N/A	231.25
Source: NRCS 2015		

Susceptibility to Erosion

Soil erosion and sedimentation are potential impacts from pipeline construction (Table 4). As shown, most of the soils within the Project ROW have an erosion factor (Kw value) that ranges between 0.10 and 0.49 (USDA/NRCS 2015). Thus, Project soils have a relatively moderate to high risk from sheet and rill erosion. In addition, most of the soils have a slight to moderate susceptibility to erosion. However, some of the soil units have severe potential erodibility, which applies to unsurfaced roads and trails, and particularly ROW travel lanes.

The Project soils range from a slight to very severe susceptibility to wind erosion. Project soils are rated between two (2) and seven (7) on of a scale from one (1) to eight (8), where one (1) indicates the wind erodibility group most susceptible to wind erosion. Thus, only a nominal amount of Project soils crossed (VaD soils for approximately 230 feet) have a somewhat high susceptibility to wind erosion.

Susceptibility to erosion can be overcome with appropriate preventative measures. As such, SPLP will implement appropriate erosion and sedimentation controls and other preventative measures to minimize the potential risk for erosion along access roads, travel lanes, and the general ROW, in accordance with Title 25 Pennsylvania Code, Chapter 102 and its Erosion and Sedimentation Control General Permit (ESCGP-2). Therefore, implementation of the proposed Project would not result in significant erosion problems from high-risk soils, or from the more common soil types that have less risk for erosion.

Table 4. Erosion Potential of Soils within USACE Parcels at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake

Soil Mapping Unit	Erosion Factor Kw of Surface Horizon[a]	Wind Erodibility Group[b]	Erosion Potential[c]
Loyalhanna Lake (PA-WM2-0064.0000) – Westmoreland County			
ErB	0.37	5	Slight
ErC	0.37	5	Moderate Slope/Erodibility
GoF	0.17	7	Very severe Slope/ Erodibility
GwF	0.17	7	Severe Slope/Erodibility
Lo	0.37	6	Slight
MoC	0.43	5	Moderate Slope/Erodibility
Conemaugh River Lake – Parcel 1 (PA-WM2-0095.0000) – Westmoreland County			
GuC	0.20	6	Slight
GuD	0.43	6	Moderate Slope/Erodibility
Lo	0.37	6	Slight
VaC	0.32	6	Slight
WrC	0.32	5	Slight
Conemaugh River Lake – Parcel 2 (PA-WM2-0099.0000) – Westmoreland County			
GcB	0.28	6	Slight
Lo	0.37	6	Slight
MoB	0.43	5	Slight
WeA	0.49	6	Slight
Conemaugh River Lake – Parcel 3 (PA-IN-0000.0001) – Indiana County			
AhB2	0.37	5	Slight
MoC2	0.37	5	Slight
WkF2	0.17	6	Moderate Slope/Erodibility
Conemaugh River Lake – Parcel 4 (PA-IN-0018.0001) – Indiana County			
GcC2	0.28	6	Slight
Raystown Lake – Parcel 1 (PA-HU-20.0008) – Huntingdon County			
AbB	0.17	7	Slight
At	0.28	6	Slight
BkB	0.20	6	Slight
BkC	0.17	6	Slight
BMF	0.20	6	Severe Slope/Erodibility
BoB	0.37	5	Slight
BoC	0.37	5	Moderate Slope/Erodibility

Soil Mapping Unit	Erosion Factor Kw of Surface Horizon[a]	Wind Erodibility Group[b]	Erosion Potential[c]
BrB	0.43	6	Slight
BuC	0.10	6	Slight
CaB	0.20	6	Slight
CaC	0.20	6	Slight
CaD	0.24	6	Moderate Slope/Erodibility
EgC	0.32	6	Slight
HcC3	0.28	6	Slight
HcD3	0.32	6	Moderate Slope/Erodibility
HhC	0.15	6	Slight
HxC	0.20	7	Slight
HxD	0.20	7	Moderate Slope/Erodibility
KlC	0.17	6	Slight
MkD	0.20	6	Moderate Slope/Erodibility
Ne	0.37	5	Slight
VaD	0.10	2	Moderate Slope/Erodibility

Notes/Sources:

[a] "Soil erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water" (USDA/NRCS 2015).

[b] "Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the National Soil Survey Handbook" (USDA/NRCS 2015).

[c] "Ratings in the column 'erosion potential' are based on slope and on K. A rating of 'slight' indicates that erosion is unlikely under ordinary climatic conditions; 'moderate' indicates that some erosion is likely and that erosion-control measures may be needed; 'severe' indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and 'very severe' indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical" (USDA/NRCS 2015).

Susceptibility to Soil Compaction

Soil compaction is the loss of soil structure or compression of the soil. It is also defined as "the densification of a soil by means of mechanical manipulation" (Soil Conservation Service 1988). Soil compaction can result from the pressure or weight of equipment that compresses the soil, loss of soil organic matter, mixing of topsoil with subsoil, or the loss of soil structure from agricultural or construction practices. This can lead to poor soil aeration, poor water infiltration and increased runoff, poor plant rooting, and adversely affect agricultural crop production (Page 2010, Plowden 2011).

Susceptibility to soil compaction cannot be accurately determined based on the generalized characteristics of a soil type. However, soil compaction is influenced by physical characteristics (e.g., soil texture, soil moisture, water table depth), as well as current and historic activities (e.g., how and when vehicles and equipment are used, plowing and previous decompaction activities, etc.). The risk of soil compaction is generally greatest when soils are wet. Soils that are poorly drained and possess a higher clay content tend to be more susceptible to soil compaction (Page 2010).

Table 5 lists soils traversed by the Project that are prone to compaction based on the percentage of clay content, its drainage class, and its bulk density. Soils within the Project ROW have a range from low to high potential for compaction. However, only a minimal amount of USACE properties traversed by the Project ROW are currently used for agricultural production, so potential impacts resulting from compaction are anticipated to be minimal. SPLP will take steps to mitigate the potential for soil compaction, such as segregating topsoil from subsoil during construction in agricultural areas and wetlands. If areas of poor revegetation are found to be compacted as a result of construction, decompaction remedies such as mechanical ripping and breaking up the soil would be employed to resolve the issue. Note that no access roads were included in Table 5 as these roads would likely continue to be used as roads in the future and would not likely be restored for agricultural use or revegetated.

Table 5. Percent Clay, Drainage Class, Moist Bulk Density, and Potential for Soil Compaction of Soils within Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake

Soil Mapping Unit	Percent Clay[a]	Drainage Class	Moist Bulk Density (Grams/Cubic Centimeter)[b]	Potential for Soil Compaction[c]
Loyalhanna Lake (PA-WM2-0064.0000) – Westmoreland County				
ErB	15-35	Moderately well drained	1.20-1.50	Moderate to High
ErC	15-35	Moderately well drained	1.20-1.50	Moderate to High
GoF	0-20	Well drained	0.05-0.20	Low to High
GwF	0-20	Well drained	0.05-0.20	Low to High
Lo	13-24	Moderately well drained	1.42-1.51	Moderate to High
MoC	13-21	Moderately well drained	1.20-1.60	Moderate to High
Conemaugh River Lake – Parcel 1 (PA-WM2-0095.0000) – Westmoreland County				
GuC	4-39	Well drained	1.28-1.60	Low to High
GuD	4-39	Well drained	1.28-1.60	Low to High
Lo	13-24	Moderately well drained	1.42-1.51	Moderate to High
VaC	15-30	Moderately well drained	1.30-1.70	Moderate to High
WrC	12-42	Moderately well drained	1.16-1.62	Moderate to High
Conemaugh River Lake – Parcel 2 (PA-WM2-0099.0000) – Westmoreland County				
GcB	5-39	Well drained	1.33-1.61	Low to High

Soil Mapping Unit	Percent Clay[a]	Drainage Class	Moist Bulk Density (Grams/Cubic Centimeter)[b]	Potential for Soil Compaction[c]
Lo	13-24	Moderately well drained	1.42-1.53	Moderate to High
MoB	13-21	Moderately well drained	1.20-1.60	Moderate to High
WeA	15-35	Somewhat poorly drained	1.30-1.60	Moderate to High
Conemaugh River Lake – Parcel 3 (PA-IN-0000.0001) – Indiana County				
AhB2	12-15	Well drained	1.38-1.53	Moderate
MoC2	10-35	Moderately well drained	1.20-1.50	Moderate to High
WkF2	13-34	Well drained	1.20-1.50	Moderate to High
Conemaugh River Lake – Parcel 4 (PA-IN-0018.0001) – Indiana County				
GcC2	5-39	Well drained	1.33-1.60	Low to High
Raystown Lake – Parcel 1 (PA-HU-20.0008) – Huntingdon County				
AbB	15-35	Moderately well drained	1.30-1.50	Moderate to High
At	18-35	Poorly drained	1.20-1.50	High
BkB	5-32	Well drained	1.20-1.60	Low to High
BkC	5-32	Well drained	1.20-1.60	Low to High
BMF	5-32	Well drained	0.05-1.60	Low to High
BoB	10-35	Somewhat poorly drained	1.40-1.70	Moderate to High
BoC	10-35	Moderately well drained	1.40-1.70	Moderate to High
BrB	15-35	Poorly drained	1.20-1.50	Moderate to High
BuC	10-30	Well drained	1.20-1.60	Moderate to High
CaB	10-30	Well drained	1.20-1.60	Moderate to High
CaC	10-30	Well drained	1.20-1.60	Moderate to High
CaD	10-30	Well drained	1.20-1.60	Moderate to High
EgC	15-60	Well drained	1.20-1.60	Moderate to High
HcC3	15-35	Well drained	1.20-1.60	Moderate to High
HcD3	15-60	Well drained	1.32-1.47	Moderate to High
HhC	7-18	Well drained	1.20-1.50	Low to Moderate
HxC	15-45	Well drained	1.20-1.60	Moderate to High
HxD	15-55	Well drained	1.20-1.60	Moderate to High
KlC	10-25	Somewhat excessively drained	1.20-1.60	Moderate to High
MkD	10-35	Well drained	1.10-1.40	Moderate to High
Ne	7-35	Somewhat poorly drained	1.20-1.45	Low to High
VaD	5-10	Well drained	1.30-1.80	Low

Soil Mapping Unit	Percent Clay[a]	Drainage Class	Moist Bulk Density (Grams/Cubic Centimeter)[b]	Potential for Soil Compaction[c]

Notes/Sources:

[a] Range of percent clay for all soil components within a depth of 16 inches.

[b] "'Moist bulk density' is the weight of soil (oven dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33 Kilopascal ["kPa"] or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees Celsius. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure" (USDA/NRCS 2015).

[c] Potential for soil compaction based on clay content. Soils with 1 to 10 percent clay content are considered to have a low potential; soils with 10 to 18 percent clay content are considered to have a moderate potential; and soils with 18 to 35 percent content are considered to have a high potential for soil compaction (Page 2010).

Prime Farmland Soils

Based on a review of the National Resource Conservation Service (NRCS) soils database, the Project ROW within USACE owned/administered properties includes soils designated as prime farmland and farmland of statewide importance. Table 6 summarizes the farmland soil designations across the proposed Project ROW within USACE administered properties. These soils have an optimal combination of physical and chemical characteristics best suited for agricultural uses, including the production of food, feed, forage, fiber, and oilseed crops. In the Project area, most of these lands are either forested or preserved as open space providing the public with recreational opportunities. However, the Project would cross some farmland of statewide importance at Raystown Lake that USACE leases to the PGC. This farmland is a part of a Conservation Reserve Enhancement Program (CREP) and uses crop cover to improve wildlife habitat and for soil erosion control on Commonwealth lands. Specifically, these lands are planted with grasses/legumes; native grasses, trees, and shrubs; and wildlife food plots. SPLP has held discussions with the cultivator of these lands and with the Huntingdon County Farm Service Agency (FSA). Mitigation for the crossing of CREP lands includes the planting of temporary cover, as requested by the PGC. This may include, but is not limited to, planting pollinator habitat and reforestation of cleared forested lands within the temporary ROW with 680 seedlings/acre, as requested by USACE Raystown Lake staff. SPLP will also provide payment for losses incurred by the cultivator to the FSA should penalties be assessed as a result of disturbance to these lands.

Table 6. Prime Farmland and Farmland of Statewide Importance Soils Crossed by the Project

Soil Mapping Unit	Prime Farmland	Farmland of Statewide Importance	Amount of Prime Farmland or Farmland of Statewide Importance (Approximate Acres)
Loyalhanna Lake (PA-WM2-0064.0000) – Westmoreland County			
ErB	-	✓	0.05
ErC	-	✓	0.12
GoF	-	-	N/A
GwF	-	-	N/A

Soil Mapping Unit	Prime Farmland	Farmland of Statewide Importance	Amount of Prime Farmland or Farmland of Statewide Importance (Approximate Acres)
Lo	✓	-	0.70
MoC	-	✓	0.00
West of Conemaugh River Lake – Parcel 1 (PA-WM2-0095.0000) – Westmoreland County			
GuC	-	✓	0.53
GuD	-	-	N/A
Lo	✓	-	0.00
VaC	-	✓	0.04
WrC	-	✓	0.27
Conemaugh River Lake – Parcel 2 (PA-WM2-0099.0000) – Westmoreland County			
GcB	✓	-	0.52
Lo	✓	-	0.00
MoB	✓	-	0.57
WeA	-	✓	1.57
Conemaugh River Lake – Parcel 3 (PA-IN-0000.0001) – Indiana County			
AhB2	✓	-	0.00
MoC2	-	✓	0.03
WkF2	-	-	0.08
Conemaugh River Lake – Parcel 4 (PA-IN-0018.0001) – Indiana County			
GcC2	-	✓	0.06
Raystown Lake (PA-HU-20.0008) – Huntingdon County			
AbB	✓	-	1.22
At	-	✓	0.01
BkB	-	✓	0.14
BkC	-	✓	0.64
BMF	-	-	N/A
BoB	-	✓	0.83
BoC	-	-	N/A
BrB	-	-	N/A
BuC	-	✓	0.63
CaB	-	✓	0.53
CaC	-	✓	5.91
CaD	-	-	N/A
EgC	-	✓	0.06
HcC3	-	✓	0.18
HcD3	-	-	N/A
HhC	-	✓	0.09
HxC	-	✓	0.32
HxD	-	-	N/A
KlC	-	-	N/A
MkD	-	-	N/A
Ne	-	✓	0.99
VaD	-	-	N/A

Notes:
N/A = Not Applicable
Source: USDA NRCS, 2015

3.1.2 Environmental Impacts and Proposed Mitigation Measures

Geology

Ripping or blasting may be required in areas where the trench line for the pipelines intersects with shallow bedrock. However, no special geologic sites or features are located within USACE owned/administered properties in the Project area. As such, implementation of the proposed Project is not expected to damage or destroy any unique and unusual geologic features and no impacts are anticipated to geological resources as a result of the Project within USACE owned/administered properties. Similarly, the No Action Alternative would have no adverse impact to geological resources in the area.

Soils

The primary potential soil impacts from the Project would occur during construction from the temporary surface disturbances that expose soils to potential risk of erosion, sedimentation into waterbodies, and possible mixing of topsoil and subsoil. Soils may be compacted and bedrock fragments may be introduced into the topsoil by trenching or blasting. Construction also has the potential to affect revegetation productivity. The No Action Alternative would not result in impacts to soil resources on USACE properties as no construction/operation of the pipeline would occur; however, SPLP would likely reroute around USACE properties, requiring additional pipeline mileage and subsequently increased soil/surface disturbance, potentially resulting in increased soil impacts.

Most of the potential impacts to soil resources would be temporary, and would be mitigated by actions taken during construction and restoration. This includes the implementation of Best Management Practices (BMPs) to prevent or minimize potential soil impacts and restore the ROW to pre-construction conditions. SPLP will take corrective actions to resolve identified problems by performing all construction and restoration activities in compliance with PADEP-approved Project-specific erosion and sedimentation control plan drawings, the ESCGP-2 permit, and other state- or county-specific requirements.

SPLP will also implement measures to avoid significant adverse impacts on wetland soils. During construction in saturated wetlands, equipment mats will be used and topsoil will be segregated from subsoil. Following completion of construction, SPLP will restore the ROW and work areas to preconstruction conditions. As such, it is anticipated that potential impacts to soils crossed by the Project would be minimized within USACE owned/administered properties. Furthermore, in conjunction with obtaining its ESCGP-2 permit, SPLP has developed site-specific erosion and sediment control plans (E&S Plans, Appendix B) which will be reviewed and approved by the appropriate county conservation district prior to construction.

Prime Farmland Soils

Potential short-term impacts to prime farmland soils associated with construction of the proposed Project may include increased soil erosion and sedimentation on steep slopes and at stream crossings due to the removal of vegetation, compaction of soils caused by construction vehicles and equipment, inclusion of rock fragments in the topsoil caused by blasting, and poor revegetation of the soil types impacted by the proposed Project. Therefore, to prevent and minimize impacts on prime farmland soils, SPLP will implement best management practice measures including

implementation of an erosion sediment control plan, decompaction, and/or segregation and conservation of topsoil to avoid and minimize impacts on soil productivity during the construction period. As noted above, minimal impacts are anticipated to farmland of statewide importance including lands leased by the PGC from USACE as these lands would be revegetated with temporary cover per the PGC's request. Additionally, SPLP would compensate the cultivator should penalties be assessed as part of the CREP Program.

Furthermore, most of the pipeline ROW would be restored to preconstruction conditions/maintained and allowed to resume to pre-existing uses following installation of the pipelines; therefore, no adverse effects as a result of conversion of farmland to nonagricultural use or loss of farmland are anticipated. A minimal amount of prime farmland soils/farmland of statewide importance would be converted from undeveloped forested/cleared land to developed land as a result of the expansion of the existing block valve proposed off Westinghouse Road to the west of Conemaugh River Lake parcel (PA-WM2-0099.0000). However, this conversion of prime farmland soils/farmland of statewide importance would be minimal at 0.14 acre, would occur on partially disturbed lands, and is not currently used for agricultural purposes. As such, this nominal conversion in farmland soil would be negligible and the Project would result in minimal impacts to prime farmland or farmland of statewide importance within USACE owned/administered properties (NRCS 2016). The No Action Alternative would not result in impacts to prime farmland or farmland of statewide importance on USACE properties as no construction/operation of the Project would occur; however SPLP would likely reroute the Project around USACE properties resulting in potentially increased impacts to prime farmland/farmland of statewide importance due to the greater potential to encounter agricultural resources in the surrounding area.

3.2 Water Resources

Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake comprise some of the largest water resources in Westmoreland, Indiana, and Huntingdon counties, and have not only been impounded for flood control but also for human consumption (Raystown Lake) and recreational use. As such, maintenance and protection of water quality within these water resources is of primary importance.

As the Project would require crossing of WOTUS, the Project is subject to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act (where applicable). Accordingly, SPLP has prepared and submitted Joint Permit Applications for USACE Section 404 and Pennsylvania Water Obstruction and Encroachment for Westmoreland, Indiana, and Huntingdon counties including USACE owned/administered properties. These permit applications are currently under review by USACE/PADEP. SPLP also prepared and submitted a Pennsylvania General-10 Permit (PAG-10) National Pollutant Discharge Elimination System (NPDES) permit application to PADEP on January 2016 for hydrostatic testing of the pipelines.

3.2.1 Affected Environment

Groundwater

The Project area does not overlie any U.S. Environmental Protection Agency (USEPA)-designated sole-source aquifers (USEPA 2007). No state-designated Primary or Principal Aquifers exist within the Project area. In addition, no public or private wells were observed in the proposed

Project workspace in USACE-owned properties during field surveys. Based on a search of the Pennsylvania Department of Conservation and Natural Resources (PADCNR) Pennsylvania Groundwater Information System (PaGWIS) database, no wells are located within, or within 150 feet of the Project's construction workspace in USACE owned properties (Pennsylvania Geological Survey 2014).

Floodplains

The project ROW through Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake intersects several Zone A – Federal Emergency Management Agency (FEMA) designated Special Flood Hazard Areas (i.e., 100-year floodplains). Specifically, the Project ROW would cross approximately 0.44 mile, approximately 0.33 mile, and approximately 0.56 mile of FEMA designated-100-year floodplains at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake, respectively.

Wetlands/Waterbodies

Aquatic resources including wetlands and waterbodies, on USACE-owned properties were surveyed in April through July, in September of 2014, and in April 2016. The survey corridor was 200 feet wide, and encompassed the proposed ROW within USACE-owned/administered properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. Tables 7 and 8 below show those wetlands and waterbodies identified during the survey conducted at USACE-owned/administered properties. A map of these resources is provided in Figure 16.

Table 7. Wetland Summary for USACE-owned properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake

Wetland ID	Cover Type	Latitude	Longitude	Delineated Acres[1]	Temporary Impact (acres)[2]	50-foot Easement (acres)[3]	Disturbed During Construction (acres)[4]	Permanent Impact[5]
Loyalhanna Lake								
W-P22	PEM	40.4364	-79.4542	0.09	0.05	0.03	0.03 (Open Cut)	0.00
				Total Impact (acres)	0.05	0.03	0.03	0.00
Conemaugh River Lake								
W-J52	PEM	40.4453	-79.2992	0.01	0.00	0.01	0.00 (HDD)	0.00
W-N28	PEM	40.4450	-79.3014	1.19	0.16	0.06	0.00 (HDD)	0.00
W-N28	PFO	40.4449	-79.3014	5.81	0.00	0.03	0.00 (HDD)	0.00
W-O45	PEM	40.4420	-79.3430	0.29	0.00	0.01	0.00 (HDD)	0.00
W-O45	PFO	40.4418	-79.3426	0.20	0.00	0.01	0.00 (HDD)	0.00
				Total Impact (acres)	0.16	0.12	0.00	0.00
Raystown Lake								

Wetland ID	Cover Type	Latitude	Longitude	Delineated Acres[1]	Temporary Impact (acres)[2]	50-foot Easement (acres)[3]	Disturbed During Construction (acres)[4]	Permanent Impact[5]
W-L36	PSS	40.3964	-78.1446	0.20	0.00	0.03	0.03 (Open Cut)	0.00
W-Y1	PFO	40.3972	-78.1342	0.02	0.00	0.01	0.00 (HDD)	0.00
W-Y2	PSS	40.3968	-78.1331	2.06	0.00	0.03	0.00 (HDD)	0.00
W-Y3	PSS	40.3965	-78.1325	0.08	0.00	0.01	0.00 (HDD)	0.00
W-Y4	PFO	40.3959	-78.1297	1.02	0.00	0.01	0.00 (HDD)	0.00
W-Y11	PEM	40.3884	-78.0968	0.01	Off ROW/ No Impact	Off ROW/ No Impact	Off ROW/ No Impact	0.00
W-Y12	PEM	40.3813	-78.0789	1.16	0.00	0.60	0.60	0.00
Total Impact (acres)					0.00	0.69	0.63	0.00

Notes:
PEM = Palustrine emergent wetland
PSS = Palustrine scrub shrub wetland
PFO = Palustrine forested wetland
[1] Acreage present in 200-foot-wide survey/study corridor.
[2] Acreage of wetland within 25-foot-wide temporary construction workspace and any additional temporary workspace areas.
[3] Acreage of wetland within the 50-foot-wide easement.
[4] Total acreage wetland disturbance during construction. HDD construction techniques will avoid surface disturbances in resources.
[5] Permanent conversion of forested wetlands to emergent wetlands as part of long-term maintenance of 50 foot-wide operational ROW.

Table 8. Waterbody Summary for USACE-Owned Properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake

Resource ID	USGS Stream Name	Flow Regime	Crossing Method	Latitude	Longitude	Bank Width (feet)	PA Chapter 93 Use	PAFBC Status
Loyalhanna Lake								
P-31	Serviceberry Run	Perennial	Dry Crossing	40.4365	-79.4540	18	HQ-WWF	N/A
P-32	Serviceberry Run	Perennial	Dry Crossing	40.4361	-79.4545	4	HQ-WWF	N/A
P-O4	Loyalhanna Lake	Lake	HDD	40.4410	-79.4430	1,231	WWF	ATW
Conemaugh River Lake								
S-J55	Conemaugh River Lake	Perennial	HDD	40.4452	-79.2995	200	WWF	N/A
S-J56	UNT to Conemaugh River Lake	Intermittent	HDD	40.4455	-79.2990	4	Drains to WWF	N/A

Resource ID	USGS Stream Name	Flow Regime	Crossing Method	Latitude	Longitude	Bank Width (feet)	PA Chapter 93 Use	PAFBC Status
S-N44	UNT to Conemaugh River Lake	Perennial	Dry Crossing	40.4451	-79.3030	15	Drains to WWF	N/A
S-O61	Spruce Run	Perennial	HDD	40.4419	-79.3432	20	HQ-CWF	N/A
S-N96	Unnamed Tributary to Blacklick Creek	Perennial	Dry Crossing	40.4535	-79.2295	15	CWF	N/A
Raystown Lake								
S-L57	UNT to Raystown Branch Juniata River	Intermittent	Dry Crossing	40.3964	-78.1448	2	WWF	N/A
S-BB84	UNT to James Creek	Perennial	Temporary Bridge	40.4010	-78.1275	3	Drains to WWF	N/A
S-JH2	UNT to Raystown Branch Juniata River	Intermittent	Dry Crossing	40.3812	-78.0792	4	Drains to WWF	N/A
S-Y1	James Creek	Perennial	HDD	40.3967	-78.1325	20	WWF	Drains to TSS
S-Y2	UNT to James Creek	Perennial	HDD	40.3961	-78.1295	5	WWF	Drains to TSS
S-Y3	UNT to James Creek	Intermittent	HDD	40.3958	-78.1288	2	Drains to WWF	Drains to TSS
S-Y14	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3875	-78.0926	8	Drains to WWF	Drains to TSS
S-Y15	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3856	-78.0862	4	Drains to WWF	Drains to TSS
S-Y16	UNT to Raystown Lake	Perennial	Dry crossing	40.3853	-78.0839	12	WWF	Drains to TSS
S-Y17	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3843	-78.0803	3	Drains to WWF	Drains to TSS
S-Y18	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3832	-78.0782	6	WWF	Drains to TSS
S-Y19	UNT to Raystown Lake	Perennial	Dry crossing	40.3807	-78.0793	6	WWF	Drains to TSS
S-Y20	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3802	-78.0791	3	Drains to WWF	Drains to TSS

Resource ID	USGS Stream Name	Flow Regime	Crossing Method	Latitude	Longitude	Bank Width (feet)	PA Chapter 93 Use	PAFBC Status
S-M48	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3795	-78.0795	4	Drains to WWF	Drains to TSS
LK-2	Raystown Lake	Perennial	HDD	40.3719	-78.0717	2,103	Drains to WWF	Drains to TSS
S-M52	UNT to Raystown Lake	Ephemeral	Dry crossing	40.3768	-78.0799	7	Drains to WWF	Drains to TSS

Notes:
UNT – Unnamed tributary
HDD – horizontal directional drill. HDD construction techniques will avoid surface disturbances in resources.
Dry Crossing – trench excavated crossing using dam and pump, dam and flume, coffer dam, or other technique that bypasses flow cleanly around or through the in-stream work zone.
PA Chapter 93 status – State water quality classification as published in PA Code, Title 25, Chapter 93.
WWF = Warmwater Fishery; HQ-CWF = High Quality Coldwater Fishery
PAFBC – PA Fish and Boat Commission (PAFBC) fishery status: ATW = Approved Trout Water; TSS = Trout Stocked Stream (stocked by PAFBC).

