TETRA TECH

PITT-02-19-016

February 1, 2019

Via E-mail and overnight Fed Ex
Ms. Scott Williamson, Program Manager
Pennsylvania Department of Environmental Protection
Waterways and Wetlands Program
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110-8200

Re: Sunoco Pipeline L.P. – Pennsylvania Pipeline Project (Mariner East II)
Chapter 105 Permit No. E07-459 – Major Modification
Modification Request for Reroute and Installation Method Change at Piney Creek HDD
Woodbury Township, Blair County, PA

Dear Mr. Williamson:

On behalf of Sunoco Pipeline L.P. (SPLP), please accept the enclosed revised drawings and information as a request for a major modification to both the referenced Chapter 105 permit and Chapter 102 permit [Note – the corresponding Chapter 102 permit modification request is being provided separately under a different cover]. This modification is being requested for a change in route and installation method of the 16-inch diameter pipeline from a Horizontal Directional Drill (HDD) to conventional open trench for a majority of the pipeline route, with a conventional auger bore under Piney Creek Road / High Street (State Route 866).

While conducting the permitted HDDs for the 20-inch pipeline through this area there were multiple inadvertent returns (IRs) in which drilling mud/fluid entered Waters of the Commonwealth. Therefore, SPLP has elected to install the 16-inch pipeline using an alternate route and method of installation that minimizes impacts to Waters of the Commonwealth.

In accordance with the Chapter 105 major permit amendment requirements, the following information is provided for your information/review and files:

- A – Project Description and Alternatives Analysis
- B – Resource Photographs
- C – Environmental Assessment
- D – Applicable 102 Drawings (E&S / Site Restoration)
- E – Site Plan and Aquatic Resource Impact Table
- F – Proof of PHMC Coordination
- G – PNDI Update
- H – Application Fee Calculation
- I – Supplemental Joint Permit Information

Enclosed are two (2) hard copies of the modification request to facilitate your review. The enclosed fee of $3,700 is for the processing of a Chapter 105 major modification and the additional resource impacts (Attachment H). Please note that the Blair County Conservation District and U.S. Army Corps of Engineers-Baltimore District have also received a copy of this request and attachments.

Tetra Tech
661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

SPLP appreciates your timely review of this modification request. Should you have questions regarding this correspondence, please do not hesitate to contact me at 412-921-8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
Project Manager
Tetra Tech, Inc.

Enclosures: 1 original, 1 copy

cc: File 212IC-PB-00387
E. Muzic, PADEP Southcentral Region
D. Thomas, Blair County Conservation District
P. Strong, U.S. Army Corps of Engineers, Baltimore District
M. Gordon, Sunoco Pipeline L.P.
C. Embry, Sunoco Pipeline L.P.
M. Styles, Sunoco Pipeline L.P.
L. Gremminger, Gremminger Associates, Inc.
B. Schaeffer, Tetra Tech

Pennsylvania Pipeline Project
Chapter 105 Joint Permit Application
Blair County, Pennsylvania
Application ID: E07-459
APS No.: 879354
January 2019

Prepared for:
Pennsylvania Department of Environmental Protection
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, Pennsylvania, 17110

Prepared by:
Tetra Tech OGA, Inc.
301 Ellicott Street
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(716) 849-9419

Prepared by: _____
Pat Green
Tetra Tech OGA, Inc.

Approved by: _____
Brad Schaeffer, P.M.P.
Tetra Tech OGA, Inc.

"I, Robert F. Simcik, do hereby certify to the best of my knowledge, information and belief, that the information contained in the accompanying plans, specifications, and reports has been prepared in accordance with accepted professional practice, is true and correct, and is in conformance with Chapter 106 of the rules and regulations of the Department of Environmental Protection."

"I, Robert F. Simcik, do hereby certify pursuant to the penalties of 18 Pa.C.S.A. Sec. 4904 to the best of my knowledge, information and belief, that the information contained in the accompanying plans, specifications and reports has been prepared in accordance with accepted engineering practice, is true and correct, and is in conformance with Chapter 105 of the rules and regulations of the Department of Environmental Protection."

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE-050435-E

1/21/19

Robert F. Simcik, P.E.
Professional Engineer No. PE050435E

ATTACHMENT A

Project Description and Alternative Analysis

Project Description

Sunoco Pipeline L.P. (SPLP) requests a major permit modification for a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Piney Creek Horizontal Directional Drill (HDD). This permit request is to convert the HDD to conventional open trench construction for the majority of the reroute, and a conventional auger bore under Piney Creek Road / High Street (State Route 866).

During the pilot hole drilling phase on the permitted Piney Creek HDD for the 20-inch pipeline installation through this area, there were multiple inadvertent returns (IRs) in which drilling mud/fluid entered Waters of the Commonwealth, including Piney Creek and S-M33. In an attempt to address these incidents, SPLP received approval from the Pennsylvania Department of Environmental Protection (PADEP) to implement a Direct Pipe construction method. This method failed, however, and after receiving approval from PADEP, the 20-inch pipeline crossing was completed using the HDD method. During completion, the Piney Creek HDD continued to experience losses of circulation and IRs. Therefore, SPLP has elected to install the 16-inch pipeline using a conventional open trench construction for the majority of the route and a conventional auger bore under Piney Creek Road/ High Street (State Route 866).

This permit modification requests an approximate 0.57-mile reroute to the north of the current permitted pipeline right-of-way. The new route will avoid wetland M26 (PEM), an Exceptional Value (EV) wetland. The new route will cross 3 streams, including two that were crossed by the original route, and no wetlands (refer to *Attachments C and E* for additional information about these water resources). An open trench installation method across these resources will result in temporary, short term impacts to streams but will avoid all EV wetland impacts and eliminate the risk of uncontrolled discharges associated with HDD IRs.

All the streams will be crossed via the open cut method with the appropriate dam and pump bypass installed to convey stream flow across the workspace and outlet downstream within the permitted limit-of-disturbance, such that work will be conducted in a dry stream channel. After the stream bypasses are in place, the trench will be excavated, and the 16-inch pipe will be installed via the open trench method through the dry streambeds in accordance with all permit conditions and requirements. In order to efficiently complete all construction activities and minimize resource impacts, SPLP is proposing a 50-foot-wide limit of disturbance (LOD) across the two perennial streams (Piney Creek, S-M30 and UNT to Piney Creek, S-M33). Timber mats and bridges will be placed within the travel lane where the streams are crossed to avoid soil compaction, allow for trench excavation, stream substrate segregation, and stockpiling of excavated materials in adjacent upland areas. Once the pipe and appropriate trench plugs are installed, the trench will be backfilled, and restored to pre-existing conditions. All work will be conducted in accordance with permit conditions/requirements as well as the revised/updated Erosion & Sediment and Restoration plan (refer to *Attachment D* of this permit modification). The reroute will not result in any loss of wetland area or water quality/quantity, and the localized stream impacts are considered minor and temporary.

Refer to *Attachment C - Environmental Assessment* for a discussion of existing conditions, potential impacts, mitigation/restoration, antidegradation compliance, and agency coordination associated with this requested reroute and proposed construction method.

Alternatives Analysis

The crossing of stream resources is unavoidable due to the linear nature of the proposed PPP Project, and as described in the Environmental Assessment, S1.B – Water Dependency (refer to *Attachment C* of this permit modification). Therefore, to avoid direct impacts to these resources, SPLP originally planned to HDD under the entire wetland/stream complex. However, there were complications encountered during the HDD of the 20-inch and drilling fluid discharges resulted in unpermitted discharges to the Waters of the Commonwealth.

SPLP evaluated an open cut of the existing permitted right-of-way and determined this would impact an EV wetland. Subsequently, they considered a Direct Pipe construction method through the area but determined that this could fail based on the previous attempts with the 20-inch pipeline.

SPLP evaluated other routes around the area but are limited due to the roads and residential properties to the south of the existing SPLP easement. In addition, a route to the south would likely impact more forested areas, possibly wetlands, and require a “greenfield”, or new, right-of-way through these areas resulting in more permanent forested impacts. The proposed route to the north avoids all wetlands, minimizes the number of residential and developed areas disturbed during construction, and reduces the amount of forested area crossed. In addition, the route to the north provides an open field for a perpendicular conventional bore under Piney Creek Road / High Street (State Route 866).

In conclusion, given the geologic conditions at the Piney Creek HDD locations and numerous incidents that occurred during the 20-inch HDD, the HDD evaluation staff has elected to install the 16-inch pipeline using an alternate route and method of installation. Alternative construction methods including an open cut and/or bore of the resources within the existing permitted right-of-way are not considered desirable due to the EV wetland impacts, and unfeasible alternative construction methods. Therefore, SPLP has elected to abandon installing the 16-inch pipeline within their existing easement and has identified an alternate route north of the currently proposed right-of-way. Analysis of other potential routes to the south would result in potentially more environmental (forested area and wetlands), residential, and developed (roads) impacts. Consequently, the professional opinion of the HDD Reevaluation Team, consisting of the Geotechnical Evaluation Leader, Professional Geologists, Professional Engineers, and other construction specialists is that an open cut with a dam and pump bypass in place for each stream crossing will have the least impact, as the work area and stream flow will be managed in accordance with all permit conditions (dam and pump) and can completed in the most efficient and timely manner, including restoration/stabilization of all the streams.

ATTACHMENT B

Stream Photographs

Sunoco Pipeline L.P.

Photo Log - Piney Creek Reroute

Notes: 12/31/2018 -- Stream S-M30 (Piney Creek)

Facing upstream of proposed crossing location

Notes: 12/31/2018 -- Stream S-M30 (Piney Creek)

Facing downstream of proposed crossing location

Notes: 12/31/2018 -- Stream S-M33

Facing upstream of proposed crossing location

Notes: 12/31/2018 -- Stream S-M33

Facing downstream of proposed crossing location

Notes: 12/31/2018 -- Stream S8r

Facing upstream of proposed crossing location

Notes: 12/31/2018 -- Stream S8r

Facing downstream of proposed crossing location

ATTACHMENT C

Environmental Assessment

Environmental Assessment (E.A. Form) Rev. 6/2017

February 2019

Note: The EA provided herein provides information relevant to the major permit modification required at the Piney Creek Road/High Street (State Route 866) HDD Reroute in Blair County, Pennsylvania, and includes specific excerpts and information previously submitted by Sunoco Pipeline L.P. as part of the approved Pennsylvania Pipeline Project (PPP) Chapter 105 Joint Permit (E07-459).

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERWAYS ENGINEERING AND WETLANDS

CHAPTER 105 ENVIRONMENTAL ASSESSMENT FORM

			Included	Item Location
Note: The Department may waive a specific information requirement in writing, at the request of the Applicant, during the pre-application review process if the Department determines the information is not necessary to complete the review.				
Module S1: Project Summary				
This module is intended to organize information in order to present an overall summary of the project scope, certain key information requirements and when applicable, a comprehensive view of the overall project and related projects.				
A. Provide an overall project description and If the answer to the question below is **YES**, address CEA requirements; otherwise proceed to **S1.B** Comprehensive Environmental Assessment (CEA) when applicable. Answer the following question:			☒	Mod S1.A; Att A
Does the "overall" project require more than one Ch. 105 permit in more than one county or will the project be completed in more than one phase?	☒ Yes	☐ No		
B. Provide information related to the project purpose, need, water dependency and summarize the amount and type of resources present and the temporary and permanent impacts proposed to those resources.			☒	Mod S1.B
Module S2: Resource Identification and Characterization				
This module is intended to organize information related to the identification of the resources present on the project site and to characterize those resources that may be affected by the proposed project.				
A. Provide the standard resource identification information, location map, wetland determination or delineation reports; watercourse reports; identification and qualifications of preparers; location map, and answer the related questions.			☒	App. S2.A-1; S2.A-2
Is the site located within or adjacent to any of the following; or within 100 feet of items vii or viii?				
i. National, state or local park, forest or recreation area	☐ Yes	☒ No		
ii. National natural landmark	☐ Yes	☒ No		
iii. National wildlife refuge, or Federal, state, local or private wildlife or plant sanctuaries	☒ Yes	☐ No		Mod S3.B
iv. State Game Lands	☐ Yes	☒ No		
v. Areas identified as prime farmland	☒ Yes	☐ No		Mod S3.B
vi. Source for a public water supply	☐ Yes	☒ No		
vii. A National Wild or Scenic River or the Commonwealth's Scenic Rivers System	☐ Yes	☒ No		
viii. Designated Federal wilderness area	☐ Yes	☒ No		
B. Identify all aquatic resources present on the project site and provide an identifier, the resource type; size of the resource(s); fishery designations, Ch. 93 uses and special protection status; and Exceptional Value (EV) wetland analysis.			☒	Mod S2.B; Att. E
C. Provide the following information related to habitat for Federal threatened and endangered (T&E) plant and animal species or State T&E species or species of special concern - copies of search forms or search receipts; identification of avoidance and minimization efforts taken to resolve identified conflicts.			☒	Mod S2.C; Att. G; App S2.A-3
Did the PNDI search or agency coordination identify any potential conflicts?	☒ Yes	☐ No		Att. G
If the above is answered **YES**; answer the following two questions related to PNDI Coordination:				
a. ***Is the applicant utilizing a sequential review of the PNDI coordination?***	☒ Yes	☐ No		Att. G
b. ***Is the applicant utilizing a concurrent review of the PNDI coordination?***	☐ Yes	☒ No		Att. G
D. Characterize the aquatic resources: riverine, wetland and lacustrine present on the project site that are proposed to be directly or indirectly affected by the project. Including but not limited to the following, resource classification information, Level 2 rapid condition assessment results, discussion of resource functions, characterization of riparian properties and any other relevant information or studies conducted.			☒	Mod S2.D;
Module S3: Identification and Description of Potential Project Impacts				
This module is intended to organize and present information concerning the potential impacts or effects of the proposed project ***in this*** *application. Impacts related to the "over all" project that are proposed under related but separate application(s) should be addressed as part of the CEA Policy response under* ***S1.A****.*				

A. Provide a summary table of the proposed temporary and permanent direct and indirect impacts for <u>each</u> effected resource category (e.g. riverine, wetlands and lacustrine resources).	☒	Mod S3.A
B. If any questions from **S2.A** Standard Information Response questions were answered YES, discuss in detail any potential impacts to those resource(s).	☒	Mod S3.B
<u>IMPORTANT NOTE</u>: If either item vii or viii from S2.A is answered YES, the project is not eligible as a "Small Project Application" type. Complete all applicable sections of the EA form for the standard application type unless an item was otherwise waived by the Department in writing (see previous Note on waiving of information requirements).		N/A

	Included	Item Location
C. Provide a table(s) of all proposed water obstruction(s), encroachment activities and dams (e.g. subfacility codes) and provide an identifier, the subfacility code and description, resource identifier from **S2.B**, latitude and longitude, the proposed temporary and permanent direct and indirect impacts and subfacility details.	☐	N/A
D. Provide a discussion of how the proposed subfacility(ies) individually and in combination directly and/or indirectly impact the identified resource(s) and the effects on the applicable resource functions: hydrologic, biogeochemical, habitat, recreation, any other environmental impacts and the effects on the property or riparian rights of owners upstream, downstream or adjacent to the project.	☒	Mod S3.D
E. **Antidegradation Analysis** - The applicant should demonstrate consistency with State antidegradation requirements as described in the Water Quality Antidegradation Implementation Guidance Policy Document Number 391-0300-002. Project application information provided below in **S3.F, G and H** may be cross-referenced.	☒	Mod S3.E
F. **Alternatives Analysis** - The scope and extent of this analysis should be commensurate with the size and scope of the proposed project impacts *in this* application, information provided in **S4.A** below, related to avoidance and minimization efforts, may be cross-referenced.	☒	Mod S3.F; Att A
G. **Potential Secondary Impact Evaluation** - Identify and describe environmental impacts on adjacent land and water resources associated with but not that direct result of the project.	☒	Mod S3.G
H. Identify and evaluate the potential cumulative environmental impacts of this project and other potential or existing projects like it, and the impacts that may result through numerous piecemeal changes to the wetland resource.	☒	Mod. S3.H
Module S4: Mitigation Plan		
*This module is intended to organize and present information concerning actions undertaken in accordance with the definition of **Mitigation** in Title 25 Pa. Code Chapter 105 - §105.1, 105.16, 105.18a(a)(3), 105.18a(b)(7), 105.20a, and 105.21 as related to the potential impacts or effects of the proposed project **in this** application.*		
A. Identify and discuss any measures taken that resulted in avoiding or minimizing unavoidable resource impacts, provide detailed responses for individual proposed impact area(s) **and** the project as a whole.	☒	Mod S4.A
B. Identify and discuss any repair, rehabilitation or restorative actions taken to rectify an impacted resource, provide detailed responses for individual proposed impact area(s) and the project as a whole. Identify and discuss any proposed preservation and maintenance operations that will be taken to reduce or eliminate an impact during the life of the project.	☒	Mod S4.B
C. Identify and discuss any actions undertaken to provide compensatory mitigation including the purchase of credits from an approved provider, a detailed discussion of proposed compensation actions and how they will offset the lost resource functions. Provide detailed plans including performance standards and success criteria.	☐	N/A
Answer the following question. If the answer to the question is **YES**, provide the information regarding the mitigation credit provider; otherwise provide a detailed mitigation plan. If the application proposes to utilize both mitigation bank credits and conduct permittee responsible mitigation; both the credit provider and mitigation plan information shall be submitted.	☐	N/A
Does the applicant propose to utilize an approved mitigation bank to provide all or a portion of the compensation? ☐ Yes ☒ No		N/A
D. When applicable, provide a plan to monitor the identified actions proposed in **S4.B** and/or **S4.C** compensatory mitigation area. Applicants should utilize the Department's Design Criteria and the USACE's RGL 08-03 -(http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl08_03.pdf) to develop monitoring plans for compensatory mitigation proposals. The plan should include performance standards/success criteria, duration and timeframes of monitoring, monitoring report template, and template remedial action or adaptive management plan.	☒	Mod S4.D; Att D
Note: All or portions of this Module may apply to "Small Project" type applications under case specific circumstances and should be discussed during any pre-application meetings or prior to application submittal.		
CERTIFICATION		
I certify that the above statements, attachments including those labeled and identified as Enclosures, and all conclusions are true, correct, and based upon current environmental principles and science, to the best of my knowledge and belief.		
Robin Dingl — Signature	2/1/2019 — Date	

Module S1: Project Summary

S1.A Overall Project Description

Sunoco Pipeline L.P. (SPLP) requests a major permit modification for a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Piney Creek Horizontal Directional Drill (HDD). This permit request is to convert the HDD to conventional open trench construction for the majority of the reroute, and a conventional auger bore under Piney Creek Road / High Street (State Route 866). During the pilot hole drilling phase on the permitted Piney Creek HDD for the 20-inch pipeline installation through this area, there were multiple inadvertent returns (IRs) in which drilling mud/fluid entered Waters of the Commonwealth, including Piney Creek and S-M33. In an attempt to address these incidents, SPLP received approval from the Pennsylvania Department of Environmental Protection (PADEP) to implement a Direct Pipe construction method. This method failed, however, and after receiving approval from PADEP, the 20-inch pipeline crossing was completed using the HDD method. During completion, the Piney Creek HDD continued to experience losses of circulation and IRs. Therefore, SPLP has elected to install the 16-inch pipeline through this area using an alternate route and method of installation that minimizes impacts to Waters of the Commonwealth.

The 0.57-mile reroute would involve conventional open trench excavation through three (3) streams including two that were crossed by the original route, and no wetlands (refer to *Attachments C and E* for additional information about these water resources): wetland M26 (PEM), an Exceptional Value (EV) wetland, crossed by the original route will be avoided. All work will be conducted in accordance with permit conditions/requirements as well as the E&S and restoration plans (refer to Appendix D of this permit modification). The crossing will not result in any loss of wetland area or water quality/quantity and the localized impacts are considered minor and temporary.

Please refer to *Attachment A* of this permit modification request packet for the Project Description and Alternatives Analysis for this proposed change in installation method and alignment.

CEA Requirements

Per PADEP Technical Policy Guidance Document No. 310-2137-006, a Comprehensive Environmental Assessment that analyzes the alternatives, impacts, mitigation and antidegradation for all structures and activities associated with the overall Project was included with the original PPP Chapter 105 Joint Permit Application submitted to PADEP (E07-459. APS 879354). Specifically, Attachment 11 EAF, Enclosure E Part 3 addresses alternatives; Part 2 includes impacts; Part 4 identifies impact avoidance minimization and mitigation; and, Part 5 discusses antidegradation.

Information applicable to this specific permit modification request are presented in this submittal as follows:

- Alternatives – Module S3, S3.F
- Impacts – Module S3, S3.B
- Avoidance, Minimization, and Mitigation – Module S4
- Antidegradation – Module S3, S3.E

S1.B Project Purpose, Need, Water Dependency, and Summary of Resources and Impacts

Project Purpose & Need

As presented in the original PPP Chapter 105 Joint Permit (E07-459), the overall Project will provide transportation service of natural gas liquids (NGLs) with the combined pipelines from the Utica and Marcellus Shale formations for both domestic and international markets. NGLs are separated from the natural gas stream before consumer ready (dry) natural gas is shipped on the natural gas pipeline network. Upstream shippers are currently limited by the shortage of NGL transport systems. In addition, the Project will provide various delivery points to local Pennsylvania distributors for supply of needed propane supplies, at affordable prices, for use as heating and/or cooking fuel by consumers in Pennsylvania and neighboring states, increasing these fuel access and supply during peak demand periods when supplies would otherwise become short. Butane will also be shipped to local markets as a component of gasoline to ensure gasoline suppliers can meet seasonal vapor pressure restrictions.

Water Dependency

As presented in the original PPP Chapter 105 Joint Permit (E07-459), constructing and operating a natural gas liquids pipeline is not, per se, a water-dependent project. However, because of Pennsylvania's abundant water and wetland resources, any project which travels approximately 300 miles west to east across the Commonwealth requires the crossing of, and therefore access to, waters and wetlands. The overall Project requires access and proximity to and siting in, on, over or under waters and wetlands in order to achieve its primary purpose to transport natural gas liquids from Houston, Washington County to SPLP's existing facility in Marcus Hook, Delaware County. Therefore, the linear nature and approximately 300-mile length of the Project across 17 counties west to east in Pennsylvania makes the Project water-dependent.

Summary of Resources & Impacts

The impacts associated with the Piney Creek Reroute will total approximately 2,090 ft^2 (0.05 acre) of permanent impacts and 54 ft^2 (0.001 acre) temporary stream impacts, and approximately 12,496 ft^2 (0.29 acre) of permanent and 5,542 ft^2 (0.13 acre) of temporary floodway impacts, respectively. Although PADEP defines pipeline operation and maintenance activities as permanent impacts, the impacts are considered minor/localized and temporary as the entire disturbed area of the streams will be restored to preconstruction conditions (i.e., elevation, flow, stream substrate, stream banks, hydrologic conditions, etc.). Furthermore, the resource crossings will not involve any permanent fill; the streams will not be relocated, and there will be no permanent loss of streams or aquatic habitat associated with the reroute modification request. Please refer to *Attachment E* of this permit modification request packet for an updated Aquatic Resource Impact Table.

The proposed route would cross streams designated by the PAFBC as a Class A Trout and Trout Natural Reproduction (TNR) stream or Drains to Approved Trout Waters (ATW) streams. Therefore, SPLP will comply with timing window restrictions/limitations (i.e., 10/1 through 12/31 for TNR and 3/1 through 6/15 for ATW) during construction and will work with the appropriate agencies to avoid and minimize potential impacts to trout/spawning/migrating fish.

In addition, an updated PNDI review (PNDI-675711) identified the proposed Project reroute as located within the range of the thick-leaved meadow-rue (*Thalictrum coriaceum),* a state

endangered plant, as well as habitat of the federally endangered Indiana bat (*Myotis sodalis)*. Therefore, SPLP will coordinate with the Pennsylvania Department of Conservation and Natural Resources (PADCNR) and conduct botanical surveys as required for the newly proposed Piney Creek Reroute. SPLP will also implement its *Myotis* Conservation Plan pre-, during, and post-construction to avoid and minimize potential impacts to the Indiana bat. Specifically, SPLP will implement tree clearing avoidance measures (restricted between April 1 and November 14) and the USFWS Forest Management Guidelines for Indiana Bat Swarming/Summer Habitat when conducting tree harvesting.

SPLP will update PADEP of future agency coordination/responses as it becomes available. Please refer to Module 2, S2.C of this Environmental Assessment and *Attachment G* of this permit modification request packet for the updated PNDI and agency coordination.

Module S2: Resource ID & Characterization

S2.A Location Map & Wetland Delineation Report.

The original location of the Project is provided in the Location Map prepared and submitted for the Project's Chapter 105 Joint Permit Application for Blair County. The applicable page from the original application is provided in Appendix S2.A-1, and has been modified to reflect the location of the Project with the proposed Piney Creek Reroute as well as the locations of the streams affected.

Similarly, an *Aquatic Resources Report* for Blair County was prepared in August 2015 and submitted as part of the PPP Chapter 105 Joint Permit Application. The Aquatic Resources Report presents the results and conclusions of wetland and stream identification activities completed for the entire Project right-of-way. An additional wetland and stream delineation survey was conducted along the Piney Creek Reroute on December 13, 2018 for this permit modification request. Excerpts from the Aquatic Resources Report (prepared in August 2015) including information on Streams S-M30 and S-M33 and a supplemental Aquatic Resources Report (prepared in January 2019) including information on Stream S8r is included as Appendix S2.A-2.

No public water suppliers (PWS) were identified within 0.5 mile of the proposed Piney Creek Reroute.

S2.B Aquatic Resources

For this permit modification request, SPLP identified all aquatic resources present within the Project reroute area and the resources that would be affected by the proposed reroute including three (3) streams.

The aquatic resources that would be affected have been identified as streams S-M30 (Piney Creek), S-M33 (an unnamed tributary to Piney Creek), and stream S8r (an unnamed tributary to Piney Creek). Stream S-M30 is identified as a perennial stream, with bank to bank width of approximately 30 feet; Stream S-M33 is identified as a perennial stream with a bank to bank width of approximately 10 feet; and Stream S8r is an ephemeral stream that drains into Stream S-M33, with a bank to bank width of 1 foot. Based on review of eMapPA maintained by the PADEP and a review of Drainage List A of Pennsylvania Code, Title 25, Chapter 93, SS 93.9h, the designated/protected uses and fisheries classification for Streams S-M30 and S-M33 are classified as High Quality-Cold Water Fishery (HQ-CWF) streams while Stream S8r is classified as Drains to HQ-CWF. All three (3) streams are also classified as Migratory Fishes (MF) streams. The Pennsylvania Fish and Boat Commission (PAFBC) designates Stream S-M30 as a Class A Trout Stream and a TNR stream and Streams S-M33 and Stream S8r as Drains to ATW. Activities within these streams are jurisdictional by the USACE and are considered activities in the waters of the U.S.

S2.C PNDI T&E plant and animal species or State T&E Species or Species of Special Concern Agency Coordination and Search Receipts

For this permit modification, a request was submitted to the Pennsylvania Natural Diversity Index on January 28, 2019 (PNDI-675711) regarding the potential of species of concern of unique habitat within the proposed reroute corridor. Based on the results of this search, the thick-leaved meadow-rue and Indiana Bat were identified as threatened and endangered (T&E) or species of

concern possibly located within the area of the proposed reroute: thick-leaved meadow-rue is listed as PA endangered, and the Indiana bat as State and Federally endangered.

As both T&E species were previously identified for the original Project route, SPLP has previously coordinated with the PADCNR and USFWS regarding these two species. Specifically, SPLP conducted a botanical survey of PADCNR identified areas of concern (up to/within 300 feet of the original proposed LOD) for thick-leaved meadow-rue between April 28, 2014 to September 16, 2015. Results of the 2015 botanical surveys identified no individual plants or suitable habitat for the species in the Project area. A courtesy copy of the negative results was sent to the PADCNR on November 4, 2015 and was included as part of the PPP Chapter 105 Joint Permit Application. The applicable excerpts from the survey are included herein as Appendix S2A-3. Nonetheless, in accordance with the latest PNDI results, SPLP will coordinate with PADCNR regarding the presence/absence of this species and/or suitable habitat for the proposed Piney Creek Reroute.

The latest PNDI review indicates that the USFWS recommends implementation of tree clearing avoidance measures (restricted between April 1 and November 14) and the USFWS Forest Management Guidelines for Indiana Bat Swarming/Summer Habitat when conducting tree harvesting for the Piney Creek Reroute. In accordance with these recommended measures, SPLP intends to conduct tree clearing between November 15 and March 31 as discussed in its *Myotis* Conservation Plan previously submitted as part of SPLP's original PPP Chapter 105 Joint Permit Application.