No federal or State-designated wild/scenic rivers are located within USACE properties crossed by the Project.

PADEP Northwest Regional Office

PADEP Northcentral Regional Office

PADEP Southwest Regional Office

Pittsburgh District USACE

Baltimore District USACE

PADEP Southcentral Regional Office

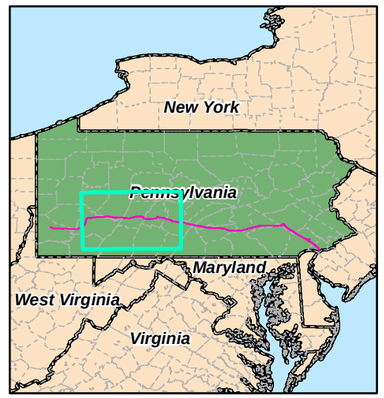
Legend

- PPP Centerline
- Sheet Boundary
- Roads
- County Boundary
- USACE Districts

PADEP Regions

- Northcentral
- Northeast
- Northwest
- Southcentral
- Southeast
- Southwest

General Location



N

0 2 4 8 12 Miles

Sheet 1 of 1

Figure 16 - Sheet Key
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project on USACE Properties

Prepared By:	Date:
TETRA TECH	05/2016

Base Map, County Boundaries; ESRI ArcGIS Online and data partners, including imagery from agencies supplied via the Content Sharing Program.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112\C059958\MXD\USACE_Property_WetlandDelineationSK.mxd

LOYALHANNA LAKE

Loyalhanna Township
WESTMORELAND COUNTY

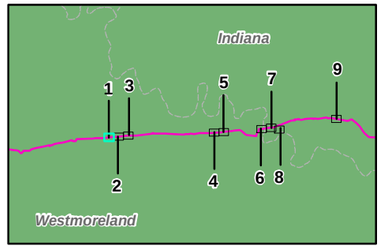
Pittsburgh
District USACE

S-P31
P22
S-P29
S-P32
P21
BB78
BB77
Q42
S-BB57
BB76
S-BB59
Koontz Rd
T 929

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

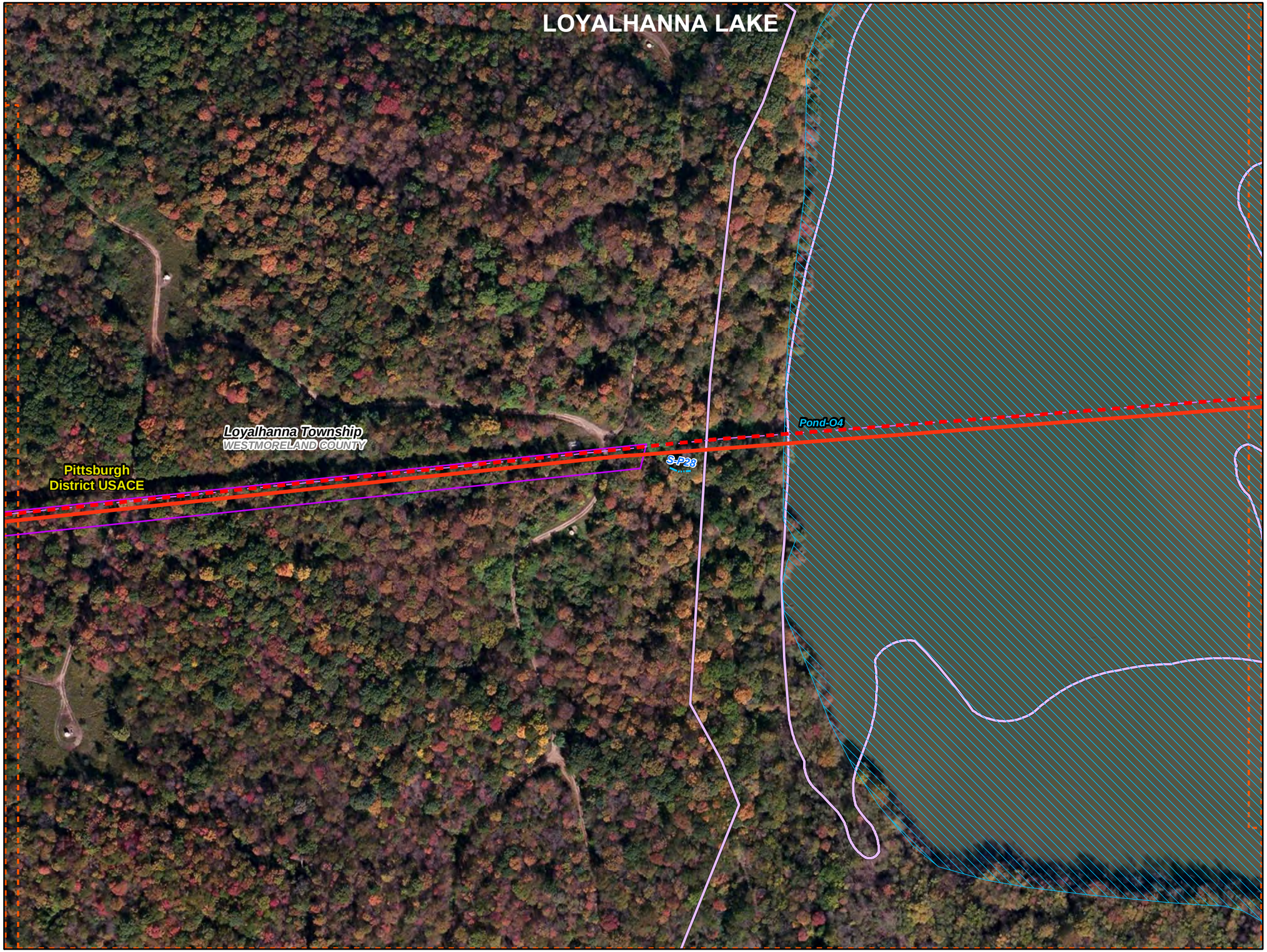
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 1 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

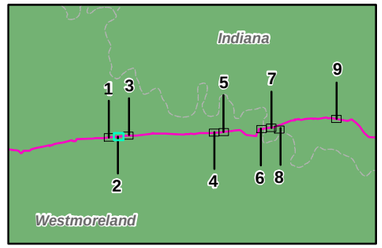
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 2 of 21

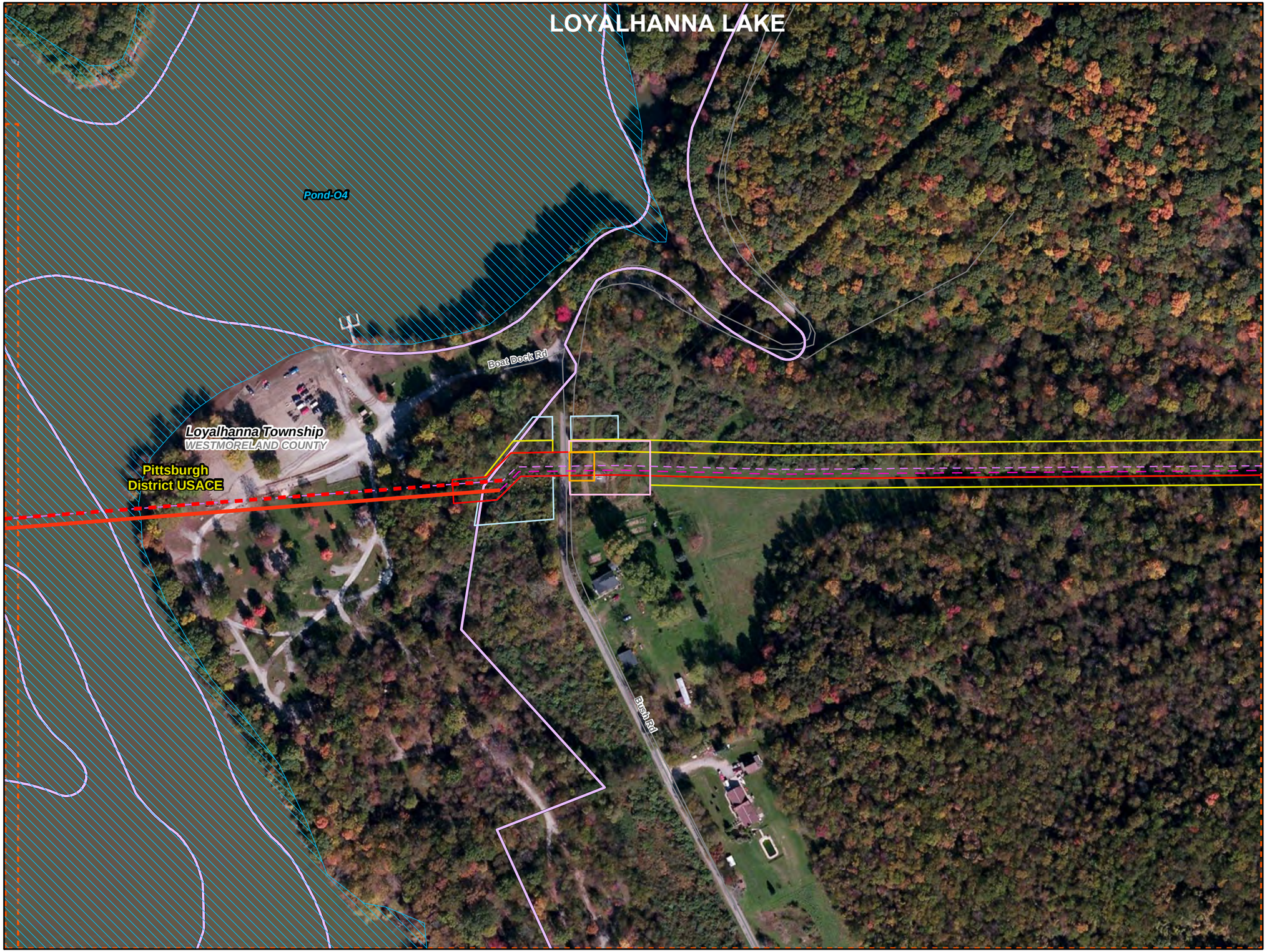
Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

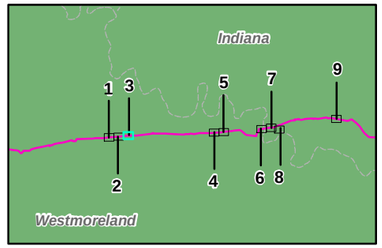
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 3 of 21

Prepared By: TETRA TECH

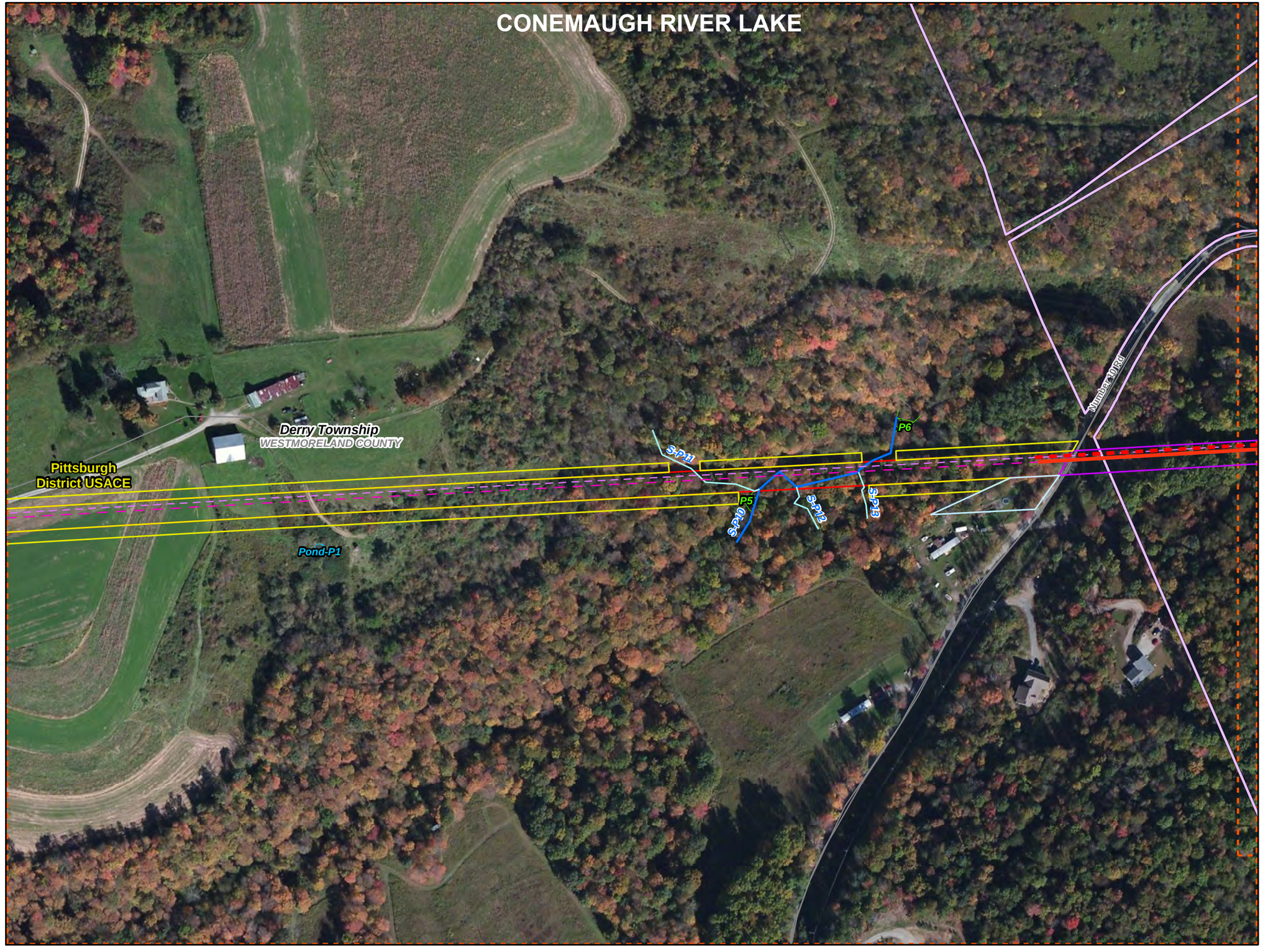
Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

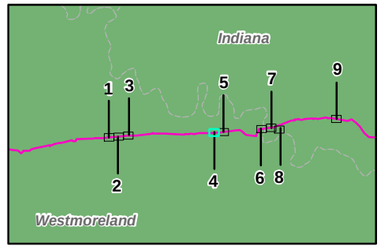
CONEMAUGH RIVER LAKE



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 4 of 21

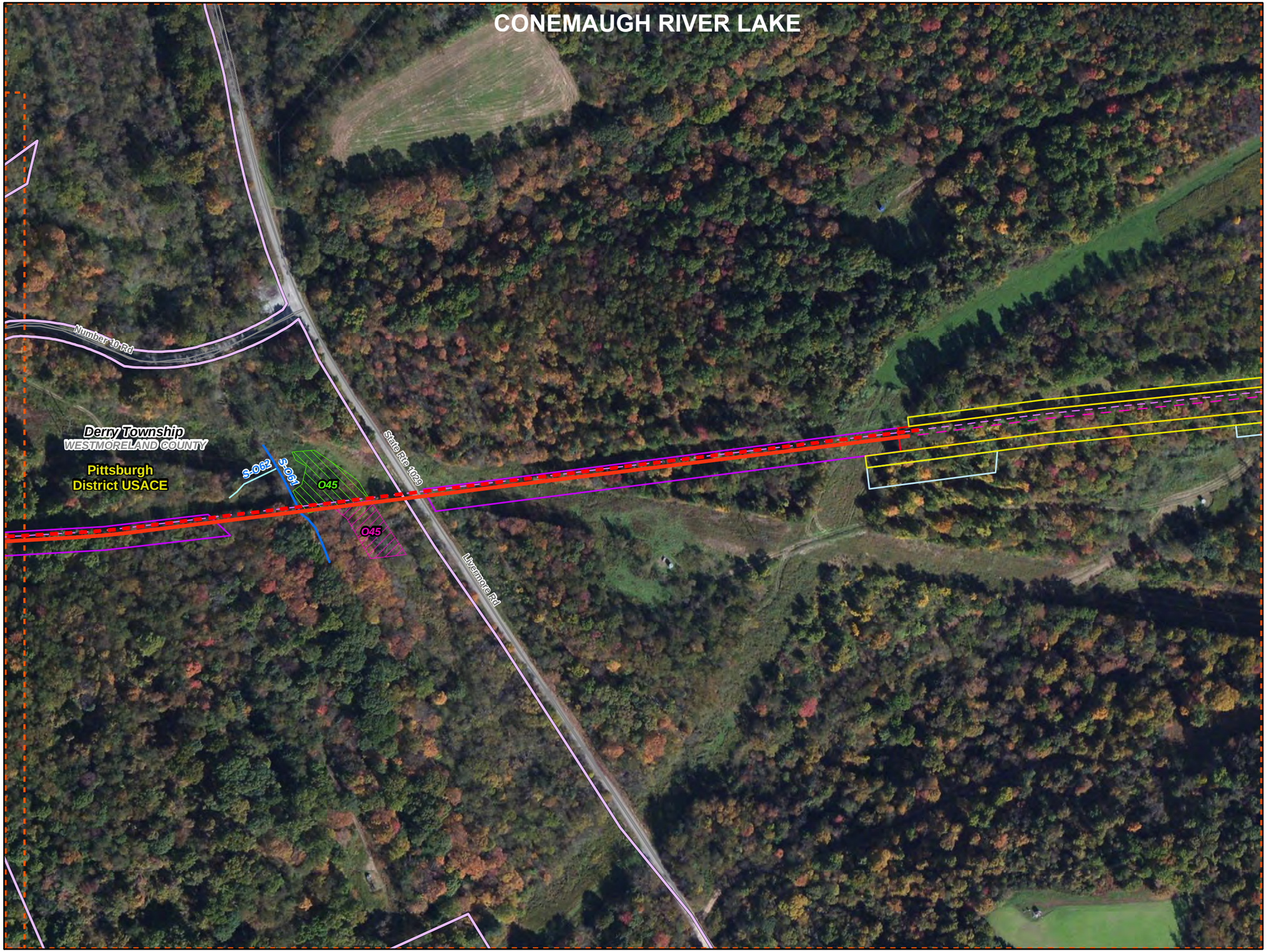
Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

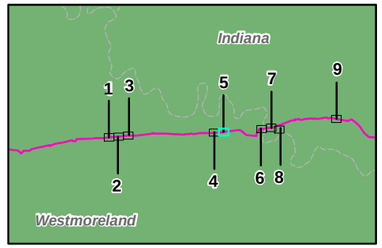
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 5 of 21

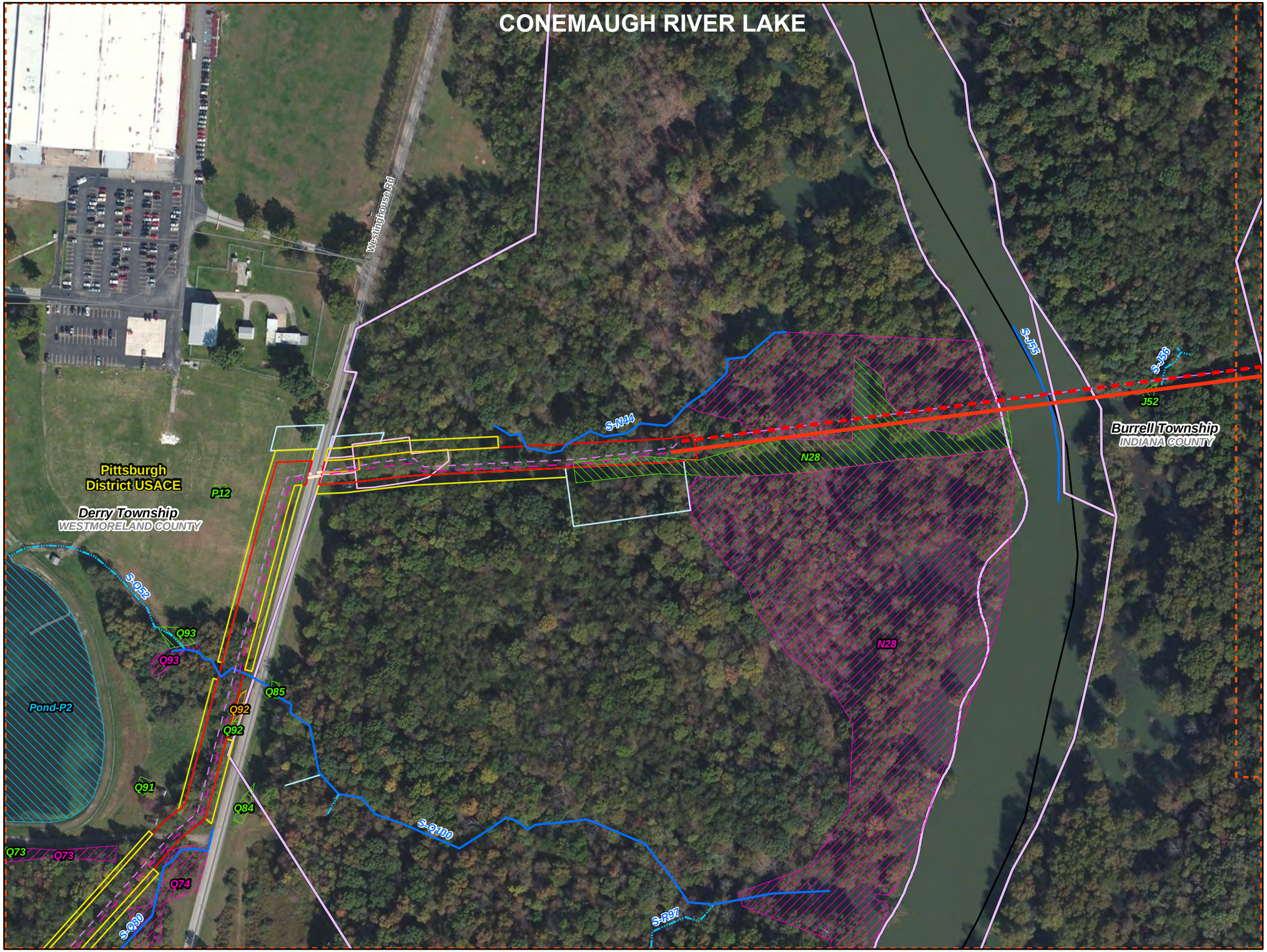
Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

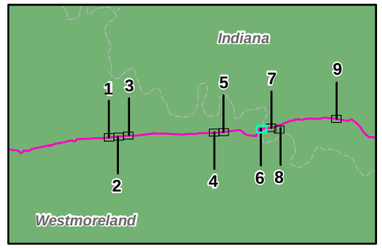
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 6 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

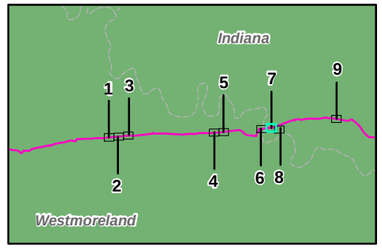
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

CONEMAUGH RIVER LAKE

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 7 of 21

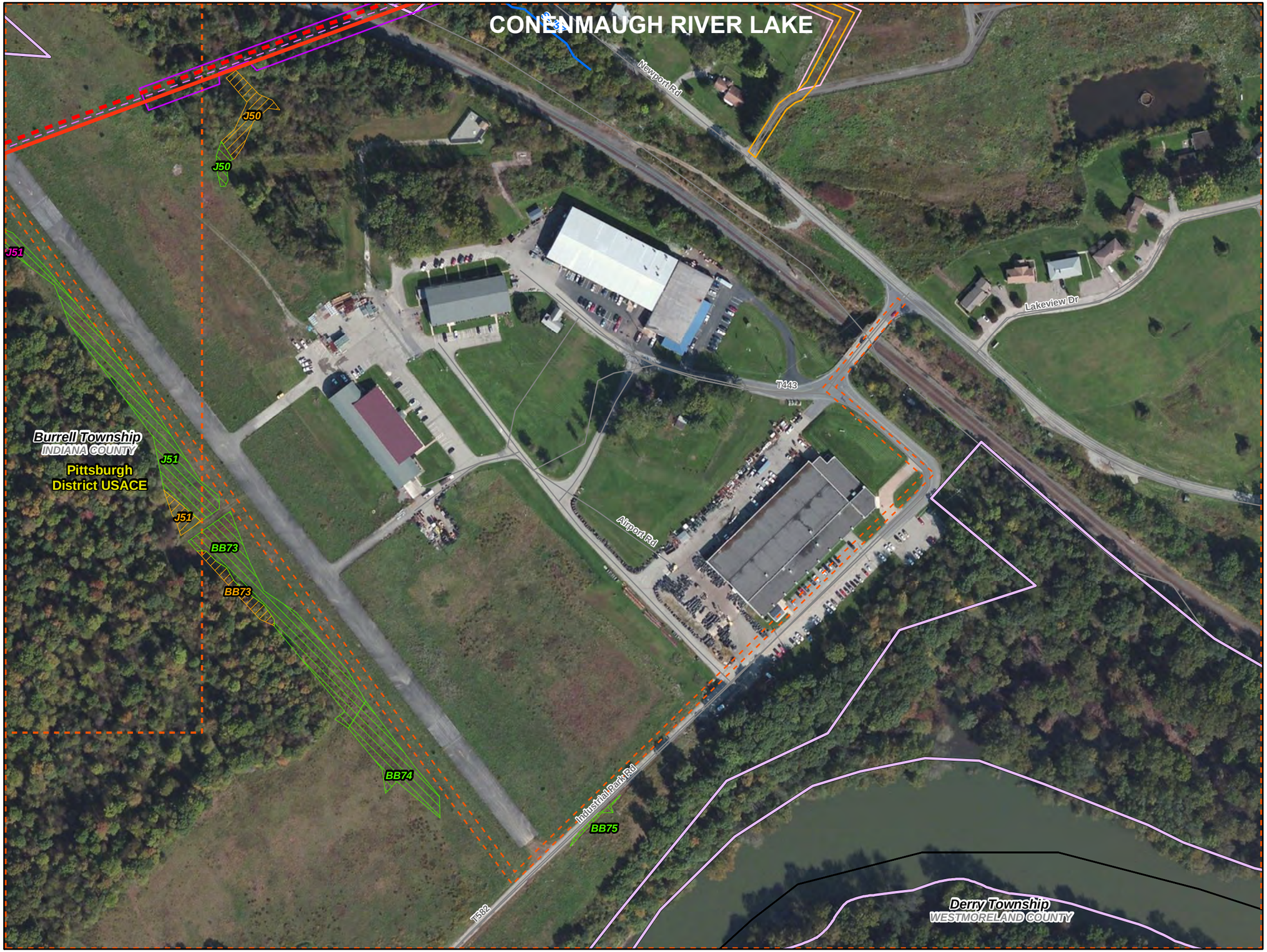
Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