No other T&E plant and animal species, or State T&E Species, or Species of Special Concern were identified. However, as noted above, SPLP is aware of the timing window restriction associated with the designated trout streams (i.e., 10/1 through 12/31 for TNR and 3/1 through 6/15 for ATW) and will comply with timing window restrictions/limitations during construction and will work with the appropriate agencies to avoid and minimize potential impacts to trout/spawning/migrating fish. Again, SPLP will provide PADEP with future agency coordination/responses as they become available.

Please refer to *Attachment G* of this permit modification request packet for the updated PNDI request and agency submittal.

S2.D Resource Classification Information; Level 2 Rapid Condition Assessment Results, Resource Function, Riparian properties and any other relevant studies.

This permit modification request is for a change in route and installation method of the 16-inch diameter pipeline from an HDD to conventional open trench, and auger bore under Piney Creek Road/ High Street (State Route 866). Due to the proposed reroute and aquatic resources that would be directly or in directly impacted by the proposed reroute, a brief description of the streams and associated floodways are presented below for this permit modification request. Note, no wetlands will be affected by this permit modification request.

Piney Creek and the two other UNTs to Piney Creek are located within the physiographic province of the Ridge and Valley Appalachian Mountain section. The surrounding land uses are agricultural, and include open fields/pasture, rural housing and roads, and Piney Creek Road/High Street (State Route 866). There are existing trees or shrubs in the riparian buffer (refer to *Attachment B* of this permit modification for current photographs of the stream crossings).

Two (2) of the three (3) streams (S-M30 and S-M33) are identified as perennial streams. These streams provide potential habitat for seasonal spawning of game and non-game fish species.

These streams also have the potential to be used for resting by a variety of birds and mammals. However, wildlife is likely to utilize more remote and secluded areas that offer more protection/cover for resting. As these streams are perennial, these streams support a continuous flow of water with moderate rates of flushing and residence times. Stream S8r is an ephemeral stream and does not support a continuous flow of water. Stream S8r supports similar habitat as Streams S-M30 and S-M33, except for providing a year-round water source.

Although all three (3) streams are either classified as PAFBC Class A Trout/TNR stream or Drains to ATW streams, seasonal migration of trout during spawning would likely be limited to stream Streams S-M30 and S-M33 based on their perennial flow characteristics. Similarly, even though all three (3) streams are also designated HQ-CWF or drains to HQ-CWF, and MF streams, the potential for anadromous fish migration to occur is likely limited to Streams S-M30 and S-M33. Regardless, SPLP is aware of the timing window restriction associated with these streams (i.e., 10/1 through 12/31 for TNR and 3/1 to 6/15 for ATW) and will work with the appropriate agencies to avoid/minimize potential impacts to the streams' trout resources and comply with any agency restrictions or limitations. SPLP will provide PADEP with all future agency coordination/responses as they become available.

The streams also provide a food source for invertebrates, birds, reptiles, amphibians, and mammals. Growth of herbaceous plants constitute the food chain base that supports primary consumers such as invertebrates and small mammal herbivores. Secondary and tertiary consumers are supported by the diversity and abundance of prey in the wetland and stream ecosystems. In addition, most of the streams support photosynthetic algae, overhanging woody vegetation, and/or small aquatic vascular plants that support invertebrate herbivores. Such invertebrates are consumed by small reptiles and fish that can inhabit the streams. Both the wetland and streams likely support aquatic insects or amphibians that meet specific prey requirements of birds and mammals with an affinity for stream habitats such as raccoon (*Procyon lotor*). The streams are also likely utilized by a variety of wildlife species as a source of drinking water.

The water quality of the streams is considered good, as evidenced by their HQ-CWF and trout classifications. The area is relatively undeveloped with agricultural areas surrounding most of the streams. The stream designations offer high quality recreational and sport fishing opportunities; however, these opportunities may be limited due to property access issues (i.e., private property).

Module S3: Identification and Description of Potential Project Impacts

S3.A Impact Summary

Table S3.A-1 Summary of Project Impacts
Permit Modification Request for the Piney Creek Reroute
Open Cut Crossing Method

Resource Category	Corps 404		PADEP/105	
	Temporary (ft^2)	Permanent (ft^2)	Temporary (ft^2)	Permanent (ft^2)
Streams (S-M30, S-M33, S8r)	2,144	N/A	54	2,090
Floodway (S-M33, S8r)	N/A	N/A	5,542	12,496

S3B. Standard Information Responses

The requested permit modification for the Piney Creek Reroute will not impact any resources identified in Module S2, Part A with the exception of some Prime Farmland soils, Bicycle PA Route G, and the Canoe Creek Watershed Important Mammal Area (IMA #16) that are described below. The proposed reroute will also cross the Springfield Branch of the Pennsylvania Railroad, which is located within the Springfield Morrisons Cove Rural Historic District (a National Register of Historic Places (NRHP) eligible district) -- also discussed further below.

The proposed reroute is located near State Game Land 147 (0.23 mile to the west, the Piney Creek Woods Biological Diversity Area (0.19 mile to the south), and Lock Mountain Land Conservation Area #3 (0.03 mile to the west). However, the proposed reroute is not anticipated to result in direct or long-term impacts to the purpose/functions of these areas/habitats as there would be no change in existing land use. Project construction/schedule may overlap with the hunting season near these areas (for the Project reroute near State Game Lands), but SPLP will work to adhere to “no work” schedules prescribed by the Pennsylvania Game Commission to minimize conflicts with hunting activities. Similarly, SPLP will work with private landowners to avoid conflicts with hunting, to the extent possible and for safety reasons.

Prime Farmland

The proposed Piney Creek Reroute would cross a small amount of designated prime farmland soils. Specifically, the reroute would cross approximately 0.15-mile of Prime Farmland including approximately 0.81-acre within the permanent ROW and approximately 0.64-acre in temporary workspace. Therefore, SPLP will take precautions during construction and restoration to protect these unique soils. Potential short-term impacts to prime farmland soils associated with construction of the Project may include increased soil erosion and sedimentation due to the removal of vegetation; compaction of soils caused by construction vehicles and equipment; and, poor revegetation. However, SPLP will prevent and minimize impacts on prime farmland soils. Specifically, SPLP will segregate and conserve topsoil, utilize decompaction if necessary, and compensate landowners for temporary suspension of crop production during the construction period. Because SPLP will restore the Project ROW and most agricultural activities will be allowed to resume following installation of the 16-inch pipeline, the Project would not have long-term impacts on Prime Farmland soils.

Bicycle PA Route G

Similar to the original proposed route, the proposed Piney Creek Reroute would cross Bicycle PA Route G; however, no aquatic resources were identified on this bicycle trail. As previously noted, Project impacts to this trail would be short term and limited to the time needed for construction of the proposed reroute. The bike route is associated with State Route 866 and will be bored under; therefore, there will be no interruption to the use of this trail during Project construction. Operation of the Project will not impact the long-term use of this recreational trail.

Canoe Creek Watershed IMA

The proposed Piney Creek Reroute would also cross the Canoe Creek Watershed IMA, which is reported to support a core population of several bat species including the Indiana bat, Little brown bat (*Myotis lucifugus)*, and the silver-haired bat (*Myotis Lasionycteris noctivagans)*, as well as the Allegheny Woodrat (*Neotoma magister*). Based on previous agency coordination for the original Project ROW through this area and on the latest PNDI review for the proposed Piney Creek Reroute, the species of concern in this IMA are likely limited to the Indiana bat. Therefore, as discussed above, SPLP will implement its *Myotis* Conservation Plan which was submitted as part of SPLP's original PPP Chapter 105 Joint Permit Application. As discussed therein, as standard practice to avoid impacts to this bat species, SPLP will conduct tree clearing between November 15 and March 31 within the identified Indiana bat habitat area. With implementation of this avoidance measure and conservation plan, SPLP will avoid take of Indiana bat species and the proposed reroute is not likely to adversely affect the Indiana bat species within the Canoe Creek Watershed IMA

Springfield Morrisons Cove Rural Historic District - Springfield Branch of the Pennsylvania Railroad

Based on cultural and archaeological surveys conducted between December 13 and 16, 2018, no cultural or archaeological resources were identified along the proposed pipeline reroute. A historic survey of the propose reroute shows that the 16-inch pipeline would cross the Springfield Branch of the Pennsylvania Railroad which is not listed in the NRHP but is located within the Northern Morrisons Cove Rural Historic District, a NRHP-eligible district. Tracks are no longer present along the now defunct line, and only some former railroad grade remains. No other historic resources associated with the railroad are present in the Project vicinity. Furthermore, SPLP will restore the railroad bed to pre-construction conditions, including existing elevation, grades and contours. Please see Negative Survey Form (ER# 2013-1862-042) submitted to the Pennsylvania State Historic Preservation Office (SHPO) – Pennsylvania Historical and Museum Commission (PHMC) on January 30, 2019 (refer to *Attachment F*).

S3.C Subfacility Details

Information related to the proposed water obstruction, encroachment activities, and temporary/permanent impacts associated with the requested permit modification to open cut Piney Creek and associated streams was provided in the original PPP Chapter 105 Joint Permit Application (E07-459. APS 879354) and is summarized within this Environmental Assessment, as well as the other attachments comprising this permit modification packet.

S3.D Direct and Indirect Impacts

As discussed above, direct and indirect impacts for the overall Project were presented in Attachment 11, Enclosure E (Part 2) of the original PPP Chapter 105 Joint Permit Application (E07-459. APS 879354). Excerpts from the submittal relevant to the Piney Creek Reroute and this permit modification request are presented below.

The open cut (open trench) crossing of Streams S-M30, S-M33, and S8r (including floodways) will result in approximately 2,090 ft^2 (0.05 acre) of permanent and 54 ft^2 (0.001 acre) temporary impacts, and approximately 12,496 ft^2 (0.29 acre) of permanent and 5,542 ft^2 (0.13 acre) of temporary floodway impacts. As defined by PADEP, permanent impacts include direct and indirect impacts resulting from the placement or construction of the pipeline and impacts to those areas necessary for the operation and maintenance of the pipeline. Temporary impacts include areas affected during the construction of the Project that will be restored when construction is completed. All physical/ecological impacts are considered minor and temporary as the streams would be restored to their original condition (i.e., elevation, flow, stream substrate, hydrologic conditions, etc.). In addition, the Project would not involve any permanent fill and there would be no permanent loss of streams associated with the Project.

Impacts to the streams would occur as a result of in-stream construction activities and would result in a temporary localized increase in turbidity levels and downstream sediment deposition. Sediments that become suspended during the short period of in-stream disturbance (i.e., installation of the dam and pump) are expected to settle out of the water column relatively quickly.

Temporary impacts would occur to aquatic life in the streams at or downstream from the construction site (pipe crossing), including potential degradation of benthic habitat due to direct disturbance to the bottom substrate in the trench zone, and associated disturbances to aquatic vegetation and invertebrates with the construction ROW. Indirect impacts from sedimentation may affect areas downstream, but generally conditions would be expected to resolve relatively quickly (e.g., dry crossing methods involving in-stream excavation would have a limited effect on downstream sedimentation for a period of 1 to 3 days).

Indirect, long-term impacts to fish spawning/migration could occur if substantial changes to Streams S-M30 and S-M33 (as these are perennial streams) substrate or current patterns result from Project construction. However substantial changes to stream substrate and current patterns are not anticipated because the native stream substrate will be replaced, and stream bed and banks will be restored as closely as possible to the original contours following construction. Furthermore, SPLP is aware of the timing window restriction associated with these streams (i.e., 10/1 through 12/31 for TNR streams and 3/1 to 6/15 for ATW) and will work with the appropriate agencies to avoid/minimize potential impacts to the streams' trout resources and comply with any agency restrictions or limitations. No impacts to fish spawning/migration are anticipated during Project operations.

Project construction will result in the clearing of areas located 100-150 feet landward of HQ streams (i.e., riparian buffer area), but the impacts have been minimized to the maximum extent practicable while allowing safe installation of the pipeline. In addition, riparian buffers and stream banks will be revegetated (seeded/planted) following construction as soon as practicable to facilitate vegetative growth along the stream channel in accordance with the included E&S Plan (*Attachment D* of this permit modification packet). For more information please refer to

Attachment 11, Enclosure E (Part 4) Impact Avoidance, Minimization and Mitigation Procedures of PPP's Chapter 105 Joint Permit Application.

In addition to the above, no fill, aboveground facilities or alteration of surface elevations/contours are proposed within the streams' floodways as they will be restored to pre-construction conditions. As such, the Project would not result in long-term impacts to the associated floodways.

Construction of the proposed Project is not expected to affect the flushing characteristics of the streams. SPLP has sited the ROW such that the stream crossings are generally perpendicular and thereby of minimal impact. In addition, the Project will not alter the volume of water or flow rates that the streams typically/naturally experience. Furthermore, the stream channels will be restored to pre-construction contours, thereby restoring pre-existing flushing characteristics and patterns within the streams crossed. Similarly, operation of the Project would not have any impact on natural drainage patterns.

Construction of the proposed Project is not expected to affect groundwater discharge that may be important for supporting stream baseflow or hydrology. Trench plugs will be installed in the trench at the entry and exit of all streams crossed to prevent draining of streams along the trench line. In addition, there are no groundwater control features or interceptor structures incorporated into the Project design. Topographic contours and drainage patterns will be restored following construction of the Project and impacts to groundwater discharge are not anticipated.

As there are no proposed aboveground facilities associated with this permit modification request, construction will not negatively impact the ability of the streams to either store or control storm and flood waters.

SPLP has designed the Project to avoid and minimize impacts to stream resources to the greatest extent possible. SPLP will conduct all activities in accordance with the Chapter 102 Permit requirements and will implement erosion and sediment control best management practices (BMPs) and ABACT measures, as necessary. Thus, this requested permit modification will not cause long-term degradation of water quality, alter flow volumes, or change the direction of flow.

S3.E Antidegradation Analysis

An Antidegradation Analysis was prepared for the overall Project and submitted as part of the PPP Chapter 105 Joint Permit Application (E07-459. APS 879354) in Attachment 11, Enclosure E (Part 5). The Antidegradation Analysis was prepared in accordance with 25 Pa. Code § 105.14(b)(11). Specifically, SPLP's Joint Permit Application for a Pennsylvania Water Obstruction and Encroachment Permit Application and U.S. Army Corps of Engineers (USACE) Section 404 Permit Application for the Project needed to ensure consistency with State antidegradation requirements contained in Chapters 93, 95 and 102 (relating to water quality standards; wastewater treatment requirements; and erosion and sediment control) and the Clean Water Act (CWA) (33 U.S.C.A. § § 1251—1376).

PADEP has implemented an Antidegradation Program to promote the maintenance and protection of existing water quality for High Quality (HQ) and Exceptional Value (EV) waters, and the protection of existing uses for all surface waters (PADEP 2003). Piney Creek (S-M30) and both UNTs to Piney Creek are classified as HQ-CWF streams/Drains to HQ-CWF streams, MF streams, Class A Trout/TNR and/or ATW streams. Therefore, the antidegradation requirements applicable to this permit modification include protection of existing instream water uses (93.4a(b)) and the level of water quality (93.4a(c)) of HQ streams.

- **Section 93.4a(b)** states that "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." In order to reduce water use impacts, SPLP has reduced the construction right-of-way (ROW) to 50 feet across Streams S-M30, S-M33 and S8r; limited the land disturbance to the excavated trench line, and temporary minor grading of the stream banks at the travel lane crossing, as required; limited the time/duration of in-stream construction (typically less than 2 days); designed the crossings such that the pipeline will be 5 feet under the streams, as compared to the PADEP 3 foot depth requirement; and, implemented erosion and sediment control measures for all land disturbances in accordance with PADEP's Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project's ESCGP Permit applications. With the proper implementation and maintenance of these protective measures, construction-related Project impacts to water quality such as increased turbidity related to sedimentation and in-stream construction will be minor, temporary, and localized and will not adversely impact or degrade the water resources. Specifically, the water quality and designated/existing uses of streams S-L6, S-L7, and the floodways of S-Q69 and S-Q70 will be maintained and protected post-construction.

- **93.4a(c): Protection for High Quality Waters** states that **"**The water quality of High Quality Waters shall be maintained and protected". The proposed Project will protect and maintain the existing/designated stream uses and water quality of the HQ streams crossed by this requested permit modification. Specifically, SPLP has reduced the construction right-of-way (ROW) to 50 feet across the streams; limited the land disturbance to the excavated trench line and minor grading of the stream banks at the travel lane crossing, as required; limited the time/duration of in-stream construction; implemented the HDD crossing method for the 20-inch pipe and will implement a dry construction method for the 16-inch crossing; designed the crossings such that the pipeline will be 5 feet under and the streams, as compared to PADEP's 3 foot depth requirement; and, will implement erosion and sediment control measures for all land disturbances in accordance with PADEP's Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project's ESCGP Permit applications.

  In addition, SPLP has incorporated ABACT BMPs into their E&S Plan to further reduce potential erosion and sediment impacts to the HQ stream crossings. Specifically, standard and ABACT BMPs that SPLP will implement to control/manage erosion and sedimentation within the Project area include:

  - Use of wash racks at rock construction entrances;
  - Placement of compost filter socks on the downgradient side of the filter bags and/or dewatering structure;
  - Application of erosion control blanket within 100 feet of receiving waters and on slopes 3:1 (H:V) or steeper;
  - Installation of compost filter socks at slope breaker outlets to provide additional filtration prior to discharge to surface waters;
  - Installation of berms and trenches to promote infiltration and manage flow rate;

- Implementation of the PPC Plan; and,
- Application of permanent seeding for site restoration.

As previously stated, Project impacts to streams, including the HQ resources, will be minor, temporary, and localized. As further demonstrated above, Project implementation of the requested crossing method, PADEP-approved ABACT BMPs identified above, and the revised 102 drawings (*Attachment D* of this permit modification request packet) will ensure the maintenance and protection of the overall water quality of the HQ streams by reducing/controlling turbidity associated with sedimentation and in-stream construction activities.

Chapter 93.4c(a)(2) requires the protection of endangered or threatened species if PADEP has confirmed the presence, critical habitat, or critical dependence of endangered or threatened Federal or Pennsylvania species in or on a surface water. Accordingly, SPLP has coordinated and will continue to coordinate with Federal and State agencies to identify and ensure protection of any endangered and threatened species and/or their critical habitat, or dependence on the surface waters crossed by this requested permit modification. Please refer to Module 2, S2.C of this Environmental Assessment and *Attachment G* of this permit modification request packet for additional information related to the protection of endangered/threatened species (i.e., thick-leaved meadow-rue and Indiana bat) associated with the requested open cut dry crossing of Streams S-M30, S-M33, and S8r and associated floodways.

Chapter 93.6 states that a project will not introduce/discharge any substance “in concentrations or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant, or aquatic life,” including actions that could produce turbidity. The requested permit modification will result in minor, temporary, and localized impacts to surface waters of the Commonwealth primarily associated with increased turbidity during construction activities. The requested permit modification does not involve any permanent structures/facilities that will discharge any treated or created industrial wastewater, nor will it alter the existing natural conditions (chemical, biological, or physical) of the water resources crossed by the Project. In addition, the Project does not involve the addition or discharge of any toxic (Section 93.8a) or harmful substances into the waters of the Commonwealth. All water resources will be restored to their pre-existing conditions following Project construction such that their designated/existing water uses are not impacted by the Project. Accordingly, the proposed Project does not have the potential to alter the water quality such that the existing water uses or aquatic life of the HQ and EV resources will be affected.

Please refer to the table below (red text indicates updates) and the complete *Antidegradation Analysis* for additional details/information.

Resource	HQ/EV	Cover Type Conversion	Antidegradation Requirement		ABACT Measure	Justification	Erosion & Sediment Sheet No.
			Non-Discharge	ABACT			
S-M33	HQ	Yes		X	Compost filter socks, immediate stabilization, PPC plan, RCE with Wash Rack & Erosion Control Blanket	Procedural BMPs such as immediate stabilization and the PPC plan are implemented for areas requiring ABACT and throughout the project. Compost filter sock, rock construction entrances with wash racks, and erosion control blanket for 100' from the top of stream bank are all approved ABACT measures to manage the potential for an increase in stormwater discharge during construction. The combination of these technologies ensures that when implemented properly the stormwater discharge will be a non-degrading discharge.	ES-3.57
S8r	HQ	Yes		X	Compost filter socks, immediate stabilization, PPC plan, RCE with Wash Rack& Erosion Control Blanket	Procedural BMPs such as immediate stabilization and the PPC plan are implemented for areas requiring ABACT and throughout the project. Compost filter sock, rock construction entrances with wash racks, and erosion control blanket for 100' from the top of stream bank are all approved ABACT measures to manage the potential for an increase in stormwater discharge during construction. The combination of these technologies ensures that when implemented properly the stormwater discharge will be a non-degrading discharge.	ES-3.57
S-M30	HQ	Yes		X	Compost filter socks, immediate stabilization, PPC plan, RCE with Wash Rack & Erosion Control Blanket	Procedural BMPs such as immediate stabilization and the PPC plan are implemented for areas requiring ABACT and throughout the project. Compost filter sock, rock construction entrances with wash racks, and erosion control blanket for 100' from the top of stream bank are all approved ABACT measures to manage the potential for an increase in stormwater discharge during construction. The combination of these technologies ensures that when implemented properly the stormwater discharge will be a non-degrading discharge.	ES-3.57-RR

S3.F Alternatives Analysis

An Alternatives Analysis was prepared and submitted as part of the PPP Chapter 105 Joint Permit Application (E07-459) in Attachment 11, Enclosure E (Part 3). For this permit modification request, an Alternatives Analysis specific to the Piney Creek Reroute has been prepared.

Please refer to *Attachment A* of this permit modification request packet for the updated Project Description and Alternatives Analysis for the Piney Creek Reroute.

S3.G Potential Secondary Impact Evaluation

A Resource ID and Project Impacts Report was prepared and submitted as part of the PPP Chapter 105 Joint Permit Application (E07-459) in Attachment 11, Enclosure E (Part 2). Potential secondary impacts to streams and the aquatic habitat, water quantity, and water quality resulting from the Project were discussed in Section 4.1 of the report. Excerpts applicable to the proposed permit modification for Streams S-M30, S-M33 and S8r are presented below.

Potential secondary impacts to stream habitats could result from the Project including short-term release of sediments into waterways and vegetation clearing, that could result in the temporary displacement of wildlife to adjacent areas. These short-term impacts adjacent to and downgradient of the LOD could temporarily alter substrate and make it less suitable for spawning and foraging, and may create temporary turbidity that could alter the feeding habits of local wildlife. In addition, the clearing of vegetation reduces the shelter and buffer capacity to adjacent habitats and creates new edge habitat when located through greenfield areas. SPLP has mitigated for these potential secondary impacts by minimizing/reducing the area of disturbance and clearing, and minimizing the duration of construction activities in stream and wetland areas, implementing the E&S BMPs (Attachment D) and appropriate ABACT measures, and restoring the disturbed areas with vegetation to avoid impacts off the ROW.

Potential secondary impacts on adjacent stream/aquatic habitat functions could result from the short-term release of turbid waters and vegetation clearing, resulting in the temporary displacement of wildlife that use adjacent areas for spawning, foraging, nesting, rearing, and resting. However, the potential secondary impacts from the release of turbid waters, at most, will be negligible in nature given the short duration of in-stream construction, the intermittent flow characteristics of the streams, and through implementation of temporary and permanent E&S controls (refer to Attachment D of this permit modification packet). As noted above, the streams are buffered by riparian areas which would be revegetated. Restoration of these areas with native plant species will minimize potential secondary impacts to adjacent habitat from the establishment of invasive or exotic vegetation.

Potential secondary impacts on water quantity or the hydrology of streams could result from changes in natural/current drainage patterns and alteration in flow and water levels from construction. However, the Project does not involve any stream relocations, enclosures, channel deepening/dredging activities, and addition of structures or impervious surfaces in the wetland/stream complex. Given that the Project does not involve direct impacts to natural and current drainage patterns, the Project will likewise not result in secondary impacts to natural and current drainage patterns. Temporary dam and flow bypass methods will be used to maintain a continuous downstream flow during construction.

Potential secondary impacts to stream water quality beyond the Project's limit of disturbance could result from: release of sediments/turbid waters from trenching, dewatering, clearing and

grading of adjacent land and stream banks, and post-construction stream bank subsidence; and, release of pollutants from construction equipment or activities adjacent to waters. However, in accordance with the Chapter 102 E&S requirements, trench dewatering will be monitored and directed into appropriate receiving structures located in well-vegetated uplands to allow for filtration. Released water will naturally infiltrate to prevent secondary impacts to water quality of streams outside the ROW. Potential secondary impacts from stream bank subsidence will be avoided by leaving roots/stumps in place, except for over the trench, and by stabilizing/revegetating stream banks as soon as possible after construction. Post-construction monitoring will ensure that successful restoration occurs, or necessary corrective actions are implemented to result in successful restoration, thereby avoiding potential secondary impacts from stream bank subsidence/subsequent downstream erosion and sedimentation. Additionally, aerial and ground inspections during Project operation will identify stream bank subsidence and soil erosion issues which will be rectified by repairs or installation of temporary erosion control devices until permanent erosion control measures become effective.

Potential secondary impacts to adjacent resources will be avoided and minimized to the extent possible such that there is no loss of aquatic habitat, water quantity, or water quality.

S3.H Potential Cumulative Impacts

A Cumulative Impact Analysis (CIA) was prepared for the overall Project and submitted as part of the PPP Chapter 105 Joint Permit Application (E07-459) in Attachment 11, Enclosure E (Part 6). The CIA addresses the cumulative impact for the entire Project and other potential or existing SPLP and other oil and gas projects within the Cumulative Impact Assessment Area (CIAA) of the Project.

Since there are no wetland impacts related to this permit modification request, the cumulative impacts to streams (including floodways) associated with the open cut crossing methodology proposed for the Piney Creek Reroute would be limited to the aggregate impacts of the Project (and other potential or existing SPLP projects, and other evaluated projects within the CIAA) on waterbodies. As reported in the CIA, implementation of the Project, including the addition of 208 linear feet associated with open cutting of the streams, and other potential or existing SPLP projects and other projects evaluated within the CIAA will result in a cumulative waterbody disturbance of approximately 65,783 linear feet. These disturbances will result in no loss of waters. As documented in the CIA, with the implementation of each potential or existing project in compliance with best management practices and permit conditions, all of the disturbances to streams are (existing projects) or are anticipated to be (potential projects) minor and temporary; therefore, no more than minimal and temporary individual and cumulative adverse environmental effects are anticipated.

Module S4: Mitigation Plan

S4.A Avoidance, Minimization and Unavoidable Impacts

The crossing of Streams S-M30, S-M33, S84 (as well as floodways) is unavoidable due to the linear nature of the proposed PPP Project and as described above in S1.B – Water Dependency. SPLP originally proposed an HDD installation of both the 20" and 16" pipe to avoid direct impacts to Piney Creek and Piney Creek Road/High Street (State Route 866). However, as described in the Project Description (Attachment A of this permit modification request), During the pilot hole drilling phase on the permitted Piney Creek HDD for the 20-inch pipeline installation through this area, there were multiple inadvertent returns (IRs) in which drilling mud/fluid entered Waters of the Commonwealth, including Piney Creek and S-M33. In an attempt to address these incidents, SPLP received approval from the Pennsylvania Department of Environmental Protection (PADEP) to implement a Direct Pipe construction method. This method failed, however, and after receiving approval from PADEP, the 20-inch pipeline crossing was completed using the HDD method. During completion, the Piney Creek HDD continued to experience losses of circulation and IRs. Therefore, SPLP has elected to install the 16-inch pipeline through this area using an alternate route and method of installation that minimizes impacts to Waters of the Commonwealth.

SPLP evaluated an open cut of the existing permitted right-of-way and determined this would impact an EV wetland. Subsequently, they considered a Direct Pipe construction method through the area but determined that this could fail based on the previous attempts with the 20-inch pipeline.

SPLP evaluated other routes around the area but are limited due to the roads and residential properties to the south of the existing SPLP easement. In addition, a route to the south would likely impact more forested areas, possibly wetlands, and require a "greenfield", or new, right-of-way through these areas resulting in more permanent forested impacts. The proposed route to the north avoids all wetlands, minimizes the number of residential and developed areas disturbed during construction, and reduces the amount of forested area crossed. In addition, the route to the north provides an open field for a perpendicular conventional bore under Piney Creek Road / High Street (State Route 866).

In conclusion, given the geologic conditions at the Piney Creek HDD location and numerous IRs that occurred during the 20-inch HDD, the HDD evaluation staff has elected to install the 16-inch pipeline through this area using an alternate route and method of installation. Alternative construction methods including an open cut and/or bore of the resources within the existing permitted right-of-way are not considered desirable due to the EV wetland impacts, and unfeasible alternative construction methods. Therefore, SPLP has elected to abandon installing the 16-inch pipeline within their existing easement and has identified an alternate route north of the currently proposed right-of-way. Analysis of other potential routes to the south would result in potentially more environmental (forested area and wetlands), residential, and developed (roads) impacts. Consequently, the professional opinion of the HDD Reevaluation Team, consisting of the Geotechnical Evaluation Leader, Professional Geologists, Professional Engineers, and other construction specialists is that an open cut with a dam and pump bypass in place for each stream crossing will have the least impact, as the work area and stream flow will be managed in accordance with all permit conditions (dam and pump) and can completed in the most efficient and timely manner, including restoration/stabilization of all the streams.

As demonstrated within SPLP's Chapter 105 Joint Permit Application (JPA), SPLP has avoided and minimized potential impacts to waters from the Project. In so doing, there is no practicable alternative to each of the crossings that would have less effect on each waterbody, and not have other significant adverse effects on the environment, taking into consideration construction costs, existing technology, safety, and logistics. Those remaining unavoidable impacts are outlined within the resource impact tables located within the Impact Avoidance, Minimization, and Mitigation Procedures provided in Attachment 11, Enclosure E, Part 4 of the PPP Chapter 105 Joint Permit Application (E07-459) and *Attachment E* of this permit modification request.

S4.B Repair, Rehab, and Restoration Actions/Proposed Preservation and Maintenance Operations

SPLP will construct the stream crossings in accordance with the Chapter 102 Permit requirements and will implement erosion and sediment control best management practices (BMPs) as required and presented throughout this permit modification request, during all construction and restoration activities. Please refer to *Attachment D* of this permit modification request packet for the updated E&S and Restoration plans specific to the requested open cut (open-trench) dry crossing of Streams S-M30, S-M33 and S8r, and the floodways of Streams S-M33 and S8r.

In addition, SPLP will implement all protective and/or preventative requirements required by the agencies with regard to wild trout resources and species of concern. Please refer to *Attachment G* of this permit modification request packet for the PNDI Update and Agency Coordination specific to the crossing of Streams S-M30, S-M33, and S8r, as well as the floodways of Streams S-M33 and S8r.

S4.C Compensatory Mitigation

This permit modification request for a construction methodology change to an open cut (open-trench) dry crossing at the Piney Creek Reroute would result in minor, short-term, and temporary impacts. No permanent fill or stream relocations would occur. The streams would be restored to their original conditions and there will be no loss of resource function; therefore, compensatory mitigation is not required or offered.

S4.D Project Monitoring Plan

Utility Inspection Program & Environmental Compliance Program

All aspects of construction, operation, and maintenance of the PPP Project are supervised by SPLP personnel. Utility or "Craft" inspectors working on behalf of SPLP are staffed throughout all phases of construction to ensure the facilities are constructed and installed in accordance with SPLP, state, local, and federal specifications and standards.

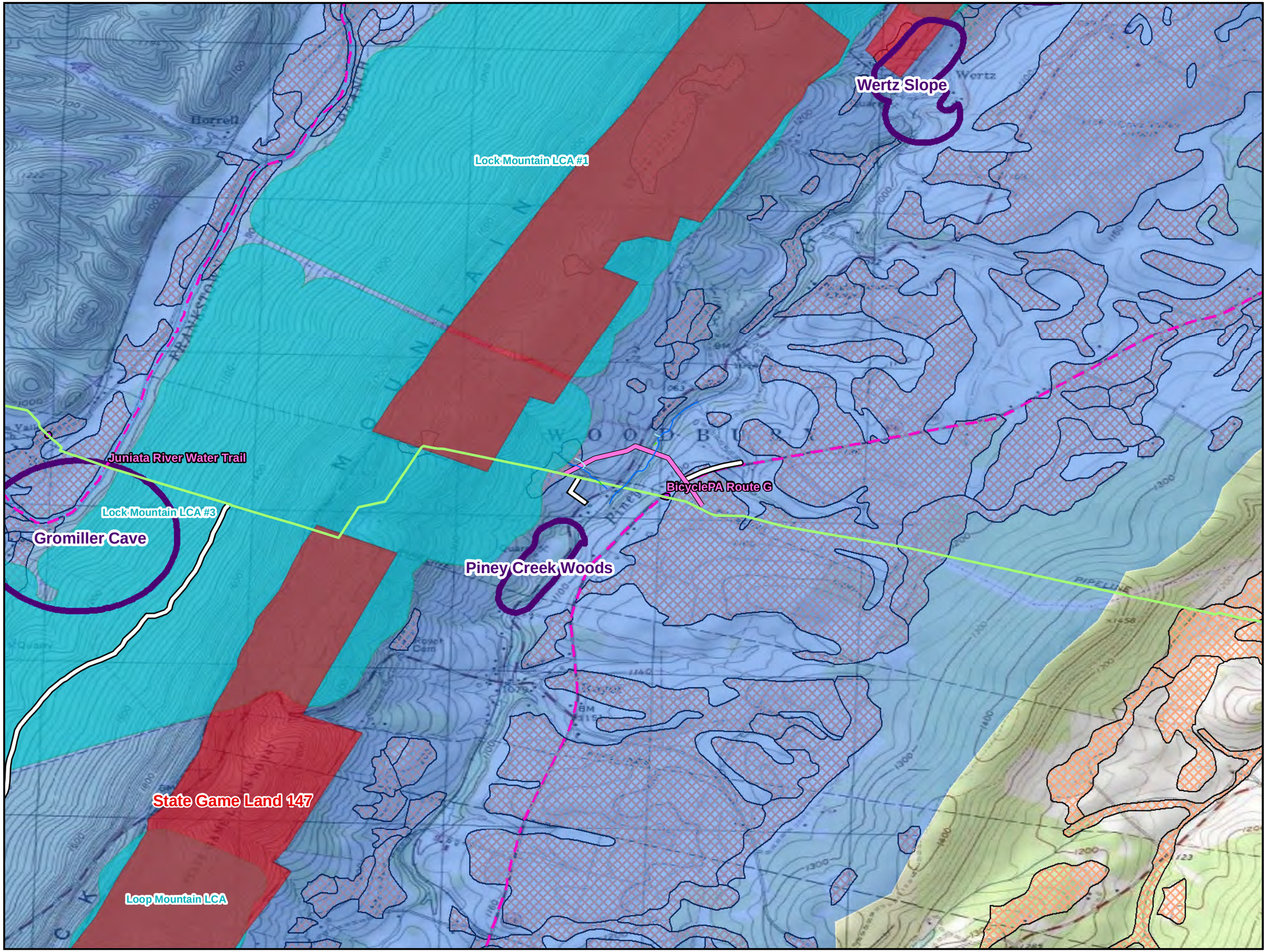
Supplemental to their Utility Inspection Program, SPLP has implemented a comprehensive Environmental Compliance Program (ECP). The ECP encompasses highly integrated and essential program elements designed to ensure compliance with the requirements of the E&S Plan, permit conditions, and approved mitigation measures and conditions. The primary elements of the ECP are environmental training; environmental inspection; biological and cultural resource monitoring/training; and, agency and Project team notification and documentation requirements. Each of these elements is incorporated into the single integrated ECP organization structure and execution plan.

Post-Construction Monitoring

Streams S-M30, S-M33 and S8r, as well as the floodways of S-M33 and S8r will be temporarily impacted and restored to original grade, stabilized, and vegetated in accordance with the E&S Plan (refer to *Attachment D* of this permit modification request packet). Post-construction, the streams will be monitored in accordance with the Project's Impact Avoidance, Minimization, and Mitigation Procedures provided in Attachment 11, Section E, Part 4 of the PPP Chapter 105 Joint Permit Application (E07-459. APS 879354) as well as all applicable permits and clearances, including any specific requirements/reporting associated with species of concern (i.e., thick-leaved meadow-rue and Indiana bat).

Appendix S2.A-1

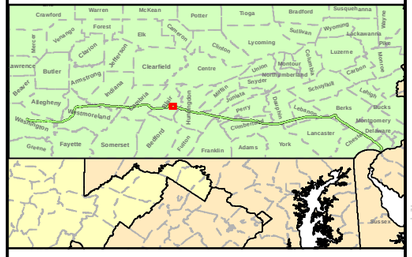
Location Map



Legend

- Recently Installed PPP 20-inch Pipeline Corridor
- Proposed PPP 16-inch Pipeline Piney Creek Reroute
- Permanent Access
- Temporary Access
- PEM Wetland
- Ephemeral Stream
- Perennial Stream
- Wildlife Management
- State Gamelands
- Trails
- USDA Soils-Prime Farmlands
- Landscape Conservation
- Canoe Creek Important Mammal Area

Sheet Location



0 1,000 2,000

1 inch = 2,000 feet

Pennsylvania Pipeline Project:
Environmental Assessment
Enclosure B - Resource Identification
Sheet 1 of 2

Prepared By: TETRA TECH

Prepared for: Sunoco Logistics

Base Map; ESRI ArcGIS Online

Coordinate System: NAD 83 UTM 17N

Date: 01/2019

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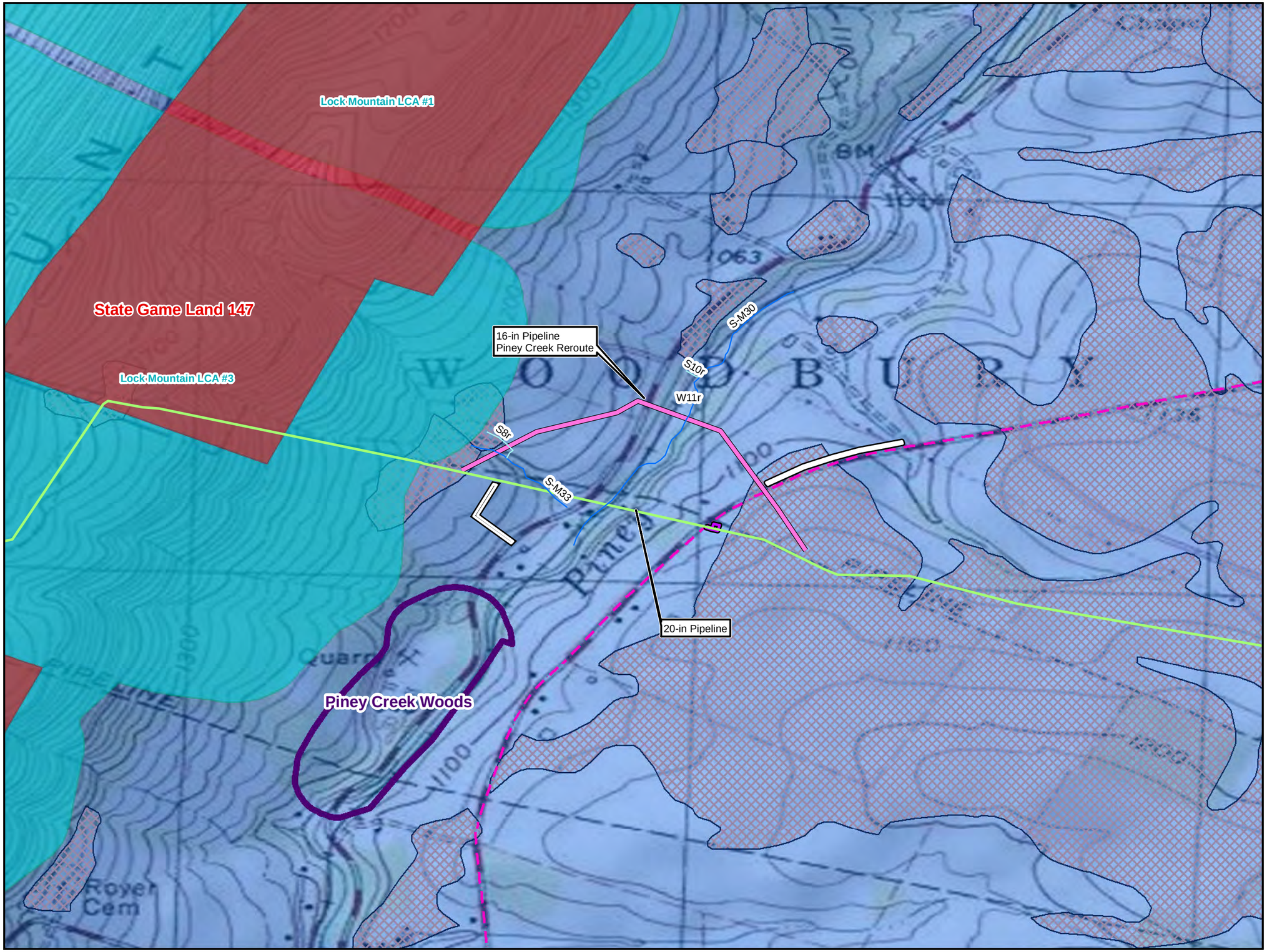

Legend

- Recently Installed PPP 20-inch Pipeline Corridor
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- Wildlife Management
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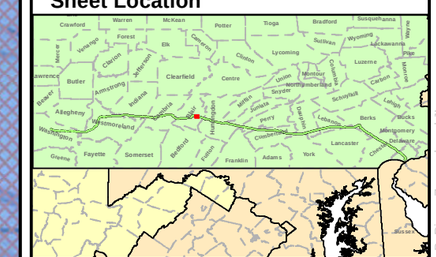
- Trails
- USDA Soils-Prime Farmlands
- Landscape Conservation
- Canoe Creek Important Mammal Area

Sheet Location



0 800 1,600

1 inch = 800 feet

Pennsylvania Pipeline Project:
Environmental Assessment
Enclosure B - Resource Identification
Sheet 2 of 2

Prepared By: TETRA TECH

Prepared for: Sunoco Logistics

Base Map; ESRI ArcGIS Online

Coordinate System: NAD 83 UTM 17N

Date: 01/2019

P:\GIS\projects\112\C05958-PPP\MXD\Permits\Permit\Mods\PPP_EnvironmentAssessmentEnclosB_Piney_Zoomed.mxd JL

Appendix S2.A-2

Excerpts from the Aquatic Resources Report (August 2015) &

Supplemental Aquatic Resources Report (January 2019)

Aquatic Resource Report for the Pennsylvania Pipeline Project, Southcentral Region, Blair County, Pennsylvania

Prepared By:

Tetra Tech, Inc. For
Sunoco Pipeline, LP
525 Fritztown Road
Sinking Spring, PA

NOTE: This Aquatic Resources Report excerpts information relevant to the major permit modification for the Piney Creek Reroute and previously submitted information by Sunoco Pipeline, LP as part of the approved PPP Chapter 105 Joint Permit (E07-459. APS 879354)

August 2015

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B WETLAND PHOTOGRAPHS
C STREAM DATA SHEETS
D STREAM PHOTOGRAPHS
E HYDRIC SOILS LIST
F RESUMES

ACRONYMS

1987 Manual	Corps of Engineers Wetland Delineation Manual
Corps Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region
CWF	Cold Water Fishes
EV	Exceptional Value Waters
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographic Information Systems
GPS	Global Positioning System
HQ-CWF	High Quality Cold Water Fishes
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
PEM	Palustrine Emergent
PFO	Palustrine Forested
Project	Southcentral Part 1 Region, Pennsylvania Pipeline Project
PSS	Palustrine Scrub Shrub
ROW	Right-of-Way
SF	Square Feet
SPLP	Sunoco Pipeline, LP
TSF	Trout Stocking Fishes
UNT	Unnamed Tributary
UPL	Upland
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWF	Warm Water Fishes

1.0 INTRODUCTION

This Aquatic Resource Report for Blair County, located within the South Central Region of the Pennsylvania Pipeline Project (Project), has been prepared by Tetra Tech, Inc. on behalf of Sunoco Pipeline, LP (SPLP). Wetland areas were delineated on site using methodology enumerated in the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory, 1987) (1987 Manual), as amended by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, April 2012 (Corps Regional Supplement).

The subject of this report is a wetland delineation and stream identification field investigation for a proposed natural gas pipeline right-of-way (ROW), associated access roads, and workspaces located across southern Pennsylvania.

The Project study area drains to Piney Creek and its unnamed tributaries (UNT) and Clover Creek and its UNTs which are listed as High Quality Cold Water Fishes (HQ-CWF), as designated in Chapter 93 of Title 25 of the PA Code. The study area drains to Blair Run and its UNTs and UNTs of Poplar Run which are all listed as Cold Water Fished (CWF), as designated in Chapter 93 of Title 25 of the PA Code. The study area drains to Dry Run and its UNTs, UNTs to Beaverdam Branch, to the Frankstown Branch of the Juniata River and its UNTs, Oldtown Run and its UNTs, and UNTs to Robinson Run which are listed as Warm Water Fished (WWF), as designated in Chapter 93 of Title 25 of the PA Code. Additionally, the study area drains to UNTs to Blair Gap Run which is listed as Trout Stocking (TSF), as designated in Chapter 93 of Title 25 of the PA Code.

The content of this report presents the methodology, results, and conclusions of wetland delineation and stream identification activities completed for the proposed Project.

2.0 METHODOLOGY

USACE requires the use of the procedures enumerated in the *1987 Manual* (Environmental Laboratory, 1987) and the *Corps Regional Supplement* (Environmental Laboratory, 2012) for making jurisdictional determinations. According to the *1987 Manual*, an area is defined as a wetland if, under normal circumstances, it meets all three of the following criteria:

1. Predominance of hydrophytic vegetation (plants which are adapted for life in saturated soil conditions);
2. Hydric soils (soils which were formed under water, or in saturated conditions); and
3. Wetland hydrology (or the presence of inundated or saturated soils at some time during the growing season).

Wetlands identified in the field were classified in accordance with the U.S. Fish and Wildlife Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Wetland classifications are as follows: palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Dominant vegetation was identified and classified according to The National Wetland Plant List: 2014 Update of Wetland Ratings (Lichvar, 2014). Plant classifications are as follows:

Obligate (OBL) - essentially always found in wetlands; estimated probability >99%

Facultative Wetland (FACW) - usually found in wetlands; estimated probability 67%-99%

Facultative (FAC) - equally likely to occur in wetlands and non-wetlands;
estimated probability 34%-66%

Facultative Upland (FACU) - usually occurs in non-wetlands; estimated probability 1%-33%

Upland (UPL) - essentially always found in non-wetlands; estimated probability >99%

The field investigations for the proposed pipeline Project were performed during numerous field visits from November 2013 through July 2015. The study area was preliminarily limited to a 200-foot wide corridor along a proposed center line. Once the proposed pipeline ROW, access roads, and workspaces were finalized any additional areas that extended beyond the preliminary study area were investigated for potential wetlands and streams. The final study area is illustrated on the project mapping. Preliminary site reconnaissance of the study area was conducted through a

review of available Geographic Information Systems (GIS) resources. Existing information reviewed included the following:

- USGS topographic mapping (Figures 1-1 to 1-4)
- Natural Resources Conservation Service (NRCS) National Cooperative Soil Survey (Figure 2-1 to 2-4)
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapping (Figure 3-1 to 3-4)

The delineation consisted of establishment of the wetland/upland margin with flagging hung at intervals that accurately depicted the outline of the boundary. The individual flags were then located using a Global Positioning System (GPS) receiver and later added to the project area mapping. Wetland flagging was limited to the bounds of the investigated study area and wetlands are shown as closed or partially closed systems on the detail map (Figure 4-1 to 4-51).

Data concerning soils, hydrology, and vegetation were collected and recorded on USACE Wetland Determination Data Forms at wetlands and upland point locations associated with wetlands, which are provided in Appendix A. Photographs depicting wetland topography and vegetation are included in Appendix B. Stream data sheets detailing stream characteristics are provided in Appendix C. Appendix D contains photographs of streams located within the study area. Appendix E provides a list of hydric soils known to occur within the counties of the study area. Resumes of project personnel are included in Appendix F.

3.0 RESULTS

The field investigations identified 71 areas within Blair County, located within the proposed Southcentral Region of the Pennsylvania Pipeline Project study area that met the wetland criteria outlined in the 1987 Manual, as amended by the Corps Regional Supplement. Additionally, 72 streams were identified within the Project study area. A narrative summary of field data collected for these systems is presented below. The detail maps provided as Figures 4-1 to 4-51 illustrate the wetland and watercourse locations in relation to the study area.

3.1 WETLAND IDENTIFICATION AND DELINEATION

Hydric soils and soils with hydric components are often associated with wetlands. A review of the NRCS Soil Survey and hydric soil list (Appendix E) indicated that there are 34 soils mapped within the study area classified as hydric or containing hydric components. These soils can be found in Table 2, Mapped Hydric Soils in Study Area. The NRCS soil survey maps are included as Figures 2-1 to 2-4. Confirmation of the soil mapping units was not performed during this site evaluation.

No NWI mapped wetlands and corresponding field delineated wetlands were found for the Project study area.

Based on field evidence and best professional judgment, it was determined that 71 wetlands are present within the study area. The areas demonstrated the presence of all three wetland parameters required by the 1987 Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species or had a prevalence index ≤ 3, the soils exhibits hydric characteristics, and the areas contains wetland hydrology indicators.

USACE wetland determination data forms that detail the existing vegetation, soil characteristics, and hydrology were prepared for each wetland and its associated upland point (Appendix A).

Wetland L70

Wetland L70 (W-L70) is a 10,972-square foot (SF) palustrine forested (PFO) wetland (Figure 4-1). Indicators of wetland hydrology include surface water, a high water table, saturation within the upper 12 inches of the soil profile, water-stained leaves, drainage patterns, moss trim lines, stunted or stressed plants, geomorphic position, and microtopographic relief. Dominant vegetation consists of red maple (*Acer rubrum*), black tupelo (*Nyssa sylvatica*), striped maple (*Acer pensylvanicm*), interrupted fern (*Osmunda claytoniana*), and rough-stalk blue grass (*Poa trivialis*). The soil between 0 and 3 inches exhibits a low-chroma matrix (7.5YR 3/1) with a gravelly silty loam texture.

Wetland L35

Wetland L35 (W-L35) is a 3,435-SF PEM wetland (Figure 4-46). Indicators of wetland hydrology include surface water table, a high water table, saturation within the upper 12 inches of the soil profile, oxidized rhizospheres on living roots, and geomorphic position. Dominant vegetation consists of black walnut (*Juglans nigra*), spotted touch-me-not (*Impatiens capensis*), reed canary grass (*Phalaris arundinacea*), and pinkweed (*Persicaria pensylvanica*). The soil between 0 and 5 inches exhibits a low-chroma matrix (2Y 3/2) with a silt loam texture that contains redoximorphic features (10YR 5/6). The soil between 5 and 15 inches exhibits a gleyed matrix (Gley 1 5/N) with a clay loam texture that contains redoximorphic features (10YR 5/8).

Wetland M23

Wetland M23 (W-M23) is a 4,083-SF PEM wetland (Figure 4-46). Indicators of wetland hydrology include a high water table, saturation within the upper 12 inches of the soil profile, a positive FAC-neutral test, and geomorphic position. Dominant vegetation consists of common buttonbush (*Cephalanthus occidentalis*), slippery elm (*Ulmus rubra*), reed canary grass (*Phalaris arundinacea*), and spotted touch-me-not (*Impatiens capensis*). The soil between 0 and 10 inches exhibits a low-chroma matrix (10YR 3/2) with a loamy sand texture that contains redoximorphic features (10YR 5/8).

3.2 STREAM IDENTIFICATION AND EVALUATION

Based on field evidence and best professional judgment, it was determined that 72 streams were identified within the evaluated study area. A data sheet that details the bank and channel characteristics, substrate composition, aquatic habitat, and hydrology was prepared for each of the streams (Appendix C).

Stream L94

Stream L94 (S-L94) is an intermittent tributary to Blair Gap Run (Figure 4-1). The stream bank is approximately 8 feet in width. The bank height is 5 inches. The stream bed contains a boulder, cobble, gravel, and silt substrate. At the time of the field investigation, the stream exhibited an average water depth of 3 inches.

Stream L96

Stream L96 (S-L96) is Blair Run, a perennial tributary to Blair Gap Run (Figure 4-2). The stream bank is approximately 15 feet in width. The bank height is 1.5 feet. The stream bed contains a

Stream M33

Stream M33 (S-M33) is a perennial tributary to Piney Creek (Figure 4-41). The stream bank is approximately 10 feet in width. The bank height is 1.5 feet. The stream bed contains a cobble, gravel, sand, and silt substrate. At the time of the field investigation the stream exhibited an average water depth of 4 inches.

Stream M30

Stream M30 (S-M31) is Piney Creek, a perennial tributary to Frankstown Branch Juniata River (Figure 4-40). The stream bank is approximately 30 feet in width. The bank height is 4 feet. The stream bed contains a boulder, cobble, gravel, sand, and silt substrate. At the time of the field investigation the stream exhibited an average water depth of 2.5 feet.

Stream L58

Stream L58 (S-L58) is Clover Creek, a perennial tributary to Frankstown Branch Juniata River (Figure 4-46). The stream bank is approximately 20 feet in width. The bank height is 3 feet. The stream bed contains a boulder, cobble, gravel, sand, and silt substrate. At the time of the field investigation, the stream exhibited an average water depth of 1.5 feet.

4.0 CONCLUSIONS

During the field investigations in Blair County, located within the Southcentral Region of the proposed Pennsylvania Pipeline Project, 71 areas were identified within the evaluated study area which exhibited all three criteria necessary to be classified as a jurisdictional wetland in accordance with the 1987 Manual and the Regional Supplement:

1. Predominance of hydrophytic vegetation (plants which are adapted for life in saturated soil conditions);
2. Hydric soils (soils which were formed under water, or in saturated conditions); and
3. Wetland hydrology (or the presence of inundated or saturated soils at some time during the growing season).

Additionally, 72 streams were identified within the evaluated study area.

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Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Government Printing Office. Washington, D.C. GPO 024-010-00524-6. 103 pp.