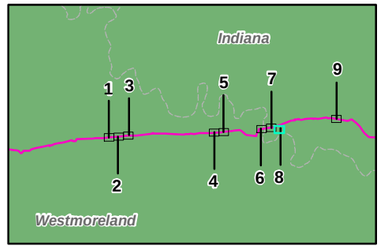
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 8 of 21

Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

CONEMAUGH RIVER LAKE

Pittsburgh
District USACE

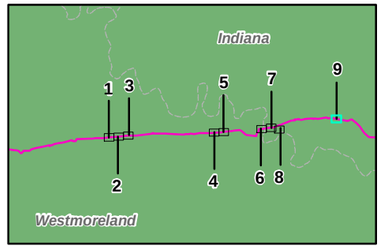
Burrell Township
INDIANA COUNTY

S-N100
S-N98
S-N99
S-N96
S-J59
N68
N67
N66
N65
J53

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 9 of 21

Prepared By: TETRA TECH

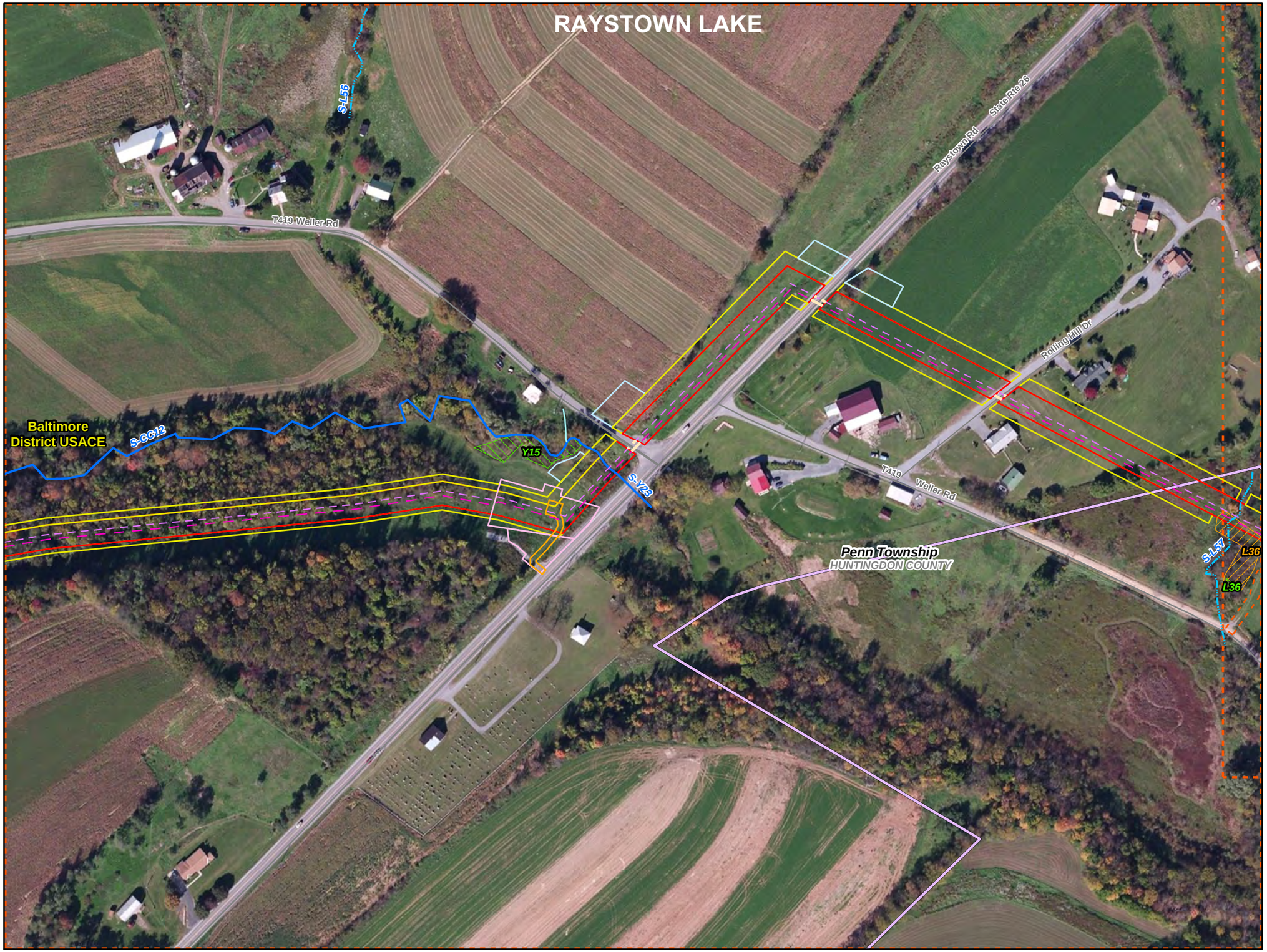
Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

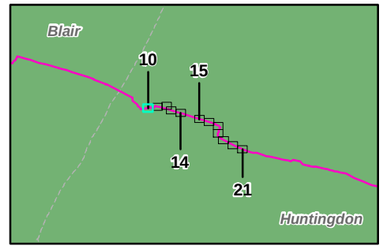
RAYSTOWN LAKE



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties

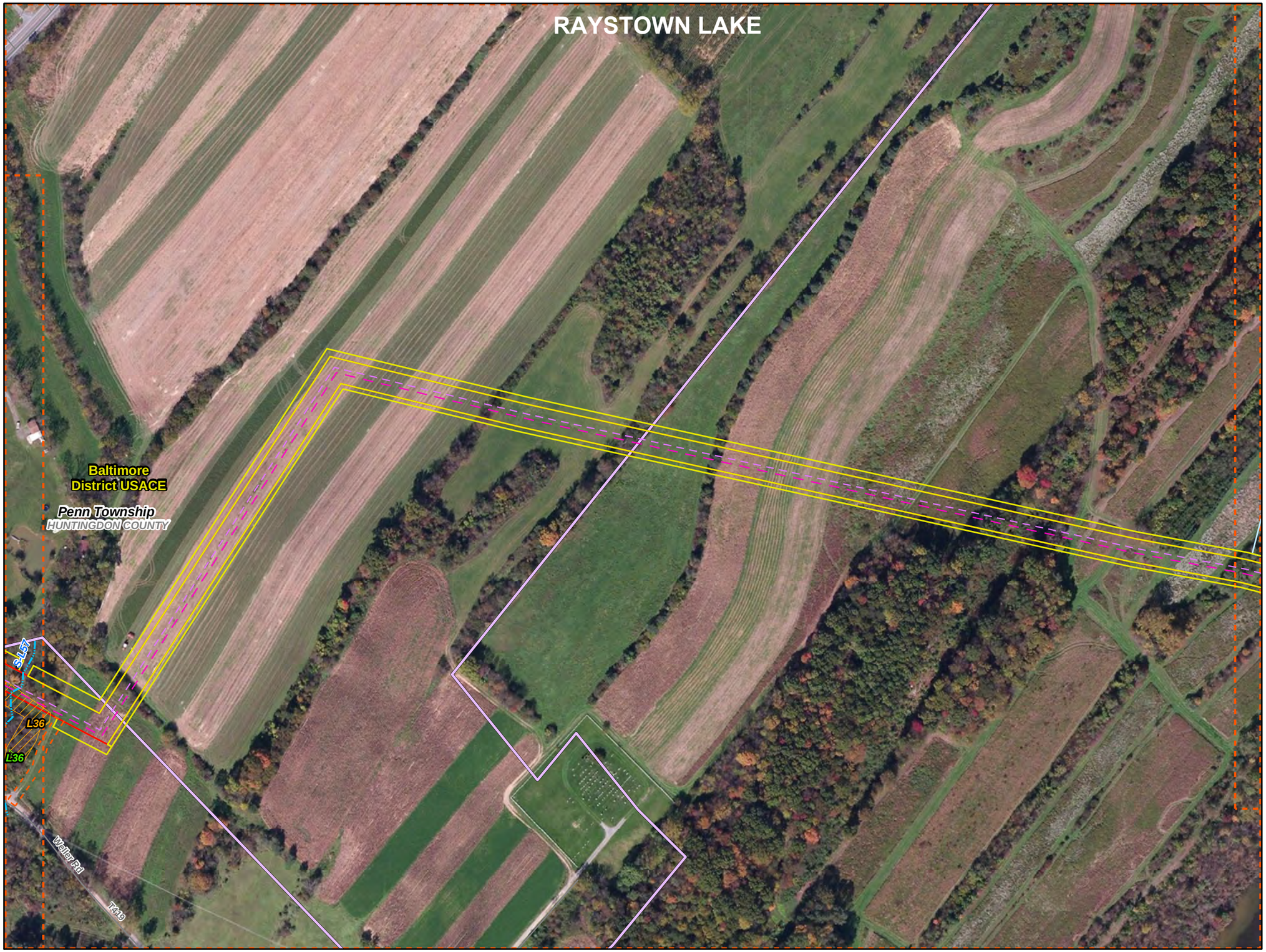
Sheet 10 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

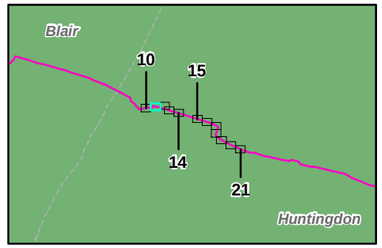
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 11 of 21

Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

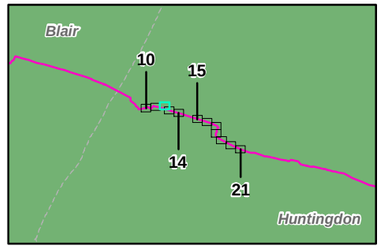
Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 12 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

RAYSTOWN LAKE

Penn Township
HUNTINGDON COUNTY

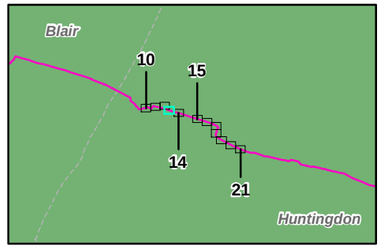
Baltimore
District USACE

Y4
S-Y2
S-Y1
S-Y3
Y5
S-Y5
T402
Hollow Rd

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

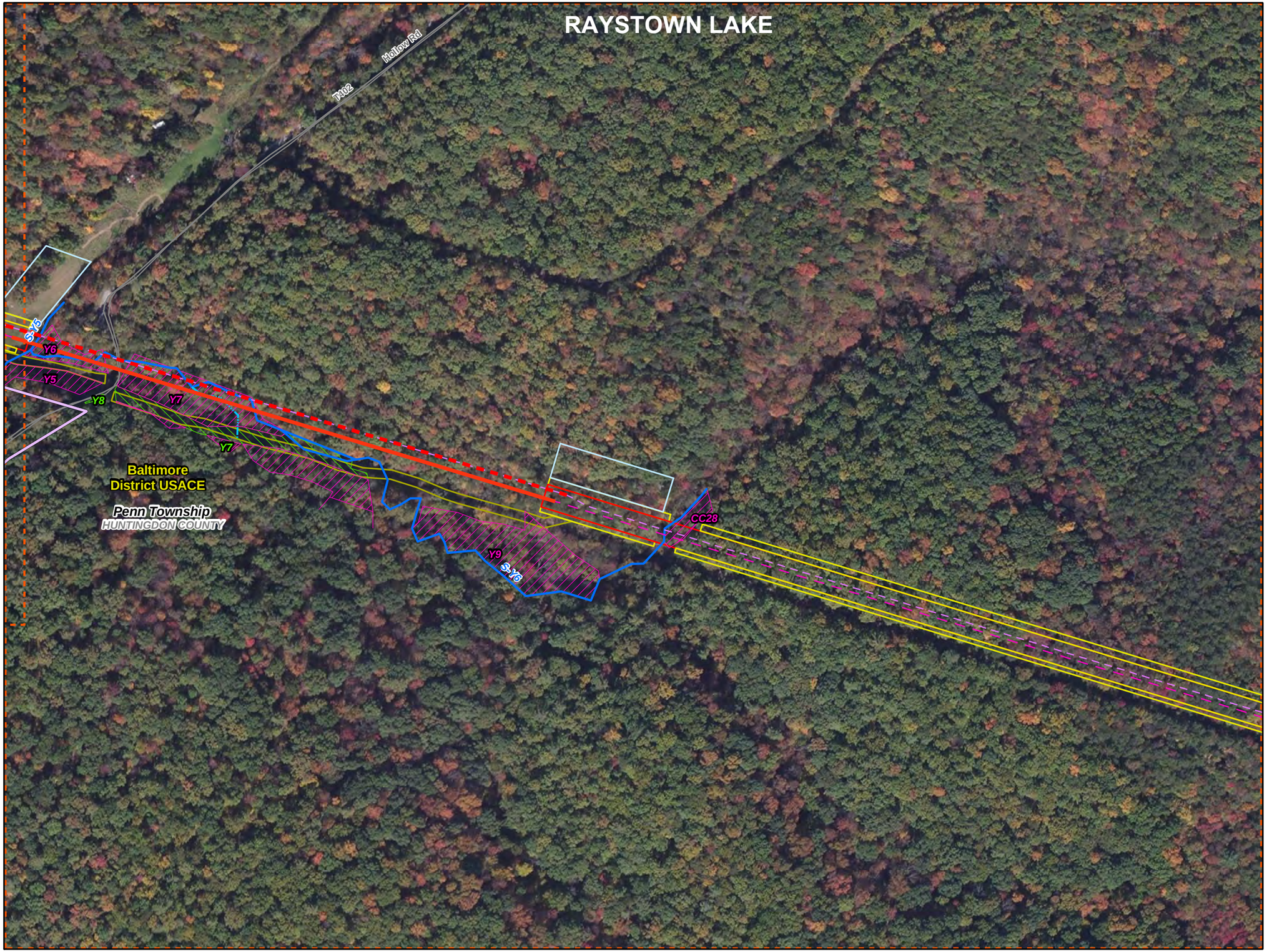
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 13 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

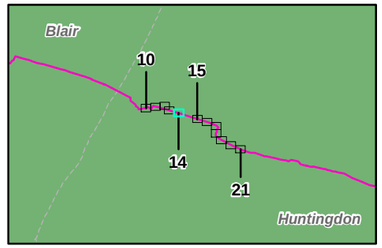
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

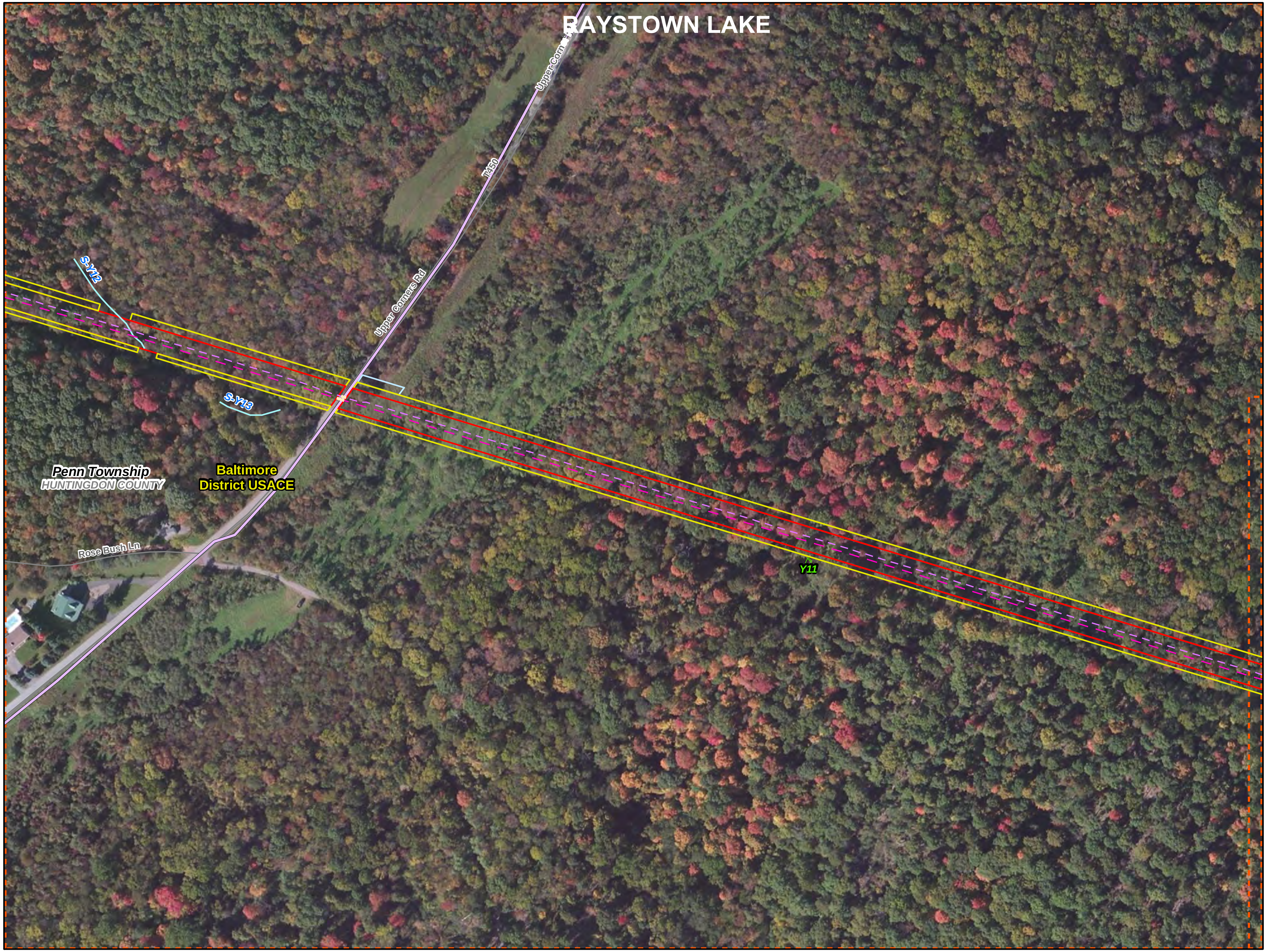
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 14 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

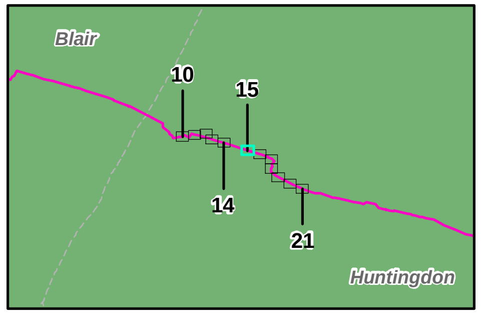
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 15 of 21

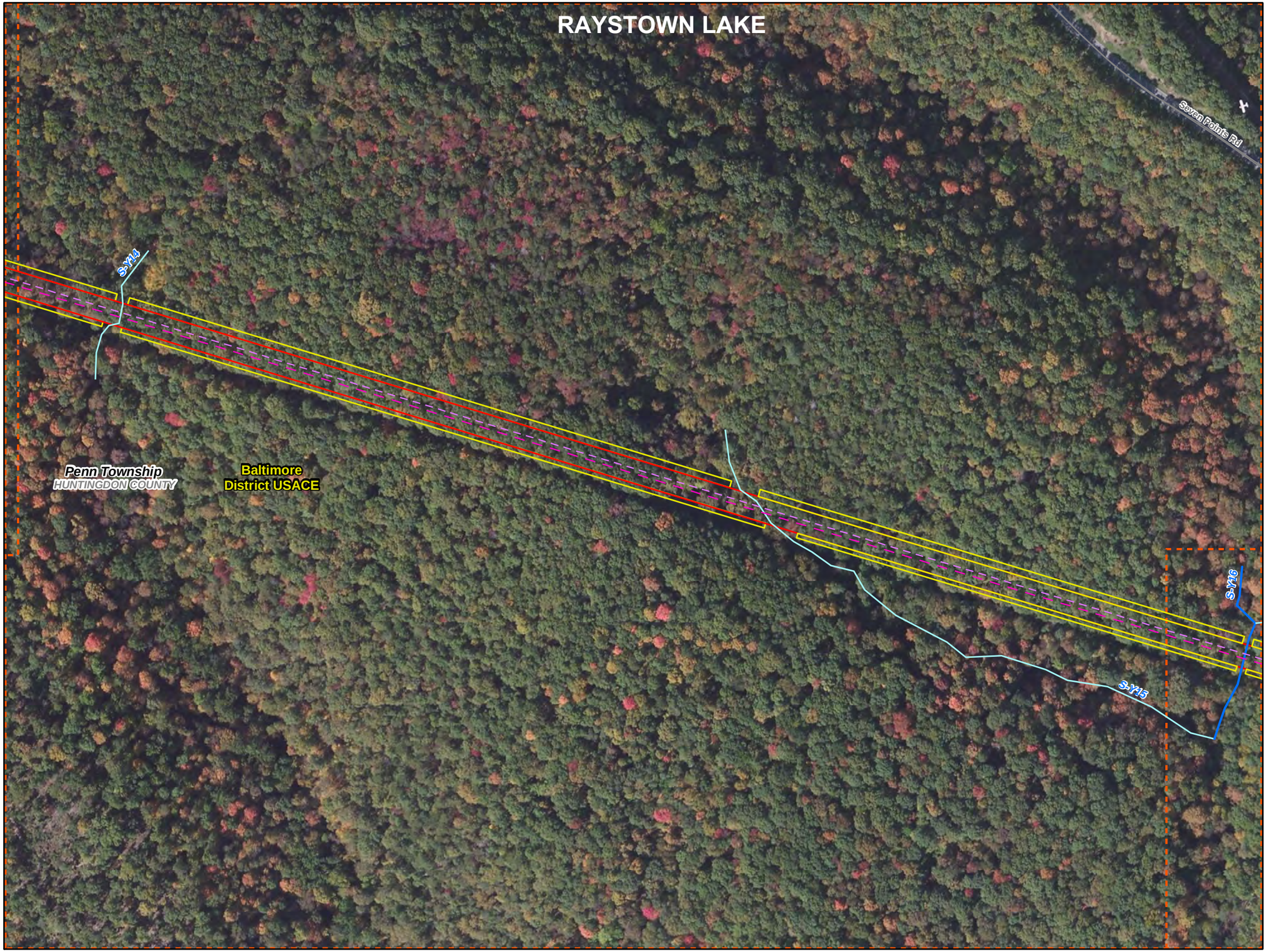
Prepared By: TETRA TECH

Date: 05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

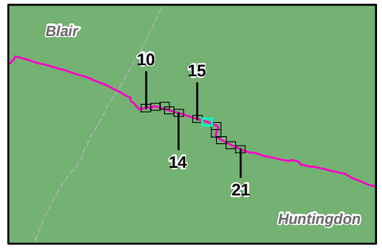
RAYSTOWN LAKE



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

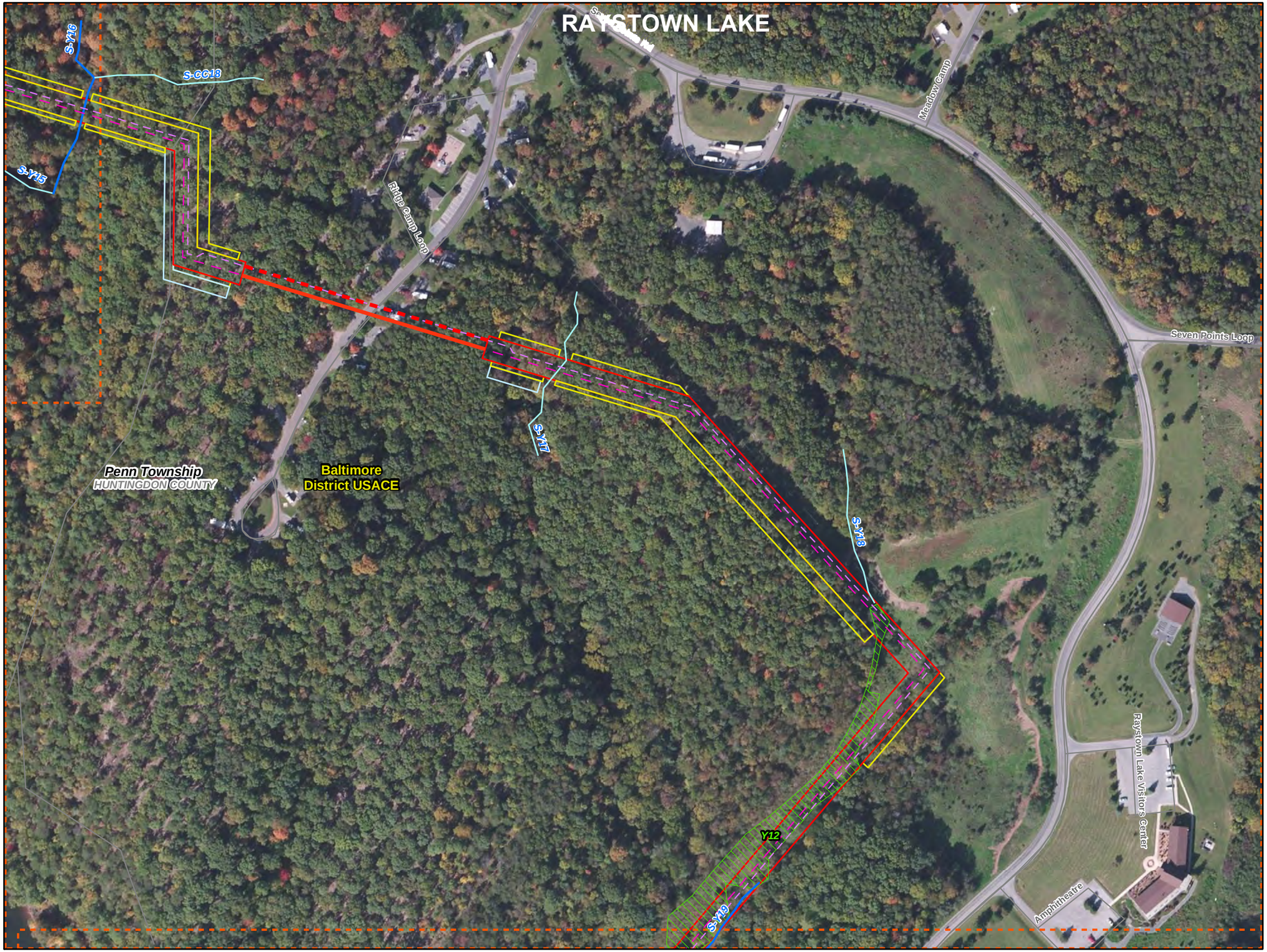
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 16 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

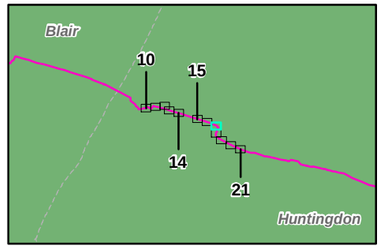
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 17 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