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TABLE

Table 1
Wetland and Stream Summary
Pennsylvania Pipeline Project

Water Resource	Dominant Plant Community/Flow Regime	Bank Full Width (ft.)	Water Depth	Channel Depth	Wetland Size (Square Feet)	Wetland Size (Acres)	Associated Water Resource
Wetlands							
W-L70	PFO	-	-	-	10972	0.25	S-L94
W-L71	PEM	-	-	-	432	0.01	S-L98
W-L61	PEM	-	-	-	91375	2.10	S-L88, S-L87, S-L84
W-M57	PEM	-	-	-	9134	0.21	S-M80
W-Q52	PEM	-	-	-	10621	0.24	S-M80
W-M56	PEM	-	-	-	1400	0.03	S-M79, S-M78
W-M55	PEM	-	-	-	35058	0.80	N/A
W-BB120	PEM	-	-	-	2328	0.05	N/A
W-BB120	PSS	-	-	-	3222	0.07	N/A
W-BB121	PSS	-	-	-	1663	0.04	N/A
W-M50	PEM	-	-	-	355	0.01	N/A
W-M79	PFO	-	-	-	52107	1.20	N/A
W-M49	PEM	-	-	-	118640	2.72	S-M69
W-M49	PFO	-	-	-	85569	1.96	S-M69
W-M49	PSS	-	-	-	21768	0.50	S-M69
W-BB48	PEM	-	-	-	1165	0.03	N/A
W-Q54	PEM	-	-	-	907	0.02	N/A
W-Q55	PSS	-	-	-	4075	0.09	N/A
W-Q56	PEM	-	-	-	1685	0.04	N/A
W-Q57	PFO	-	-	-	1373	0.03	S-BB49
W-BB61	PSS	-	-	-	944	0.02	S-BB49
W-BB60	PEM	-	-	-	26443	0.61	S-BB49
W-BB59	PEM	-	-	-	1114	0.03	N/A
W-BB58	PEM	-	-	-	28092	0.64	N/A
W-BB58	PSS	-	-	-	7337	0.17	N/A
W-BB159	PEM	-	-	-	702	0.02	N/A
W-BB57	PEM	-	-	-	3503	0.08	N/A
W-L59	PEM	-	-	-	1729	0.04	N/A
W-BB56	PSS	-	-	-	3356	0.08	N/A
W-BB56	PEM	-	-	-	585	0.01	N/A
W-BB52	PEM	-	-	-	15283	0.35	S-BB45
W-BB50	PEM	-	-	-	17636	0.40	S-BB44
W-BB50	PSS	-	-	-	22392	0.51	S-BB44
W-BB51	PEM	-	-	-	35725	0.82	S-BB44
W-Q58	PEM	-	-	-	737	0.02	N/A
W-M35	PFO	-	-	-	51604	1.18	S-Q60

* = See Data Sheet for Channel Depth
' = feet
" = inches
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

Table 1
Wetland and Stream Summary
Pennsylvania Pipeline Project

Water Resource	Dominant Plant Community/Flow Regime	Bank Full Width (ft.)	Water Depth	Channel Depth	Wetland Size (Square Feet)	Wetland Size (Acres)	Associated Water Resource
W-L43	PFO	-	-	-	39678	0.91	N/A
W-L43	PSS	-	-	-	2254	0.05	N/A
W-L42	PEM	-	-	-	3809	0.09	N/A
W-L41	PFO	-	-	-	2467	0.06	S-L66
W-L40	PEM	-	-	-	4800	0.11	S-L66
W-M24	PEM (1)	-	-	-	48230	1.11	S-M32
W-M24	PEM (2)	-	-	-	48230	1.11	S-M32
W-M25	PEM	-	-	-	1992	0.05	S-M32
W-M29	PEM (1)	-	-	-	19434	0.45	S-M38
W-M29	PEM (2)	-	-	-	19434	0.45	S-M38
W-M28	PEM	-	-	-	8714	0.20	S-M38
W-BB105	PEM	-	-	-	185	0.00	S-BB78
W-BB104	PEM	-	-	-	1238	0.03	S-BB76
W-BB103	PSS	-	-	-	1207	0.03	N/A
W-BB103	PEM	-	-	-	1570	0.04	N/A
W-BB101	PEM	-	-	-	677	0.02	S-BB73
W-BB99	PEM	-	-	-	977	0.02	S-BB70, S-BB71
W-BB98	PSS	-	-	-	339	0.01	N/A
W-BB98	PEM	-	-	-	242	0.01	N/A
W-BB96	PEM	-	-	-	3002	0.07	S-BB68
W-BB94	PEM	-	-	-	520	0.01	S-BB68
W-BB95	PEM	-	-	-	161	0.00	N/A
W-M26	PEM	-	-	-	1073	0.02	S-M33
W-M22	PEM	-	-	-	1964	0.05	N/A
W-L35	PEM	-	-	-	3435	0.08	S-L58
W-M23	PEM	-	-	-	4083	0.09	S-L58
Streams							
S-L94	Intermittent	8	3"	5"	-	-	W-L70
S-L96	Perennial	15	1'	1.5'	-	-	S-L97
S-L97	Perennial	5	1"	1"	-	-	S-L96
S-L98	Ephemeral	3	0"	4"	-	-	W-L71
S-L83	Ephemeral	7	0"	3'	-	-	S-Q58
S-Q58	Perennial	4	4"	1'	-	-	S-L83
S-L84	Perennial	3	6"	1.5'	-	-	W-L61
S-Q59	Intermittent	2	2"	1'	-	-	N/A
S-M80	Intermittent	3	3"	6"	-	-	W-M57, W-M58
S-M79	Ephemeral	1	0"	4"	-	-	W-M55

* = See Data Sheet for Channel Depth
' = feet
" = inches
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

Table 1
Wetland and Stream Summary
Pennsylvania Pipeline Project

Water Resource	Dominant Plant Community/Flow Regime	Bank Full Width (ft.)	Water Depth	Channel Depth	Wetland Size (Square Feet)	Wetland Size (Acres)	Associated Water Resource
S-M32	Ephemeral	4	2"	10"	-	-	N/A
S-M31	Perennial	143	5'	3'	-	-	S-M38, S-M39
S-M39	Intermittent	3	1"	8"	-	-	S-M39, W-M29
S-M38	Intermittent	3	2"	3"	-	-	S-M29, W-M28
S-BB78	Perennial	5	2"	1.5'	-	-	W-BB105
S-BB77	Intermittent	4.5	2"	*	-	-	S-BB76
S-BB76	Perennial	3	1.5"	*	-	-	W-BB104, S-BB77
S-BB75	Intermittent	3	1.5"	*	-	-	N/A
S-BB74	Intermittent	6	3.5"	15"	-	-	N/A
S-STV4	Intermittent	1	1"	*	-	-	N/A
S-BB73	Intermittent	3.5	1.5"	*	-	-	S-BB72, W-BB101
S-BB72	Intermittent	6	3"	2.5'	-	-	S-BB73
S-STV3	Intermittent	2.5	6"	1.5'	-	-	N/A
S-BB70	Intermittent	3.5	1"	11"	-	-	W-BB99, S-BB71
S-BB71	Intermittent	2	1"	10"	-	-	W-BB99, S-BB70
S-STV1	Intermittent	2	1"	1'	-	-	N/A
S-BB69	Ephemeral	5	1"	15"	-	-	N/A
S-BB68	Perennial	2.5	3"	*	-	-	S-BB67
S-BB67	Perennial	6	1.5'	2.5'	-	-	S-BB68, W-BB94
S-BB66	Perennial	5	2"	*	-	-	N/A
S-M35	Intermittent	3	2"	4"	-	-	N/A
S-M34	Perennial	7	4"	6"	-	-	N/A
S-M33	Perennial	10	4"	1.5'	-	-	W-M26
S-M30	Perennial	30	2.5'	4'	-	-	N/A
S-L58	Perennial	20	1.5'	3'	-	-	W-L35

* = See Data Sheet for Channel Depth
' = feet
" = inches
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

Table 2
Mapped Hydric Soils in Study Area
Pennsylvania Pipeline Project, Blair County

Map Unit Symbol	Map Unit Name	Component Name and Phase	Component Percent	Landforms
AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
AbC	Albrights gravelly silt loam, 8 to 15 percent slopes	Brinkerton	5	hills
AcB	Albrights very stony silt loam, 3 to 8 percent slopes	Brinkerton	10	hills
AcD	Albrights very stony silt loam, 8 to 25 percent slopes	Brinkerton	10	hills
AoB	Andover variant extremely stony loam, 3 to 8 percent slopes	Andover variant	90	mountain slopes
Ba	Basher soils	Holly	5	flood plains
BdD	Bedington very stony silt loam, 8 to 25 percent slopes	Brinkerton	5	hills
BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	Brinkerton	2	hills
BoB	Blairton silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
BoC	Blairton silt loam, 8 to 15 percent slopes	Brinkerton	5	hills
BrB	Brinkerton silt loam, 3 to 8 percent slopes	Brinkerton	75	depressions
BrB	Brinkerton silt loam, 3 to 8 percent slopes	Atkins	3	flood plains
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	Andover	5	depressions

Table 2
Mapped Hydric Soils in Study Area
Pennsylvania Pipeline Project, Blair County

BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	Seeps and springs	1	depressions
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes	Andover	5	depressions
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes	Seeps and springs	1	depressions
BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	Andover	5	depressions
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Andover	3	depressions
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Springs and seeps	1	depressions
CbB	Clarksburg silt loam, 3 to 8 percent slopes	Thorndale	5	depressions
ErB	Ernest silt loam, 3 to 8 percent slopes	Brinkerton	5	depressions
ErB	Ernest silt loam, 3 to 8 percent slopes	Atkins	2	flood plains
ErC	Ernest silt loam, 8 to 15 percent slopes	Brinkerton	5	depressions
Ho	Holly silt loam	Holly	94	flood plains
Ho	Holly silt loam	Brinkerton	2	depressions
Lo	Linden soils	Holly	2	flood plains
Lp	Lobdell silt loam	Holly	10	flood plains

Table 2
Mapped Hydric Soils in Study Area
Pennsylvania Pipeline Project, Blair County

MoB	Monongahela silt loam, 3 to 8 percent slopes	Holly	3	flood plains
OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Holly	1	flood plains
Pu	Purdy silt loam	Purdy	85	terraces
Qu	Quarries-Dumps complex	Brinkerton, poorly drained areas	2	hills
Ty	Tyler silt loam	Purdy	5	depressions
UD	Udifluvents-Dystrochrepts complex	Brinkerton	2	hills
UD	Udifluvents-Dystrochrepts complex	Holly	2	flood plains

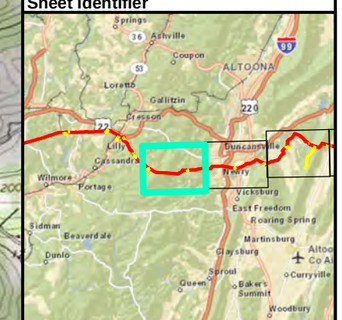
Modified from Hydric Soils of the United States (NRCS 2014)

FIGURES

Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary

Sheet Identifier



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USGS PROJECT LOCATION MAP
FIGURE 1-1
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Cresson, Hollidaysburg

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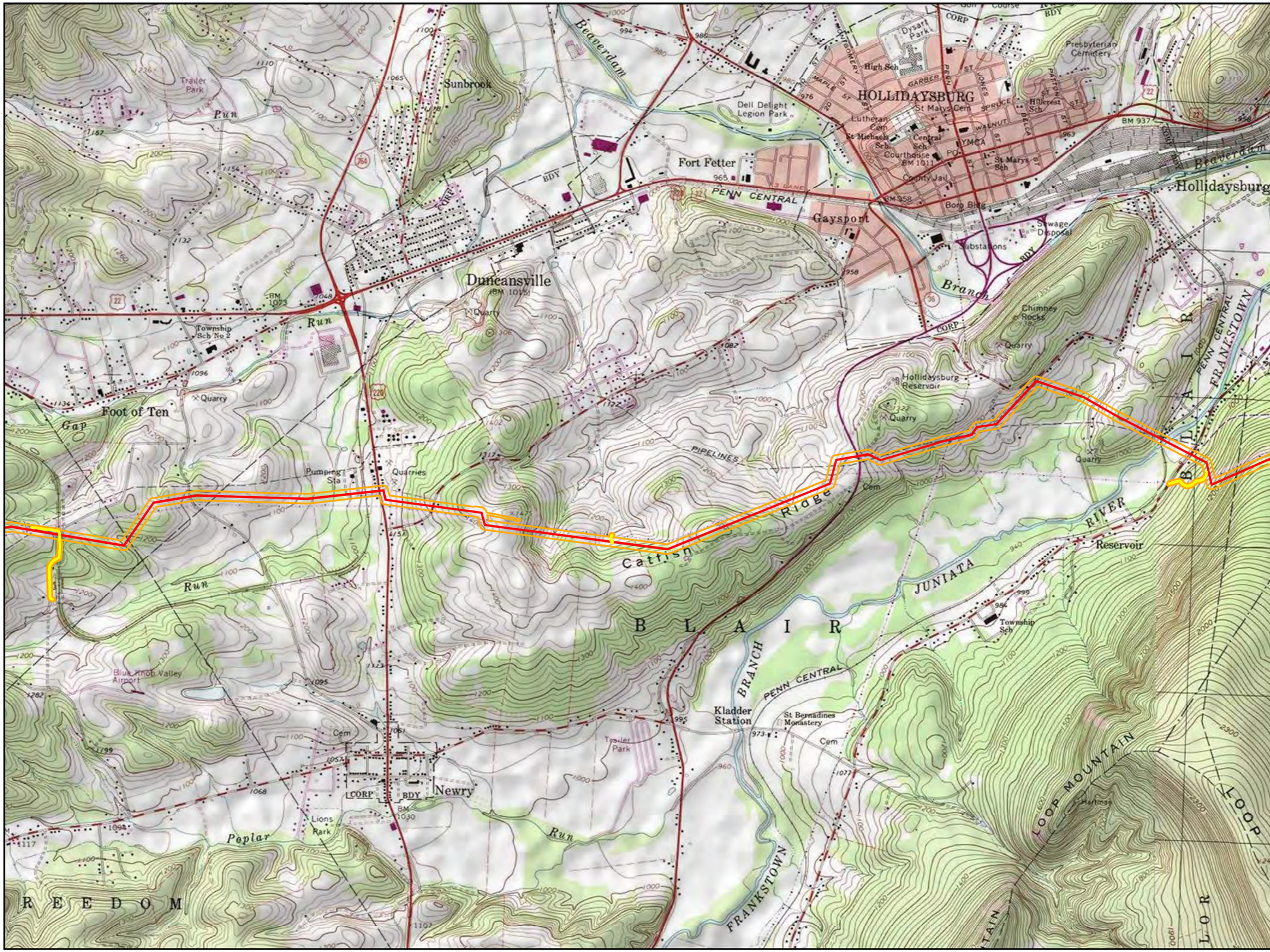

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- Access Road
- Alignment Centerline
- Study Area
- County Boundary

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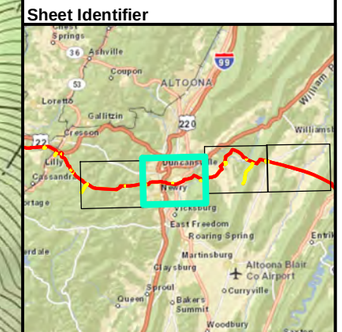

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USGS PROJECT LOCATION MAP
FIGURE 1-2
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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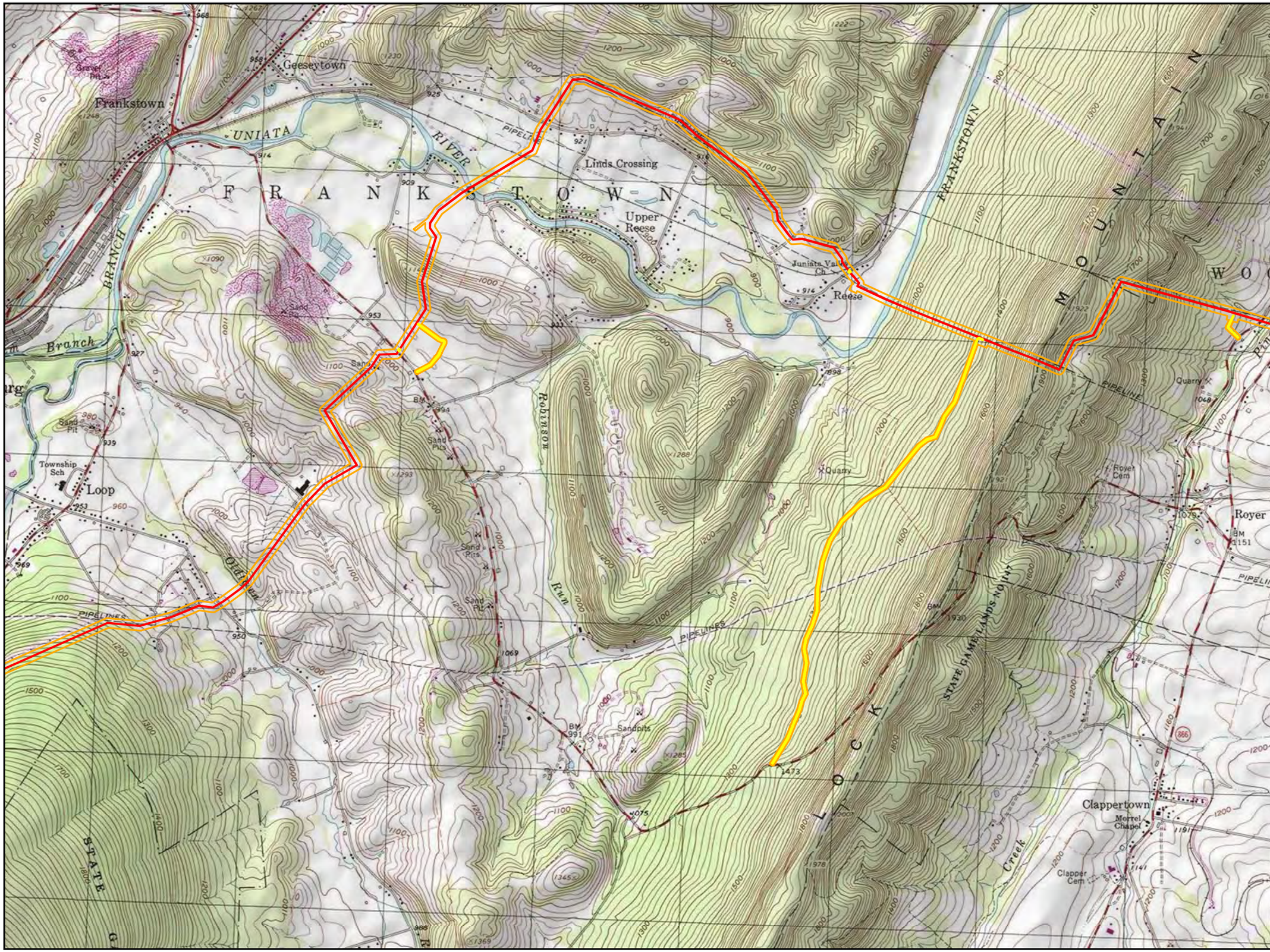
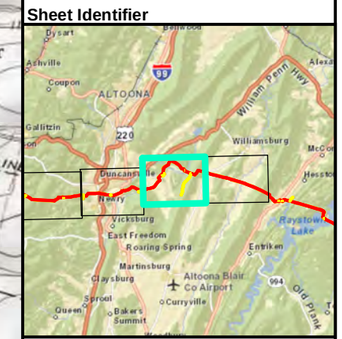


Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary

Sheet Identifier



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USGS PROJECT LOCATION MAP
FIGURE 1-3
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary

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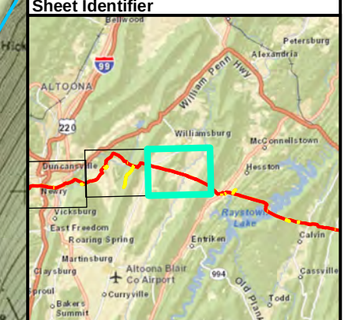

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USGS PROJECT LOCATION MAP
FIGURE 1-4
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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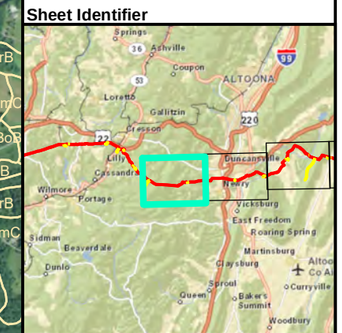
Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NRCS Soils and Codes

Sheet Identifier



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NRCS SOILS MAP
FIGURE 2-1
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NRCS Soils and Codes

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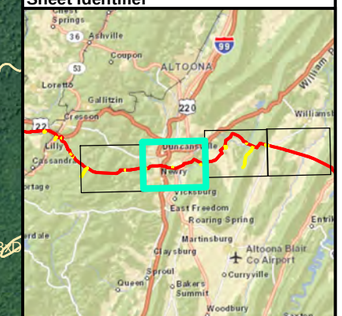

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NRCS SOILS MAP
FIGURE 2-2
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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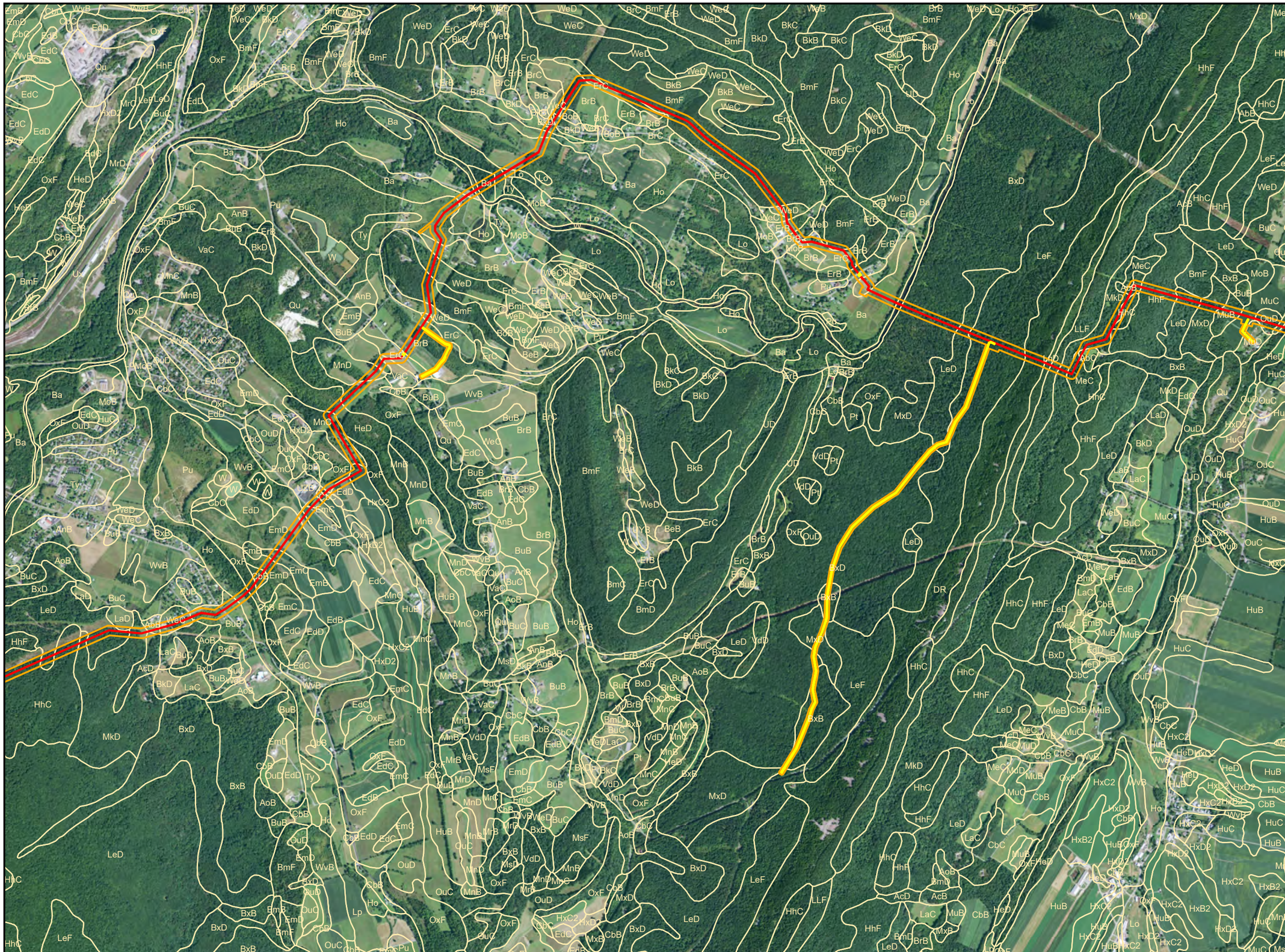

Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NRCS Soils and Codes

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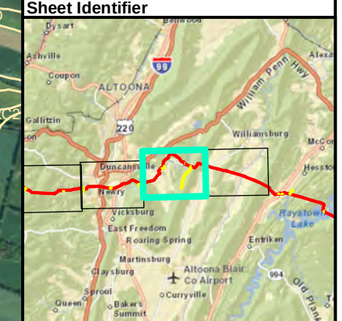

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NRCS SOILS MAP
FIGURE 2-3
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

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Legend

- Access Road
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- Study Area
- County Boundary
- NRCS Soils and Codes

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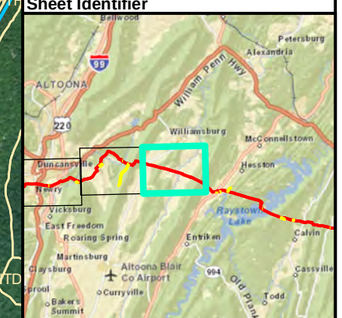

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NRCS SOILS MAP
FIGURE 2-4
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

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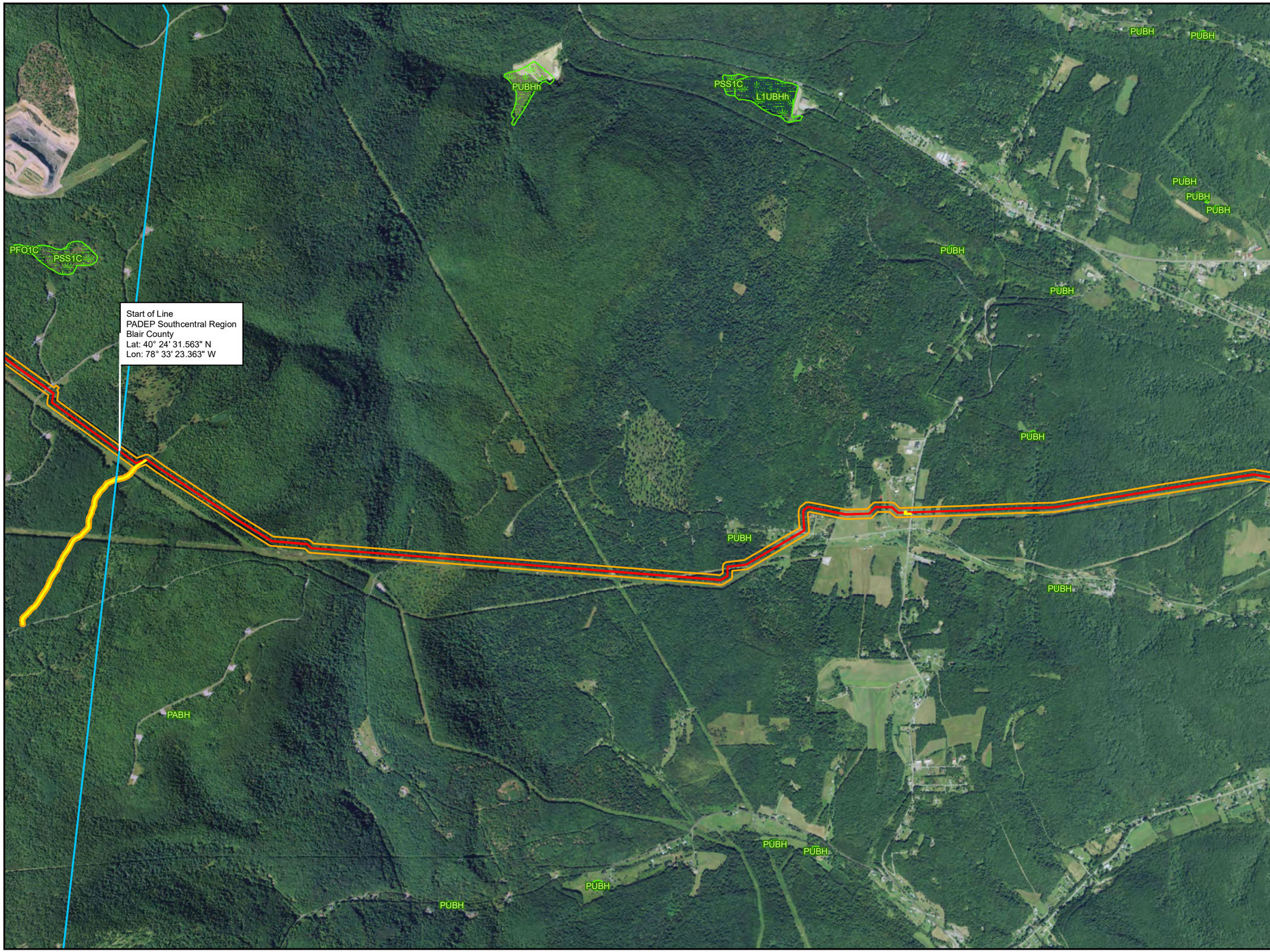
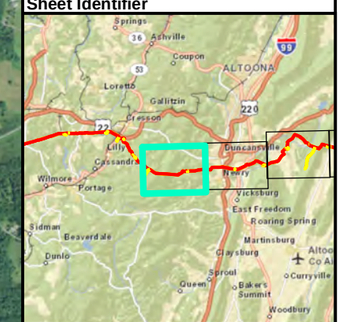


Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NWI Wetlands and Codes

Sheet Identifier



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NWI WETLANDS MAP
FIGURE 3-1
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

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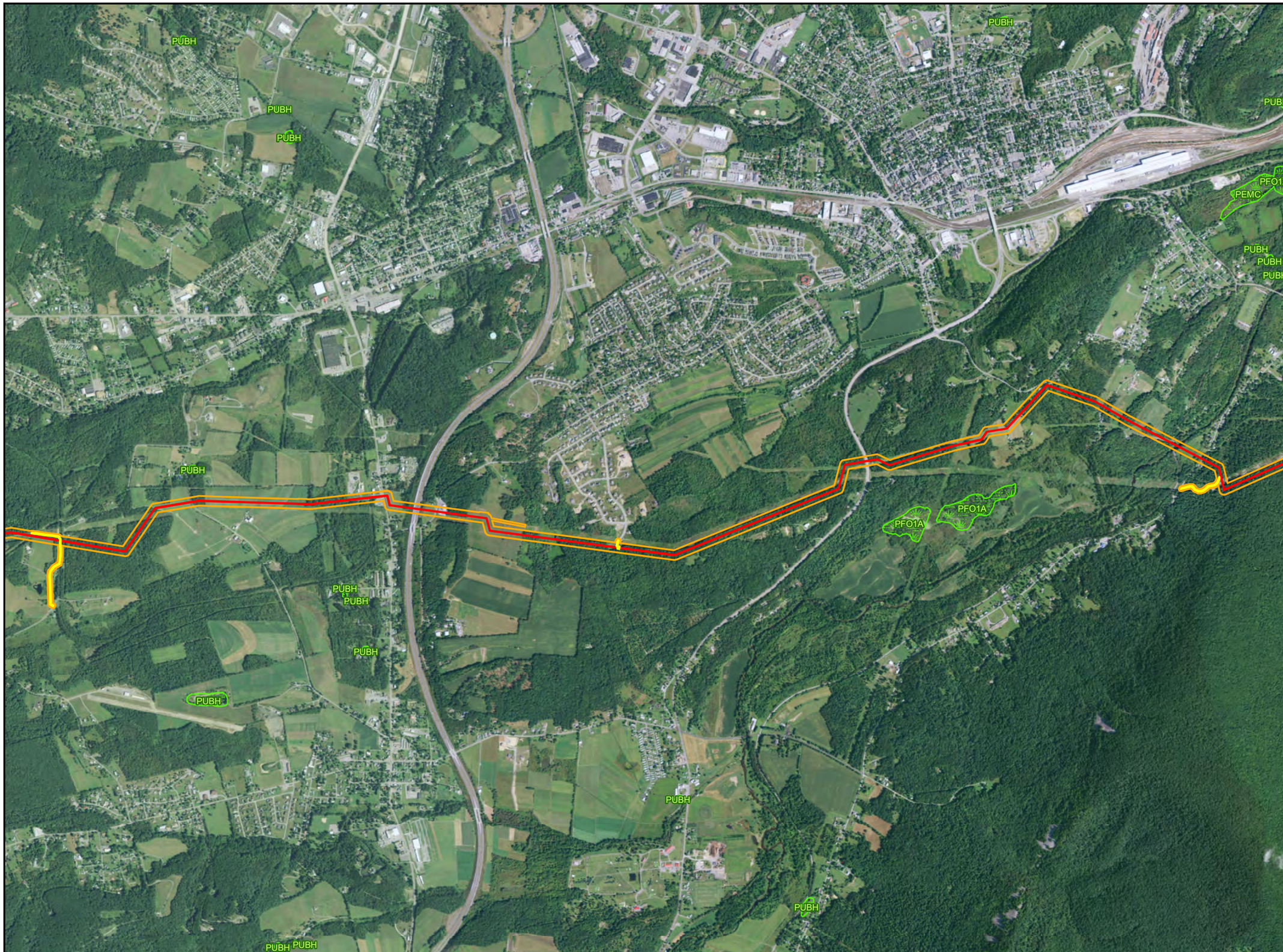

Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NWI Wetlands and Codes

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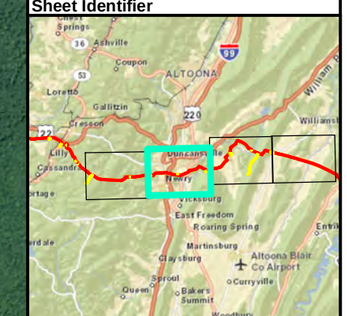

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NWI WETLANDS MAP
FIGURE 3-2
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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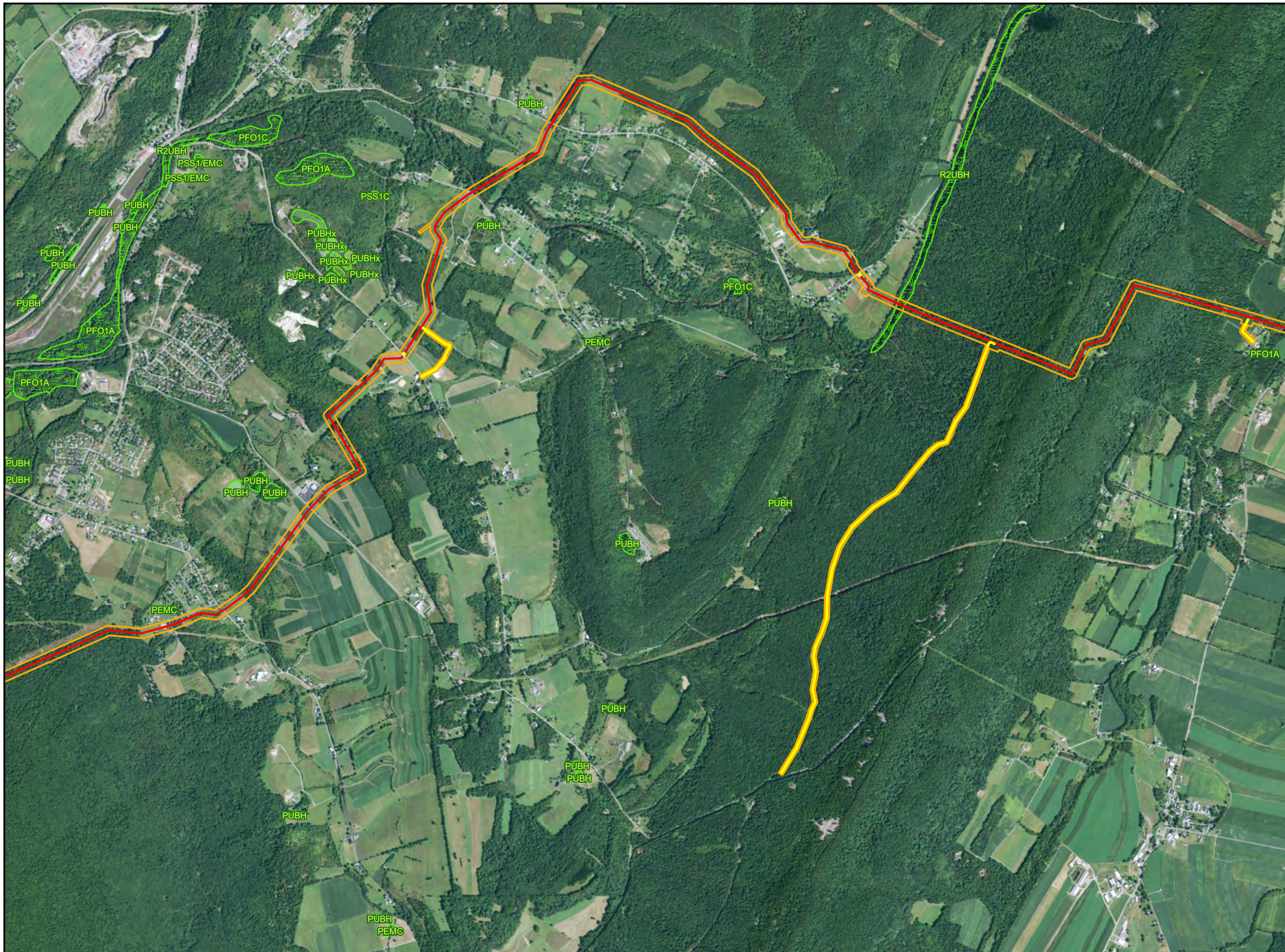
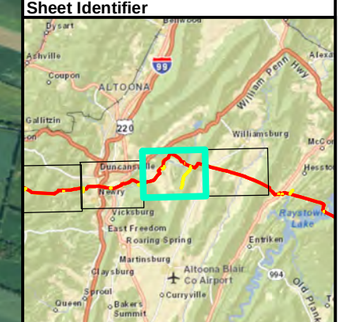


Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NWI Wetlands and Codes

Sheet Identifier



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NWI WETLANDS MAP
FIGURE 3-3
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- NWI Wetlands and Codes

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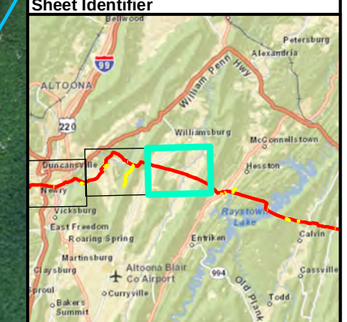

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Meters: 0 300 600

NWI WETLANDS MAP
FIGURE 3-4
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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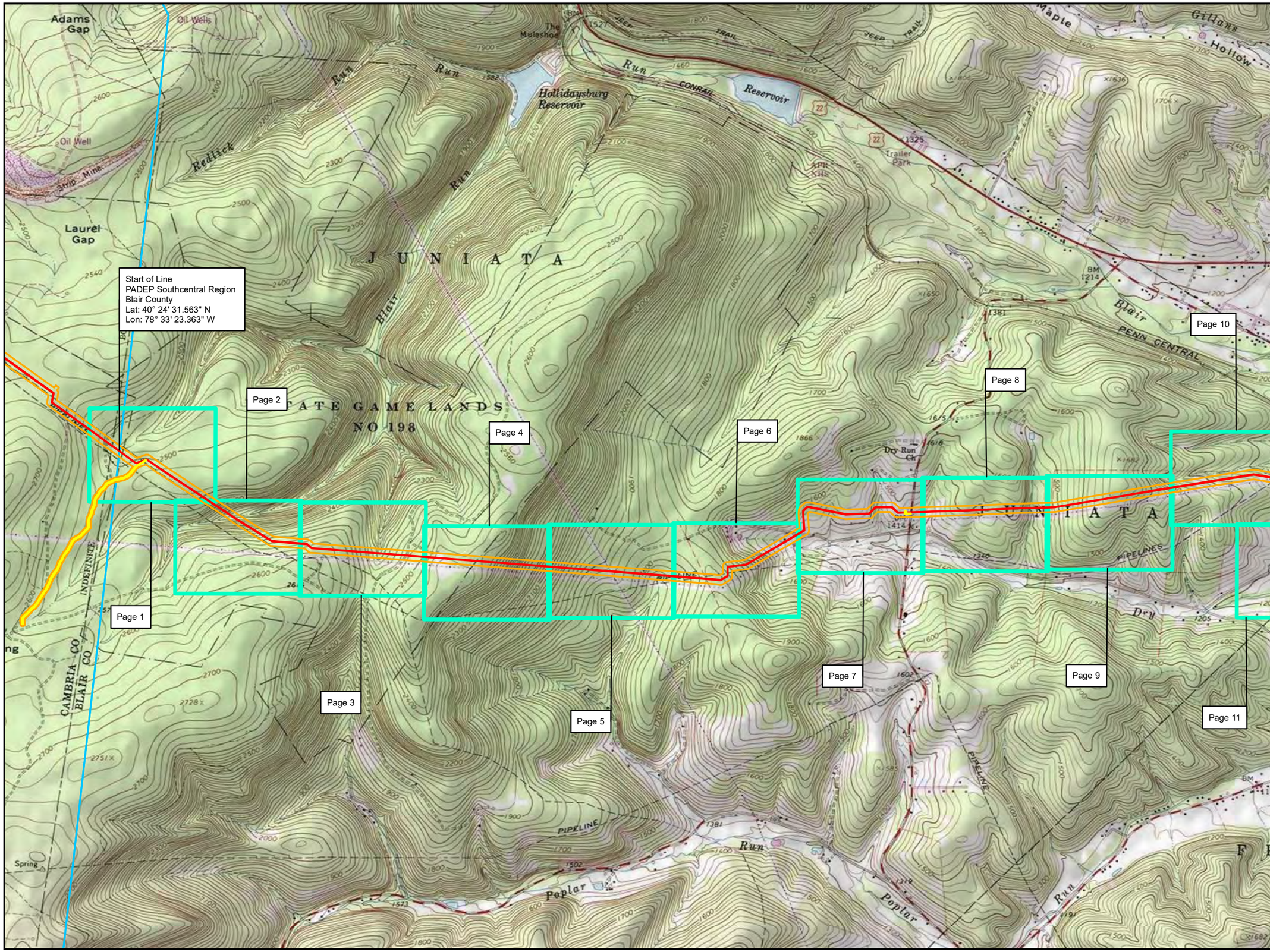

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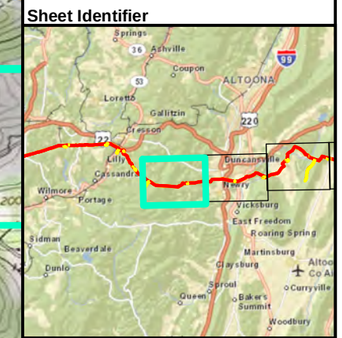
- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- Map Book Index

Sheet Identifier



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INDEX MAP
FIGURE 4 - INDEX-1
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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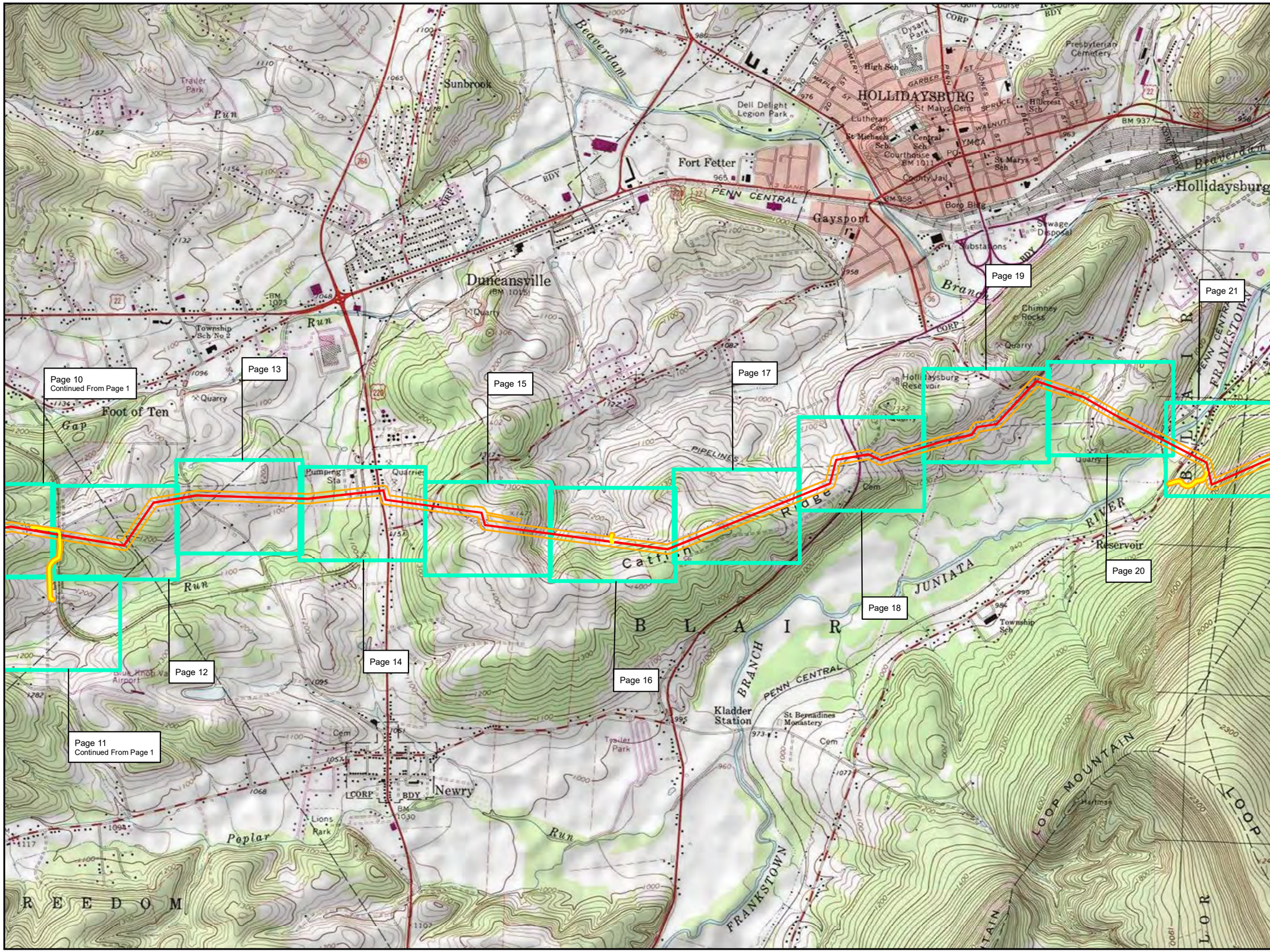
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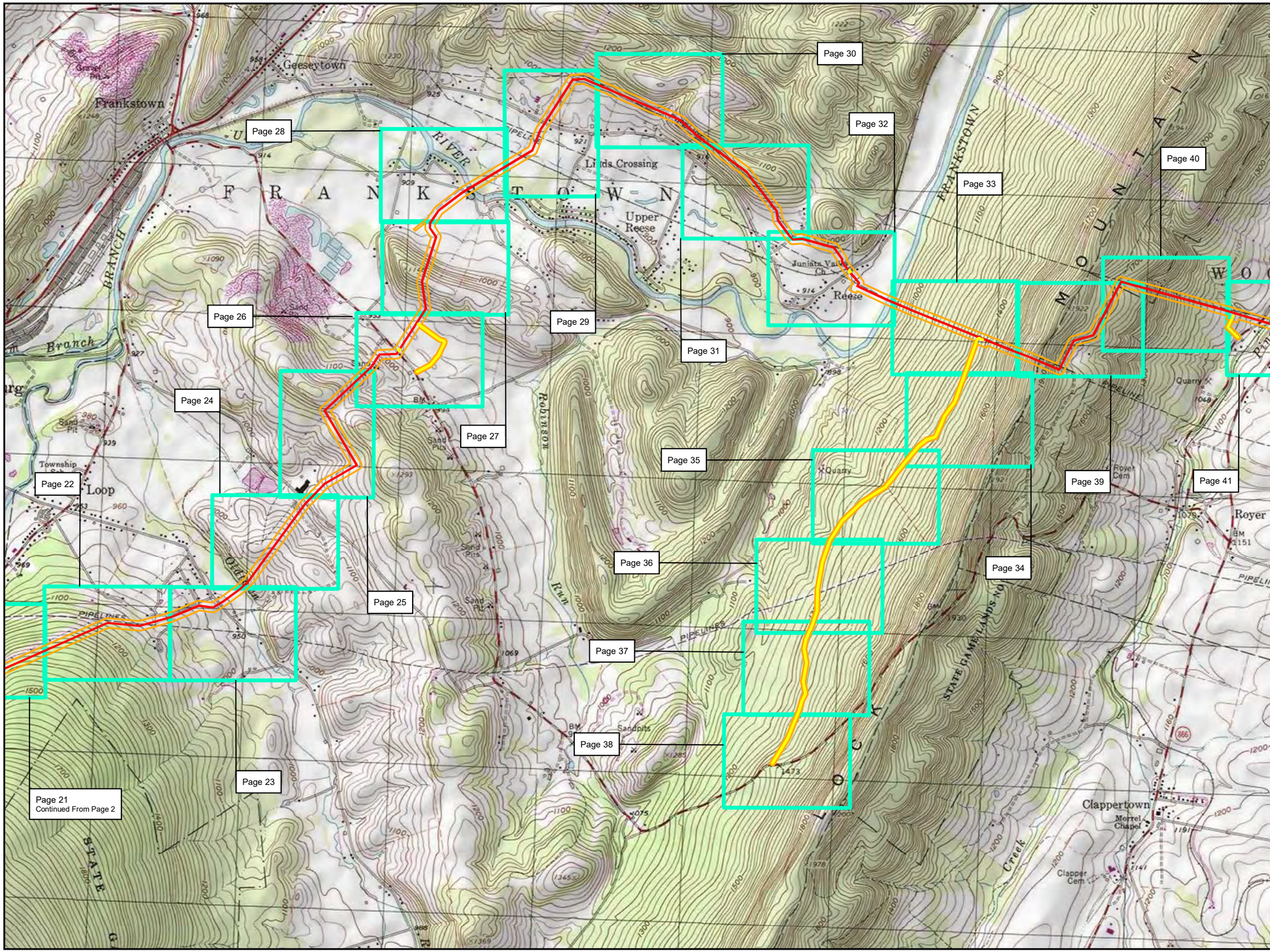
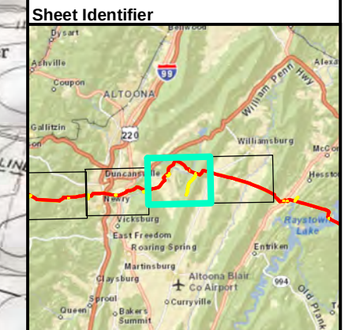
HOLLIDAYSBURG
Hollidaysburg
Duncansville
Newry
Gaysport
Fort Fetter
Sunbrook
Foot of Ten
Kladder Station
Reservoir
PENN CENTRAL
BLAIR
JUNIATA
RIVER
LOOP MOUNTAIN
FRANKSTOWN
BRANCH
Beaverdam
Run
Poplar
Catfish
Ridge
Brandy
PIPELINES
Hollidaysburg Reservoir
Chimney Rocks
Dell Delight Legion Park
Dysart Park
Presbyterian Cemetery
Sewage Disposal
Substations
Boro Bldg
County Jail
Courthouse
St Bernadines Monastery
Trailer Park
Lions Park
Pumping Sta
Quarries
Quarry
Township Sch No 2
Township Sch
Cem
BDY
CORP
BM 1073
BM 1030
BM 937
BM 958
BM 1015
Legend
Access Road
Alignment Centerline
Study Area
County Boundary
Map Book Index
Sheet Identifier
Feet
0
1,000
2,000
Meters
0
300
600
INDEX MAP
FIGURE 4 - INDEX-2
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA
TETRA TECH
Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Hollidaysburg
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP WETLANDS SC-1\PENNPIPELINE_BLAIRCO_INDEX.MXD 08/05/15 JN



Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- Map Book Index

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

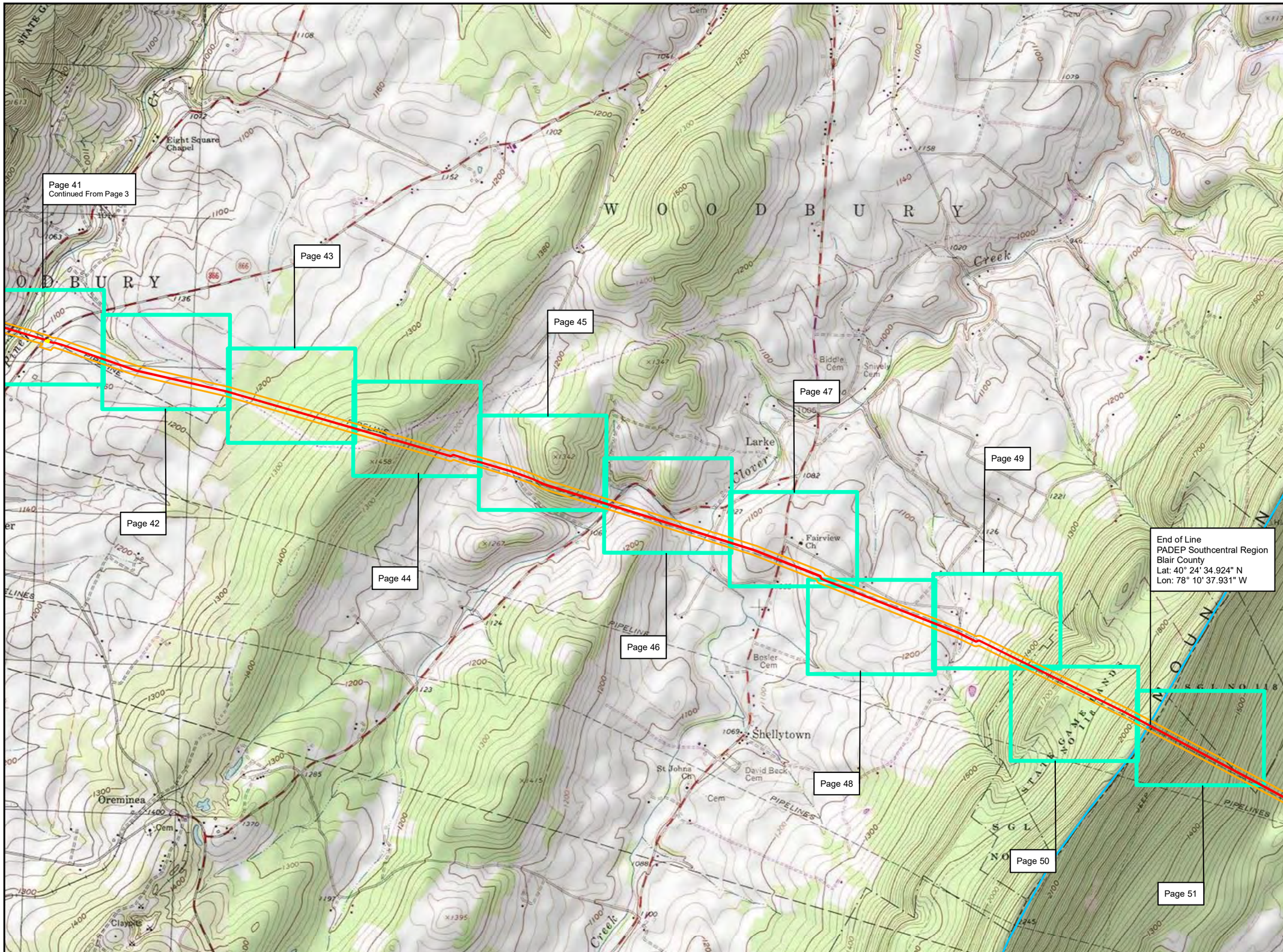
Meters: 0 — 300 — 600

INDEX MAP
FIGURE 4 - INDEX-3
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Frankstown, Hollidaysburg

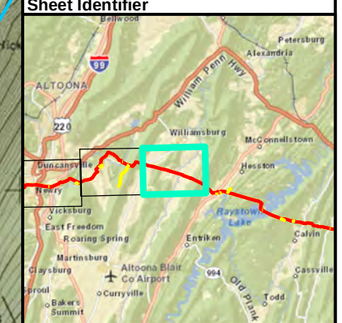
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP WETLANDS SC-1\PENNPIPELINE_BLAIRCO_INDEX.MXD 08/05/15 JN



Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- Map Book Index

Sheet Identifier



Feet: 0 1,000 2,000

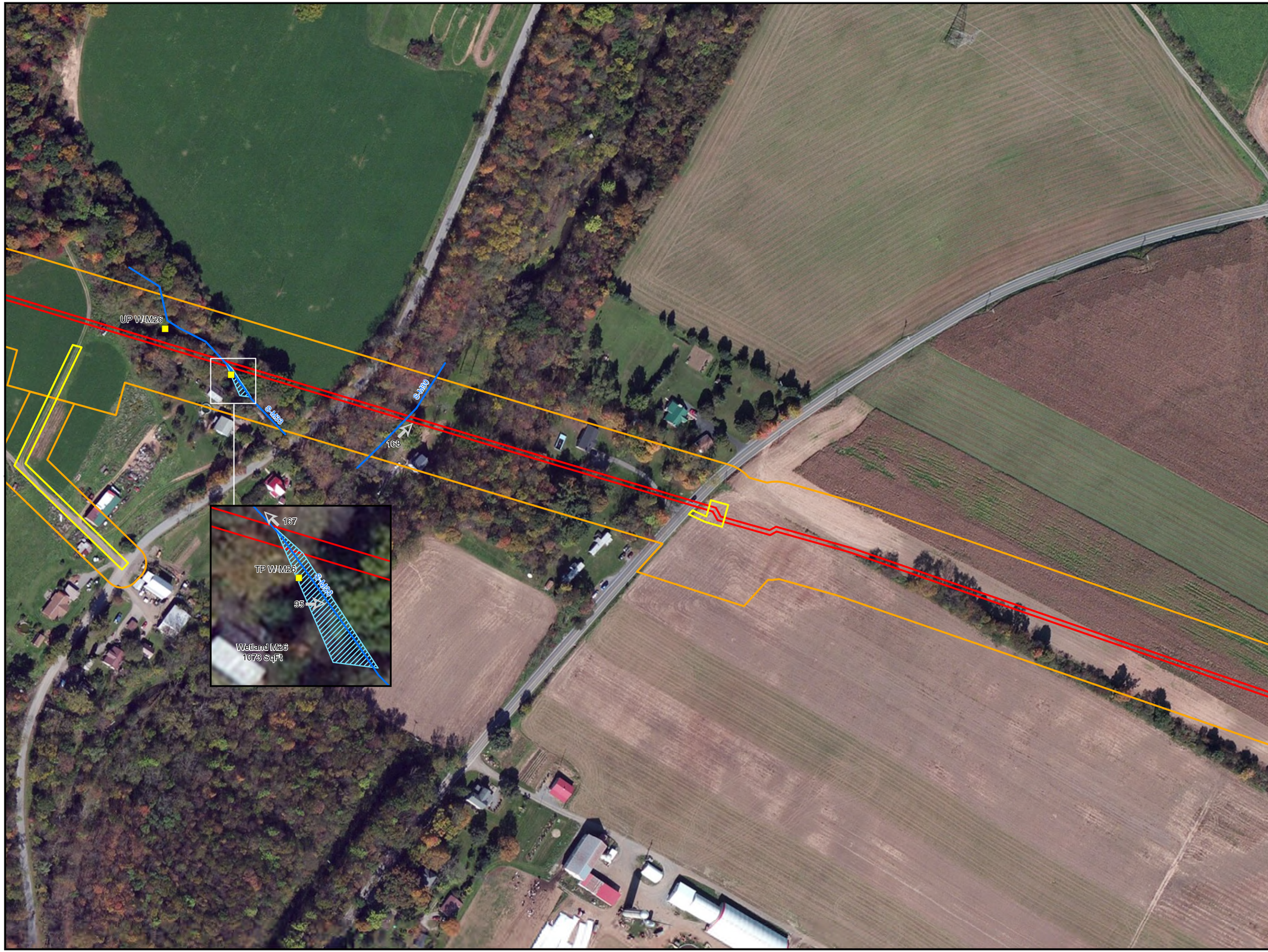
Meters: 0 300 600

INDEX MAP
FIGURE 4 - INDEX-4
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Quadrangles being displayed are Frankstown, Williamsburg

PGH: P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP_WETLANDS_SC-1\PENNPIPELINE_BLAIRCO_INDEX_MXD_08.05.15 JN



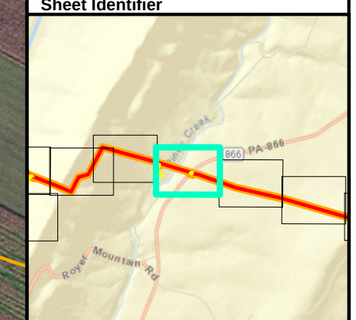
Legend

- Access Road
- Alignment Centerline
- Study Area
- County Boundary
- Culvert
- Sample Location
- Photo Location
- Drainage Feature
- Stream

Wetland

- PEM
- PFO
- PSS
- PuB

Sheet Identifier



Feet: 0 100 200

Meters: 0 30.45 60.9

WETLANDS DETAIL MAP
FIGURE 4-41
PENNSYLVANIA PIPELINE PROJECT
AUGUST 2, ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Map insets are at a scale of 1 inch = 50 feet unless otherwise noted.