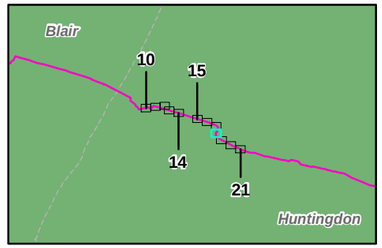
Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

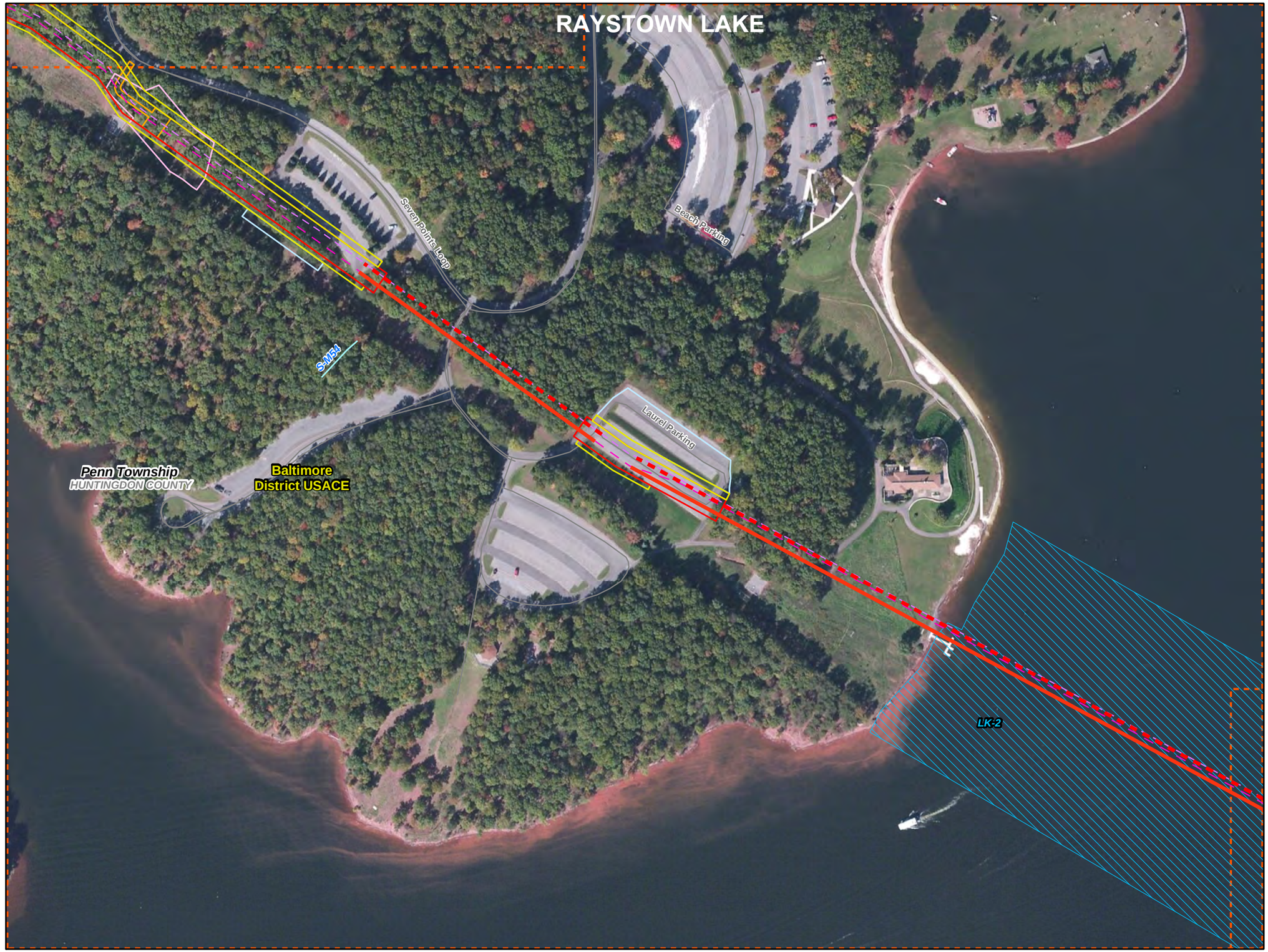
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 18 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

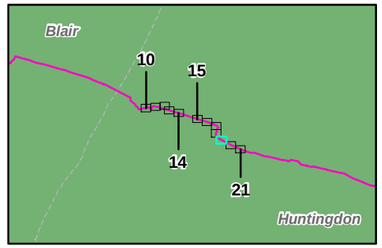
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

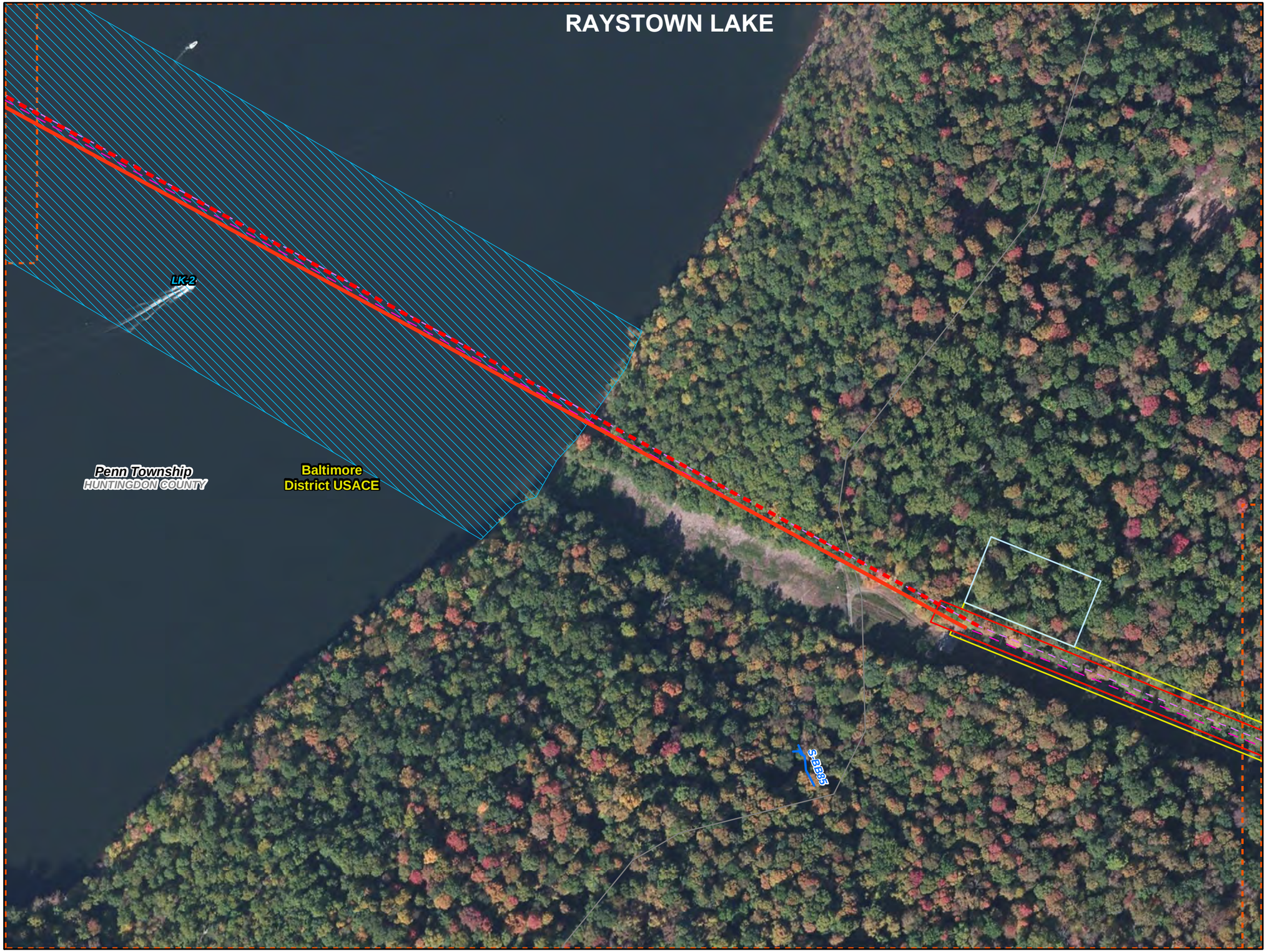
Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 19 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

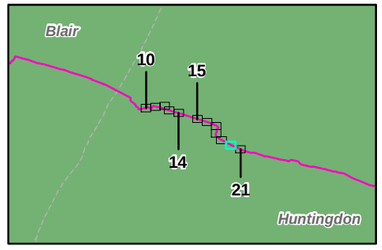
P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations



Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 20 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

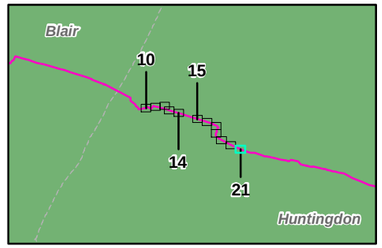
Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

Legend

- Sheet Boundary
- PPP 1 Bore
- PPP 2 Bore
- PPP 1 HDD
- PPP 2 HDD
- Swedesford Lateral
- PPP 1
- PPP 2
- 50-foot ROW
- Temporary ROW
- ATWS
- Block Valve Setting LOD
- Existing Block Valve Setting
- Permanent Access Road
- Temporary Access Road
- Clearing Only
- Travel Only
- Pond
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- USACE Property
- USACE Districts
- Municipal Boundary
- Roads

General Location



N

0 50 100 200 300 400

1 inch = 200 feet

Wetlands and Waterbodies Traversed by the Sunoco Pennsylvania Pipeline Project, on USACE Properties
Sheet 21 of 21

Prepared By:	Date:
TETRA TECH	05/2016

Base Map; ESRI ArcGIS Online and partners, Municipal Boundaries; PA Spatial Data Access, downloaded 6/13. Roads; NRCS Geospatial Data Giveaway 9/13.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112C\05958-PPP\MXD\Permits\USACEProperties\PPP_USACEDelineations

3.2.2 Environmental Impacts and Proposed Mitigation Measures

Groundwater

Dewatering of the pipeline trench may be necessary in order to install the pipeline in areas where there is a high water table or during periods of excessive precipitation. However, any lowering of localized groundwater is expected to be temporary, and dewatering activities will be performed in accordance with SPLP's BMPs and permit conditions. In order to recharge the aquifer and prevent silt-laden waters from flowing into wetlands and streams/waterbodies, SPLP will discharge water from dewatering activities into adjacent, stable, well-vegetated upland areas. If the selected dewatering locations are not within or immediately adjacent to the construction ROW, they will be sited to minimize off-ROW impacts. Under no circumstances shall heavily silt-laden waters be directly discharged into wetlands or streams/waterbodies.

With implementation of spill prevention measures discussed below, no adverse effects to groundwater resources are anticipated during construction of the Project. Once construction is complete, no adverse effects are anticipated to groundwater resources during operation of the Project. The No Action Alternative would not result in impacts to groundwater resources in USACE properties as no construction/operation of the pipeline Project would occur; however, SPLP would likely reroute around USACE properties, potentially resulting in similar impacts to groundwater resources in the area.

Spill Prevention Measures:

During construction, groundwater contamination could occur from construction equipment fuel, lubrication oil, or hydraulic oil spills; however, preventative measures will be implemented to avoid such spills from occurring including industry-approved spill prevention control and countermeasures such as the following:

- All employees handling fuels and other hazardous materials will be properly trained.
- All equipment will be in good operating order and inspected on a regular basis.
- Fuel trucks transporting fuel to on-site equipment will travel only on approved access roads.
- All equipment will be parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities will occur closer only if the Environmental Inspector (EI) finds, in advance, no reasonable alternative and all appropriate steps have been taken (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill. As a precautionary measure, in accordance with USACE Pittsburgh District requirements, construction vehicles/equipment parked on USACE properties at Loyalhanna Lake and Conemaugh River Lake shall utilize portable drip pans to ensure that potential vehicle/equipment leaks/spills are avoided and minimized.
- Hazardous materials, including chemicals, fuels, and lubricating oils, will not be stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to routine operation or use of

equipment in these areas. Materials safety data sheets will be kept on-site as required for hazardous materials on-site.

- Construction crew (including cleanup crews) will have on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and will be provided the proper procedure protocols for reporting spills. All sites will be inspected and routinely monitored for leaks or other conditions that could lead to spills or emergency situations.

Floodplains

The Project ROW crosses several FEMA designated flood hazard areas; however, the majority of these areas would be crossed using HDD or boring techniques, reducing surface disturbance and potential Project impacts. Specifically, the 0.39 mile, and the 0.56 mile of 100-year floodplain at Loyalhanna Lake and at Raystown Lake would be crossed using the horizontal directional drill method. Within the Conemaugh River Lake area, approximately 0.22 mile of 100-year floodplain would be crossed using the HDD construction method, resulting in a nominal 0.11 mile of 100-year floodplain to be crossed using open cut construction methods. In addition, the pipeline will be buried underground, and preconstruction contours and elevations will be restored following pipeline installation.

No aboveground facilities or access roads would be located within floodways. The expansion of the existing block valve site off Westinghouse Road (to the west of the Conemaugh River Lake crossing) would be located in a small portion (approximately 0.14-acre) of the 100-year floodplain (FEMA designated Special Flood Hazard Area Zone A). However, this expansion is not anticipated to result in adverse impacts as it would require minimal site grading and fill, and only a nominal amount of the block valve station pad would be located at existing grade within the floodplain: there will not be any structure or fill above grade in the mapped floodplain. Therefore, no changes to the 100-year flood elevation or flow patterns are anticipated, and there would be no increased flood risks to structures, human health, safety, or welfare. Similarly, the No Action Alternative would not result in floodplain impacts on USACE properties as no construction/operation of the pipeline would occur; however, SPLP would likely reroute the pipeline ROW potentially resulting in similar impacts to the floodplain resources outside of USACE properties as the Preferred Alternative.

Wetlands/Waterbodies

One (1) wetland and three (3) waterbodies were identified along the Loyalhanna Lake parcel; five (5) wetlands[1] and five (5) waterbodies along the Conemaugh River Lake parcel, and seven (7) wetlands and 16 waterbodies along the Raystown Lake parcel. Maps providing detailed resource locations within the Project workspace are shown in Figure16. Several of the pipeline crossings would be installed using HDD techniques, including Spruce Run (S-O61), an unnamed tributary (UNT) to Spruce Run (S-O62), Conemaugh River (S-J55), an UNT to Conemaugh River (S-J56), Loyalhanna Lake (P-O4), the crossing at West Raystown Lake (S-Y1, James Creek) and the

[1] Note: Two (2) of the wetlands (i.e., W-N28 and W-O45) in the Conemaugh River parcel contain different vegetation cover types and are listed individually by cover type, on separate lines in Table 7.

crossing at Raystown Lake (LK-2). SPLP will comply with all environmental permits associated with waterbody crossings and any special timing restrictions identified by the regulatory agencies.

HDD techniques will also be used under wetlands at USACE properties in Conemaugh River Lake, avoiding permanent conversion of wetland cover type (e.g., no conversion of forested wetland to un-forested cover types) resulting from this Project. HDD techniques will also be used for the majority of the forested and scrub-shrub wetlands on USACE properties at Raystown Lake, minimizing the requirement for tree and shrub clearing in these wetlands. However, the Project would temporarily disturb 0.60 acre (W-Y12 at Raystown), 0.03 acre (WP-22 at Loyalhanna) of palustrine emergent wetland and approximately 0.03 acre of palustrine scrub-shrub wetland (W-L36) at Raystown Lake. However, following construction, these wetlands would be restored to their preconstruction contours, shape and size (*i.e.*, no fill), and replanted to their preconstruction cover type and no permanent impacts to wetlands would occur. The No Action Alternative would not result in wetland/water resource impacts on USACE properties as no construction/operation of the pipeline project would occur; however SPLP would likely reroute the pipeline around USACE properties, potentially resulting in increased impacts to wetland and water resources when compared with the Preferred Alternative, as pipeline construction would require clearing a new right-of-way, resulting in additional impacts along a likely longer route.

During construction, the Project would require hydrostatic testing to ensure the proper operations and safety of the pipeline. Hydrostatic testing is performed by pressurizing a constructed pipeline with water. This would require water withdrawal from certain access points (outside of USACE owned/administrated properties), and discharge of the water on USACE property once hydrostatic testing is completed. SPLP does not anticipate any known contaminants in the water sources; however, the test water would be sampled for compliance with the Sampling and Analysis Program for Hydrostatic Test Waters in Pennsylvania prior to release. The Project would require discharge of hydrostatic testing water to discharge structures to be set-up on USACE property in well vegetated/grassy upland areas to promote ground infiltration and limit/reduce surface water sheet flow. The downgradient receiving waters (i.e., WOTUS) include an UNT to Conemaugh River at the Conemaugh River Lake area, James Creek, a UNT to Raystown Branch Juniata River, and the Raystown Branch Juniata River at Raystown Lake, none of which are designated HQ or EV waters. The water discharged would result from hydrostatic testing that would be conducted at several horizontal directional drilling bores and would be discharged near the endpoints of each HDD within the Project ROW. No hydrostatic testing water would be discharged within Loyalhanna Lake. The hydrostatic testing would be performed by a SPLP contractor who will be responsible for implementing all BMPs and ensuring that all waters discharged as result of hydrostatic testing are discharged in accordance with NPDES requirements set forth in SPLP's PAG-10 permit application. Furthermore, to ensure that adequate preparedness and appropriate response will be taken to protect the safety of the public, personnel on-site and the local environment or assets, a Preparedness, Prevention, and Contingency Plan (PPC) would be implemented during testing in accordance with PADEP's Guidelines for the Development and Implementation of Environmental Emergency Response Plans (Appendix H). Given the above, hydrostatic testing water discharged adjacent to WOTUS would not result in adverse effects, and impacts would be minimal. It is anticipated that the No Action Alternative would result in similar impacts as the Preferred Alternative for hydrostatic testing outside USACE properties.

Construction and Impact Minimization Procedures for Wetlands

As noted above, the Project will utilize standard wetland construction techniques or HDD install pipeline crossings at wetlands during construction. HDD is a trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the ground surface, including to streams and wetlands. The primary potential environmental impact associated with HDD revolves around the use of drilling fluids. Therefore, in those areas where HDD has been identified the HDD profile has been designed to minimize the potential for the release of drilling fluids in sensitive areas. As such, USACE does not anticipate that the use of HDD will alter, disturb, or otherwise impact subsurface hydrology of associated streams and wetlands, including subsurface pressurized waters, and the surfacing of groundwater is not expected. Furthermore, SPLP would be required to ensure that HDD contractors will closely monitor fluid circulation to detect potential inadvertent returns at the earliest possible time. An Inadvertent Return Plan (attached herein as Appendix C) has been prepared as part of a Mitigation Plan and submitted to PADEP for review and comment to ensure that potential impacts associated with HDD are avoided or minimized.

Standard construction and restoration BMPs will be implemented project-wide to prevent or minimize the potential for sedimentation or contamination in wetlands during construction activities. This will include Antidegradation Best Available Combination of Technologies (ABACT) in those areas of USACE lands that are in PADEP-designated Special Protection watersheds. SPLP has developed Project-specific E&S Plans in accordance with PADEP's *Erosion and Sediment Pollution Control Program Manual*, to minimize Project impacts to waterbodies. SPLP is also currently seeking approval of the E&S Plans from PADEP and the appropriate County Soil Conservation District, and is pursuing an ESCGP-2 Permit and Water Obstruction and Encroachment Permits for the Project. As previously discussed, USACE is currently reviewing SPLP's application for stream and wetland crossing permits under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

In addition, to ensure that impacts to wetlands during Project construction and restoration are avoided/minimized, the Project will implement the following construction and mitigation procedures at wetland crossings:

- The construction workspace will be reduced in width and limited to 50 feet in wetlands, occurring 10 feet before and after crossings.
- Vegetation will be cut off at ground level, leaving existing root systems intact, and the cut vegetation will be removed from the wetlands for disposal. Vegetation disturbance will be kept to the minimum practicable.
- Sediment barriers will be installed and maintained at the edge of wetlands as necessary until upslope ROW revegetation is completed.
- Pulling of tree stumps and grading activities will be limited to that area directly over the trench, and to a lesser extent, to the work or travel area. Where, in the judgment of the Chief Inspector or EI, construction safety would be compromised, stumps will be pulled in the workspace outside of the trench line.
- In wetlands with saturated soils where equipment must be supported to avoid deep rutting, SPLP will use prefabricated timber mats within the work area to stabilize the ROW. All

timber mats and prefabricated equipment pads will be removed upon completion of construction.

- The top 12 inches of topsoil from the trench will be segregated from the subsoil and stored in separate piles during construction. During backfilling, subsoil will be returned to the trench first and then topsoil on top (except in areas where tree roots and stumps, standing water, or saturated soils prevent effective soil segregation).
- Permanent trench breakers will be installed at the point where the trench enters and exits the wetland to help preserve the wetland's hydrologic characteristics and to control sediment discharges into the wetlands, and wetland drainage.
- No upland soil or fill material will be backfilled or imported into the wetland.
- Wetlands traversed by the pipeline ROW will be reseeded with a wet meadow and wetland seed mix (refer to Appendix E for a representative species composition list). However, to quickly stabilize the soil, the wetlands may initially be seeded with annual ryegrass to establish vegetative cover and minimize colonization of invasive species and/or erosion; this short-lived species will then recede, allowing the wetland seed mix to establish dominance over time.
- No lime or fertilizer will be applied in wetlands.

To minimize the temporary loss of trees and shrubs in forested and scrub-shrub wetland areas located in the temporary construction ROW on USACE-administered lands, SPLP will replant all temporarily impacted forested and scrub-shrub wetland areas. SPLP will restore these areas by planting native trees and shrubs, the same or similar species to the trees that were temporarily removed.

This is consistent with USACE's standard recommendations for restoration of oil and gas projects under Section 404 of the CWA. This will minimize the duration of impacts in forested/scrub-shrub wetland areas, where plantings will provide a "jump start" on forest re-growth, minimizing temporary impacts on the wetland systems' functions and values. This restoration planting program will be conducted after all construction activities have been completed and the workspace has been restored to pre-existing contours and soil morphology.

The species to be planted will be the same or similar native/non-invasive, hydrophytic species that were temporarily removed, within adjacent wetland areas, or common to the region. Planting will be conducted by a qualified and reputable landscape contractor or arborist, under the supervision of a qualified EI who is contracted by SPLP to provide oversight of the restoration activities. Tree species to be planted will consist of two- to three-foot whip sized individuals in a variety of facultative wetland species obtained from a reputable plant nursery. No cultivars or other ornamental native-species will be allowed as substitutes.

To ensure successful completion and increased survivorship of individual plantings, SPLP anticipates planting in either the fall immediately following completion of Project construction, or during the following year. The timing of planting will be in accordance with guidance and recommendations from a qualified landscape contractor or arborist, depending on the plant species and/or locations. Planting will be conducted by a qualified and reputable landscape contractor or arborist, under the supervision of a qualified EI who is contracted by SPLP to provide oversight of the restoration activities. The landscape contractor and EI will be provided a copy of a detailed

wetland mitigation plan with wetland-specific drawings, and apprised of SPLP's obligations under the plan and applicable permit conditions.

Monitoring of the planted wetland areas will occur as part of the Project's annual wetland monitoring program and will be conducted in accordance with PADEP and USACE permit conditions regarding monitoring. Maintenance of these planted areas will focus on a key element: avoiding accidental mowing of these areas during routine ROW vegetation maintenance. To protect the planted areas from accidental mowing by maintenance crew and others, the Project will install "No Mow Zone" markers at the entry and exit points, and along the edge of the planted areas along the pipeline's 50-foot wide ROW. This will demarcate the tree planting/growing area and signal the mowers to avoid mowing in these areas.

Construction and Impact Minimization Procedures for Waterbodies

As noted above, as part of mitigation, the Project includes a reduction of the construction workspace from the typical 75-foot wide construction ROW to a 50-foot ROW, which would occur 10 feet before and after encroachment of wetlands and waterbody crossings. Furthermore, where feasible, the Project will employ HDD construction methods to avoid impacts to some wetlands and major waterbodies, as described further below.

Construction activities within the waterbody crossing area typically consist of trench excavation for installation of the pipeline, and installation of temporary equipment bridges over the waterbody (see figures of typicals in Appendix B). The typical permitted ROW workspace at waterbody crossings will be 50 feet wide, but the actual area of in-stream excavation and disturbance is generally limited to the width of the trench, which is approximately eight (8) to 10 feet for a 20-inch-diameter pipe, plus dam and equipment crossing/bridge construction (depending on type of bridge) of about 20 to 25 feet or less.

For those waterbodies not proposed for HDD, the Project would use "dry" stream crossing methods to cross the streams on USACE properties. These techniques involve use of a temporary dam and flow bypass method, which allows for trenching, pipe installation, and initial restoration to occur in a dry streambed while maintaining a continuous downstream flow around the dry work area. A dry stream crossing also significantly reduces the amount of sediment and turbidity that would be created compared to a wet open cut crossing (without dams and flow diversions). In case the stream has no water or no perceptible flow at the time of construction, an open cut crossing method will likely be used. Most crossings of streams 10 feet wide or less will be completed in one (1) work day.

PADEP restricts in-stream construction activities for certain periods in stocked and wild trout streams, unless waived in writing by the PAFBC. PAFBC has designated Loyalhanna Lake (P-O4) as an Approved Trout Water (ATW) stream. No other streams are designated ATW or trout naturally reproducing streams. SPLP is in the process of obtaining written confirmation of the construction timing restrictions on stream crossings along the Project ROW.

Erosion & Sediment Control

Potential surface disturbance associated with pipeline projects include clearing, trench excavation, boring/HDD activities, construction/access road construction, multi-phase pipeline installation, site restoration, and revegetation. This would result in the potential for increased runoff, erosion, and sedimentation within USACE administered properties. As such, the Project would incorporate BMPs, and is submitting E&S Plans for the Project, in accordance with local, State, and federal regulations as discussed below.

Anti-degradation Best Available Combination of Technologies (ABACT) BMPs

To minimize soil erosion and sedimentation during construction, the Project will implement sediment pollution prevention procedures outlined in the Project E&S Plans, which are pending approval by the PADEP and the appropriate county conservation districts. Furthermore, SPLP is obtaining an ESCGP-2 for the Project, as required by 25 Pennsylvania Code Chapter 102. The E&S Plans are "project-specific" specifying exact placement, types, and quantities for temporary and permanent erosion control BMPs, and a construction sequence for the Project work.