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PPP WETLANDS SC-1\PENNPIPELINE_BLAIRCO_DETAIL.MXD 08/04/15 JN

APPENDIX C

STREAM DATA SHEETS

Tetra Tech Stream Data Sheet

Surveyors: J. McGuirk, D. Quinn, K. Keat, D. Bonomo Date: 06/28/2014 Resource ID Number: S-M33
Project: PPP State: PA County: Blair
Photo Number (s): _____ Canopy Cover: 50 % Location: 40.43363, -78.268543

Flow Direction: E **Bank Width:** 10 Feet **Water Width:** 2 Feet
High Water Depth: 8 Inches **Water Depth:** 4.00 Inches **Turbidity:** low
Flow Stage: moderate
Flow Regime: [✔] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[✔] Low
[ ] Medium
[ ] High

Features:
[✔] Riffles [ ] Sand/Mud Bar [✔] Run/Glide
[ ] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[✔] Cobble/Gravel 70 %
[✔] Sand 15 %
[✔] Silt/Clay 15 %
[ ] Organic ___%

Bank Substrate:
Height: Left 18" Right 18"

	Left	Right
Bedrock	[ ]	[ ]
Boulder	[ ]	[ ]
Gravel	[ ]	[ ]
Sand	[✔]	[✔]
Silt/Clay	[✔]	[✔]
Organic	[ ]	[ ]

Floodplain Width:

Left		Right
[✔]	<10 feet	[✔]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[✔] Forested
Species: Fraxinus pennsylvanica, Salix sp.
[✔] Shrub
Species: Acer negundo
[✔] Herbaceous
Species: Rumex crispus, Pilea sp., Impatiens capensis

Wildlife Observed/Notes:

Sketch:
See Attached Figure.

Tetra Tech Stream Data Sheet

Surveyors: J. McGuirk, D. Quinn, K. Keat Date: 06/27/2014 Resource ID Number: S-M30
Project: PPP State: PA County: Huntingdon
Photo Number (s): _____ Canopy Cover: 40 % Location: 40.433075, -78.266713

Flow Direction: NE **Bank Width:** 30 Feet **Water Width:** 30 Feet
High Water Depth: 3 Feet **Water Depth:** 2.50 Feet **Turbidity:** mod-low
Flow Stage: moderate
Flow Regime: [✔] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[✔] Low
[ ] Medium
[ ] High

Features:
[✔] Riffles [ ] Sand/Mud Bar [✔] Run/Glide
[✔] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[✔] Boulder 40 %
[✔] Cobble/Gravel 25 %
[✔] Sand 10 %
[✔] Silt/Clay 25 %
[ ] Organic ___%

Bank Substrate:
Height: Left 4' Right 4'

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[ ]	Gravel	[ ]
[ ]	Sand	[ ]
[✔]	Silt/Clay	[✔]
[✔]	Organic	[✔]

Floodplain Width:

Left		Right
[✔]	<10 feet	[✔]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[✔] Forested
Species: Ulmus americana, Juglans nigra, Pinus strobus
[ ] Shrub
Species: _____
[✔] Herbaceous
Species: Impatiens sp., Phalaris sp.

Wildlife Observed/Notes:
Maintained lawn on one side

Sketch:
See Attached Figure.

APPENDIX D

STREAM PHOTOGRAPHS

Photograph Number:	166	**Feature Name:**	S-M34	**Date:**	06/28/2014
Direction:	E, Downstream	**Flow Regime:**	Perennial	**Remarks:**	N/A

Photograph Number:	167	**Feature Name:**	S-M33	**Date:**	06/28/2014
Direction:	NW, Upstream	**Flow Regime:**	Perennial	**Remarks:**	N/A

Photograph Number:	168	**Feature Name:**	S-M30	**Date:**	06/27/2014
Direction:	NE, Downstream	**Flow Regime:**	Perennial	**Remarks:**	Piney Creek

Photograph Number:	169	**Feature Name:**	S-L58	**Date:**	06/27/2014
Direction:	SW, Upstream	**Flow Regime:**	Perennial	**Remarks:**	Clover Creek

APPENDIX E

HYDRIC SOILS LIST

Hydric Soils List
Blair County, Pennsylvania

Map Unit Symbol	Map Unit Name	Component Name and Phase	Component Percent	Landforms
AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
AbC	Albrights gravelly silt loam, 8 to 15 percent slopes	Brinkerton	5	hills
AcB	Albrights very stony silt loam, 3 to 8 percent slopes	Brinkerton	10	hills
AcD	Albrights very stony silt loam, 8 to 25 percent slopes	Brinkerton	10	hills
AnB	Andover variant loam, 3 to 8 percent slopes	Andover variant	90	mountain slopes
AoB	Andover variant extremely stony loam, 3 to 8 percent slopes	Andover variant	90	mountain slopes
Ba	Basher soils	Holly	5	flood plains
BdD	Bedington very stony silt loam, 8 to 25 percent slopes	Brinkerton	5	hills
BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	Brinkerton	2	hills
BoB	Blairton silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
BoC	Blairton silt loam, 8 to 15 percent slopes	Brinkerton	5	hills
BrB	Brinkerton silt loam, 3 to 8 percent slopes	Brinkerton	75	depressions
BrB	Brinkerton silt loam, 3 to 8 percent slopes	Atkins	3	flood plains

BrC	Brinkerton silt loam, 8 to 15 percent slopes	Brinkerton	85	drainageways
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	Andover	5	depressions
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	Seeps and springs	1	depressions
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes	Andover	5	depressions
BuC	Buchanan gravelly silt loam, 8 to 15 percent slopes	Seeps and springs	1	depressions
BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	Andover	5	depressions
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Andover	3	depressions
BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Springs and seeps	1	depressions
CaB	Cavode silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
CbB	Clarksburg silt loam, 3 to 8 percent slopes	Thorndale	5	depressions
ErB	Ernest silt loam, 3 to 8 percent slopes	Brinkerton	5	depressions
ErB	Ernest silt loam, 3 to 8 percent slopes	Atkins	2	flood plains
ErC	Ernest silt loam, 8 to 15 percent slopes	Brinkerton	5	depressions
Ho	Holly silt loam	Holly	94	flood plains
Ho	Holly silt loam	Brinkerton	2	depressions
Lo	Linden soils	Holly	2	flood plains
Lp	Lobdell silt loam	Holly	10	flood plains

MoB	Monongahela silt loam, 3 to 8 percent slopes	Holly	3	flood plains
OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Holly	1	flood plains
PeB	Penlaw silt loam, 0 to 8 percent slopes	Thorndale	10	draws
Pt	Pits-Dumps complex	Brinkerton, poorly drained areas	1	hills
Pu	Purdy silt loam	Purdy	85	terraces
Qu	Quarries-Dumps complex	Brinkerton, poorly drained areas	2	hills
Ty	Tyler silt loam	Purdy	5	depressions
UD	Udifluvents-Dystrochrepts complex	Brinkerton	2	hills
UD	Udifluvents-Dystrochrepts complex	Holly	2	flood plains
UYB	Urban land-Berks complex, 0 to 8 percent slopes	Brinkerton	5	depressions
UYD	Urban land-Berks complex, 8 to 25 percent slopes	Brinkerton	5	depressions
WhB	Wharton silt loam, 3 to 8 percent slopes	Brinkerton	3	draws
WhC	Wharton silt loam, 8 to 15 percent slopes	Brinkerton	3	hills
WvB	Wharton variant silt loam, 3 to 8 percent slopes	Brinkerton	5	hills
Modified from Hydric Soils of the United States (NRCS 2014)				

Aquatic Resources Report
Piney Creek Reroute
Blair County, Pennsylvania

January 2019

Prepared for:

Sunoco Pipeline, L.P.
535 Fritztown Road
Sinking Spring, PA 19608

Prepared by:

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(716) 849-9419
Fax (716) 849-9420

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ATTACHMENTS

Attachment A – Figures
Attachment B – Wetland Photographic Log
Attachment C – Waterbody Photographic Log
Attachment D – Wetland Data Forms
Attachment E – Stream Data Forms

Aquatic Resources Report
Piney Creek Reroute
Blair County, Pennsylvania

1.0 Introduction

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Pipeline L.P. to perform a wetland assessment of an approximately 60-acre area in the vicinity of the proposed Piney Creek Right-of Way (ROW) crossing, adjacent to Lower Piney Creek Rd. and Rt. 866 in Woodbury Township, Blair County, PA.

The purpose of this investigation was to determine the presence and extent of resources within the survey area that meet the criteria for federal wetlands designation according to the United States Army Corps of Engineers (USACE) guidelines and are potentially jurisdictional and regulated under Section 404 of the Clean Water Act (CWA). Background review information such as U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) mapped soils and presence of U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS NWI) features are summarized within Survey Methods below.

The following report summarizes the characteristics of delineated resources and report attachments include: Attachment A – Figures, Attachment B – Wetland Photographic Log, and Attachment C – Waterbody Photographic Log, Attachment D – Wetland Data Forms, and Attachment E – Stream Data Forms.

2.0 Survey Methods

2.1 Background Research

Prior to conducting fieldwork, Tetra Tech reviewed existing information for the survey area, including:

- United States Geological Survey (USGS) 7.5-minute series topographic quadrangle maps for the survey areas (Holidaysburg, PA 1903).
- Soil survey maps, descriptions, and lists, to determine presence and extent of hydric and upland soils (USDA NRCS 1965), Web Soil Survey database for Blair County, PA.
- NWI geospatial data available from the USFWS for the survey area (USFWS, Wetlands Mapper, data downloaded December 2018); and,
- Aerial photographs to identify drainage and other hydrologic features (Environmental Sciences Research Institute, Inc. [ESRI] online mapping services, available at: services.arcgisonline.com/arcgis/service).

2.2 On-Site Delineation

Following the review of background information, two wetland scientists performed a field survey on December 13, 2018. The survey consisted of walk-through inspection of the survey area to identify topographic, drainage, and vegetation features that would indicate the potential for a wetland determination. Potential wetlands were further evaluated by collecting soil, vegetation, and hydrology data at upland and wetland sample locations at suspected wetland boundaries. Sample plot data were recorded on Eastern Mountains and Piedmont Region Wetland Determination Data Forms provided within the regional supplement.

The survey area was evaluated for the presence and extent of wetlands using the routine, Level-2 determination method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental

Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (USACE 2012). Wetlands identified and delineated were subsequently classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al*. 1979). Classifications were restricted to palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Wetland boundaries were also flagged and marked in the field and each wetland area was photographed.

Each wetland and waterbody was further evaluated to characterize the hydrological connection to adjacent upland, wetland, and waterbody regions occurring in proximity to the survey area investigated. Specific methods for characterizing and evaluating the soils, vegetation, and hydrologic indicators are described below.

Vegetation: Dominant plant species in each major vegetation stratum (tree, sapling/shrub, herbaceous, and woody vine) were identified within 30-foot radius sample plots. The wetland indicator status of each species was assigned according to the *Eastern Mountains and Piedmont Regional Wetland Plant List* (Lichvar *et al.* 2016). Hydrophytic vegetation was determined to be present where more than 50 percent of the dominant species from all vegetation strata were classified as facultative (FAC), facultative wetland (FACW), or obligate wetland species (OBL). Other tests used to evaluate the dominance of hydrophytic species included the Dominance Test and the Prevalence Index (USACE 2012).

Soils: A soil auger was used at each sample plot to extract a core sample to a depth where either hydric indicators were observed, approximately 20 inches, or until rocky substrate resulted in auger refusal. The soils were characterized by determining the color and texture of each soil horizon. Soil matrix and mottle colors were identified using Munsell Soil Color Charts (Munsell Color 2012). Soils were considered hydric if they exhibited one (1) or more of the following indicators, including, but not limited to: histosols, histic epipedons, black histic, hydrogen sulfide, stratified layers, 2 cm muck, depletion below dark surface, thick dark surface, sandy mucky mineral, sandy gleyed matrix, sandy redox, stripped matrix, dark surface, polyvalue below surface, thin dark surface, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, iron-manganese masses, umbric surface, Piedmont floodplain soils, and red parent material. These indicators support a hydric soil determination, although secondary or additional indicators may also be present.

Hydrology: Each sample plot was examined for evidence of wetland hydrology. Indicators of wetland hydrology include: surface water, high water table, saturations, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, visible inundation on aerials, water stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, or a thin muck surface. Presence of standing water or depth to soil saturation was recorded at each sampling location.

2.3 Waterbody Identification

Prior to field surveys, known waterbodies in the survey area were identified on USGS topographic quadrangle maps. During the field investigation, a qualified biologist examined the entire field survey area for mapped and unmapped waterbodies. Waterbodies identified included perennial, intermittent, and ephemeral streams and ponds. Data recorded included stream name, associated wetlands, flow regime (perennial, intermittent, or ephemeral), direction of flow, water width, bank-to-bank width, bank height and slope, water depth, bottom and bank substrates, observed water quality, channel meander, and adjacent vegetation type. In addition, indicators of aquatic habitat, wildlife use, and soil erosion potential were recorded.

2.4 GPS Mapping

Wetland and waterbody boundaries/alignments were flagged at regular intervals to accurately represent the boundary between the aquatic resource and the adjacent upland. Flag points were then land surveyed using a Trimble, Inc. (Sunnyvale, CA) Geo XH Global Positioning System (GPS). Each point used an identification code and was numbered consecutively to facilitate the desktop mapping process. Flag points were differentially corrected in accordance with Trimble, Inc. sub-meter accuracy standards. All data was recorded in the WGS 84 coordinate zone and then projected into NAD 83 State Plane Pennsylvania South using ArcGIS 10.2.

Attribute data for all flag points was recorded, including the following information:

- Unique number or name;
- NAD 1983 coordinates;
- Date;
- Time;
- Number of positions recorded;
- Max value position dilution of precision (PDOP); and,
- Horizontal accuracy (in meters)

GPS data were differentially corrected using Pathfinder Office 5.60 software (Trimble Inc., Sunnyvale, CA) and commercial base station control points. Corrected flag points were then imported into ArcView 10.2 (ESRI; Redlands, CA) Geographic Information System (GIS) mapping software where points were connected in consecutive order and according to surveyor notes. Wetland boundaries were left “open” when the wetland extended beyond the survey boundaries and were “closed” when contained entirely within the survey boundaries. Stream alignments were connected in a similar manner and designated as “line” data. A geo-referenced wetland delineation boundary suitable for overlay onto themed base layers was created using ArcView 10.2 GIS software. The same GIS software was also used as an analytical tool, providing acreages of the delineated wetlands and coordinate location of the centroids of the polygons.

3.0 Survey Results

3.1 Background Data Review

General Area Description
Land use within the survey boundary is rural and consists of cropland, mowed fields, woodlots, and several sparsely-concentrated residential homes, with several two-lane paved roads and gravel driveways. Land use in the general vicinity of the survey area is the same. Attachment A, Figure 1 provides an aerial basemap of the survey area.

Soils
A review of published and publicly available soils data for the survey area indicates that fifteen (15) soils series are mapped within the survey boundary (Attachment A, Figure 1). Mapped soil series are summarized in Table 1 below.

Table 1. Mapped Soil Types on Piney Creek Reroute

Soil Symbol	Soil Name and Brief Description[1]	Hydric Soil Classification
BuB	Buchanan gravelly silt loam, 3 to 8 percent slopes	Partial
BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	Partial
HeD	Jagerstpwm-Rock outcrop complex, 8 to 25 percent slopes	Not hydric
HuB	Hublersburg cherty silt loam, 3 to 8 percent slopes	Not hydric
HuC	Hublersburg cherty silt loam, 8 to 15 percent slopes	Not hydric
HxD2	Hublersburg cherty silty clay loam, 15 to 25 percent slopes, eroded	Not hydric
MoB	Monongahela silt loam, 3 to 8 percent slopes	Partial
MuB	Murrill gravelly silt loam, 3 to 8 percent slopes	Not hydric
MuC	Murrill gravelly silt loam, 8 to 15 percent slopes	Not hydric
MuD	Murrill gravelly silt loam, 15 to 25 percent slopes	Not hydric
MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes	Not hydric
OuD	Opequon silty clay loam, 15 to 25 percent slopes	Not hydric
OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Partial
Qu	Quarries-Dumps complex	Partial
UD	Udifluvents-Dystrochrepts complex	Partial

[1]USDA, NRCS, Soil Series Descriptions for Blair County, PA, 2017.

Mapped Wetlands

Three (3) USFWS mapped NWI features were identified in the survey area, including two (2) streams and one (1) wetlands. The first stream is a 1.12-acre riverine habitat south of the reroute location classified as R4SBC that joins Piney Creek from the West. The second stream is a 2.97-acre riverine habitat that crosses the proposed reroute near its western end, classified as R4SBC. The one wetland, a 9.04-acre freshwater forested/shrub wetland (classified as PFO1A), appears to be associated with Piney Creek. The wetland follows its banks and crosses the proposed reroute at its center. Piney Creek itself was not otherwidse identified as a waterbody in NWI records.

Mapped Waterbodies

The only waterbody depicted on the USGS 7.5-minute series topographic quadrangle map (Holidaysburg, PA, 1903) is Piney Creek.

3.2 Delineated Aquatic Resources

Two (2) new wetlands and three (3) new streams were identified during the field survey. Additionally, two (2) streams were extended through the new survey area. Wetland W10r was classified as palustrine forested (PFO) and wetland W11r was classified as palustrine emergent (PEM). These newly delineated wetlands are summarized below in Table 2. Photologs of each of these wetlands are provided in Attachment B, and data forms for each of these wetlands are provided in Attachment D.

Table 2. Wetlands Identified During Field Survey at Piney Creek Reroute

Wetland ID	Cover Class[1]	Hydrology Indicator[2]	Hydric Vegetation Indicator[2,3]	Hydric Soils Indicator[2]	Figure 2 Sheet	Photo Numbers	Description
W10r	PFO	A3, B9, B10, B16, D2, D4	DT	F3	3	1, 2	Forested wetland in a low-lying area bounded Lower Piney Creek Road, an old railroad

Wetland ID	Cover Class[1]	Hydrology Indicator[2]	Hydric Vegetation Indicator[2,3]	Hydric Soils Indicator[2]	Figure 2 Sheet	Photo Numbers	Description
							bed, and a private gravel driveway
W11r	PEM	A2, A3, B9, B10, C1, D2	DT	F3	2	3, 4	Small depression wetland between Piney Creek and old railroad bed

[1]Field classification based on Cowardin et al. 1979.
[2]Indicator codes from Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (V 2.0).
[3]RT = Rapid Test, DT = Dominance Test, PI = Prevalence Index.

Previously-identified streams S-M30 (Piney Creek) and S-M33 (UNT to Piney Creek) were extended through the survey area from their initially reported limits. There are no significant changes to either of these streams. Each of the three (3) new streams identified (streams S8r, S9r, and S10r) were classified as ephemeral. A brief summary of the identified streams is provided in Table 3 below, photos of each stream are provided in Attachment C, and stream data forms are provided in Attachment D.

Table 3. Waterbodies Identified During Field Survey at Piney Creek Reroute

Stream ID	Flow Regime	Water Depth (in.)	Bankfull Width (ft.)	Figure 2 Sheet	Photo Numbers	Description
S-M30	Perennial	18	40	1, 2, 3	1, 2	Piney Creek – extended about 0.4 mile to the north of the existing delineation during this field survey. Wide, swiftly-flowing perennial stream that drains the surrounding area
S-M33	Perennial	4	10	1	3, 4	Southeast-flowing perennial stream that has a confluence with Piney Creek (S-M30) about 0.15 mi south of the proposed reroute. Extended approximately 400 feet to the west during this field survey
S8r	Ephemeral	<1	1	1	5, 6	Ephemeral stream that joins stream S-M33 from the north near the proposed reroute crossing
S9r	Ephemeral	0	1	3	7, 8	Rocky drainage on the western slope of the Piney Creek (S-M30) valley
S10r	Ephemeral	1	1	3	9	Rocky drainage on a steep section of the western slope of the Piney Creek (S-M30) valley

*Note that widths and depths are averages based on the assessed limits of the features

4.0 Summary

Tetra Tech completed an aquatic resource survey on an approximately 60-acre area around the proposed Piney Creek reroute location, adjacent Lower Piney Creek Road and High Street (Route 866), in Woodbury Township, Blair County, Pennsylvania. Tetra Tech identified two (2) wetlands and three (3) new streams that meet USACE criteria for aquatic resources. Two (2) known streams had their previously reported limits extended through the survey area. Attachment A provides figures regarding the site location and geometry and alignments of the delineated features. Attachments B and C provide photologs for each of the new resources delineated within the survey area, and Attachments D and E provide data forms for each of the features.

5.0 References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, Washington, D.C. 131 pp.

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Munsell Color. 2009. Munsell Soil Color Chart. MacBeth Division of Kollmorgen Instruments Corporation. Baltimore, MD. 27 pp.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

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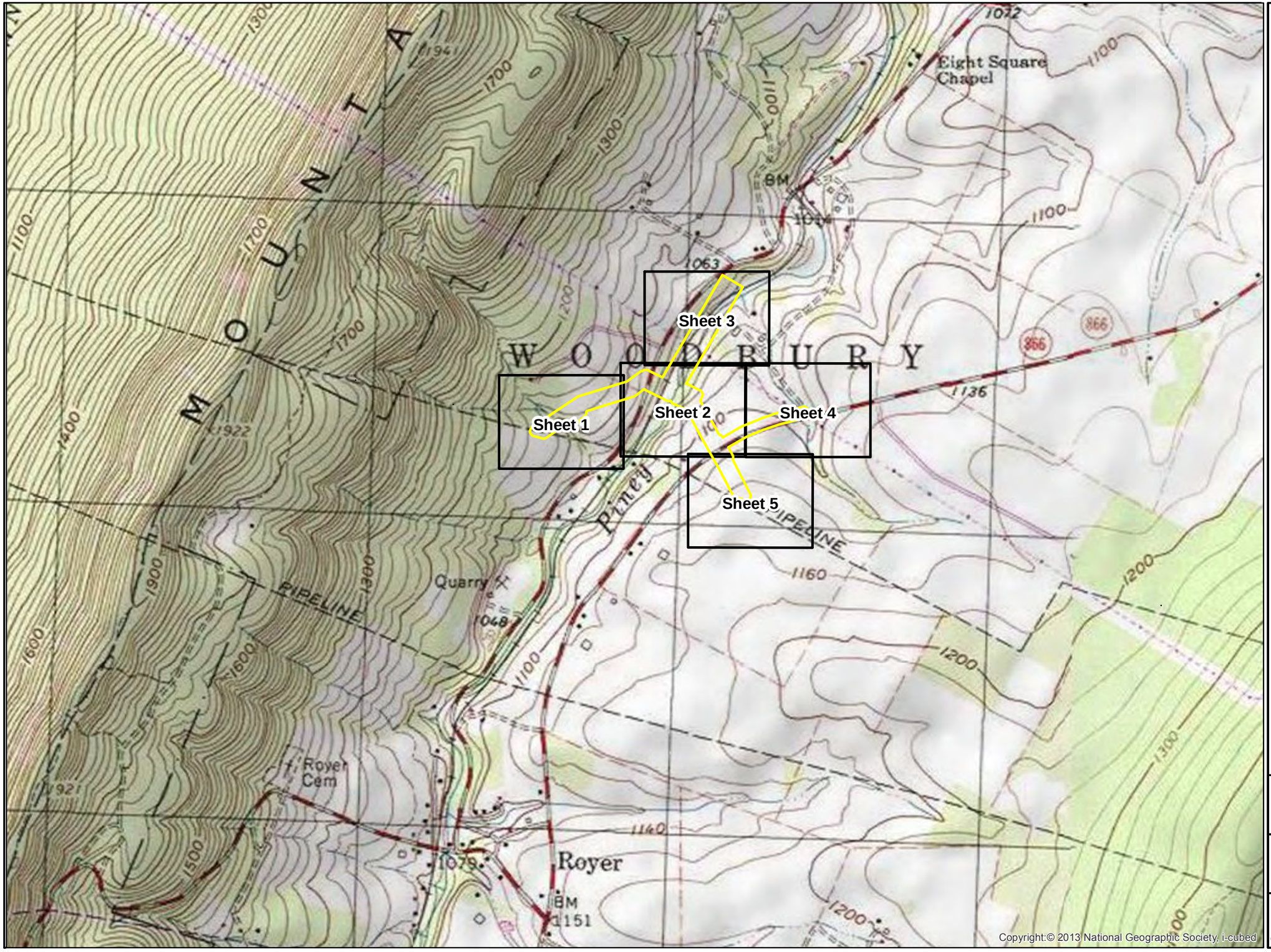
ATTACHMENT A

FIGURES

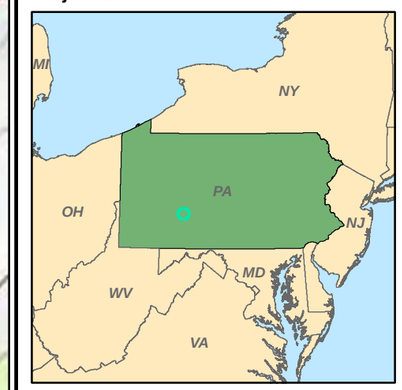


Legend

Survey Corridor

SheetBoundary

Project Location



N

0 500 1,000 2,000

1 inch = 1,000 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet Key

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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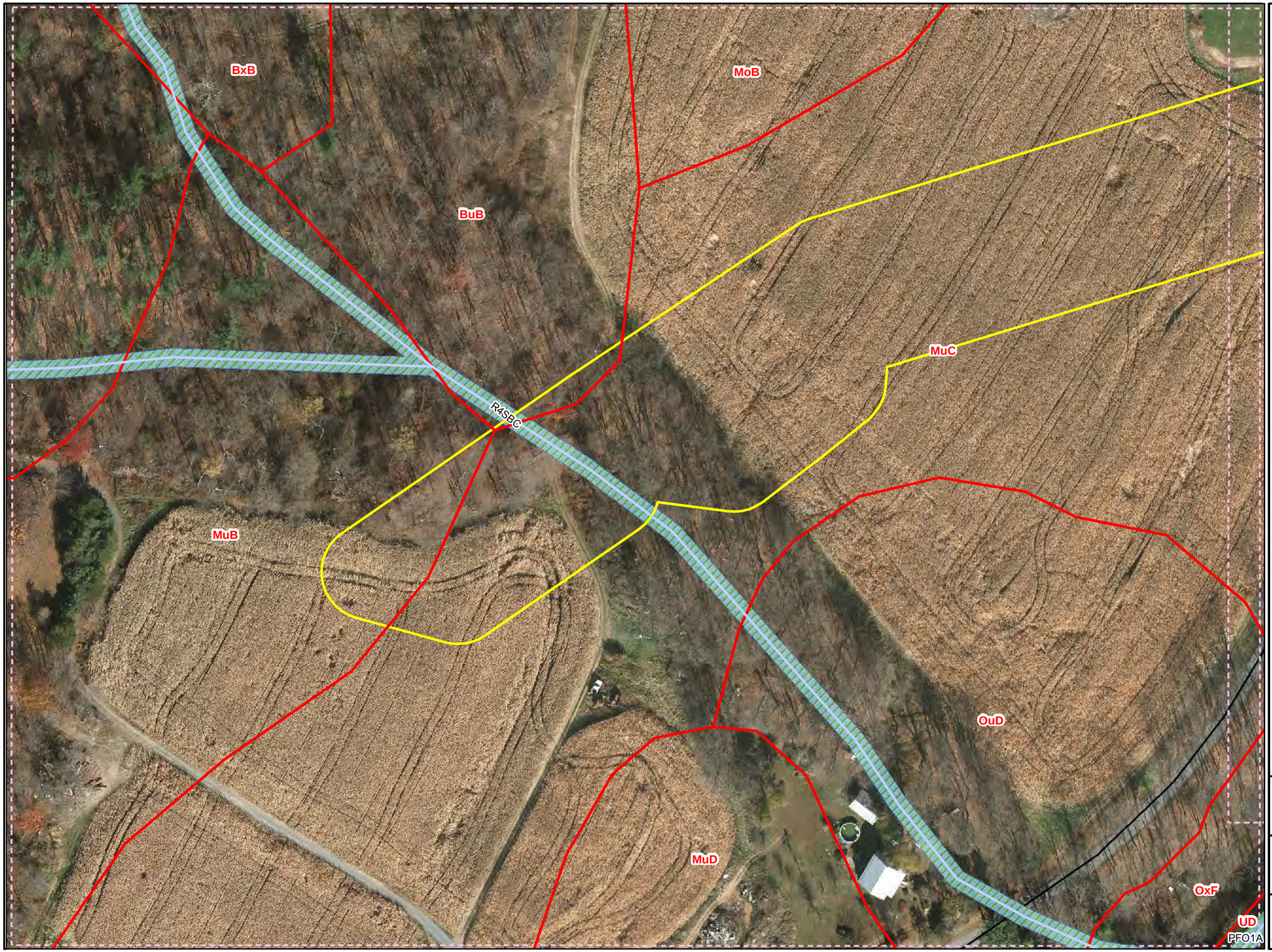
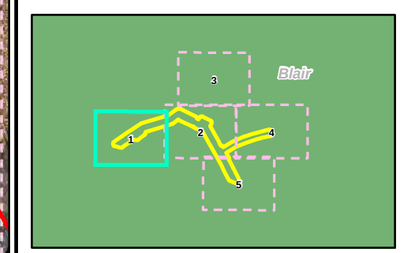


Legend

- Survey Corridor
- NWI Wetlands
- Soils
- SheetBoundary
- NHD

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 1 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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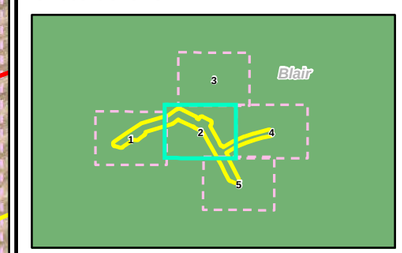
Legend

- Survey Corridor
- NWI Wetlands
- Soils
- SheetBoundary
- NHD

Sheet Identifier



N

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1 inch = 100 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 2 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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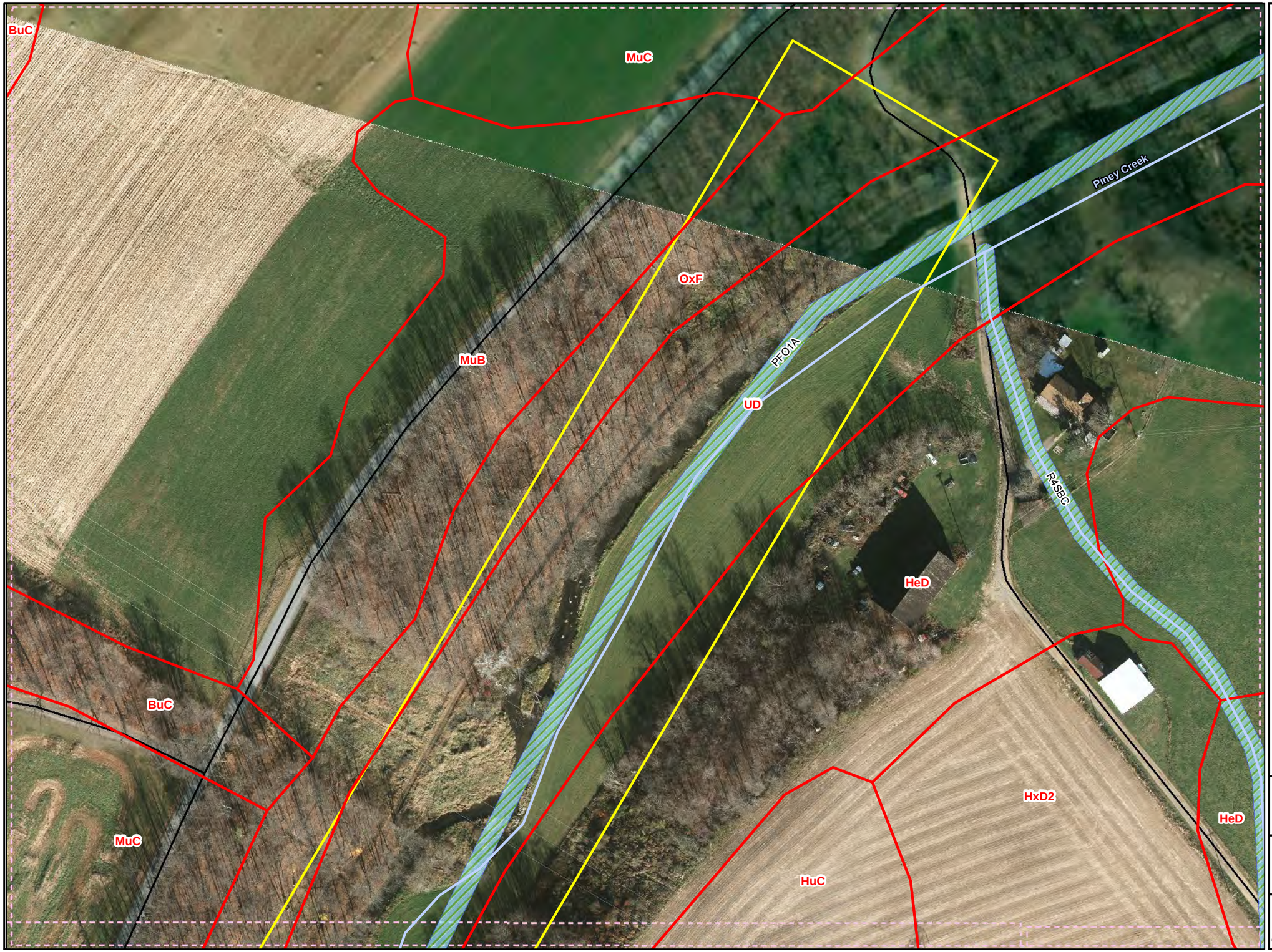
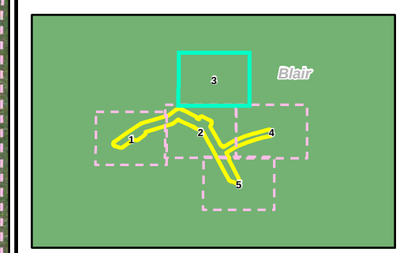


Legend

- Survey Corridor
- NWI Wetlands
- Soils
- SheetBoundary
- NHD

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 3 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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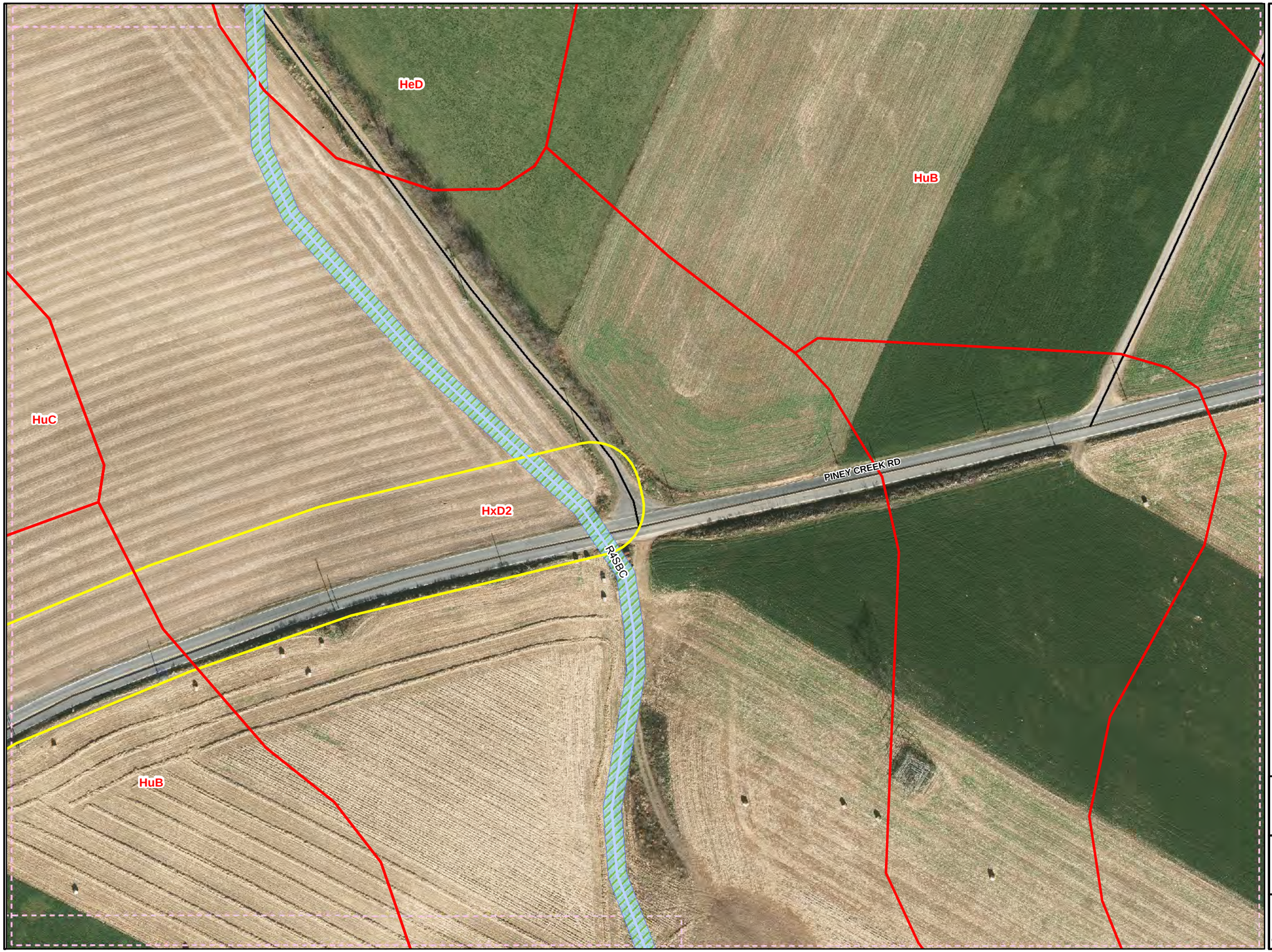
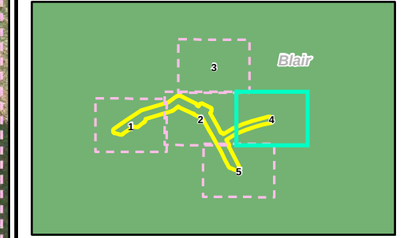


Legend

- Survey Corridor
- NWI Wetlands
- Soils
- SheetBoundary
- NHD

Sheet Identifier



0 25 50 100 150 200

1 inch = 100 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 4 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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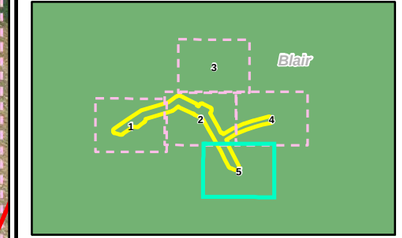
Legend

- Survey Corridor
- NWI Wetlands
- Soils
- SheetBoundary
- NHD

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 5 of 5

Prepared By: TETRA TECH

Date: 01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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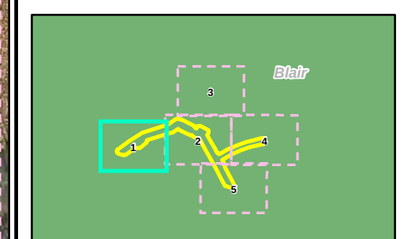
Legend

- Survey Corridor
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 1 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

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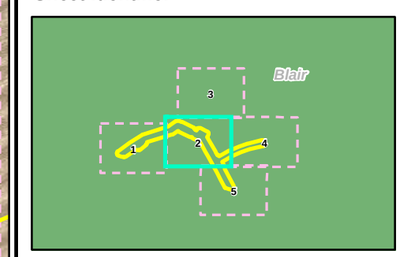
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

Sheet Identifier



N

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1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 2 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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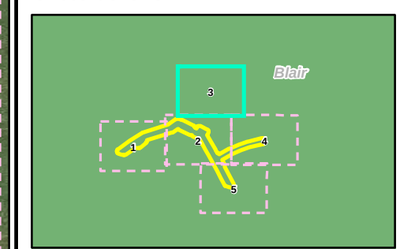
Legend

- Survey Corridor
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 3 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018 Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\projects\112\C05958-PPP\MXD\Permits\Permit\Mods\Piney\WDR\Figure2.mxd JL

Legend

- Survey Corridor
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

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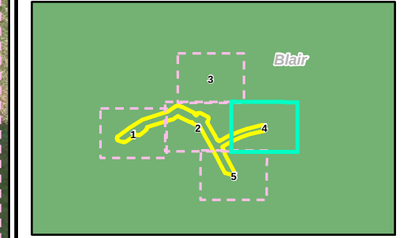

N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 4 of 5

Prepared By:	Date:
TETRA TECH	01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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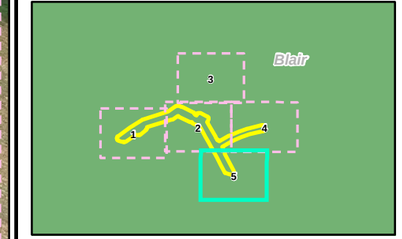
Legend

- Survey Corridor
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- PEM Wetland
- PFO Wetland
- PSS Wetland
- SheetBoundary

Sheet Identifier



N

0 25 50 100 150 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Blair County, PA. Sheet 5 of 5

Prepared By: TETRA TECH

Date: 01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, Soils USDA 09/18/2018
Cambria County, NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\projects\112C06958-PPP\MXD\Permits\Permit\Mods\PineyWD\Figure2.mxd JL

ATTACHMENT B

WETLAND PHOTOGRAPHIC LOG

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 1

Direction: East

Comments: Wetland W10r – wetland sampling point

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 2

Direction: West

Comments: Wetland W10r – upland sampling point

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 3

Direction: South

Comments: Wetland W11r – wetland sampling point

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 4

Direction: Southeast

Comments: Wetland W11r – upland sampling point

ATTACHMENT C

WATERBODY PHOTOGRAPHIC LOG

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 1

Direction: North

Comments: Stream S-M30 (Piney Creek) crossing location, downstream

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 2

Direction: South

Comments: Stream S-M30 (Piney Creek) crossing location, upstream

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 3

Direction: Northwest

Comments: Stream S-M33 crossing location, upstream

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 4

Direction: Southeast

Comments: Stream S-M33 crossing location, downstream

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 5

Direction: Northwest

Comments: Stream S8r crossing location, upstream

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 6

Direction: Southeast

Comments: Stream S8r crossing location, downstream

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 7

Direction: West

Comments: Stream S9r from railroad bed, upstream

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 8

Direction: East

Comments: Stream S9r from hilltop, downstream

WATERBODY PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.

Project: Pennsylvania Pipeline Project (PPP) – Piney Creek Re-route

Photographer: K. Berend

Date: 12/13/2018

Photo No.: 9

Direction: West

Comments: Stream S10r from railroad bed, upstream

ATTACHMENT D

WETLAND DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PPP Reroute City/County: BLAIR Sampling Date: 12/18/18

Applicant/Owner: Sunoco State: PA Sampling Point: W10R-WET1

Investigator(s): ECKWAHL/BeRend Section, Township, Range:

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum:

Soil Map Unit Name: _____ NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No	**Is the Sampled Area within a Wetland?**	**Yes** X **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- X Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):
Water Table Present?	Yes ___	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W10R-WET1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. FRAXINUS pennsylvanica	50	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. FRAXINUS pennsylvanica	20	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		

Herb Stratum (Plot size: 9)			
1. Phalaris arundinacea	60	X	FACW
2. Lysimachia nummularia	20	X	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W10R-WET 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					SILT LOAM	
4-14	10YR 3/2	85	7.5YR 5/8	15	RM	M	SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PPP reroute City/County: BLAIR CO Sampling Date: 12/13/18

Applicant/Owner: Sunoco State: PA Sampling Point: W10R-up1

Investigator(s): Eckwall / Beecend Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): _____ Slope (%):

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum:

Soil Map Unit Name: _____ NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WOR-up1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccarhum	90	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Acer saccarhum	20	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W/O R-up 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1						SILT LOAM	
4-12	10YR 3/4						SILT LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PPP Reroute City/County: BLAIR Sampling Date: 12/13/18

Applicant/Owner: Sunoco State: PA Sampling Point: WHR-WET1

Investigator(s): ECKWAHL / BERCOW Section, Township, Range: _____

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 0

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W/R - WET 1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 9 _____)			
1. Lysimachia nummularia	30	X	FACW
2. Geum lacinatum	20	X	FACU
3. CAREX spp	15		
4. Equisetum spp	10		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WIIR-WET1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Fine sandy loam	
4-12	10YR 3/2	80	7.5YR 5/6	20	RM	M	Fine sandy	Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PPP Reroute City/County: Blair Co Sampling Date: 12/13/18

Applicant/Owner: Sunoco State: PA Sampling Point: W11R-wp1

Investigator(s): Eckwahl / Beacon Section, Township, Range:

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): 0 Slope (%):

Subregion (LRR or MLRA): Lat: Long: Datum:

Soil Map Unit Name: NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):
Water Table Present?	Yes ____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches):

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W1R-up1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	70	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. Juglans nigra	20	X	FACU
2. Acer saccarhum	20	X	FACU
3. Lonicera tatarica	5		FACU
4. Rosa multiflora	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: / (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WHR-wp1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100					FINE Sandy Loam	
5-14	10YR 4/6	100					FINE Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

ATTACHMENT E

STREAM DATA FORMS

Tetra Tech Stream Data Sheet

SM-30 EXTENSION

Surveyors: Eckwark / Berend Date: 12/13/18 Resource ID Number: SM-30
Project: PPP Reroute State: PA County: BLAIR
Photo Number (s): _____ Canopy Cover: 50 %

Flow Direction: N **Bank Width:** 40 feet **Water Width:** 46 feet
High Water Depth: 4 feet **Water Depth:** 1.5 feet **Turbidity:** clear

Flow Regime: [X] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[X] Low
[ ] Medium
[ ] High

Features:
[X] Riffles [ ] Sand/Mud Bar [X] Run/Glide
[X] Pools [ ] Gravel Bar [ ] Braided
[X] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[X] Boulder 5 %
[X] Cobble/Gravel 75 %
[X] Sand 20 %
[ ] Silt/Clay ___%
[ ] Organic ___%

Bank Substrate:
Height: Left 10 Right 6

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[X]	Gravel	[X]
[ ]	Sand	[ ]
[X]	Silt/Clay	[X]
[ ]	Organic	[ ]

Floodplain Width:

Left		Right
[ ]	<10 feet	[ ]
[ ]	<25 feet	[ ]
[X]	<50 feet	[ ]
[ ]	<100 feet	[X]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: Green Ash, Blk Walnut
[ ] Shrub
Species: Rosa multiflora, Blk Walnut Saps.
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

S-M33 EXTENSION

Tetra Tech Stream Data Sheet

Surveyors: Eckwahl / Berend Date: 12/13/18 Resource ID Number: S-M33
Project: PPP Reroute State: PA County: BLAIR CO.
Photo Number (s): _____ Canopy Cover: 80 %

Flow Direction: SE **Bank Width:** 10 feet **Water Width:** 10' feet
High Water Depth: 3 feet **Water Depth:** 4" ~~feet~~ **Turbidity:** Clear

Flow Regime: [X] Perennial [ ] Intermittent [ ] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[ ] Low
[X] Medium
[ ] High

Features:
[X] Riffles [ ] Sand/Mud Bar [X] Run/Glide
[X] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[X] Cobble/Gravel 70 %
[X] Sand 20 %
[X] Silt/Clay 10 %
[ ] Organic ___%

Bank Substrate:
Height: Left 10 Right 10

	Left	Right
Bedrock	[ ]	[ ]
Boulder	[ ]	[ ]
Gravel	[X]	[X]
Sand	[ ]	[ ]
Silt/Clay	[X]	[X]
Organic	[ ]	[ ]

Floodplain Width:

Left		Right
[X]	<10 feet	[X]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: BLK Cherry, Am. Beech, Green Ash, Basswood
[ ] Shrub
Species: Japanese Barberry, Blk Cherry Saplings
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: Eckwahl / Benard Date: 12/13/18 Resource ID Number: S-8R
Project: PPP Reroute State: PA County: BLAIR
Photo Number (s): _____ Canopy Cover: 70 %

Flow Direction: SE **Bank Width:** 1 feet **Water Width:** 1 feet
High Water Depth: 6" ~~feet~~ **Water Depth:** muddy ~~feet~~ **Turbidity:** Clear

Flow Regime: [ ] Perennial [ ] Intermittent [X] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[X] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[ ] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other _____

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[X] Cobble/Gravel 60 %
[X] Sand 30 %
[X] Silt/Clay 10 %
[ ] Organic ___%

Bank Substrate:
Height: Left 1 Right 1

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[ ]	Gravel	[ ]
[ ]	Sand	[ ]
[X]	Silt/Clay	[X]
[ ]	Organic	[ ]

Floodplain Width:

Left		Right
[X]	<10 feet	[X]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: Blk. Walnut, Sugar maple, Blk Cherry
[ ] Shrub
Species: Blk Cherry sapling
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: Eckwahl / Beecnd Date: 11/13/18 Resource ID Number: 59R
Project: PPP reroute State: PA County: BLAIR
Photo Number (s): _____ Canopy Cover: 75 %

Flow Direction: E **Bank Width:** 1' feet **Water Width:** NO feet
High Water Depth: 6" ~~feet~~ **Water Depth:** NO feet **Turbidity:** NO

Flow Regime: [ ] Perennial [ ] Intermittent [X] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[X] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[ ] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other NO H_2O

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[X] Cobble/Gravel 90 %
[X] Sand 10 %
[ ] Silt/Clay ___%
[ ] Organic ___%

Bank Substrate:
Height: Left 1 Right 1

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[X]	Gravel	[X]
[ ]	Sand	[ ]
[X]	Silt/Clay	[X]
[ ]	Organic	[ ]

Floodplain Width:

Left		Right
[X]	<10 feet	[X]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: Sugar Maple
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Tetra Tech Stream Data Sheet

Surveyors: Eckwahl / Behacent Date: 11/13/18 Resource ID Number: S10R
Project: PPP Report State: PA County: BLAIR
Photo Number (s): _____ Canopy Cover: 75 %

Flow Direction: E **Bank Width:** 1 feet **Water Width:** NO feet
High Water Depth: 6" ~~feet~~ **Water Depth:** NO feet **Turbidity:** NO

Flow Regime: [ ] Perennial [ ] Intermittent [X] Ephemeral [ ] Flowing Ditch [ ] Dry/Stagnant Ditch

Sinuosity:
[X] Low
[ ] Medium
[ ] High

Features:
[ ] Riffles [ ] Sand/Mud Bar [ ] Run/Glide
[ ] Pools [ ] Gravel Bar [ ] Braided
[ ] Rapids [ ] Aquatic Vegetation [ ] Other NO H_2O

Substrate:
[ ] Bedrock ___%
[ ] Boulder ___%
[X] Cobble/Gravel 90 %
[X] Sand 10 %
[ ] Silt/Clay ___%
[ ] Organic ___%

Bank Substrate:
Height: Left 1' Right 1'

[ ]	Bedrock	[ ]
[ ]	Boulder	[ ]
[X]	Gravel	[X]
[ ]	Sand	[ ]
[X]	Silt/Clay	[X]
[ ]	Organic	[ ]

Floodplain Width:

Left		Right
[X]	<10 feet	[X]
[ ]	<25 feet	[ ]
[ ]	<50 feet	[ ]
[ ]	<100 feet	[ ]
[ ]	>100 feet	[ ]

Dominant Vegetation:
[ ] Forested
Species: Sugar maple
[ ] Shrub
Species: _____
[ ] Herbaceous
Species: _____

Wildlife Observed/Notes:

Sketch:

Appendix S2.A-3

Excerpts from the Botanical Survey Report

Botanical Survey Report
PNDI No. 22275 (Update 22275)

Pennsylvania Pipeline Project

Allegheny, Berks, Blair, Cambria, Chester, Cumberland, Dauphin, Delaware, Huntingdon, Indiana, Juniata, Lancaster, Lebanon, Perry, Washington, Westmoreland, and York Counties, Pennsylvania

Prepared for:

Sunoco Logistics, L.P.