A few areas of the Project ROW within USACE properties are state-designated Special Protection watersheds, i.e., HQ watersheds, including some areas of Loyalhanna Lake (i.e. Parcel PA-WM2-0065.0000 is a designated HQ-WWF, and the parcel west of Conemaugh River Lake, Parcel PA-WM2-0095.0000 is a designated HQ-CWF). Accordingly, SPLP will implement ABACT during construction, in accordance with Chapter 102 requirements. ABACT are erosion and sediment control BMPs approved for use in HQ watersheds that are designed to prevent sediment from reaching those Special Protection waters. They are typically sediment barriers (or a combination of multiple devices) that are rated as having higher sediment removal efficiency, and permit higher water flow rates than regular silt fence (e.g., compost filter socks, wood chip berms, vegetated filter strips, and riparian buffers). ABACT sediment control BMPs are not only required at stream and wetland crossings, but throughout any portions of the Project (including uplands) that are located in Special Protection Watersheds. The project-specific ABACT BMPs will require either compost filter socks or belted-reinforced silt fence (in conjunction with a wood chip berm or vegetated strip within 50 feet of streams) as opposed to standard silt fence.

A draft of the E&S Plans for USACE owned/administered lands has been submitted to PADEP for review and are included in Appendix B of this EA. SPLP will submit copies of the final PADEP-approved E&S Plan to USACE when it is available and will have a copy available on location during all construction activities.

3.3 Vegetation

3.3.1 Affected Environment

The Project ROW within USACE owned/administered properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake are primarily surrounded by forest vegetation including deciduous, evergreen, or a mix of the two forest types. Specifically, the Project ROW encompasses approximately 0.85 acre of forested land in Loyalhanna Lake, approximately 2.9 acres within the Conemaugh River Lake area, and approximately 17 acres of forested land at Raystown Lake.

3.3.2 Environmental Impacts and Proposed Mitigation Measures

SPLP has sited the Project ROW parallel to existing ROWs to minimize tree clearing and habitat fragmentation. In addition, SPLP incorporated the HDD technique to further avoid impacts to vegetation within USACE owned/administered properties. However, the Project would still require clearing of forested lands on USACE administered property. The Post-Construction Planting Plan (Appendix E) includes figures that provide an aerial view of the Project ROW on USACE properties and presents a summary of the acreage of forested land proposed for clearing within the Project ROW. The approximately 0.39 acre, 1.57 acres, and 13.66 acres of forested land that would be cleared in Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake properties, respectively, would be converted to a maintained 50-foot wide ROW. This would represent approximately 70, 70, and 63 percent of the forested land crossed within the Project ROW at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake properties, respectively. Per coordination/consultation with USACE, the entire 50-foot wide ROW through all USACE owned/administered lands would be revegetated with pollinator habitat with a Xerces seed mix approved by USACE (refer to Appendix E for the species composition of the pollinator seed mix) and monitored for five (5) years to ensure an 85% survival rate. Similarly, the remaining forested land to be cleared (temporary work spaces) would be reforested and monitored for two (2) years in accordance with the Planting Plan (Appendix E), to ensure an 85% survival rate. It is anticipated that the No Action Alternative would not result in impacts to vegetation on USACE properties as no construction/operation of the pipeline would occur; however, SPLP would likely reroute the Project around USACE properties, resulting in potentially more impacts to vegetation as pipeline construction would require clearing a new right-of-way along a likely longer route, potentially resulting in increased impacts to vegetation.

In addition to the above, SPLP will compensate USACE for the timber value as part of the real estate easement agreement for those forested areas to be cleared. Therefore, based on a combination of reforestation of the temporary work areas, revegetation of the 50-foot wide ROW to pollinator habitat, re-establishment of forested lands at Conemaugh River Lake, and payment for the timber to be cleared, it is anticipated that Project impacts to vegetation on USACE owned/administered properties will be minimized/mitigated.

3.4 Biological Resources

The USACE properties' forested habitat, scrub-shrub uplands, wetlands, streams, and river/lakes support a variety of wildlife species common to the Commonwealth of Pennsylvania. A few of the more common species likely to occur in the Project area include osprey *(Pandion haliaetus)*, turkey (*Meleagris gallopavo*), red-winged blackbirds (*Agelaius phoeniceus*), robins (*Turdus sp.*), song sparrows (*Melospiza melodia*), common mergansers (*M. merganser*), mallards (*Anas platyrhynchos*), red fox (*Vulpes fulvus*), white tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphimorphia*), and the occasional black bear (*Ursus americanus*). In addition, USACE properties support a variety of amphibians and reptiles including a number of different frog, turtle, salamander, and snake species. All these species encompass a wide range of the USACE properties, moving between habitat types, including transient use of the forest edge along utility ROWs.

Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake also provide habitat for a diverse

array of fish species including smallmouth/largemouth bass (*Micropterus sp.*), brown/tiger/rainbow trout (*Oncorhynchus, Salmo and Salvelinus, sp.*), northern pike (*Esox Lucius*), and tiger musky (*Esox masquinongy*), walleye (Sander vitreus), catfish (*i.e., Ictalurus punctatus, Ameiurus catus,* etc.), carp (*Cyprinus* sp.) and many others.

3.4.1 Affected Environment

SPLP initiated Pennsylvania Natural Diversity Inventory (PNDI) review and consultation with the DCNR, PGC, the PAFBC, and the USFWS on December 11, 2013 and subsequently resubmitted additional PNDI reviews in January and March of 2014 regarding the potential occurrence of threatened, endangered, and special species of concern that may be affected by the proposed Project. During this consultation/coordination process, a few threatened and endangered species, and species of special concern were identified within USACE properties:

Table 9. Summary of Identified Rare, Threatened, Endangered Species and Species of Special Concern within USACE Properties

Species	Scientific Name	Status	Surveys Required (Location)
Bald eagle	*Haliaeetus leucocephalus*	State protected species	No
Indiana bat	*Myotis sodalis*	Federally listed endangered species	Yes (LL, CRL, RL)
Northern long-eared bat	*Myotis septentrionalis*	Federally listed threatened species	Yes (LL, CRL, RL)
Silver-haired bat	*Lasionycteris noctivagans*	State listed candidate species	Yes (LL, CRL, RL)
Eastern small-footed bat	*Myotis leibii*	State threatened species	No
Timber rattlesnake	*Crotalus horridus*	State listed Candidate-rare species	Yes (RL)
Allegheny woodrat	*Neotoma magister*	State listed threatened species (priority)	No
Shale-barren evening-primrose	*Oenothera argillicola*	State listed threatened species	Yes (RL)
Kate's mountain clover	*Trifolium virginicum*	State listed endangered species	Yes (RL)
Notes: LL = Loyalhanna Lake CRL = Conemaugh River Lake RL = Raystown Lake			

As indicated in Table 9, biological surveys were conducted to identify the locations and to evaluate potential impacts to some of these species within the Project ROW. Once the surveys were completed, requests for determination were sent to the agencies between July and November of 2015. A copy of the PNDI review, the coordination between these agencies, and the requests for determinations and any clearance letters received to date are provided in Appendix D. Additional discussion regarding the rare, threatened, and endangered (RTE) species are summarized below.

One (1) BCA was identified within the Project ROW at Raystown Lake. This BCA was proposed by USACE to address proposed forest operation and maintenance activities. Potential impacts to the BCA traversed by the Project ROW at Raystown Lake is discussed below.

Rare, Threatened, and Endangered (RTE) Species

Bird Species

Based on surveys of rare bird species within the Project area, correspondence with the PGC on March 14, 2014, and USFWS on May 28, 2014, birds of concern that may be located within the Project ROW at USACE-owned/administered properties include the Bald eagle *(Haliaeetus leucocephalus)* which is considered a protected species by the Commonwealth of PA and is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Protection Treaty Act. Bald eagles were noted as they generally nest along coastlines, rivers, large lakes, or streams where there is adequate food supply. No surveys for bald eagles within USACE properties was required by the USFWS or by the PGC, and no known bald eagle nests have been identified within 0.5 mile of the Project ROW.

Important Bird Areas

No designated Important Bird Areas (IBAs) are located within the Project ROW on USACE properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. The nearest identified IBA is the Greater Tussy Mountain IBA, located outside of USACE properties approximately one (1) mile west of Raystown Lake (NAS 2015).

Mammals/Reptiles

Based on correspondence dated March 14, 2014 and March 19, 2014, the USFWS and PGC raised concerns regarding the Indiana bat *(Myotis sodalis*)—a Federally listed endangered species, the Northern long-eared bat *(Myotis septentrionalis*)—a Federally listed threatened species, the silver-haired bat (*Lasionycteris noctivagans*)—a State listed Candidate-rare species, and the eastern small-footed bat *(Myotis leibii*)—a State threatened species. Surveys were requested for the Indiana Bat, the Northern long-eared bat, and for the silver haired bat; however, no surveys were required for the eastern small-footed bat on USACE properties.

Based on correspondence dated January 27, 2014 and March 14, 2014, the PAFBC and the PGC raised concerns for timber rattlesnake *(Crotalus horridus*)—a State listed Candidate-rare species and Allegheny woodrat *(Neotoma magister*)—a State listed threatened species (priority) in certain areas within Huntingdon County, respectively. Surveys for the Allegheny Woodrat was not required by the PFBC or the PGC on USACE-owned properties; however the PFBC did request for surveys of timer rattlesnake on USACE-owned properties at Raytown Lake.

Plant Species

Based on initial correspondence dated January 30, 2014, from PADCNR, no areas of concern (AOCs) were identified by the PADCNR on USACE-owned/administered properties at Loyalhanna Lake and Conemaugh River Lake. The PADCNR and PA Natural Heritage Inventory (PNDI) did identify one AOC (AOC W16) at Raystown Lake and recommended that rare plant surveys be conducted for shale-barren evening-primrose (*Oenothera argillicola)*—a State listed threatened species and Kate's mountain clover *(Trifolium virginicum*)—a State listed endangered species on that property.

3.4.2 Environmental Impacts and Proposed Mitigation Measures

Most Project construction would occur along and overlapping SPLP's existing ROW or other utility ROWs which are currently disturbed and limit the quality and diversity of wildlife habitat in the area. Therefore, the Project would have minimal potential to result in adverse effects or disturbance to wildlife species in the area. Although the Project would result in the clearing of forested lands, the Project would maintain a forest edge (similar to existing conditions), and would revegetate/reforest the areas that are cleared with pollinator habitat and tree seedlings to restore potentially affected wildlife habitat within USACE properties. The Project has committed to minimizing workspaces within wetlands and streams, and has agreed to revegetate using wetland seed mixes. Furthermore, as the Project would utilize HDD construction methods underneath large bodies of water (i.e. Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake), it is not anticipated that the Project would have the potential to adversely affect fish species within USACE properties during construction. Overall, with implementation of the avoidance/minimization and revegetation/restoration measures, no adverse impacts to mobile wildlife species in the Project area are anticipated during construction. Earth disturbance activities may result in the loss/mortality of some less mobile species such as small mammals or insects; however, this would not adversely impact the overall population of these species on USACE properties.

During operation of the pipeline, it is anticipated that minimal to no disturbances would occur to the surrounding areas. The Project would require periodic maintenance and or operation of the aboveground block valve stations, but these occurrences would be minimal and temporary and would occur adjacent to existing block valve stations. Therefore, it is not anticipated that the Project would have adverse effects to the surrounding wildlife and fish population or habitat. It is anticipated that the No Action Alternative would not result in adverse effects to the surrounding wildlife and fish population or habitat as no construction, clearing, or surface disturbance associated with the Project would occur on USACE properties; however SPLP would likely reroute around USACE properties, requiring the clearing of a new right-of-way along a likely longer route, potentially resulting in additional long-term habitat impacts.

Rare, Threatened, and Endangered (RTE) Species

Bird Species

Birds are afforded protection by the Migratory Bird Act and the Bald and Golden Eagle Protection Act. Those activities that result in the "incidental take" of migratory birds or eagles (including their nests and eggs) are prohibited unless authorized by the USFWS. Per 50 CFR 10.12, a "take" is defined as *"to pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to pursue, hunt, shoot, wound, kill, trap, capture or collect*.

The nearest bald eagle nest in the Loyalhanna Lake/Conemaugh River Lake area was identified 0.81-mile away from the Project ROW and would not be impacted. The bald eagle nest sites located at Raystown Lake near Lake Mile Marker 10 and Aitch/James Creek Coves are located approximately one (1) mile or more from the Project ROW and also would not be impacted. In addition, construction activities including any drilling or blasting that may occur for the Project would occur within the established recommendations of the *USFWS Bald Eagle Management Guidelines*. Per the guidelines, construction, clearing, tree harvesting, and land use activities should be conducted at least 660 feet away from active nests (at the closest). For blasting and

other loud, intermittent noises, a half-mile distance away is recommended from active nests. As construction activities associated with the Project would be located over 660 feet, it is not anticipated that the Project would result in impacts to bald eagle nests or to bald eagles in the area. In addition, the PGC has noted that the bald eagle nests within Raystown Lake are fairly obscured by foliage and not easily observed (PGC 2016). Nevertheless, in the event that the Project encounters bald eagle nests, during construction/tree clearing, the Project would comply with the *USFWS Bald Eagle Management Guidelines* to ensure that no adverse effects to bald eagles occur and to prevent an "incidental take" from occurring (USFWS 2007). Operation of the pipeline is not anticipated to adversely affect bald eagles. Similarly, the No Action Alternative would not result in impacts to bald eagles in the area as no construction/operation associated with the Project would occur on USACE properties; however SPLP would likely reroute around USACE properties, resulting in additional pipeline mileage and the potential for increased impacts to bald eagles.

Due to the size of the Project, migratory birds would be reasonably expected to cross the proposed Project ROW at some points along its length. However, the Project disturbance area is limited to a narrow linear corridor within the habitat, and the Project would not significantly affect any key resting locations for birds travelling to breeding or wintering grounds. Migratory birds nest in a variety of different habitats ranging from forest to shrub and grasslands. Although these types of habitat would be traversed by the Project, impacts to nesting birds would be avoided or minimal because tree clearing would be conducted during the winter/early spring season, outside of the nesting season for most migratory bird species. Furthermore, impacts from the Project on bird migration patterns are expected to be negligible based on the limited width of clearing and the limited duration of construction activities within a particular location. It is anticipated that the No Action Alternative would likely result in additional impacts to migratory birds than the Preferred Alternative as pipeline construction would require clearing a new right-of-way along a likely longer route resulting in additional impacts to nesting habitat.

IBAs

As noted above, the Project ROW through USACE owned properties would not intersect any Audubon designated IBAs. As such, no adverse effects to IBAs are anticipated as a result of the Project. Similarly, the No Action Alternative would not result in impacts to IBAs as there would be no construction/operation of the Project occurring on USACE properties; however SPLP would likely reroute around USACE properties, resulting in additional pipeline mileage and the potential for increased impacts to IBAs.

Mammals/Reptiles

In response to USFWS and PGC concerns, SPLP conducted mist net surveys on USACE owned properties at Loyalhanna Lake and Conemaugh River Lake [2] within the Project ROW or in the vicinity of the Project area. The results of the mist net survey did not capture/identify any of the three (3) bat species of concern (*i.e.*, Indiana bat, Northern long-eared bat, and silver-haired bat) at Loyalhanna Lake and Conemaugh River Lake. No mist net surveys were conducted at Raystown

[2] SPLP conducted mist-net surveys only at USACE-owned properties in Loyalhanna Lake and Conemaugh River Lake areas as past surveys in Raystown Lake confirmed Indiana bat swarming habitat and the presence of Northern long eared bat species.

Lake due to past surveys confirming Indiana bat swarming habitat, as well as the known presence of Northern long-eared bats (USACE 2015).

SPLP also conducted potential bat roost tree (PRT) surveys at all three USACE owned/administered properties to identify the Project's potential impacts on RTE bat species as a result of tree clearing required on USACE properties. The results of the PRT survey identified 83 PRTs (six [6] in Loyalhanna Lake, 11 in Conemaugh River Lake, and 66 in Raystown Lake) within the Project ROW on USACE owned-properties including 39 primary PRTs and 44 secondary PRTs. Twenty-two of the roost trees are located outside of the Project work areas and were determined not necessary for clearing[3]. No PRTs were identified within the proposed BCA at Raystown Lake, therefore potential Project impacts to the proposed BCA are anticipated to be minimal. Nonetheless, the Project would impact approximately 1.4 acres of the designated BCA at Raystown Lake. The No Action Alternative would not impact the BCA at Raystown Lake as the Project would reroute around USACE properties and associated recently established BCAs at Raystown Lake.

Based on the results of the surveys conducted, the Project would implement mitigation measures to ensure that the Project would not result in adverse effects to the Indiana bat and other bat species within USACE-owned properties. In addition to minimizing tree clearing, the Project will implement a *Myotis* Conservation Plan (currently pending USFWS review) for the Indiana and Northern long-eared bats. This includes tree clearing restrictions for the Indiana Bat (April 1 through November 14) and tree clearing restrictions from June 1 to July 31st for the Northern-long-eared bat (in accordance with USFWS approved methods). Clearing trees outside of this time period (i.e., winter tree clearing) would ensure that breeding activities are not interrupted during the bats' active period and to prevent the incidental take of roosting bats. In the event winter tree clearing is not possible, the Project will implement USFWS recommendations regarding tree clearing in agreement with USACE, outside of the busy summer recreation season to ensure compliance with USFWS approved methods. Furthermore, SPLP has also committed to setting aside funding for IBCF. With implementation of these mitigation measures, adverse effects to RTE bats would not likely occur. USFWS issued its determination letter on June 24, 2016, indicating that effects of the Project on the Indiana bat are insignificant or discountable. The USFWS further found that following the June 1- July 31 time of year restriction on roost tree clearing, any incidental take of the Northern long-eared bat that might result from tree removal is not prohibited. When compared with the No Action Alternative, the No Action Alternative would not result in impacts to bat habitat as pipeline construction/operation would not occur on USACE properties. However, SPLP would likely reroute around the USACE properties resulting in the clearing of a new right-of-way along a likely longer route resulting in additional long-term/permanent forested impacts and subsequently more impacts to bat habitat.

SPLP has also developed a BCA Compensatory Mitigation Plan (CMP) (Appendix F), in accordance with USACE requirements, which includes the installation of artificial roost trees, the girdling of trees to create additional snags (standing dead/dying trees), and the control of invasive species in coordination with USACE at the BCA located to the east of the Raystown Lake crossing.

[3] Primary roost trees are typically large (>9 inches diameter breast height [DBH]) with loose, exfoliating bark and a high degree of solar exposure. Secondary roost trees are typically <9 inches in DBH with exfoliating bark, cracks, crevices, hollows (tree boles and limbs) and a lower degree of solar exposure.

Furthermore, SPLP has agreed to reforest/revegetate the temporarily cleared forested areas along the Project's temporary ROW with a mix of trees and shrubs, and with pollinator habitat for the 50-foot wide workspaces as part of the Planting Plan (Appendix E). With implementation of the BCA CMP, and with reforestation/revegetation of cleared forested land, it is not anticipated that USACE's proposed BCA and their goals for protecting bat species habitat would be affected by the Project. The No Action Alternative would not result in the creation of bat habitat and invasive species management on the USACE owned properties, but would likely implement similar mitigation measures along an alternate route.

No surveys of Allegheny woodrat were required by the PFBC or PGC at USACE properties. However, the PFBC did require survey of the timber rattlesnake at Raystown Lake, particularly within the Project ROW at Terrace Mountain. Terrace Mountain is located east of the Raystown Lake crossing, with the survey area extending from Raystown Lake (as its western terminus) to just east of Happy Hills Road (as its eastern terminus). One (1) timber rattlesnake was observed during field surveys, but no denning or gestation habitats were confirmed. As no den or gestational habitat was confirmed, no construction timing restriction is necessary. However, a Timber Rattlesnake Conservation Plan would be implemented to avoid/minimize potential impacts to timber rattlesnakes identified during construction. As discussed in the plan, SPLP will provide timber rattlesnake monitors during construction activities to ensure that no impacts to these species will occur. Monitoring will be required between April 15 and October 15 (timber rattlesnake active season), should construction occur during this timeframe. In addition, SPLP will conduct pre-construction surveys 48 hours prior to the scheduled construction activity and to ensure safe removal from the workspaces. Captured snakes would be moved a sufficient distance to minimize the probability of its return to construction workspaces. Furthermore, silt fencing would be installed along the edge of the workspaces facing the release points. With implementation of this conservation plan, it is anticipated that potential project impacts to timber rattlesnake will be minimal. The Timber Rattlesnake Conservation Plan was prepared and submitted to the PFBC for review and approval on August 21, 2015. A clearance determination from the PFBC for the timber rattlesnake was received on September 22, 2015. SPLP received a clearance determination from the PGC for the Allegheny woodrat on June 8, 2016. Similarly, the No Action Alternative would not result in impacts to these species or any other protected mammals/reptiles as no construction/operation of the pipeline would occur on USACE properties; however. SPLP would likely reroute around USACE properties, resulting in additional pipeline mileage and the potential for increased impacts to protected species.

RTE Plant Species

In response to PADCNR concerns, botanical field surveys were conducted at specified AOCs in Raystown Lake between July 16 through 17, 2014 and from August 4 to August 7, 2014. The results of the field surveys did not identify the presence of shale-barren evening-primrose (*Oenothera argillicola)* or Kate's mountain clover *(Trifolium virginicum*) along the proposed Project ROW (including temporary access roads) at Raystown Lake. These findings were submitted to the DCNR for concurrence on November 4, 2015. DCNR's clearance determination for these species were received on January 15, 2016. As such, no adverse effects are anticipated to RTE plant species as result of the Project. Similarly, the No Action Alternative would not result in impacts to RTE plant species on USACE properties as no construction/operation of the pipeline

project would occur; however SPLP would likely reroute around USACE properties, resulting in additional pipeline mileage and the potential for increased impacts to RTE plant species.

SPLP has obtained agency clearances for all RTE species to be potentially impacted by the Project. Copies of all agency correspondence/coordination efforts for the entire Project are presented Appendix D. SPLP is currently committed to incorporating USFWS recommendations in the event that winter tree clearing is not possible and committing to clearing outside of the busy summer recreational season. Therefore, the Project is not anticipated to result in an adverse effect determination to any rare, threatened, or endangered and protected animal and plant species. The additional commitments made by SPLP in coordination with these agencies are stated within the agencies' determination letters and reflected in the Project's construction plans. These commitments include impact minimization measures such as fencing, time of year restrictions, and/or biological monitoring.

3.5 Cultural Resources

Cultural resource investigations were conducted for the Project using Pennsylvania's Cultural Resources Geographic Information System, field surveys, and ongoing consultation and coordination with the PHMC which serves as the SHPO. Appendix G presents the methods, results, and maps for the cultural/historic resource surveys conducted on USACE owned/administered properties. As discussed therein, Tetra Tech's archaeological and historic resources surveys on USACE owned/administered properties were conducted following the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register [FR] 44716-42, September 29, 1983); the National Historic Preservation Act (NHPA) of 1966, as amended; Executive Order 11593; the regulations of the Advisory Council on Historic Preservation (36 Code of Federal Regulations [C.F.R.] 800); and, using research and survey methods in conformance with guidelines in the Commonwealth of Pennsylvania's Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations in Pennsylvania (PHMC 2008), as well as the PHMC Survey Guidelines for Pipelines Projects: Above Ground Resources (PHMC 2013). In addition, as part of Section 106 of the NHPA requirements, the USACE Pittsburgh and Baltimore District Regulatory divisions have initiated Native American tribal consultation for the Project. A copy of the notification letters sent to the tribes for the Project and comments received on the Project are provided in Appendix A of this EA. As noted above, two (2) comment letters were received for the Project; one (1) of the two (2) comment letters discussed fees required by the Delaware tribe for review of the Project; while the other noted a PA SHPO Determination of Effects meeting that the tribes were invited to and provided a short summary of the results of the meeting. Per USACE, tribal consultation will be occurring for the entire SPLP Pennsylvania Pipeline Project, including for all areas located outside of USACE owned/administrated properties. To date however, no specific comments involving Native American cultural resources were received for the Project area located within the USACE properties.

3.5.1 Affected Environment

Archaeological Resources

The fieldwork conducted on USACE properties entailed subsurface testing of all intact soils with slopes of less than 15% within a 60 meter (m)/200 foot-wide study corridor, centered over the

proposed ROW or the Area of Potential Effect (APE). Subsurface testing was achieved through the excavation of shovel test pits (STPs). STPs measuring 20 inches by 20 inches were initially placed at 50-foot intervals in all areas with slopes of less than 15%. Additional STPs were excavated around any STP that contained in-situ prehistoric or historic artifacts. Specifically, four (4) supplemental STPs (radials) were placed in each cardinal direction at 5-meter (16.4-foot) intervals, when possible. Although areas with slopes in excess of 15% were not shovel tested, they were inspected for historic-period features as well as rock shelters and level benches that could contain prehistoric sites.

Altogether, a total of 698 STPs were excavated across USACE-owned properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. Of the five (5) parcels excavated, one (1) potentially historic archaeological resource within the Project ROW at Parcel Number PA-WM2-0099.0000/ Site 36WM1055 on the Conemaugh River Lake property was recommended for Phase II investigation. Table 10 below shows a summary of resources found/identified within USACE properties. Additional details regarding the finding is discussed below.

Table 10. Archaeological Resources Identified Within the Project ROW on USACE Properties

Parcel Number	STP Number	Site Number	Resources Identified	National Register Eligibility
Loyalhanna Lake				
PA-WM2-0064.0000	-	N/A	None Identified	N/A
Conemaugh River Lake				
PA-WM2-0095.0000	A14	Isolate 36WM/064	Two (2) Unidentified Redware Fragments	Not eligible
	A15		Five (5) unidentifiable ferrous objects	Not eligible
PA-WM2-0099.0000	A25	36WM1055	Eight (8) artifacts: composed of unidentified ferrous material (n=4), a brick fragment, a cut nail, and coal cinders (n=2); Historic material: unidentifiable ferrous material (n=7), plain whiteware fragments (n=3), window glass (n=1), coal (n=1), brick fragments (n=4)	Recommended for Phase II investigation. Phase II investigation revealed site not recommended eligible for listing – (SHPO concurrence received) Not eligible
	A26		Four (4) plain whiteware fragments	Not eligible
	A27		Two (2) clear flat glass fragments	Not eligible
PA-IN-0000.0001	-	N/A	None Identified	N/A
Raystown Lake				
PA-HU-20.0008	-	N/A	None Identified	N/A

Surveys at the Conemaugh River Lake Crossing (Parcel PA-WM2-0099.0000)

Surveys of USACE parcel number PA-WM2-0099.0000 began near the east side of Westinghouse Road in Derry Township and extended approximately 0.41 mile eastward across Conemaugh River Lake and into Burrell Township. A total of 55 STPs were excavated with three (3) adjacent STPs found to contain historic material. The material recovered from STP A25 included an approximately 17-centimeter (6.6-inch) thick lens of recent alluvium which contained eight (8) artifacts, composed of unidentified ferrous material, a brick fragment, a cut nail, and coal cinders as well as unidentifiable ferrous material, plain whiteware fragments, window glass, coal, brick fragments, and a cut nail. STP A26 contained four plain whiteware fragments, and STP A27 contained two (2) clear flat glass fragments. As this location may represent a previously unrecorded historic period archaeological site, the site's potential for listing in the National Register of Historic Places (NRHP) was requested for evaluation.

The Phase II investigation was completed in July 2015 by Gray & Pape Inc. A total of 22 STPs were excavated with 16 additional artifacts recovered; however, this site was not recommended eligible for listing in the NRHP as no information was found to link the site to an established historical context or to significant developments related to domestic life in rural Pennsylvania and did not meet the criterion required for listing. Additional information can be found in the Cultural Resources Report (Appendix G**)**.

Historic Resources

Tetra Tech also performed an above-ground historic resources survey within USACE owned/administrated properties for the proposed Project. The APE included the 'geographic area or areas within which an undertaking may directly or indirectly cause changes in the character of or use of historic properties, if any such properties exist" (36 CFR §800.16(d)).' A minimum of 152 m (500 ft.) along both sides of the Project ROW was evaluated. Results of the survey identified two (2) previously recorded historic resources within the APE, one of which was eligible for listing in the NRHP. This resource, the Western Pennsylvania Railroad (PHMC Key No. 97496), runs adjacent to the Conemaugh River Lake area and is considered eligible for listing in the NRHP. However, no previously undocumented buildings or structures 50 years of age or older within or immediately adjacent to the APE were identified located within USACE properties. No other historic properties, structures, buildings, or districts were identified within the APE.

3.5.2 Environmental Impacts and Proposed Mitigation Measures

As noted above, the Project ROW within USACE properties is located within/near one (1) identified potential archaeological resource in Conemaugh River Lake area. However, that site (36WM1055) was not recommended eligible for listing in the NRHP. In addition, due to the HDD crossing method proposed at the Conemaugh River Lake crossing, it is not anticipated that the Project would encounter archaeological resources identified at Parcel PA-WM2-0099.0000. The HDD crossing method proposed would also avoid the Project's potential impacts to the Western Pennsylvania Railroad. Therefore, it is not anticipated that the Project would result in adverse effects to archaeological resources or historic resources eligible for or listed in the NRHP on USACE property at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

PHMC has reviewed the Project survey reports and on September 14, 2016 determined the reports are consistent with the Guidelines for Archaeological Investigations in Pennsylvania and the Secretary of Interior's Guidelines for Archaeological Determination. In addition, the PHMC concurred with the survey report determination that Site 36WM1055 is not eligible for listing in the National Register of Historic Places (see Appendix G). As such, no further work is needed for this Site.

The No Action Alternative also would not have impacts on cultural resources on USACE properties as no construction/operation of the pipeline Project would occur; however SPLP would likely reroute the Project around USACE properties, resulting in increased pipeline mileage and construction, as well as increased potential to encounter archaeological/cultural resources in the area.

In the unlikely event that previously unidentified cultural resources or Native American human remains are encountered during construction, SPLP has developed avoidance/minimization procedures and protocols to be implemented if/when necessary, consistent with local, state, and federal regulations. This unanticipated discovery plan would be implemented during Project construction to ensure that cultural resource impacts are minimized.

3.6 Land Use

3.6.1 Affected Environment

The Project ROW would be located within USACE owned/administered properties that have been constructed and used for flood control purposes and recreational uses (i.e., Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake). However, most of the Project ROW through USACE properties would be located parallel or adjacent to SPLP's existing ROW and other existing utility corridors. These areas include grassy areas along the forest edge that are maintained periodically to ensure that Project access is available for routine inspections/maintenance and safety checks. The Project would also cross one (1) BCA within Raystown Lake. While the proposed BCA is not a conservation easement and does not preclude development, an analysis of the Project's potential impact on the BCA's designated land use is discussed herein.

3.6.2 Environmental Impacts and Proposed Mitigation Measures

To the extent feasible, SPLP has sited the Project parallel or adjacent to SPLP's existing ROW within all three (3) USACE properties and has agreed to construct the pipeline outside of the busy summer recreation season, per USACE's requirements. SPLP also considered and implemented alternative construction methods, including HDD and boring to minimize potential Project impacts at USACE properties. For example, the pipeline would be installed through Ridge Camp (a camp site area along the proposed pipeline route) at Raystown Lake using horizontal directional drilling techniques, avoiding and minimizing the need for temporary disturbance to areas surrounding the camp site/land uses, and potential conflict with shallow buried utilities in this developed recreational area. Nonetheless, the Project would result in approximately 28 acres of temporary surface/land disturbance (Table 11) resulting in minor recreational use impacts for approximately six (6 months) on USACE properties, as discussed further in Section 3.7. This acreage of disturbance would be reduced to approximately 19 acres once construction is complete, as

temporary workspaces would be restored and allowed to revert to pre-construction land use/recreational use conditions. The approximately 19 acres would be revegetated and maintained as operational utility ROWs.

Table 11. Estimated Land Disturbance Impacts

Property Name	USACE District	Tract Number	Total ROW Crossing Type & Length (approx. miles)	Estimated Total Acreage Impacts (Temporary & Permanent)	Estimated Permanent Acreage Impacts
Loyalhanna Lake	Pittsburgh	PA-WM2-0064.0000	Open cut (0.07 mile); HDD (0.39 mile)	0.63	0.42
Parcel 1 west of Conemaugh River Lake	Pittsburgh	PA-WM2-0095.0000	HDD (0.22 mile)	-	-
Parcel 2 at Conemaugh River Lake Crossing	Pittsburgh	PA-WM2-0099.0000	Open Cut (0.14 mile); HDD (0.14 mile)	1.27	0.84
Parcel 3 east of Conemaugh River Lake	Pittsburgh	PA-IN-0000.0001	HDD (0.12 mile) HDD (0.02 mile)	-	-
Parcel 4 east of Conemaugh River Lake	Pittsburgh	PA-IN- 0018.0001	Open Cut (0.01 mile)	0.06	0.05
Raystown Lake	Baltimore	PA-HU-20.0008	Open Cut (2.88 miles); Bore (0.02 mile); HDD (1.25 miles)	26.18	17.45
			Total Acreage	28.14	18.76

Although these areas would be maintained as part of the 50-foot wide ROW, the existing land uses of these areas would be anticipated to resume routine operations activities following construction (i.e., typically within 3 to 6 months or less, depending on the property) as the only land use change would be a slightly wider utility easement. Similarly, it is anticipated that land uses at USACE properties would continue as normal in those areas that would be directionally drilled.

Expansion of the existing block valve west of the Conemaugh River Lake crossing would result in the permanent conversion of approximately 0.14-acre of prime farmland/farmland of statewide importance. However, this land is currently not being used for farming or agricultural uses and an expansion of the existing block valve would result in minimal land use change to the area. Similarly, the new block valve proposed at Raystown Lake would result in a nominal conversion of land use as the proposed block valve would be located along an existing utility ROW and immediately adjacent to an existing block valve site currently owned by another utility. This block valve was relocated in coordination with USACE to minimize visual impacts to a parking area, and combine similar uses by moving the valve site closer to existing aboveground infrastructure for a different pipeline on the property. Consequently, the current land use would be slightly expanded to accommodate the block valve additions/modifications.

SPLP has prepared a BCA CMP (Appendix F) which includes compensating the impacts to the BCA area impacted by the Project (refer to Section 3.4.3). Therefore, the combination of the BCA CMP and reforestation/revegetation of cleared forested land, it is not anticipated that USACE's BCA at Raystown Lake and their goals for protecting bat species habitat would be affected by the Project. The No Action Alternative would not impact BCAs at Raystown Lake; however, reroutes around USACE properties would likely result in additional impacts to bat habitat due to the clearing of forested habitat and long-term maintenance of a new ROW through these areas.

With these impact minimization measures, the Project would result in minimal temporary impacts to land uses at all three USACE owned-administered properties but would return to normal operational land uses following construction. As no Project construction/operation would occur with the No Action Alternative, no impacts to land use on USACE properties would occur. SPLP would likely reroute the Project outside of USACE properties, potentially resulting in a much larger permanent pipeline easement as it would likely require new right-of-way for the majority of its alignment; however, land use impacts/changes associated with this easement are unknown at this time.

3.7 Recreational Uses

3.7.1 Affected Environment

All three (3) USACE owned/administered properties (Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake) provide a mixture of recreational uses for visitors including camping, hiking, biking, swimming, fishing, hunting and boating opportunities. Within the Project ROW, Loyalhanna Lake provides fishing and boating/canoeing opportunities and camping at the Bush Recreation Area, while Conemaugh River Lake provides educational trails, and overlooks of cultural/historical resources. Raystown Lake includes the Seven Points Recreation Area, including campgrounds, trails, and a full service marina to the north of the Project ROW. Within the Project ROW, USACE has identified Ridge Camp in Raystown Lake as a popular destination and busy campground during the summer season, usually between Memorial Day through Labor Day weekend. Additionally, USACE identified Point Camp (near the Project ROW) and the entire Seven Points Recreation Area as popular from April 1 through the end of October. USACE Raystown Lake staff also identified the Allegrippis Trail (a mountain bike trail), which would be crossed by the Project ROW at several locations.

3.7.2 Environmental Impacts and Proposed Mitigation Measures

Construction of the proposed Project may result in minor, short-term impacts to recreational uses in/near USACE administered properties/areas, including to fishing, hiking, biking, camping, and other recreational activities should construction occur during the busy summer recreation season. However, as noted above, the Project would be limited to construction outside of the busy summer recreation season, as specifically defined by USACE for specific areas of USACE properties. In particular, construction would be conducted only between the months of November and April in Raystown Lake Seven Points Recreational Area. Construction in the Ridge Camp area would be allowed only between the months of October and April. In addition, the Project would intersect the Allegrippis Trail at several locations, and would require temporary closure/detours of the trail during construction of the Project. Other potential recreational impacts may include, but are not

be limited to, restricted access to areas of the park or longer travel time (around construction areas), reduced wildlife/bird sightings due to temporarily displaced wildlife, detours on walking trails, and disruption of the natural viewsheds from the river/lakes (refer to Section 3.8).

To minimize recreational impacts, SPLP will coordinate with USACE regarding potential temporary closures or rerouting that may be required during construction, as well as signage, scheduling and standard security and safety provisions that may be required for the Project. As required, SPLP will provide proper notice/written notification of when work is expected to commence in these areas, periodic updates on project progress, a copy of current construction schedules, and notices of temporary changes and closures of trails and roads. SPLP will also coordinate with the appropriate person/persons (i.e. USACE Loyalhanna Lake, Conemaugh River Lake, or Raystown Lake staff) prior to conducting operations on USACE owned/administrated properties. Hiking and biking through the construction corridor would be prohibited until construction is complete and those areas are restored to preconstruction conditions such that recreational activities (i.e. hiking, biking) can resume to pre-construction operating conditions.

Construction activities on the Allegrippis Trail would be restricted to weekdays and after the busy summer recreational season (i.e. after Labor Day weekend). No construction is allowed on this trail system during the weekends. Once construction is complete, the trail would be restored similar to existing conditions, resulting in minor and temporary impacts to recreational uses. SPLP has agreed to full restoration of the trail including additional costs that may be incurred.

Per USACE's request, SPLP will also implement timing restrictions on tree clearing as well as on construction to avoid the busy recreational season (summer) at USACE owned/administered properties. These timing restrictions include avoiding construction from April 1st to after Labor Day weekend (end of August), or after the end of October, as USACE specifically assigned to certain areas of the property at Raystown Lake, to ensure that potential Project impacts to recreational uses are minimal. SPLP also proposes to use the HDD construction method at major waterbody crossings to avoid recreational impacts on USACE properties. Furthermore, SPLP will HDD underneath Ridge Camp at Raystown Lake, and at the Bush Recreational Camp Area at Loyalhanna Lake to minimize/avoid potential Project impacts to recreational uses.

After pipeline construction and restoration, no adverse impacts on recreational uses are anticipated. With adherence to these guidelines, potential impacts to recreational uses during Project construction would be minimized and temporary during construction. It is anticipated that future recreational activities would resume to normal operations. As such, no long-term impacts to recreational sites and opportunities are anticipated as a result of Project operations. The No Action Alternative not result in any recreational activities on USACE owned properties as no construction/operation of the pipeline project would occur; however, SPLP would likely reroute the Project to the north or south of USACE properties potentially resulting in recreational impacts to the W. Penn Trail to the north at Conemaugh River Lake; other potential recreational impacts/changes associated with the alternate routes outside of USACE properties are unknown at this time.

3.8 Aesthetics

3.8.1 Affected Environment

The Project ROW is located on USACE properties within three (3) recreational areas (associated with Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake), set within the rolling foothills, and ridges and valleys of Pennsylvania. A mixture of scenery provides various panoramic views of forest and undeveloped land and waters that have been sustained for various recreational and open space uses. Visibility of the Project ROW is dependent upon the topography and one's location within USACE properties, as most of the Project ROW is surrounded by maintained grassy areas (in proximity to SPLP's existing pipeline and/other utility lines) and located between tall forest edges. Views of the Project ROW may be visible from farther distances (similar to a ski slope), whereas a vantage point from the forest floor would be limited to the immediate surrounding forest. Several scenic overlooks can be found within Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. For example, scenic views of Raystown Lake are available from the visitor's center located approximately 0.11 mile to the east of the Project ROW; however, these views would be located east of the Visitor's Center instead of towards the Project ROW (to the west), and would be obscured from view by dense forest vegetation. No scenic overlooks were identified within view of the Project ROW. Further, no scenic rivers or national natural landmarks, or designated scenic byways were identified within view of the Project ROW on USACE properties.

3.8.2 Environmental Impacts and Proposed Mitigation Measures

During construction, there would be temporary visual impacts due to tree clearing, earth disturbance, and the presence/use of construction equipment and vehicles. Temporary visual impacts would potentially be greatest at Loyalhanna Lake and Raystown Lake, if construction were to occur during the busy summer season.

Once construction is complete, most of the Project would be located underground and would not be visible. The pipelines are routed within and immediately adjacent to existing ROWs to the extent feasible, including SPLP's existing ROW. Incremental widening of existing ROWs would result in negligible to no visual impacts in most areas.

New block valve facilities (aboveground facilities) are required as a pipeline safety measure near major waterbodies. Siting of block valves ideally requires proximity to roadways for access to support regular maintenance activities. One (1) new block valve facility is proposed on Raystown Lake property (parcel PA-HU-20.0008) and an expansion of an existing block valve is also proposed on the Conemaugh River Lake property (parcel PA-WM2-0099.0000). The Raystown Lake West Block Valve may be visible to the public at the surface parking lot located off Seven Points Loop Road. The Conemaugh River Lake West block valve will expand an existing SPLP block valve site, and would result in temporary aesthetic impacts during construction.

Overall, the Project would be consistent with the existing landscape that is currently visible from the viewsheds, campgrounds, and potential viewpoints in the vicinity of the Project. Accordingly, the Project would result in minimal or no new adverse effects on these visual resources or visually sensitive areas. The No Action Alternative would not result in any aesthetic impacts to USACE

owned properties; however, impacts to aesthetics outside the USACE owned properties would include the creation of new pipeline corridor and new block valve facilities that would likely be visible from local roads and possibly residences.

SPLP has planned Project construction to occur outside of the busy summer season (i.e., April 1st through after Labor Day weekend, including tree clearing) in response to a USACE request. Furthermore, SPLP has proposed to HDD through areas near campsites and heavily used recreational areas to reduce surface disturbance to the extent feasible. Therefore, minimal visual impacts are anticipated to high visibility areas at Loyalhanna Lake and Raystown Lake.

SPLP also adjusted the location of the Raystown block valve further west to be closer/adjacent to an existing valve site owned by another pipeline company, and will install suitable visual barriers and reforest cleared trees in the temporary workspace to ensure that the new block valve facility will not have adverse visual impacts. In addition, SPLP will be expanding an existing block valve in order to avoid the addition of a new station that would impact the aesthetic character of the area. With implementation of these avoidance/minimization measures, it is anticipated that visual impacts within USACE owned/administered properties would be minimal.

3.9 Air Quality and Climate Change

3.9.1 Affected Environment

The Project ROW through USACE owned/administered properties is located within Loyalhanna and Derry Townships in Westmoreland County, Burrell Township in Indiana County, and Penn Township in Huntingdon County. These Townships in Westmoreland and Indiana counties are regulated by the Southwest Pennsylvania Intrastate Air Quality Control Region (AQCR 197) and Huntingdon County by AQCR 195, the Central Pennsylvania Intrastate AQCR. Based on review of the USEPA's Green Book of Nonattainment Areas for Criteria Pollutants website, as of June 2016, some areas within the Project ROW through USACE owned/administered properties are classified as non-attainment/or moderate maintenance areas for some National Ambient Air Quality Standards (NAAQS) criteria pollutants (i.e., particulate matter (PM_{10} and $PM_{2.5}$)[4], sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), and lead (Pb)) (USEPA 2015). In addition to these classifications, all of Pennsylvania is located within the Ozone Transport Region (OTR) and considered a moderate non-attainment area for ozone.[5]

[4] PM_{10} - particles with an aerodynamic diameter less than or equal to 10 micrometers; $PM_{2.5}$ - particles with an aerodynamic diameter less than or equal to 2.5 micrometers;

[5] Congress established the Ozone Transport Region (OTR) under the Clean Air Act Amendments of 1990, Section 184(a). (42 U.S.C. Chapter 85, Section 7511c, Control of interstate ozone air pollution, 1990 CAA Section 184, November 15, 1990).

Table 12. NAAQS Status for Westmoreland, Indiana, and Huntingdon Counties

Criteria Pollutant	Westmoreland County	Indiana County[1]	Huntingdon County
Particulate Matter (PM_{10})	Attainment	Attainment	Attainment
Particulate Matter ($PM_{2.5}$) 2012 standard	Attainment	Attainment	Attainment
$PM_{2.5}$ 2006 standard	Moderate- Maintenance	Attainment	Attainment
$PM_{2.5}$ 1997 standard	Moderate- maintenance	Attainment	Attainment
Sulfur Dioxide (SO_2) 2010 standard	Attainment	Non-attainment	Attainment
SO_2 1971 standard	Attainment	Attainment	Attainment
Carbon Monoxide (CO)	Attainment	Attainment	Attainment
Nitrogen Dioxides (NO_2)	Attainment	Attainment	Attainment
Ozone (O_3) 2008 standard	Nonattainment – Marginal[2]	Attainment	Attainment
Lead (Pb)	Attainment	Attainment	Attainment

Notes:

[1] Status provided are for those areas within AQCR 197 only. Other parts of the county, such as the Johnstown, PA area (including the Townships of West Wheatfield, Center, East Wheatfield, and Armagh Borough and Homer City Borough) are classified as moderate-maintenance areas for the $PM_{2.5}$ (2006) and $PM_{2.5}$ (1997) standard.

[2] On August 25, 2016, the USEPA issued a proposed rule for the Determination of Attainment Date for the 2008 Ozone NAAQS for the Pennsylvania: Pittsburgh-Beaver Valley area, including Westmoreland County; however this determination does not constitute a redesignation and will require additional criteria for redesignation to attainment. The proposed rule is available online at: https://www.gpo.gov/fdsys/pkg/FR-2016-08-25/pdf/2016-20313.pdf#page=1

As presented in Table 12, Huntingdon County is in attainment for all NAAQS. Westmoreland County, however, is in non-attainment for ozone (marginal attainment), and Indiana County is in non-attainment for SO_2. Further, Westmoreland County is in moderate (maintenance) attainment for the $PM_{2.5}$ (1997) and $PM_{2.5}$ (2006) standard.

Pursuant to Section 176(c) of the Clean Air Act (CAA) and its implementing regulations, no federal agency "shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform" to an applicable state implementation plan, and shall make a "determination that a Federal action conforms to the applicable implementation plan" before the action is taken (40 CFR 93.151). A conformity determination must be prepared for criteria pollutants or precursors where the total of direct and indirect emissions of the criteria pollutant or precursor caused by a Federal action would equal or exceed *de minimis* thresholds for non-attainment or maintenance areas (40 CFR 93.153).

In accordance with the regulations, an applicability analysis was first prepared to determine whether the Project must be supported by a conformity determination. (40 CFR 93.152) A conformity determination is not required for two alternative reasons. First, a CAA conformity determination is not required for Federal actions “which would result in no emissions increase or an increase in emissions that is clearly *de minimis*.” This includes “the granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted will be similar in scope and operation to activities currently being conducted" (40 CFR.93.153(c)(2)(xi)). Given that

the Project would be collocated adjacent to SPLP's existing ROW, and other pipeline utility ROW's, and that the Proposed Action involves a real estate easement agreement where activities will be similar in scope and operation to activities that are currently being conducted in the area, the Project was determined not to increase emissions, and thus a conformity determination is not required. Alternatively, if subsection (c)(2)(xi)'s exemption is not applicable, the *de minimis* threshold limits that apply to emissions within the Project Area will not be exceeded (40 CFR.93.153(c)(1)) (50 tons per year [tpy] of ozone, including 50 tpy of volatile organic compounds (VOCs), 100 tpy of oxides of nitrogen (NOx), and 100 tpy of CO for ozone precursors, 100 tpy of SO_2, and 100 tpy of $PM_{2.5}$), and thus, a conformity determination is not required.

Nonetheless, the USEPA has adopted regulations for the control of air pollutant emissions from off-road and mobile source engines (see 40 CFR Parts 89, 90, 91, and 94) which would be applicable to manufacturers, owners, or operators of certain equipment that would be used to construct the Project.

PADEP has also adopted regulations for the control of air pollutant emissions from certain motor vehicles. PADEP regulations include inspection and maintenance program requirements, testing and other requirements applicable to certain motor vehicles, heavy duty motor vehicles, and engines offered for sale or lease in Pennsylvania. Compliance with Pennsylvania Act 124 of 2008 limits idling of diesel-powered vehicles with a gross vehicle weight rating (GVWR) of 10,001 pounds (lbs.) to no more than five (5) minutes in any continuous 60 minute period.

On December 18, 2014, the Council on Environmental Quality (CEQ) released guidance on how federal agencies should consider the effects of greenhouse gas emissions and climate change during NEPA reviews (CEQ 2014). The guidance indicates that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action. A discussion of the potential greenhouse gas impacts of the Project are discussed below.

3.9.2 Environmental Impacts and Proposed Mitigation Measures

Construction activities would result in some short-term minor impacts on air quality as a result of air pollutant emissions from construction equipment, worker vehicles, and deliveries of equipment and supplies. Mobile source emissions have the potential to increase air emissions during construction; however, these sources of emissions would be temporary.

During construction, some dust would be created as a result of soil disturbance (during clearing and open cut construction) and from vehicle/equipment traffic on unpaved roads. Therefore, the Project would be required to implement dust control measures such as the watering down of workspaces along the Project ROW and other measures required by USACE during construction. Additional BMPs are discussed below.

Once construction is complete, the Project would have minimal impacts on local air quality as there would be no permanent sources of air emissions that would exceed *de minimis* thresholds, as shown in Table 13 below. As noted in Table 13, the Project would not emit criteria pollutants associated with the production of combustion. Although the block valve stations associated with the project on USACE property would have some fugitive VOC emissions, totaling approximately

0.024 tpy of VOC, the levels would not exceed the *de minimis* thresholds of 50 tpy. Therefore, the Project would not exceed or cause to exceed non-attainment/maintenance designations in the State as part of an OTR and/or in Westmoreland and Indiana counties. Some emissions would also occur as a result of maintenance vehicle travel to and from the Project area to perform Project ROW maintenance and the required pipeline safety visits and checks to ensure pipeline integrity and optimal operations. However, these emissions would be temporary, would occur periodically and in accordance with pipeline safety regulations, resulting in minimal air emissions during Project operations.

Table 13. Estimated Emissions from Block Valve Facilities at Conemaugh River Lake and Raystown Lake

Facility	Criteria Pollutant Emission Rate[1] (tpy)		
	VOC	**NO_X**	**CO**
Westinghouse Road (Conemaugh River West Block Valve Expansion)	0.01	N/A	N/A
Seven Points Loop (Raystown Lake Block Valve)	0.01	N/A	N/A
Project Emissions:	0.02	0	0
Contingency (20%)	0.004	0	0
Total Project Emissions:	0.024	0	0
	***de minimis* threshold (tpy)**		
	50	100	100
Comparison to *de minimis* threshold:	Below	Below	Below

Notes:
[1] There are only fugitive VOC emissions associated with this Facility, that is, there are no criteria pollutants associated with the products of combustion and, therefore, no SO_X, CO, Particulate Matter, NO_X, or lead air emissions. See Air Quality Worksheets included in Appendix I of this EA.

tpy *tons per year;*
N/A *not applicable*

The No Action Alternative would not result in air emissions generated on USACE properties as no construction/operation of the pipeline would occur; however as SPLP would likely reroute the Project ROW around USACE properties, similar or increased air emissions as a result of additional pipeline mileage and construction required outside of USACE properties.

The mobile source emissions associated with construction vehicles/equipment would have minimal potential to increase GHG emissions, as these emissions would be temporary resulting in a nominal increase in GHG emissions. Maintenance of the Project ROW and operation of the pipeline would also have minimal GHG emissions contribution from the occasional maintenance vehicle transport to and from the Project site. As such, overall GHG emissions from the Project would be considered minimal and would not result in an appreciable impact to climate change. Similarly, the No Action alternative would not result in an appreciable impact to climate change as no construction/operation of the pipeline project would occur; however SPLP would likely reroute the Project around USACE properties resulting in similar, if not possibly greater emissions due to additional pipeline mileage and construction. Nonetheless, these emissions would not result in an appreciable impact to climate change.

Some GHG emissions may occur in the event of an accidental leak or combustion of the fuels. As such, prior to Project operations, SPLP will conduct hydrostatic testing to ensure proper and safe operations of the pipeline. Once construction and testing is complete, SPLP will conduct ongoing maintenance inspections and safety checks and repairs to minimize and prevent the potential for leaks. In the event of such an occurrence, and in the event that emissions are equal to or more than 25,000 metric tons carbon dioxide equivalent (CO2e) per year, emissions would be reported to the USEPA, in accordance with greenhouse gas reporting procedures, Subpart W.

To ensure air quality impacts are minimized, SPLP and its contractors will employ the following practices as necessary:

- Require contractors to meet all federal, state, and local air quality regulations and emission standards applicable to their equipment;
- Post appropriate signage, made to required specifications, to ensure compliance with Pennsylvania Act 124 (*i.e.*, limit diesel idling to no more than five minutes for those vehicles with GVWR over 10,000 lbs.);
- Apply water or dust suppressants to disturbed areas, as necessary, to reduce vehicle traffic dust;
- Cover open hauling trucks with tarps, as necessary;
- Use paved roads for construction vehicle traffic, wherever practicable;
- Limit vehicle speeds as required to reduce dust generation;
- Respond promptly to any significant particulate emission concerns that occur during construction by evaluating the source of emissions; and,
- Upon completion of construction activity, stabilize disturbed areas.

3.10 Noise

3.10.1 Affected Environment

The Project ROW is located primarily within an existing utility corridor surrounded by forested lands within USACE properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake, which provide various recreational opportunities for the public to enjoy. Due to the surrounding forest cover, noise levels in the area are generally low with dense forest vegetation providing sufficient noise buffers in the Project area. Nonetheless, sensitive noise receptors may be found within these recreational areas at any given time of the day; thus, the Project would be required to ensure that existing noise levels are preserved to the extent feasible to ensure that the recreational users are not adversely affected.

The nearest sensitive receptor identified within the Project ROW is the Bush Recreation Area located within the Project LOD in Loyalhanna Lake, and the Seven Points Campground including Ridge Camp and Valley Camp which are located within the Project LOD and approximately 0.04 mile (approximately 200 feet) west of the Project work area in Raystown Lake. The nearest sensitive receptor is a residence located outside of USACE property approximately 0.02-mile (100 feet) north of the Raystown Lake boundary.

3.10.2 Environmental Impacts and Proposed Mitigation Measures

Noise impacts from construction of the Project would be minor to moderate, and temporary (i.e., limited to the construction phase). These temporary noise impacts would result primarily from the use of heavy construction equipment/machinery and construction traffic passing through the area—and could occur up to 7 days a week for 24 hours per day. Noise levels will vary depending on the distance from the noise source, ambient noise levels, weather, topography, and vegetation in the surrounding area. In general, the maximum construction noise in a well-defined area typically attenuates approximately 6 decibels (A-weighted sound Level – dBA) per doubling distance. For example, a noise level of 88 dBA would measure 82 dBA at a distance of approximately 100 feet. Therefore, for those sensitive noise receptors located approximately 150-200 feet away, estimated construction noise levels of 92 dBA associated with an HDD Drill Rig (at 50 feet—anticipated to be the dominant noise source along parts of the Project) would be reduced to approximately 80-83 dBA, respectively. A table showing common sound levels and the subjective human impression is shown below for reference. As shown, at 80-83 dBA, the sound levels associated with an HDD Drill Rig at 50 feet away would generate a range of sound levels similar to or slightly louder than a garbage disposal, a pneumatic drill or a food blender at 50 feet and 2 feet away, respectively.

Table 14. Sound Pressure Levels and Relative Loudness of Common Noise Sources

Noise Source/Activity	Sound Level (dBA)	Subjective Impression
Jet aircraft from carrier (50 ft.)	140	Threshold of pain
50-hp siren (100 ft.)	130	
Loud rock concert near stage Jet takeoff (200 ft.)	120	Uncomfortably loud
Float plane takeoff (100 ft.)	110	
Jet takeoff (2,000 ft.)	100	Very loud
Heavy truck or motorcycle	90	
Garbage disposal Food blender (2 ft.) Pneumatic drill (50 ft.)	80	Loud
Vacuum cleaner (10 ft.)	70	Moderate
Passenger car at 65 mph (25 ft.)	65	
Large store air-conditioning unit (20 ft.)	60	
Light auto traffic (100 ft.)	50	Quiet
Quiet residential area w/ no activity	45	
Bedroom or quiet living room Bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 ft.)	30	Very Quiet
Wilderness with no wind or animal activity	25	Extremely Quiet
High quality recording studio	20	
Acoustic test chamber	10	

Adapted from: Beranek 1988 and USEPA (1971a).

However, as Project construction would likely occur within localized densely forested areas, it is anticipated that sufficient noise buffers would be in place to reduce construction sound levels. In addition, active pipeline construction would be scheduled to avoid the busy summer recreational season, in accordance with USACE's recommendations and pending Project permit approvals. Therefore weather events, such as snowy conditions during the winter season could also muffle and reduce construction noise levels in the area. While the Project would HDD near campground sites outside of the recreational season, no HDD construction is anticipated near residences. No construction is also anticipated during holidays to minimize potential impacts to the public, contractors, and employees. In addition, to ensure that noise levels are minimized, construction hours would be limited to daytime hours near residences to maintain ambient nighttime noise levels in the area. As such, construction noise impacts are considered to be minimal as they would be temporary and localized. The No Action Alternative would not result in noise impacts on USACE properties as no construction/operation associated with the Project would occur. Nonetheless, SPLP would likely reroute the Project ROW outside of USACE properties and similar sound levels/noise would be generated outside of USACE properties; however, the proximity of noise sensitive receptors is unknown at this time, resulting in potentially increased noise impacts and associated mitigation measures.

Once construction is complete, noise impacts from the maintenance and operation of the pipeline and block valve stations would not result in noise impacts to sensitive resources near/within USACE properties. As such, no adverse noise effects are anticipated to USACE properties during Project operation.

3.11 Transportation

3.11.1 Affected Environment

SPLP recognizes that the Project would be located within high recreational use areas on USACE properties, and that during construction, Project use of nearby roads would have the potential to impede access to USACE properties. As such, SPLP has coordinated with local agencies and various landowners regarding the use of public and private access roads for the Project (i.e., farm lanes, driveways, etc.). Specifically, SPLP has coordinated easement agreements for two (2) separate access roads for ingress/egress on opposite sides of Loyalhanna Lake. For the Conemaugh River Lake properties, public roadway access is available via Number 10 Road and Livermore Road for Parcel 1 west of the Conemaugh River Lake; public roadway access is available on Westinghouse Road for Parcel 2 at Conemaugh River Lake; temporary private access will be available off Industry Park Road at Parcel 3 (to the east of the Conemaugh River Lake crossing); and public roadway access is available on Newport Road for Parcel 4, the parcel to the far east of Conemaugh River Lake. Within Raystown Lake, temporary/private access roads would be available off Weller Road to the west of USACE property, and via John Bum Road (to the east of USACE property).

Although, most roadway access for the Project has been coordinated with local agencies/landowners to minimize Project impacts to USACE owned/administered properties, SPLP proposes to use two (2) temporary access roads (TARs) within Raystown Lake. Specifically, a TAR for use off Backbone Road and Seldom Seen Drive (in Raystown Lake Parcel PA-HU-0020.0008) and a TAR off Weller Road (PA-HU-0020.0008-TAR) on the western edge of

Raystown Lake are proposed for use during construction. In addition, four (4) private roads were identified as part of heavy haul routes also at Raystown Lake, including Ridge Camp Road, Seven Points Camp Road, Point Camp Road, and Seven Points Loop.

3.11.2 Environmental Impacts and Proposed Mitigation Measures

The use of all the TARs would be temporary and limited to use only during construction of the Project ROW, and any roads used for heavy hauling would be bonded by SPLP to ensure no Project impacts to these roadways would occur. In addition, SPLP has planned construction of the Project ROW such that local roadway crossings would be drilled (HDD) or bored (to the extent feasible) to minimize disruption of local access/traffic during construction. This includes boring under Bush Road at Loyalhanna Lake, an HDD under Livermore Road on USACE property west of the Conemaugh River Lake, and boring underneath Westinghouse Road before the Conemaugh River Lake crossing. In response to USACE Raystown Lake staff concerns, SPLP will also bore or HDD underneath all roadway crossings (unnamed access roads) at Raystown Lake. Specifically, the Project will bore underneath Upper Corners Road and Point Camp Road and HDD underneath both Ridge Camp Loop and Seven Points Loop. Furthermore, per USACE request, SPLP extended the HDD entry pit to the west side of the Mushroom Parking lot area for the Raystown Lake HDD crossing.

Prior to construction, SPLP will coordinate with USACE regarding any necessary improvements (i.e. road material, grading, culvert upgrades, gates/barricades, etc.) that may be required for Project construction in order to ensure public access is not restricted. SPLP will also coordinate with USACE regarding any required detours/closure of USACE roads prior to commencing work in these areas, and will implement appropriate notices, signage, and safety measures to protect roadways used for recreational purposes.

Once construction is complete, temporary access roads would be allowed to revert, or be restored to, pre-construction conditions and resume normal operations/use. As such, it is not anticipated that the Project would result in adverse traffic/access impacts to USACE properties. However, the Project will require routine access for operational maintenance purposes following construction. SPLP will coordinate with USACE regarding appropriate notifications and/or any other road access/use considerations. The No Action Alternative would not result in traffic/roadway access impacts to USACE properties as no construction/operation associated with the Project would occur; however as SPLP would likely reroute the Project around USACE properties, similar, if not possibly greater, transportation impacts could occur outside of USACE owned properties.

3.12 Health and Safety

3.12.1 Affected Environment

The U.S. Department of Transportation (USDOT) is responsible for setting federal safety standards for pipeline facilities and assumes oversight responsibility for the transportation of gas. The USDOT regulates the operation of pipeline facilities under federal safety standards 49 CFR Part 195 (Transportation of Hazardous Liquids by Pipeline) to ensure adequate protection of the public from hazardous liquids pipeline failures. This includes annual accident and safety-related

condition reporting (Part 195 Subpart B) and design requirements such as material selection and qualification, protection from internal, external, and atmospheric corrosion (Part 195 Subpart C).

Children's Environmental Health and Safety Risks

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs Federal agencies to analyze their policies, programs, activities, and standards for environmental health and safety risks that may disproportionately affect children. These can include risks to health and safety attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

In accordance with this E.O., an evaluation of schools, recreation areas, childcare facilities, and residential areas was conducted. No residences, schools, or childcare facilities were found located on-site or in proximity to the Project's construction area; however, the Project does cross recreational facilities that are open to the public and are utilized by children during the summer season.

3.12.2 Environmental Impacts and Proposed Mitigation Measures

Liquid pipeline facilities such as SPLP's Project are designed and maintained in accordance with USDOT regulations and industry standards. Specifically, for hazardous liquids pipeline systems and pump stations in general, empirical information illustrates a very low potential for public hazard for incidents associated with the operation of interstate hazardous liquids pipeline facilities such as the proposed Project (USDOT 2015, USDOT 2016). In accordance with USDOT federal safety standards, 49 CFR Part 19, the proposed Project would be designed, constructed, operated, and maintained to ensure adequate protection for the public from hazardous liquids pipeline failures. In addition,

Specifically, SPLP will comply with, and in many cases exceed, the requirements of the DOT, the U.S. Occupational Health and Safety Administration (OSHA), and other applicable regulations, standards, and guidelines for safety. This will include compliance with applicable design standards and codes, construction provisions as mandated, and operation procedures and standards, such as the Pennsylvania one-call and those outlined in SPLP's Preparedness, Prevention and Contingency Plan (Appendix H). SPLP will also provide annual reports to the USDOT that provide pipeline operation and maintenance data no later than March 15 for the preceding calendar year.

Group safety trainings will be held for SPLP's inspection crews and construction contractor's personnel prior to construction. SPLP's inspection crews will also conduct safety meetings regularly throughout construction.

The USDOT standards allow for the safe operation of the facility and protect against fire or explosion. Although the possibility of fire and/or explosion is remote, SPLP will implement a damage prevention plan and an emergency response plan/program for the Project. Additionally, SPLP will comply with required regulations in regard to emergency response and training.

Responsible maintenance of the pipelines is the key to providing a safe and reliable energy source. SPLP routinely patrols, inspects, tests, repairs, replaces, and maintains its pipelines and compressor stations. SPLP's ongoing improvement plan provides for the replacement of older pipeline segments when needed, utilizes improved and more efficient gas storage and pipeline transportation methods, and assesses risks associated with natural disasters such as storms, tornados, and earthquakes.

In addition to the above, SPLP will also be subject to additional requirements as indicated by USACE's real estate agreement. SPLP will also implement and/or adhere to the safety practices outlined below:

- SPLP will perform regular leak detection surveys in accordance with USDOT regulations.
- SPLP's cathodic protection system will be inspected at regular intervals to ensure proper operating conditions consistent with DOT requirements for corrosion mitigation.
- New aboveground facilities will be fenced with required signs posted. Existing facilities will remain securely fenced to prevent unauthorized access.
- Any potential hazards will be minimized by emergency shutdown and pressure restriction in any necessary section of pipeline.
- Under DOT regulations provided in 49 CFR. §195.402(E), SPLP will establish an Emergency Response Plan that provides written procedures to minimize hazards from a gas pipeline emergency. This includes but is not limited to immediate notification of certain incidents to the National Response Center (i.e. at the earliest practicable moment following discovery), the filing of an incident report not more than 30 days after detection of an incident, and safety related condition reports.
- SPLP has a Computational Pipeline Monitoring leak detection system in place as required by 49 CFR 195.134.
- SPLP has a Public Awareness Program that informs and educates public, (affected municipalities, school districts, businesses, and residents) appropriate government organizations, and persons engaged in excavation related activities on:

    - Use of a one-call notification system prior to excavation and other damage prevention activities;
    - Possible hazards associated with unintended releases from a hazardous liquid pipeline facility;
    - Physical indications that such a release may have occurred;
    - Steps that should be taken for public safety in the event of a hazardous liquid or pipeline release; and
    - Procedures to report such an event.

With implementation of the above design and operational safety procedures, it is not anticipated that the Project would result in any adverse health and safety impacts. The No Action Alternative would not result in potential health and safety impacts on USACE properties as no construction/operation of the Project would occur; however, as SPLP would likely reroute the Project around USACE properties, potential health and safety impacts could be similar or greater outside of USACE properties.

Children's Environmental Health and Safety Risks

As noted above, the Project would traverse through several recreation areas which would be utilized by children, potentially exposing children to potential health and safety risks during construction of the Project. However, the potential impacts to children resulting from construction of the Project would be minimal and similar to the effects that could occur to adults exposed to the same event/activities. As noted above, Project impacts to air quality, noise, and water resources would be temporary and would likely only occur during construction of the Project. However, as discussed above, to minimize the potential for impacts to recreational areas, the Project will be constructed outside of the busy summer recreational season to avoid and minimize the potential for exposure of adults and children to potential health and safety risks. Furthermore, as there are no schools or child care facilities on-site, the presence of children during construction is likely to be minimal. The Project would also HDD underneath all river/lake crossings to avoid and minimize potential surface disturbance to recreational areas (i.e. campgrounds and water resources). Once construction is complete, the Project will implement a PPC Plan to ensure that the Project performs and functions optimally and that it is maintained regularly in accordance with applicable Federal, state, and local health and safety regulations. As most of the Project would be buried underground (with the exception of the block valve stations that will be fenced), the potential for impacts to children from air emissions, noise, and water resources would be minimal to none. As such, it is not anticipated that the Project would result in adverse effects to children's health and safety and no mitigation measures are required. The No Action Alternative would not result in health and safety impacts to children as no construction/operation associated with the Project would occur on USACE properties; however SPLP would likely reroute the Project around USACE properties, potentially resulting in additional impacts depending on the final route selected and its proximity to areas that schools, day care facilities, etc.

3.13 Environmental Justice

3.13.1 Affected Environment

On February 11, 1994, Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" was issued requiring federal agencies to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations." However, no permanent populations including minority or low-income populations are located within the proposed Project ROW on USACE owned/administered properties.

3.13.2 Environmental Impacts and Proposed Mitigation Measures

No minority or low-income populations are located within the Project ROW on USACE owned/administered lands and properties. Furthermore, the Project involves the development of natural gas liquid pipelines adjacent and parallel to SPLP's existing ROW, and would function similar to existing utility pipelines/uses within the Project area. As such, the Project is not expected to result in disproportionate and/or adverse human health or environmental effects to low-income and minority populations in the surrounding areas. Similarly, the No Action Alternative would not have impacts to low-income and minority populations.

3.14 Socioeconomics

3.14.1 Affected Environment

The CEQ regulations require that an analysis of socioeconomic impacts be conducted for those projects that are associated with significant physical environmental change to assess the social and economic effects of the physical changes resulting from the proposed Action.

All three USACE properties (Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake) have no permanent population/residents. There are no staff housing or residential areas located within the USACE properties for USACE staff and employees. Loyalhanna Lake and Raystown Lake have campgrounds and cabins that are available to the public for camping; however, these are limited to overnight/short-term stays during the summer recreational season.

Most employment on-site is limited to management of the recreational areas and activities available on USACE properties, general labor duties associated with maintenance of USACE property and recreational areas, and concession stands that are operated either by USACE or subcontractors chosen to work on-site.

3.14.2 Environmental Impacts and Proposed Mitigation Measures

As noted above, there are no permanent populations housed or living within USACE owned/administered lands and properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake. Campers are limited to seasonal and temporary stays, and most workers in the area live off-site.

During Project construction, socioeconomic effects would primarily be short-term and localized, resulting from a temporary increase in workers in the area. Construction workers would likely live near the Project area, in rental properties or housing outside of USACE properties that would likely result in a relatively modest increase in local spending. As such, minimal and temporary effects to population, expenditures in the local economy, transportation, and taxes are anticipated.

The temporary construction workforce is expected to create a limited, short-term increase in the local population and cause a short-term increase in local employment. Due to the Project's size, it is anticipated that vendors and contractors in Pennsylvania will provide some of the Project's temporary civil, electrical, general labor, and support services during Project construction. In addition, some operations and maintenance staff may be permanently hired from the local labor force. However, the number or employees that may be hired locally would be considered insignificant and would not have any impact on the employment statistics of the area.

Based on the above, it is not anticipated that the Project would result in any adverse or beneficial impacts to the socioeconomics of the area. The No Action Alternative would not result in socioeconomic impacts as no Project construction/operation would occur on USACE properties; however SPLP would likely reroute the pipeline project around USACE properties, the construction and operation of which would likely result in similar impacts to socioeconomics in the area.

4.0 REASONABLY FORESEEABLE FUTURE ACTIONS AND CUMULATIVE EFFECTS

In accordance with NEPA Regulations 40 CFR 1508.7, the Council on Environmental Quality (CEQ) requires that all federal agencies consider the cumulative effects of a proposed action. Cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal), or person undertakes such other actions. These cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

For purposes of this Project, the analysis of reasonably foreseeable future actions includes a variety of new projects, improvements, or expansions, or maintenance that are scheduled or proposed to on USACE owned/administered properties near and/or within the proposed Project ROW at Loyalhanna Lake, Conemaugh River Lake, or Raystown Lake, and/or which have the potential to result in cumulative effects. As noted in Section 1.1, Background, USACE has jurisdiction under Section 408 only over the specific activities or portions of activities that have the potential to alter a USACE project. For example, a pipeline can extend for many miles on either side of the USACE project boundary. In this example, the scope of analysis would likely be limited to the effects of the pipeline within the USACE project boundary, but would not address those portions of the pipeline beyond the USACE project boundary. Table 15 provides a list of actions currently scheduled or proposed to occur within Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake based on input from the USACE Pittsburgh District Resource Manager for Loyalhanna Lake and Conemaugh River Lake, and USACE Baltimore District's five (5) year operational management work plan for Raystown Lake. As shown below, a majority of these actions involve scheduled maintenance, repairs, and/or updates that would occur within USACE properties in the next five (5) years. These actions, when combined with the proposed Project may cumulatively result in a combination of detrimental or beneficial effects on the environment that can be assessed for cumulative effects.

Table 15 List of Past, Present, and Reasonably Foreseeable Future Actions – USACE Pittsburgh & Baltimore Districts

Project #	Work Unit Description (Fiscal Year)	Location	Remarks
1	Grout channel where stem wall meets steel plate at pedestrian underpass (FY 2015)	Raystown Lake – Seven Points	Findings from FY14 Bridge Inspection Report
2	Complete initial 5 sites at Volunteer Village (FY 2015)	Raystown Lake – Seven Points	Complete 5 full hook up campsites for permanent volunteer campers
3	Prescribed burns (FY 2015)	Raystown Lake – Various Locations	Repeat on a semi-annual basis thereafter
4	Tree planting (FY 2015)	Raystown Lake – Various locations	Annual requirement
5	Forest Road Maintenance (FY 2015)	Raystown Lake – Various locations	Annual requirement
6	Treat Forest Invasive Species (FY 2015)	Raystown Lake – Various Locations	Annual requirement

Project #	Work Unit Description (Fiscal Year)	Location	Remarks
7	Water Line Replacement Point Camp (FY 2015)	Raystown Lake – Seven Points	Replace all water lines from campground entrance to each water hydrant
8	Sewer Line Integrity Test & Repair (FY 2016)	Raystown Lake – Seven Points & TR	Run remote camera through sewer line/contractor does integrity test and digs to replace compromised line
9	Stone Wall Repairs (FY 2016)	Raystown Lake – SP Beach & Dam	Repoint the wall and add cap stones at the Lighthouse Patio and entrance to the pagoda area at the dam
10	Road Surface Improvements (FY 2016)	Raystown Lake – Various locations	Continual road maintenance consisting of asphalt repair, striping and crack filling.
11	Playground Replacement Plan (FY 2016)	Raystown Lake – Project Wide	Phase in replacement program for 10 playgrounds
12	Expand Volunteer Village by 4 Sites (FY 2017)	Raystown Lake – Seven Points	-
13	Hunter road maintenance	Raystown Lake – Various locations	-
14	Shoreline stabilization	Raystown Lake – Various locations	Tatman Run – in picnic area cove/ Nancy's camp – north side
15	Senoia Restroom #1	Raystown Lake – Seven Points	Replace existing restroom
16	Deer Survey	Various locations	-
17	Campsite Electric in Senoia Camp	Raystown Lake – Seven Points	Replace direct burial wire with conduit
18	Replace Water Treatment Plant	Raystown Lake – Seven Points	Replace WTP with a larger one to accommodate increased demands
19	Sewage Treatment Plant	Raystown Lake – Seven Points	Replace STP backwash filter assembly in Clarifier Unit #2
20	Add showers to building	Raystown Lake – Valley Camp	-
21	Environmental Stewardship Work	Raystown Lake – Project Wide	-
22	Wildlife Surveys	Raystown Lake – Project Wide	-
23	Universal Access Plan (ADA)	Raystown Lake – Project Wide	-
24	Construct Aquatic Habitat	Raystown Lake – Various Locations	-
25	Provide emergency power to Seven Points administration facilities	Raystown Lake – Seven Points	-
26	Site Development/Mobilization area precursor to future Service Bridge Repairs of Loyalhanna Dam (FY 2015-2016)	Loyalhanna Lake – Bush Recreation Area (NW of Loyalhanna Lake Bush Rec. Area Boat Ramp & gravel parking area	Construction of a floating plant/work pad access area consisting of a pre-cast block retaining wall
Sources: Krupa 2015, Toman 2015.			

4.1 Geology/Soils

Based on the reasonably foreseeable future actions identified in Table 15, minimal cumulative effects are anticipated to geology or soils. The majority of the aforementioned actions are related to maintenance/repairs and/or the improvement/updates of existing facilities. Depending on the footprint of the replacement water treatment plant (Project No. 18) at Raystown Lake, additional soil disturbance may be necessary, albeit in an already disturbed area. Nonetheless, it is anticipated that the projects identified in Table 15 would implement erosion and sediment control plans similar to the proposed Project. As such, cumulative effects to geology/soils would be minimal to none. Other proposed projects such as Project No. 3 – Prescribed Burns and Project No. 4 – Tree Planting at Raystown Lake would result in minimal and beneficial soil disturbance. When combined with the proposed Project, no adverse effects to geology/soils are anticipated within the Project areas at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

Based on the reasonably foreseeable future actions identified in Table 15, cumulative effects to farmland soils, prime farmland, or farmland of localized or of statewide importance are anticipated to be minimal. The USACE owned-properties at Loyalhanna Lake, Conemaugh River, and Raystown Lake are mostly preserved as open space or used for recreational uses and any conversion of designated farmland, prime farmland, or farmland of localized or of statewide importance associated with the projects listed in Table 15 are anticipated to be minimal. Thus, minimal to no cumulative effects are anticipated to soils.

4.2 Water Resources

Based on the reasonably foreseeable future actions identified in Table 15, minimal effects to water resources are anticipated as discussed further below.

4.2.1 Groundwater

As previously noted, the majority of the proposed USACE actions involve maintenance/repair, or updates/improvement and/or replacement of existing structures and facilities. The construction of a replacement water treatment plant (Project No. 18) to accommodate increased demands may result in some impacts to groundwater as a result of increased water withdrawal for treatment; however, this increase would likely be subject to review in accordance with applicable local, state, and federal regulations and it is not anticipated that Project No. 18 would result in adverse effects to groundwater wells or nearby aquifers. Similar to the proposed Project, it is anticipated that the replacement of the water treatment plant would implement an erosion and sediment control plan during construction at Raystown Lake. Cumulative effects as a result of Project No. 26 (Table 15) at Loyalhanna Lake are not anticipated to result in adverse effects to groundwater within Loyalhanna Lake. Construction of the proposed Project pipeline would be accomplished by HDD and the construction of the floating plant/work pad near the Bush Recreation Area boat ramp would occur in an area that is currently disturbed and would be temporary in nature to accommodate the required maintenance/bridge repairs. Therefore, the Project, in addition to the other projects listed in Table 15, would result in minimal effects to groundwater resources at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

4.2.2 Wetlands/Waterbodies

The majority of the reasonably foreseeable future actions involve maintenance/repair, upgrades/improvement, and or the replacement of existing facilities, which are not anticipated to result in adverse effects to wetlands/waterbodies within USACE-owned/administered properties. For example, Project No. 14, the stabilization of the shoreline near Tatman Run and Nancy's Camp would result in beneficial effects, reducing erosion and sedimentation currently occurring at Raystown Lake. In addition, as both these areas are located a sufficient distance away from the Project ROW in Raystown Lake, it is not anticipated that cumulative effects to waterbodies would occur during construction. Project No. 24 would increase aquatic habitat at Raystown Lake, resulting in additional beneficial effects in the area; however, no location has been determined for this activity to date. Pending a location identified for the proposed additional aquatic habitat, it is anticipated that any adverse cumulative effects to wetlands/waterbodies within Raystown Lake from the Project and USACE Projects identified in Table 15 would be minimal to none.

Cumulative effects as a result of Project No. 26 (Table 15) at Loyalhanna Lake are not anticipated to result in adverse effects to wetlands/waterbodies within Loyalhanna Lake. Specifically, construction of the floating plant/work pad near the Lake Bush Recreation Area Boat Ramp would occur in an area that is currently disturbed and would be temporary in nature to accommodate the required maintenance/bridge repairs. Therefore, no conversion of wetlands/waterbodies or adverse effects to wetlands/waterbodies are anticipated to occur.

4.2.3 Floodplains

Due to the USACE properties' adjacency to lakes/rivers, the minor maintenance/repair, updates/improvements, and/or replacement projects proposed may be located within FEMA-designated 100-year flood zones; however, it is not anticipated that the proposed replacement projects, or aboveground facilities (such as Project No. 18 – Replace Water Treatment Plant at Raystown Lake) would be located within floodways, or be situated in area that would pose potential flood hazards or safety risks to structures or life. It is anticipated that the maintenance/repair activities proposed at Raystown Lake and Loyalhanna Lake would occur in already disturbed areas, and/or where structures currently exist. Therefore, the Project in addition to those projects listed in Table 15 would not cumulatively result in adverse effects to floodplains, floodways, or result in potential hazards to property, structures, or pose a hazard/safety risk to the public.

4.3 Vegetation

As noted in Section 3.3.2, the Project would result in the clearing of forested areas during construction; however, the temporary workspace areas would be reforested/planted, and the 50-foot wide ROW would be seeded with pollinator habitat to minimize Project impacts (refer to Appendix E). Only a small area of vegetated area on USACE properties would be converted to a developed/non-vegetated land use associated with the block valve station additions/improvements: 0.10 acre on Raystown Lake and 0.13 acre on Conemaugh River Lake. With implementation of Project No. 4 – Tree planting, Project No. 6 – the treatment of forest invasive species annually, and Project No. 21 – Environmental Stewardship at Raystown Lake, in addition to other proposed projects identified in Table 15, it is anticipated that the Project would not result in cumulative

adverse effects on vegetation within USACE owned/administered properties at Loyalhanna Lake, Conemaugh River Lake, or Raystown Lake.

4.4 Biological Resources

Based on the reasonably foreseeable future actions identified in Table 15, cumulative effects to biological resources would be minimal. Specifically, most of the projects identified in Table 15 are maintenance/repair, updates/improvements, and/or replacement projects. As a result, it is not anticipated that these projects in conjunction with the proposed Project would result in adverse effects to endangered/threatened species (*e.g.*, Project No. 24 would increase aquatic habitat, resulting in beneficial impacts for aquatic species within Raystown Lake). Minimal tree clearing/conversion of land may occur as a result of the construction of Project No. 18 – Water Treatment Plant at Raystown Lake; however, it would not occur to any great extent, as it is anticipated that the new water treatment plant would be located where the existing water treatment plant is situated, resulting in a minimal increase in the project footprint. Similarly, the Project will require clearing forested areas and a temporary conversion of habitat until the areas are restored in accordance with the Post-Construction Planting Plan (Appendix E). However, all activities associated with the Project and Table 15 projects would be conducted in such a manner as to avoid/minimize impacts to sensitive species (i.e., timing restrictions) and would be required to comply with all state and federal permit requirements. As such, the potential cumulative effects of the Project and activities identified in Table 15 to rare, threatened, or endangered species including, but not limited to, aquatic species, bats, migratory birds and bald eagles within Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake would be minimal and cumulative effects to biological resources would be minimal.

4.5 Cultural/Historic Resources

Based on the reasonably foreseeable future actions identified in Table 15, cumulative effects to cultural resources are anticipated to be minimal. Most of the aforementioned actions involve maintenance/repair, updates/improvements, and/or replacement activities in previously disturbed areas. In addition, similar to the proposed Project, the activities listed in Table 15 would be subject to USACE Section 106 review and compliance, including PHMC concurrence and Native American (tribal) consultation to avoid/minimize potential impacts to cultural/historic resources. Therefore, it is anticipated that the Project in addition to the projects listed in Table 15 would have relatively minimal potential to encounter cultural/historic resources and cumulative effects to cultural resources within/near Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake would be minimal to none.

4.6 Land Use

The proposed Project is located adjacent to and within SPLP's existing ROW and other existing utility ROWs and no changes in land use would occur. The majority of the actions listed in Table 15 involve maintenance/repairs, the upgrade/improvement and/or the replacement of existing facilities, which are not anticipated to result in changes to existing land use. Depending on the future identified location of the new water treatment plant (Project No. 18), it is not anticipated that a conversion of existing land use within USACE-owned/administered properties would occur. The Project and existing recreational uses on USACE-owned and administrated properties would continue to function similar to existing conditions, resulting in minimal to no changes to land use.

Construction associated with Project No. 26, the floating plant/work pad near the Bush Recreation Area Boat Ramp at Loyalhanna Lake, would be temporary as it would only be used for bridge repair maintenance service and no change in land use would occur. Therefore, the potential cumulative land use effects at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake would be minimal to none.

4.7 Recreational Uses

A majority of the projects identified in Table 15(*i.e.*, Project No.'s 11 – Playground Replacement, 15 – Senoia Restroom, 17 – Campsite Electric in Senoia Camp, 20 – Additional Showers, and 26 – Site Development/Mobilization for the floating plant/work pad near the Bush Recreation Area Boat Ramp) involve the maintenance/repair, upgrade/improvement, or replacement of existing facilities within recreational areas including the Seven Points Recreation Area in Raystown Lake and the Bush Recreation Area in Loyalhanna Lake. Due to the close proximity of the Project to these areas, it is anticipated that temporary closures/detours that would temporarily impede visitor/public access to these recreation areas may be required during construction. Specifically, the Project ROW and USACE's Project No. 26 in the Bush Recreation Area (northwest of the Project ROW) are situated immediately adjacent to each other, which may result in some overlap in workspace area during construction at Loyalhanna Lake. Therefore, SPLP will coordinate with USACE to ensure that the timing of any road closures/detours will minimize potential impacts to recreational users in the area. Furthermore, SPLP has proposed to install the proposed pipelines using HDD methods in those areas identified where Project No. 26 would overlap.

Accordingly, it is not anticipated that adverse cumulative effects to recreational resources/uses would occur within these areas. Once construction is complete, it is anticipated that recreational uses/activities would resume to normal operating conditions and that visitor/public access to these facilities would continue. The maintenance/repairs and upgrades/improvements of existing facilities identified in Table 15 would result in beneficial effects for recreational users in the area. Therefore, cumulative effects to recreational uses at all three USACE owned/administered properties are anticipated to be minimal.

4.8 Aesthetics

Based on the reasonably foreseeable future actions identified in Table 15, it is anticipated that cumulative effects to aesthetics would be minimal. During construction, some views/view sheds may be temporarily obscured as a result of construction sites/vehicles surrounding the Project area. For example, Project No.'s 5 and 9 – Forest Road Maintenance and Surface Road Improvements, No. 18 – Water Treatment Plant Replacement, and Project No. 22, the Universal Access Plan proposed at Raystown Lake, would result in temporary construction that would likely be visible to visitors in the general area. In addition, the Project would be temporarily visible from road crossings and possibly some highpoints in the recreation areas, but has been sited parallel to existing ROWs to avoid altering the existing view sheds in the long-term. Therefore, once construction is complete these views/view sheds would return to existing conditions, if not improved be by the various projects. For example, as part of the proposed list of actions, additional tree planting (Project No. 4) would occur within Raystown Lake, further enhancing the visual landscape in the project area. With implementation of the aforementioned projects, minimal obstruction of visual resources or changes to views would occur and cumulative effects to aesthetics are anticipated to be minimal at Raystown Lake.

Similarly, aesthetic effects as a result of Project No. 26 (construction of the floating plant/work pad near the Lake Bush Recreation Area Boat Ramp) combined with construction of the Project would result in minimal aesthetic effects to visitors visiting Loyalhanna Lake, as construction would likely be temporarily visible to visitors along Bush Road and in the general area. However, most construction near the Bush Recreation Area would be drilled (HDD) minimizing surface disturbance to the extent feasible and would be temporary. In addition, SPLP located its temporary workspaces to the east, on the opposite side of the lake, and outside of USACE properties. Therefore, no views of the lake from the Bush Recreational Area are anticipated to be impeded. Once construction is complete, these views/view sheds would return to existing conditions, and no long-term adverse cumulative aesthetic effects would occur at Loyalhanna Lake.

No reasonably foreseeable future projects were identified at Conemaugh River Lake; therefore, cumulative aesthetic effects to the Conemaugh River Lake area are anticipated to be minimal to none.

4.9 Air Quality/Climate Change

As previously stated in Section 3.9, the Project area is located in an area of moderate-maintenance/ non-attainment status for some NAAQs for criteria pollutants and an OTR. However, the Project would not exceed *de minimis* thresholds for criteria pollutants and is exempt from a CAA conformity determination. With implementation of the Project and the reasonably foreseeable future actions identified in Table 15, violations of NAAQS for criteria pollutants or cumulative effects to air quality are not anticipated. Minimal and temporary air quality impacts would be anticipated during construction as a result of mobile source emissions from construction vehicles, equipment, and construction travel. However, these emissions would be short-term and temporary in nature. All projects identified in Table 15 that require the use of vehicles, construction equipment, and/or machinery would generate air emissions in the respective USACE-owned properties. In addition, minimal air emissions may also result from prescribed burns (Project No. 3) at Raystown Lake. However, these emissions would be temporary in nature and are anticipated to comply with CAA regulations. Once Project construction is complete, cumulative air quality effects as a result of the Project and any reasonably foreseeable future actions would be minimal to none. The emissions resulting from the Project and the proposed actions listed in Table 15 would generally occur during construction, and no-long term increases in emissions are anticipated. Therefore, cumulative impacts to air quality and greenhouse gas (GHG) emissions are anticipated to be minimal at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

4.10 Noise

Based on USACE's reasonably foreseeable future actions, cumulative effects to noise levels in the area would be minimal. As shown in Table 15, the proposed projects on USACE properties mostly involve maintenance/repair, upgrades/improvements, and/or the replacement of existing facilities. Therefore the timeframe of construction and associated noise effects are anticipated to be short-term and temporary. With the exception of Project No. 18, the replacement of the water treatment plant, minimal noise disturbance may occur to visitors near Seven Points Recreation Area at Raystown Lake. However, most noise-related impacts would be limited to areas where construction is occurring and would be dependent on the distance/location from the construction zones. Due to the remote nature of the Project area and surrounding heavy vegetation, it is

anticipated that the existing natural noise buffer is sufficient to offset any potential noise impacts along the ROW. Some noise would be generated as a result of vehicle access/construction trucks hauling equipment along adjacent roadways/entrances on USACE properties; however, this noise would be intermittent, and short-term/temporary in nature and would not permanently affect cumulative noise levels.

SPLP will schedule construction to occur outside the busy summer season to minimize the effects of construction noise on recreational users. As such, construction noise impacts would be temporary and would result in minimal to no impacts to recreational users at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

Once construction is complete, noise levels may increase slightly during the operation of Raystown Lake's new water treatment plant. However, it is anticipated that noise levels would be similar to noise currently generated by the existing water treatment plant. Furthermore, as the Project would locate the expansion of and construction of block valve facilities where they currently exist (to the west of the Conemaugh River Lake crossing, and to the west of Raystown Lake crossing), no new noise sources would be added at the Conemaugh and Raystown Lake areas. In addition, there may be some temporary incremental noise increases as a result of Project operations associated with periodically depressurizing the pipeline; however, this activity would result in a minimal increase in noise impacts. As such, the nominal increase in cumulative noise levels would result in minimal noise effects at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

4.11 Transportation

Based on the reasonably foreseeable future actions identified in Table 15, cumulative effects to traffic/access are anticipated to be minimal. Project No.5 – Forest Road Maintenance and Project No. 9 – Road Surface Improvements at Raystown Lake may occur in conjunction with construction of the proposed Project. However, the majority of roads that would be used by the Project are located on private roads/land minimizing the potential for traffic/access disruption at Raystown Lake. During construction, some traffic/access impacts may occur along the Project's hauling route from the use of construction vehicles/equipment and as a result of construction travel associated with the projects listed in Table 15. For example, Project No. 18, the replacement of the water treatment plant at Raystown Lake would likely require ingress/egress and the use of the roadways for construction vehicles. Similarly Project No. 26, construction of a floating plant/work pad at the Bush Camp Recreation Area would likely require coordinated travel along Bush Road at Loyalhanna Lake for construction vehicles. However, as construction would be temporary, it is anticipated that traffic/access impacts at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake would be temporary and limited for the duration of the construction period. Furthermore, most construction travel as a result of the Project would be coordinated with private landowners and with USACE to minimize potential traffic impacts on all USACE owned/administered properties, including coordination on detours and signage to be used to ensure adequate and safe vehicle ingress and egress on USACE owned/operated properties. Once construction is complete, it is anticipated that normal traffic/access patterns and levels of service would resume to normal and cumulative traffic/access impacts at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake would be minimal. Therefore, no mitigation measures are required to address transportation.

4.12 Health & Safety

Based on the reasonably foreseeable future actions identified in Table 15, cumulative effects to health and safety are anticipated to be minimal. Although some health and safety risks would be involved during construction of the actions listed in Table 15, all construction activities would be required to comply with and implement OSHA safety guidelines. Furthermore, Project No. 23 would result in compliance with the Americans with Disabilities Act, improving access to facilities near Seven Points Recreational Area at Raystown Lake to those who are disabled; Project No. 25 would help increase emergency power to administrative buildings near the Seven Points Recreation Area at Raystown Lake; and, Project No. 26, the construction of a floating plant/work pad for future bridge repairs at Loyalhanna Dam would ensure structural safety for bridge operations. As a result, it is anticipated that potential cumulative adverse health and safety risks associated with the Project and those listed in Table 15 would be minimal at all three USACE-owned properties. Once construction is complete, operations of the Project and other tasks/projects would be conducted in accordance with USACE safety plans, guidelines, and/or local, state, and federal regulations. Consequently, it is anticipated that no adverse health and safety effects would occur and that potential cumulative health and safety effects would be minimal at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake.

Similar to the Project, potential health and safety impacts to children as a result of the cumulative projects discussed above would be minimal. Most construction involved would be maintenance activities or improvements—some of which would enhance public safety for children and adults within recreational areas. As such, potential cumulative adverse health and safety risks to children would be minimal on all USACE-owned properties.

4.13 Environmental Justice

As noted in Section 3.13.2, there are no minority or low-income populations located within USACE owned/administered lands and properties. In addition to the proposed Project, the proposed USACE maintenance/repair, and/or upgrades/improvements to existing facilities identified in Table 15 are not expected to result in disproportionate and/or adverse human health or environmental effects to low-income and minority populations. Therefore, no cumulative environmental justice effects are identified at Loyalhanna Lake, Conemaugh River Lake, or Raystown Lake.

4.14 Socioeconomics

As noted in Section 3.14.2, there is no permanent population located within USACE owned/administered lands and properties. In addition to the proposed Project, the proposed USACE maintenance/repair, and/or upgrades/improvements to existing facilities identified in Table 15 are not expected to require additional housing or increase employment substantially to result in adverse socioeconomic effects to the Project area. Therefore, no cumulative socioeconomic effects are identified at Loyalhanna Lake, Conemaugh River Lake, or Raystown Lake.

5.0 ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

As noted in Section 1.0, the scope of analysis for the NEPA and environmental compliance evaluations associated with the Section 408 review process is limited to the area of the alteration and those adjacent areas that are directly or indirectly affected by the alteration of the Project. As this EA is limited to those USACE-administered parcels affected by the Project at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake, only additional environmental considerations related to those areas are discussed herein.

5.1 Indirect Effects

Indirect Effects as a result of the Project are anticipated to be minimal. For example, as the Project would not increase the amount of housing, the Project would not induce the growth of population or increase population density in the area. As the Project would be situated adjacent to SPLP's existing ROW and other utility ROWs, minimal to no changes in land use would occur. The Project would result in the expansion and construction of block valve stations on the Conemaugh and Raystown Lake properties, respectively; however, these block valve stations would function similar to existing block valve stations in the area and thus are not anticipated to result in adverse indirect effects to resources in the area. Furthermore, as most of the Project would be buried underground, minimal to no indirect effects are anticipated to aesthetics, historic resources, noise, recreational uses, transportation, or water resources in the area.

Indirect effects may result from vegetation clearing and the proposed revegetation of the Project ROW with pollinator habitat. The revegetation with pollinator habitat would be beneficial and supportive of USACE and Presidential directives to increase pollinator habitat. However, some visitors/public may view these indirect effects differently as the amount of increased pollinators in the area may increase health/safety risks to those who are allergic or sensitive to pollinator species' stings. Other indirect effects that could occur include increased bat species within Raystown Lake as a result of creation of increased habitat for bat species within the BCA, as a result of the installation of artificial roost structures or control of invasive plant species. However, this indirect effect would be a beneficial effect and would support the goals of the BCA and no adverse effects to sensitive bat species would occur.

5.2 Unavoidable Adverse Effects

Unavoidable Adverse Effects as a result of the Project would be minimal. Some loss of forested habitat, including potential bat habitat, would occur along the forest edge as a result of tree clearing required for the Project. However, as noted above, the forested areas would be restored in the temporary workspaces and replaced with other habitat in the maintained ROW, including pollinator habitat, in accordance with USACE goals to promote the health of honey bees and other pollinators. In addition, the loss of potential bat habitat will be minimal as the Project would install artificial roost structures and control invasive plant species to enhance the BCA at Raystown Lake. As such, the potential unavoidable adverse effects to biological resources would be minimized.

As discussed in Section 3.0, minimal conversion of prime farmland/farmland of statewide importance (approximately 0.14-acre) would occur as a result of the proposed new block valve located off of Westinghouse Road within the Conemaugh River Lake area, resulting in an unavoidable adverse effect. However, the amount of land converted would be nominal and is

currently not used for agricultural purposes. As such, the potential for unavoidable adverse effects to soils are anticipated to be minimal.

5.3 Irreversible Irretrievable Commitment of Resources

An Irreversible Irretrievable Commitment of Resources occurs when there is a permanent conversion of wetlands/streams, the loss of cultural/historic resources, agricultural resources, soils, or wildlife, and other nonrenewable resources. As the Project requires tree clearing in some areas, the Project would have the potential to result in the irretrievable commitment of resources such as vegetation/timber within the Project's 50-foot wide ROW areas; however, these areas would be replanted with pollinator habitat as requested by USACE and would support Presidential directives. No conversion of wetland cover types would occur and no loss of wetland functions and values as all the wetlands impacted would be restored to their pre-existing wetland habitat. A small conversion of unique/prime farmland would occur for the expansion of an existing block valve; however, this conversion would result in a minimal footprint in an area that is already partially developed with an existing block valve station and is not currently being used for crops. In the event of decommissioning of the pipeline, this land would be allowed to revert back to existing conditions and would not result in an irreversible, irretrievable commitment of resources. Nonetheless, the Project would result in an irreversible commitment of other natural resources such as fossil fuels and other construction materials during construction of the Project.

6.0 COMPLIANCE WITH FEDERAL STATUTES

As the lead Federal agency for the Project on USACE administered/owned lands, the Proposed Action was evaluated by USACE in accordance with all applicable Federal regulations and the Proposed Action's compliance status. Table 14 provides a summary of the Proposed Action's compliance with pertinent Federal regulations for the three USACE administered/owned lands crossed by the Project.

Table 16. Compliance of the Proposed Action with Potentially Pertinent Environmental Protection Statutes and Other Requirements

Federal Statutes	**Level of Compliance**
Anadromous Fish Conservation Act	Full
Archeological and Historic Preservation Act	Partial
Clean Air Act	Full
Clean Water Act	Partial
Comprehensive Environmental Response, Compensation, and Liability Act	N/A
Endangered Species Act	Full
Estuary Protection Act	N/A
Farmland Protection Policy Act	Full
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	Partial
Land and Water Conservation Fund Act	N/A
National Environmental Policy Act	Partial
National Historic Preservation Act	Partial
Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011	Partial
Pipeline Inspection, Protection, Enforcement and Safety (PIPES) Act of 2006	Partial
Resource Conservation and Recovery Act	N/A
Rivers and Harbors Act	Partial
Submerged Land Act	N/A
Water Resources Planning Act	N/A
Watershed Protection and Flood Prevention Act	Partial
Wild and Scenic Rivers Act	N/A
Executive Orders (EO), Memoranda, etc.	
Protection and Enhancement of Environmental Quality (E.O. 11514, 1977)	Partial
Protection and Enhancement of Cultural Environment (E.O. 11593)	Partial
Floodplain Management (E.O. 11988)	Partial
Pipeline Safety Regulations 49 CFR 190-199	Partial
Pipeline Safety Statutes 49 USC Chapters 601 & 603	Partial
Protection of Wetlands (E.O. 11990)	Partial
Environmental Justice (E.O. 12898)	Full
Recreational Fisheries (E.O. 12962)	Partial
Protection of Children from Environmental Health Risks and Safety Risks (E.O. 13045)	Partial
Stormwater Discharges 40 CFR 122.26 (B)(4), 19 Nov 1990	Partial

Levels of Compliance: a. Full: having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning. b. Partial: having met only some of the requirements that normally are met in the current stage of planning. c. Non-Compliance: violation of a requirement of the statute, E.O., or other environmental requirement. d. Not-Applicable (N/A): no requirements for the statute, E.O., or other environmental requirement for the current stage of planning.	

7.0 SUMMARY

In summary, USACE has evaluated the environmental consequences of the Proposed Action and subsequently the proposed pipeline Project crossing through USACE owned/administrated properties at Loyalhanna Lake, Conemaugh River Lake, and Raystown Lake properties. USACE also compared the environmental consequences of the Proposed Action with the alternatives evaluated in this EA. The Preferred Alternative chosen is the proposed Project discussed herein which would result in an easement agreement allowing SPLP to construct and operate a five (5) mile pipeline through USACE owned/administered properties, parallel to and adjacent to its existing ROWs and parallel to and adjacent other utility ROWs.

When compared to the No Action Alternative, the Preferred Alternative would result in environmental impacts to USACE properties: however, these impacts would be reduced with implementation of adequate mitigation. The proposed mitigation measures would minimize impacts and are anticipated to result in net beneficial impacts on USACE properties exceeding pre-project conditions. For example, the Preferred Alternative would increase the amount of pollinator habitat across USACE owned properties that the Project would be crossing, when compared to existing conditions. The creation of pollinator habitat would meet President Obama's directives to increase and improve pollinator habitat to agencies that manage and administer Federally-owned lands. Furthermore, the pollinator habitat within the Project ROW would be monitored for five (5) years and would require an 85% survivability rate to ensure that the pollinator habitat is established. Under the No Action Alternative, pollinator habitat could be created, but would likely require funding from alternate sources with the potential for increased costs for monitoring. Furthermore, the Project would set aside funds for the IBCF, as well as compensate a recently designated BCA at Raystown Lake by installing artificial roost trees, girdling trees, and by helping control invasive plant species as part of mitigation for potential impacts to threatened and endangered bat species in Raystown Lake. As a consequence of implementation of these mitigation measures, potential Project impacts are anticipated to be minimal.

Based on the remainder of the Project's potential effects discussed above, preparation of an Environmental Impact Statement is determined to not be necessary. A Finding of No Significant Impact (FONSI) has been prepared, and is provided in the cover of this EA. The Preferred Alternative crossing through USACE owned/administered properties would minimize, to the greatest extent possible, potentially adverse effects that alternative pipeline routes could cause private landowners, greenfields, and currently undisturbed areas. SPLP would be held responsible subject to the regulations and policies to ensure that the mitigation measures discussed herein are implemented and meet their intended purpose over time.

8.0 REFERENCES

Beranek, L. 1988. Noise and Vibration Control. Institute of Noise Control Engineering, Washington, D.C., 1988.

Krupa, Nicholas. 2015. Email Correspondence (Appendix 20 – Five (5) [Year] Operational Management Work Plans) between Tetra Tech Inc. and Nicholas Krupa, USACE Baltimore District, Raystown Lake dated September30, 2015.

National Audubon Society (NAS) 2015, Important Bird Areas – Pennsylvania, Available online at: http://netapp.audubon.org/iba/state/US-PA, Accessed 2015.

Page, S. 2010. Personal communication regarding soil compaction and USDA/NRCS Soils Data Mart soil reports on November 15, 2010, between Steven Page, USDA/NRCS Soil Scientist, Syracuse, New York; and Suzanne Villacorta, Tetra Tech, Inc., Buffalo, New York.

PADCNR 2000. Pennsylvania Department of Conservation and Natural Resources (PADCNR), Bureau of Topographic and Geologic Survey, Map 13, Physiographic Provinces of Pennsylvania, Compiled by W. D. Sevon, Fourth Edition, 2000; Available online at: http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_016202.pdf

PADCNR 2014a. Initial correspondence between Tetra Tech Inc. and PADCNR dated 30 January, 2014.

PADCNR 2014b. Reroute correspondence between Tetra Tech Inc. and PADCNR dated 30 January, 2014.

Pennsylvania Fish and Boat Commission (PFBC) 2014. Correspondence between Tetra Tech Inc. and PFBC dated 27 January, 2014.

Pennsylvania Game Commission (PGC) 2014. Correspondence between Tetra Tech Inc. and PGC dated 14 March, 2014.

Pennsylvania Geological Survey 2014. Pennsylvania groundwater information system (PaGWIS): Pennsylvania Geological Survey, 4th ser., SQL database. http://www.dcnr.state.pa.us/topogeo/groundwater/pagwis/records/index.htm

Plowden 2011. Personal communication regarding soil compaction and USDA/NRCS Soils Data Mart soil reports on July 13, 2011 between Yuri Plowden, USDA/NRCS Area Resources Soil Scientist, Bloomsburg, Pennsylvania; and Brian Rod, Tetra Tech, Inc., Portland, Maine.

Soil Conservation Service 1988. Soil Mechanics Training Series, Basic Soil Properties, Module 5 – Compaction, Part A – Introduction, Definitions, and Concepts, Study Guide. U.S. Department of Agriculture, Soil Conservation Service.

Toman, Paul. 2015. Email correspondence between Tetra Tech Inc. and Paul Toman, U.S. Army Corps, Pittsburgh District, Resource Manager at Loyalhanna Lake and Conemaugh River Lake Area, dated November 10, 2015.

USACE 2015. U.S. Army Corps of Engineers, Department of the Army, CECW – CP Circular No. 1165-2-216, Water Resource Policies and Authorities, Expires July 31, 2016, Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408, Section 7; September 30, 2015. Available online at: http://www.publications.usace.army.mil/Portals/76/Publications/EngineerCirculars/EC_1165-2-216.pdf

USACE 2015. U.S. Army Corps of Engineers Raystown Lake Project; Programmatic Biological Assessment for Proposed Activities at the Raystown Lake Project, Hesston Pennsylvania, for Forest Dwelling Bat Species Including the Indiana *(Myotis sodalis)* and Northern Long-Eared Bat *(Myotis septentrionalis)*; August 2015.

USDA/NRCS 2015. U.S. Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS). 2015. Web Soil Survey, soil data information. Natural Resource Conservation Service, United States Department of Agriculture. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

USDA/NRCS 2016. Telephone Conversation regarding the Farmland Protection Policy Act and Farmland Conversion Impact Rating Assessments on June 28, 2016, between Michael Robotham, USDA/NRCS National Leader – Technical Soil Services, and Ailene Batoon, Tetra Tech Inc. Per telephone conversation with the USDA/NRCS, the expansion of the existing block valve west of the Conemaugh River crossing would have a minimal building footprint, would overlap an existing block valve station, and would occur within an existing ROW. Therefore, a Farmland Conversion Impact Rating Assessment from the USDA/NRCS is not required.

USDOT 2015. Bureau of Transportation Statistics, Research and Innovative Tech. Admin., U.S. Department of Transportation Statistics Annual Report 2015; Available online at: http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/TSAR_2015_final_0.pdf

USDOT 2016. Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation Pipeline Incident 20 Year Trends; Available online at: http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends; Last Visited May 2016.

USEPA 1971. Community Noise, Publication NT1D300.3, Washington, D.C. 1971.

USEPA 2007. EPA Region 3, Virtual Aquifers - Water Protection Division, Sole Source Aquifer Program, Last updated February 2, 2007; Available online at: http://www.epa.gov/reg3wapd/presentations/ssa/index.htm

USEPA 2015. The Green Book of Nonattainment Areas for Criteria Pollutants, As of June 17, 2016; Available online at: https://www.epa.gov/green-book

US Fish and Wildlife Service (USFWS) 2007. USFWS Bald Eagle Management Guidelines, Available online at: http://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf

USFWS 2014. Correspondence between Tetra Tech Inc. and USFWS dated 19 March, 2014.