525 Friztown Road

Sinking Spring, PA 19608

Prepared by:

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PA Department of Conservation of Natural Resources

Bureau of Forestry, Ecological Services Section

ATTN: Mr. Jason Ryndock or Mr. Frederick Sechler

400 Market Street

Harrisburg, Pennsylvania 17105

August 2015

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LIST OF ACRONYMS and ABBREVIATIONS

ACRONYM	MEANING
AOC	Area of Concern
AG	Agriculture
BTF	Broadleaf Terrestrial Forest
BTW	Broadleaf Terrestrial Woodland
CBTF	Coniferous - Broadleaf Terrestrial Forest
CBTW	Coniferous - Broadleaf Terrestrial Woodland
cm	Centimeter
CMNH	Carnegie Museum of Natural History
COC	Community of Concern
CTF	Coniferous Terrestrial Forest

dm	Decimeter
ECSI	Environmental Consultation Services Inc
FF	Fallow Field
ft	Foot or Feet
G1	Critically Imperiled
G2	Imperiled
G3	Vulnerable
G4	Apparently Secure
G5	Secure
in	Inch
HDD	Horizontal Directional Drill[ing]
LOD	Limit of Disturbance
m	Meter
MBTW	Mesic Broadleaf Terrestrial Woodland
MBTF	Mesic Broadleaf Terrestrial Forest
ME1	Mariner East Pipeline – Houston to Delmont
MSB	Mesic Broadleaf Woodland
MSF	Mesic Broadleaf Forest
NGLs	Natural Gas Liquids
NS	Not Surveyed
NRCS	Natural Resources Conservation Service
OPP	Ohio Pipeline Project
PA	Pennsylvania
PA DCNR	Pennsylvania Department of Conservation and Natural Resources
PE	Palustrine Emergent Wetland
PE	Pennsylvania Endangered
PF	Palustrine Forested Floodplain
PNDI	Pennsylvania Natural Diversity Index
PNHP	Pennsylvania Natural Heritage Program
PPP	Pennsylvania Pipeline Project
PR	Pennsylvania Rare
Project	Pennsylvania Pipeline Project
PS	Palustrine Scrub-Shrub Wetland
PSFP	Palustrine Successional Farm Pond
PT	Pennsylvania Threatened
RBTF	Riverine Broadleaf Terrestrial Forest
ROW	Right-of-Way
S1	Critically Imperiled
S2	Imperiled
S3	Vulnerable
SOSC	Species of Special Concern
SGL	Serpentine Grassland
SPLP	Sunoco Pipeline, L.P.
Tetra Tech	Tetra Tech Inc.
THO	Terrestrial Herbaceous Opening
TOM	Terrestrial Open Meadow
TS	Terrestrial Shrub Opening/Terrestrial Shrubland
URD	Urban-Residential-Developed
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

1.0 PROJECT INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Pipeline, L.P. (SPLP) to perform botanical surveys for the Pennsylvania Pipeline Project (Project). Large project information including a large project form, project description, and preliminary project USGS topographic mapping was initially provided to the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) under the preliminary project name "Mariner East 2 Pipeline - Trans-Pennsylvania". The Mariner East 2 Project originally encompassed all of the project activities within the state of Pennsylvania (PA), excluding areas covered in the Mariner East Pipeline – Houston to Delmont (ME1) project. Mr. Jason Ryndock and Mr. Frederick Sechler of the PA DCNR utilized the initial large project information to define areas of concern (AOCs) where botanical surveys were required for the specific species of special concern (SOSC) and communities of concern (COC) listed in the Pennsylvania Natural Diversity Index (PNDI) search receipts 22275, dated January 30, 2014 and Update 22275, dated March 13, 2014. All PNDI search receipts are provided in Agency Coordination (Appendix A).

After the initial submission to the PA DCNR the Mariner East 2 Project activities and boundaries were broken up into two separate projects; the Pennsylvania Pipeline Project (Project) and the Ohio Pipeline Project (OPP). A separate botanical report, dated February 2015 was submitted for the OPP portion of Washington County, PA. The Pennsylvania Pipeline Project includes Allegheny, Berks, Blair, Cambria, Chester, Cumberland, Dauphin, Delaware, Huntingdon, Indiana, Juniata, Lancaster, Lebanon, Perry, Westmoreland, and York Counties. The Ohio Pipeline Project included the portions of Washington County west of the existing plant located in Houston, PA. The portion of Washington County to the east of the existing Houston, PA plant, all of Allegheny County, and the portion of Westmoreland County west of Delmont, PA were all previously surveyed during the botanical survey of the ME1 project under PNDI 22132 (Updated 22007). The Botanical Survey Report PNDI No. 22132 (Updated 22007) Mariner East Pipeline – Houston to Delmont is included in this Botanical Survey Report submittal package (Appendix B). PA DCNR clearance letters from the ME1 and OPP botanical surveys have been included in Appendix.

SPLP proposes to construct and operate the Project which would expand existing pipeline systems to provide natural gas liquid (NGL) transportation of up to 350,000 barrels per day. The Project involves the phased installation of approximately 561 miles of two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, PA to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines (Figure 1, Appendix C). Initially, a 20-inch (in) diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306 miles) and a second, up to 20-in diameter pipeline, would be installed in the same ROW within 5 years. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. The following provides the details of the proposed pipeline facilities:

- Phase 1: Houston, PA to Marcus Hook, PA – This is an incremental expansion of the capacities of Sunoco Logistics to transport NGL's to the Marcus Hook facility. This Phase of the Project will include a 20 in diameter steel pipeline and pump stations. The route of the pipeline is either inside or adjacent to the existing Sunoco pipeline corridor and is approximately 306 miles long.

- Phase 2: Delmont, PA to Marcus Hook, PA – The second phase of the project will be completed should customer demand prove that additional transport capacity for ethane is required. The pipeline route for Phase 2 will include 255 miles of pipeline that will be inside the existing Sunoco corridor.

<u>Aboveground facilities in Pennsylvania</u>:

- Houston, PA has an existing facility which will connect to the pipeline. This Project will install meters on the outlets from existing storage, injection pumps, control valves, associated piping and accessory structures.

- Delmont, PA has an existing site and this Project will expand the pump station with added booster pumps, associated piping and accessory structures.
- Ebensburg, PA has an existing site and this Project will expand the pump station with added booster pumps, leak detection metering, associated piping and accessory structures.
- Middletown, PA has an existing pump station and this Project will expand the pump station with added booster pumps, associated piping and accessory structures.
- Beckersville, PA has an existing pump station and this Project will add to the pump station with leak detection metering, associated piping and accessory structures.
- Twin Oaks, PA is an existing site and this Project will install custody transfer meters and control valves.
- There are 50 Mainline Valve sets planned for this Project, which will be placed at as many existing valve sites as possible

Support Sites (Pipe / Contractor Yards and Access Roads)

SPLP is in the initial phases of project design and site selection and as such exact locations to be utilized for contractor and pipe yards have not been determined. The contractor and pipe yards will be used for equipment, pipe, and material storage, as well as temporary field offices and pipe preparation/field assembly areas during construction. Site selection and acquisition will continue throughout the planning and permitting stages of the Project. In most cases, contractors will be required to site pipe and contractor yards in previously developed areas that will require no new land disturbance.

Support Sites (Access Roads)

To the extent possible, SPLP will use existing public and private roads for temporary construction access to the mainline pipeline Right-of-Ways (ROWs) and aboveground facilities. SPLP is currently in the process of identifying potential temporary and permanent access roads and will provide detailed information relative to access road location, length, and land acreage requirements within all agency filings. SPLP will seek and obtain the necessary property rights and approvals from landowners and government agencies prior to the use or construction of such roads.

The AOCs provided by the PA DCNR generally represented a 1500-foot (ft) buffer around the pipeline route. Changes or “reroutes” made by SPLP to the proposed pipeline alignment that went outside the 1500-ft buffer were communicated to the PA DCNR by Tetra Tech Inc.

A large reroute, referred to as the “Twin Oaks-30 Mile Reroute”, was a 30-mile reroute located in Chester and Delaware Counties. The PA DCNR was notified of the reroute and an updated PNDI search receipt (Update 22275, dated March 13, 2014) was generated which included numerous additional SOSC and associated AOCs not included on the original PNDI receipt. SPLP determined that the Twin Oaks-30 Mile Reroute was not feasible and reverted to the original proposed alignment contained in the initial submittal to the PA DCNR. None of the SOSC or associated AOCs for the Twin Oaks-30 Mile Reroute were included as part of this botanical survey.

Provided AOCs that existed completely outside the pipeline survey corridor (300-ft) were not included in the botanical survey. This includes areas initially provided by the PA DCNR that fell outside the survey corridor and areas where the pipeline was rerouted (but still within the 1500-ft PA DCNR buffer), resulting in the provided AOC existing outside the survey corridor. The PA DCNR determined during the April 16, 2015 meeting with Tetra Tech that two AOCs (ALT W2, ALT W4) were exempt from 2015 surveys. It was determined that no survey was necessary for grass-leaved rush (*Juncus biflorus*) in AOC ALT W2 due to a reroute in the pipeline alignment that bypassed AOC ALT W2 entirely. SPLP will cross AOC ALT W4

utilizing a horizontal directional drill (HDD) boring which will avoid impacts to any SOSC in the AOC. The directional bore underneath AOC ALT W4 will travel from outside of the original surveyed corridor to end up within areas that had been reviewed in the initial survey of the AOC.

AOCs previously surveyed as part of the ME1 project include AOC W2 through AOC W7. These areas were not surveyed as part of the Pennsylvania Pipeline Project. The results of the botanical survey for ME1 are included in the attached Botanical Survey Report PNDI No. 22132 (Updated 22007) Mariner East Pipeline – Houston to Delmont (Appendix B). A PA DCNR clearance letter was received for the ME1 project and is provided in Appendix A. AOC W1 was not located in the footprint of this project and was included in the Botanical Survey Report PNDI No. 22275 (Updated 22275) for the Ohio Pipeline Project submitted on February 27, 2015. A PA DCNR letter of no adverse effects was received for the OPP (Appendix A).

The Plant Species of Special Concern Table (Table 1, Appendix D) summarizes the SOSC listed on PNDI search receipts 22275, dated January 30, 2014 and Update 22275, dated March 13, 2014. The Communities of Concern Table (Table 2, Appendix D) summarizes the COC listed on the same three search reciepts. SOSC or COC not surveyed (NS) for are noted on Table 1 and Table 2 (Appendix D).

In addition to the surveys that were conducted in this report for the PA state listed SOSC listed on PNDI search receipts 22275, coordination with the United States Fish and Wildlife Service (US FWS) yeilded an additional required survey for the Northeastern bulrush (*Scirpus ancistrochaetus*). Though survey areas for these two surveys overlapped in areas, a separate report will be generated for the Northeastern bulrush survey. Thae bulrush report will be submitted to USFWS and all coordination regarding this federally listed species will be done with USFWS, but any identified populations of *S. ancistrochaetus* will be accounted for in both botanical reports.

This report summarizes the species biology and habitat preferences, methods, results, and conclusions of a botanical survey conducted throughout 2014 and 2015 growing seasons to determine the presence or absence and extent of the SOSC and COC listed on PNDI search receipt 22275 (Updated 22275) within the portions of the survey corridor that intersect with the assigned AOCs of the Project. Under Wild Plant Management Permit Numbers 14-624/15-624 (Appendix E), lead environmental scientist Korey McCluskey of Tetra Tech Inc. led a team that also included environmental scientists Codie Vileno (Permit Nos. 14-623/15-623), and Greg Stevens (Permit No. 15-676), Jason McGuirk (Permit No. 14-651), A.J Grech, and Deanna Quinn (Permit No. 14-650) of Tetra Tech Inc. Surveys were also conducted by Kevin Keat and David Bonomo (Permit No. 14-578) of Environmental Consultation Services Inc. (ECSI).

2.0 SPECIES BIOLOGY AND HABITAT PREFERENCE

2.1 MOUNTAIN BUGBANE ATTRIBUTES

Mountain bugbane (*Actaea podocarpa*) is a perennial herbaceous member of the Buttercup Family (Ranunculaceae) with stems 0.7 to 1.5 meters (m) tall (PNHP 2014a). It has palmately compound three-lobed leaves with large, toothed, ovate-obovate terminal leaflets approximately 6 to 16 centimeters (cm) wide (Rhoads and Block, 2007). The inflorescence is a slender raceme, approximately 10 to 60 cm long. The flowers are small, radially symmetric, with numerous distinctive white stamens. Mountain bugbane is distinguished from its congeners by its long flowering raceme; stalked, thin papery follicle fruit; five sepals, and the presence of three or more carpels. (PNHP 2014a; Rhoads and Block 2007).

Mountain bugbane is globally ranked as G4 (apparently secure), state ranked as S3 (vulnerable), and its Pennsylvania status is threatened (PT) with a proposed Pennsylvania status of rare (PR) (PNHP 2015). Mountain bugbane is found from Pennsylvania west to Illinois and south to Tennessee and Georgia (Natureserve 2015). In Pennsylvania, mountain bugbane is found primarily in the Appalachian Mountains in the southwest part of the state in moist, rich hardwood forests, often in mountain coves or north-facing slopes. In Pennsylvania, mountain bugbane flowers in August (PNHP 2014a; Rhoads and Block 2007).

2.2 LOW SERVICEBERRY ATTRIBUTES

Low serviceberry or low juneberry (*Amelanchier humilis*) is a woody perennial member of the Rose Family (Rosaceae) that grows to be between 0.3 and 8 m tall. It has densely tomentose leaves becoming glabrescent beneath. Leaflets are most commonly oval-oblong with serrate veins that fork and enter the teeth. Low serviceberry has an erect, densely tomentose raceme and produces densely tomentose flowers with petals that are 7-10 millimeters (mm) in length (Rhoads and Block 2007).

Low serviceberry is globally ranked as G5 (secure), state ranked in Pennsylvania as S1 (critically imperiled), has a tentatively undetermined (TU) current status, and a proposed status of PA endangered (PE) (PNHP 2015). Low serviceberry is distributed from Nebraska east to Pennsylvania, north to Canada, and south to West Virginia and Missouri (NatureServe 2015). In Pennsylvania, Low serviceberry is found scattered across the state (Rhoads and Block 2007, USDA 2015). This species reaches the southern limit of its range in southern Pennsylvania. Low serviceberry grows on dry, open sites with rocky, gravelly or sandy soil, often in calcareous regions. Low serviceberry typically flowers in PA from April to mid-May and fruits from June to early-July (Rhoads and Block 2007).

2.3 ROUNDLEAF SERVICEBERRY ATTRIBUTES

Roundleaf serviceberry (*Amelanchier sanguinea*) is a woody perennial member of the Rose Family (Rosaceae) that grows to be between 3 and 6 m tall. It has alternate, coarsely-toothed, oblong to subrotund leaflets with lateral veins extending into teeth (Rhoads and Block 2007). Roundleaf serviceberry has a long, drooping raceme with flowers that have five white petals approximately 11-15mm in length and group in small clusters, distinguishing it from its congeners (PNHP 2012b; Rhoads and Block 2007).

Roundleaf serviceberry is globally ranked as G5 (secure), state ranked as S1 (critically imperiled), and its Pennsylvania status is tentatively undetermined (PNHP 2015). Roundleaf serviceberry is distributed from Maine west throughout Canada, South to Kansas, and West to Georgia (Natureserve 2015). In Pennsylvania, roundleaf serviceberry is found scattered across the state growing on dry, rocky slopes, cliffs, and outcrops in scrubby woods and exposed locations (Rhoads and Block 2007). In Pennsylvania, roundleaf serviceberry flowers from late April to mid-May and fruits from June to early July (PNHP 2012b; Rhoads and Block 2007).

have white, pale yellow, or green spots. It is also distinguished from other congeners in its relatively smaller stature (MDC NAP 2004; Rhoads and Block 2007).

Shining ladies' tresses is globally ranked as G5 (secure), state ranked as S3 (vulnerable), and it is not currently listed in Pennsylvania, but it is proposed PA threatened (PNHP 2015). Shining ladies' tresses occurs from Quebec and New Brunswick south to North Carolina and Georgia and west to Missouri and Indiana (NatureServe 2011). In Pennsylvania, it is found in moist meadows, often on calcareous soils, mostly in the south and west portions of the state, and it flowers from May to July (Rhoads and Block 2007).

2.27 SERPENTINE ASTER ATTRIBUTES

Serpentine aster (*Symphyotrichum depauperatum*) is a perennial herb in the Aster Family (Asteraceae) (PNHP 2014o). It grows in clumps with smooth, wiry, flowering stems that reach 4dm in height (PNHP 2014o). Oblong basal leaves are about 4cm in length while alternate narrow leaves line the stem (PNHP 2014o). Flowering stems produce many yellow-white daisy-like flower heads with 7-16 petals in branching clusters (PNHP 2014o, Rhoads and Block 2007).

Serpentine aster is globally ranked as G2 (imperiled), state ranked as S2 (imperiled), and it has a current status of PA Threatened (PNHP 2015). It is endemic to Pennsylvania and Maryland's eastern serpentine barrens (PNHP 2014o). Lancaster, Chester, and Delaware counties in Pennsylvania are considered the "stronghold" of the species (PNHP 2014o). Flowers can be seen from August through October (PNHP 2014o).

2.28 THICK-LEAVED MEADOW-RUE ATTRIBUTES

Thick-leaved meadow-rue (*Thalictrum coriaceum*) is a dioecious, perennial herb in the Buttercup Family (Ranunculaceae). It grows up to 1m tall, and it has a low woody base (PNHP 2011c, Rhoads and Block 2007). Flowers do not grow petals but are white to purple colored sepals (PNHP 2011c). Leaves are compound with as many as 4 kidney shaped or round leaves, lobed or toothed along the outer margins (PNHP 2011c). Roots are bright yellow in color (PNHP 2011c, Rhoads and Block 2007).

Thick-leaved meadow-rue is globally ranked as G4 (apparently secure), state ranked as S2 (vulnerable), and it has a current status of PA endangered (PNHP 2015). It is found from Pennsylvania south to Tennessee and Georgia (PNHP 2011c, USDA 2011). In Pennsylvania, thick-leaved meadow-rue grows in pristine forest habitat with rocky open wooded areas with rich piedmont terrain or moist mountain soils PNHP 2011c. It often flowers between late May and June in its Pennsylvania ranges (Rhoads and Block 2007).

2.29 KATE'S MOUNTAIN CLOVER ATTRIBUTES

Kate's mountain clover (*Trifolium virginicum*) is a perennial herb that grows from a stout taproot in the Pea Family (Fabaceae) (Rhoads and Block 2007, NatureServe 2015). It is a small plant, typically between 1-2 dm in height, with prostrate, pubescent stems, linear to oblanceolate shaped leaflets, flowers appear yellowish-white, and produce legumes with 1-6 seeds (NatureServe 2015, Rhoads and Block 2007).

Kate's mountain clover is globally ranked as G3 (vulnerable), state ranked as S1 (critically imperiled), and it has a current status of PA endangered (PNHP 2015, NatureServe 2015). It is found along one portion of the ridge and valley province in Virginia, West Virginia, Maryland, and southern Pennsylvania (USDA 2011). In Pennsylvania, Kate's mountain clover is primarily from outcrops of Devonian, Ordovician, and Silurian shales, and rarely from limestone (NatureServe 2015). Known to flower from May through August (Rhoads and Block 2007).

2.30 NETTED CHAIN FERN ATTRIBUTES

Netted chain fern (*Woodwardia areolata*) is a perennial forb/herb in the Chain Fern Family (Blechnaceae). It is an average size plant, growing between 5-8 dm tall, often forming small colonies (PNHP 2011d, Rhoads and Block 2007). It has a typical flattened, fern-like appearance, green in color with 7 to 12 deeply lobed leaflets with conspicuous leaf veins arranged in a net or chain-like appearance Fertile leaves are darker colored, narrow, and unflattened with spore structures located on the underside (PNHP 2014aa). Often mistaken for the Sensitive Fern (Onoclea sensibilis), take note of the Netted Chain Fern's alternately arranged lobes and the noticeable difference between fertile fronds (PNHP 2011d, Rhoads and Block 2007, USDA 2015).

Netted chain fern is globally ranked as G5 (secure), state ranked as S2 (imperiled), and it has a current status of PA rare (PNHP 2015). It is found from along the Atlantic coastal plain from Nova Scotia south and west into Texas and Florida. (PNHP 2011d). In Pennsylvania, netted chain fern is found in scattered counties especially in the Delaware River drainage, often growing in swamps, seepages, wet woods, boggy wetlands, and along margins of streams (PNHP 2011d).

3.0 METHODS

Prior to field surveys of the assigned Areas of Concern (AOCs), floras and herbarium specimens from the Carnegie Museum of Natural History (CMNH), and reference websites (see References) were consulted for information on characteristic morphological traits, flowering time, habitat preferences, and associated plant species. If a known reference population of the SOSC was accessible prior to field surveys it was visited to verify whether distinguishing morphological characteristics were present. USGS topographic mapping (Figure 1 and Figures 2-Index-1 to 2-Index-19, Appendix C) and aerial photography mapping of the study area were reviewed to evaluate areas of potential SOSC habitat (Figures 2-1 to 2-72, Appendix C) and target areas within each AOC to focus the field surveys on.

Field surveys were conducted in accordance with DCNR's *Protocols for Conducting Surveys for Plant Species of Special Concern, Part 2 of 4*, Conducting the Botanical Survey (PNHP 2011g). The limits of the study area were based on an approximately 300-foot wide survey corridor that encompassed the pipeline's limit of disturbance (LOD), a 100-foot wide survey corridor encompassing access roads, and the LOD of ancillary facilities (Figures 2-1 to 2-72, Appendix C). AOCs that fell completely outside the survey corridor were not included in the botanical survey. This includes areas initially provided by the PA DCNR that fell outside the survey corridor and areas where the pipeline was rerouted, resulting in the provided AOC existing entirely outside the survey corridor.

The PA DCNR determined during the April 16, 2015 meeting with Tetra Tech that two AOCs (ALT W2 and ALT W4) were exempt from survey. It was determined that no survey was necessary for grass-leaved rush (*Juncus biflorus*) in AOC ALT W2 due to a reroute in the pipeline alignment that bypassed AOC ALT W2 entirely. SPLP will cross AOC ALT W4 utilizing a horizontal directional bore (HDD) which will avoid impacts to any SOSC in the AOC. The directional bore underneath AOC ALT W4 will travel from outside of the original surveyed corridor to end up within areas that had been reviewed in the initial survey of the AOC.

AOCs previously surveyed as part of the ME1 project include AOC W2 through AOC W7. These areas were not surveyed as part of this Project. The results of the botanical survey for ME1 are included in the attached Botanical Survey Report PNDI No. 22132 (Updated 22007) Mariner East Pipeline – Houston to Delmont (Appendix B). AOC W1 is included in the Botanical Survey Report PNDI No. 22275 (Updated 22275) Ohio Pipeline Project submitted on February 27, 2015.

Habitat and hydrologic requirements for the SOSC were determined prior to conducting the survey. Field investigations of the AOCs occurred within the survey corridor crossings of AOCs. Botanical surveys were conducted over the 2014 and 2015 growing seasons. The timing of these surveys coincided with the recommended survey periods for the AOC specific SOSC listed on the PNDI response letter and listed in Table 1 of Appendix D. The multiple rounds of field surveys ensured that all SOSC listed in the search receipt that were within the defined survey corridor were surveyed for during the recommended survey period. In addition, characteristic photographs of the listed target SOSC are included in the Representative Photographs of SOSC (Appendix F).

Surveys for individual plants were done by two or three individuals walking in a systematic back-and-forth meander through the survey corridor within the assigned AOC. Less accessible areas (e.g. steep slopes or cliffs and extremely dense thicket communities) were surveyed in a random manner, slightly different than the methods mentioned above, but still ensuring coverage of the entire study corridor. Vegetation was reviewed within the entire length and width of the survey corridor, associated access roads, and ancillary facility LODs that lay within each of the assigned AOCs. The study area was divided into habitat types based on species composition and association, aspect and slope, soil and geology conditions, probable land use history, disturbance, and other factors present. Habitat classification and nomenclature was based on the Terrestrial & Palustrine Plant Communities of Pennsylvania 2nd Ed. (Zimmerman et al., 2012)

Habitat types encountered in the Project study area:

1) AG/FF Agriculture/ Fallow Field
2) BTF Broadleaf Terrestrial Forest
3) BTW Broadleaf Terrestrial Woodland
4) CBTF Coniferous - Broadleaf Terrestrial Forest
5) CBTW Coniferous – Broadleaf Terrestrial Woodland
6) CTF Coniferous Terrestrial Forest
7) MBTF Mesic Broadleaf Terrestrial Forest
8) MBTW Mesic Broadleaf Terrestrial Woodland
9) MSB Mesic Broadleaf Woodland
10) MSF Mesic Broadleaf Forest
11) PE Palustrine Emergent Wetland
12) PF Palustrine Forested Floodplain
13) PS Palustrine Scrub-Shrub Wetland
14) PSFP Palustrine Successional Farm Pond
15) RBTF Riverine Broadleaf Terrestrial Forest
16) RBTW Riverine Broadleaf Terrestrial Woodland
17) SGL Serpentine Grassland
18) THO Terrestrial Herbaceous Opening
19) TOM Terrestrial Open Meadow
20) TS Terrestrial Shrub Opening/Terrestrial Shrubland
21) URD Urban-Residential-Developed

Within each individual habitat of each assigned AOC, a Botanical Field Survey Form was filled out containing a species list, moisture level, canopy coverage, aspect and slope, relative age, disturbance and other relevant habitat information, and is included in Appendix G. Dominant species in each individual habitat were asterisked or given an estimated percent cover, while non-dominant plants were not. Representative photographs of each habitat type were taken from various locations along the Project and are included in the Representative Habitat Photographs (Appendix H).

All individual recorded habitats where located within areas of the survey corridor, associated access roads, and ancillary facility LODs that lay within each of the assigned AOCs. Each of the assigned AOCs was evaluated for the presence or absence, extent, and potential habitat suitability for the SOSC listed in each of the assigned AOCs listed in the Plant Species of Special Concern Table (Table 1, Appendix D). While survey efforts were focused on the SOSC listed in the PNDI search receipt, the potential presence of all other species on the PNHP SOSC list (PNHP 2015) was assessed within each AOC evaluated.

4.0 HABITAT DESCRIPTIONS AND RESULTS

Field investigations for the Project were conducted during the 2014 and 2015 growing seasons, beginning in April, 2014 and concluding in August, 2015. Botanical surveys were completed in an effort to determine the presence/absence, extent, and habitat suitability potential present for the PNDI 22275 (Updated 22275) listed SOSC within the botanical survey corridor crossings of 23 individual AOCs. Weather conditions during the growing seasons of 2014 and 2015 varied greatly. Climatic and hydrologic conditions were typical during the majority of the 2014 and 2015 field surveys with the exception of the spring of 2014 and the early summer of 2015, which were both unseasonably wet.

As noted in the Introduction (Section 1.0), prior to field investigations the determination was made by the PA DCNR that portions of the project area intersects with 23 AOCs that could contain the AOC specific target SOSCs or potentially suitable habitat for those SOSC. The prevalence of invasive species and human activities across the Project have reduced the potential for suitable habitat within many of the assigned AOCs. Other disturbances include agriculture, grazing, logging, construction, residential, commercial, and industrial development, periodic herbicide treatment, and mowing. These anthropogenic impacts extend throughout significant portions of the Project and severely limit the potential for sustained habitat suitability for the listed target SOSC.

Botanical Field Survey Forms (Appendix G) and Representative Habitat Photographs (Appendix H) that detail the existing vegetation, soil characteristics, and topography were prepared to help categorize individual recorded habitats within the assigned AOCs into generalized habitat types, as to assist in assigning preference to those communities that met suitable habitat requirements for the AOC specific target SOSC. Comprehensive vegetation lists of plant species occurring within each AOC are provided in Appendix I. Soils located within the study area are presented in the Soils Table (Table 3, Appendix D). A summary of the listed SOSC, assigned AOCs, individual recorded habitat areas, general habitat types, potential habitat suitability, and presence/absence within those recorded habitat areas is clarified in the Habitat Suitability and Presence Table (Table 4, Appendix D). Generalized habitat types identified within the Project survey corridor and listed in the Methods (Section 3.0) portion of this report are described below.

4.1 HABITAT DESCRIPTIONS

Habitat types across the Project study area were observed to have great variability in species composition and associations. Specific associations within each of these generalized habitat types are described in detail in the general habitat description sections of the botanical field survey forms included for each of the individually recorded habitat areas (Appendix G).

4.1.1 AGRICULTURE/FALLOW FIELD

Agriculture/Fallow Field AG/FF habitat type occurs rarely within the project area. The habitat type is characterized by planted crops and managed fields dominated by planted pasture grasses. Soils conditions within these habitats are generally dry. Common vegetation within the habitat consists of corn (*Zea mays*), orchard grass (*Dactylis glomerata*), common Timothy (*Phleum pratense*), Indian-hemp (*Apocynum cannabinum*), common yarrow (*Achillea millefolium*), Queen Anne's lace (*Daucus carota*). No tree or shrubs are generally present within this habitat type.

Botanical Field Survey Forms were recorded at each of the 2 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as AG/FF can be found in Table 4 (Appendix D).

4.1.2 BROADLEAF TERRESTRIAL FOREST

The Broadleaf Terrestrial Forest (BTF) habitat type occurs commonly throughout the project area. Soils conditions within these habitats range from dry to mesic. Various tree species observed include oaks (*Quercus* spp.), hickories (*Carya* spp.), black cherry (*Prunus serotina*), tuliptree (*Liriodendron tulipifera*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), sweet birch (*Betula lenta*), yellow birch (*Betula allegheniensis*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), basswood (*Tilia americana*), black-gum (*Nyssa sylvatica*). Conifers are also common in the BTF habitat, but make up a negligible percentage of the tree canopy. Typical conifers that may be found in the BTF habitat include pitch pine (*Pinus rigida*), Virginia pine (*Pinus virginiana*), eastern white pine (*Pinus strobus*), and hemlock (*Tsuga canadensis*). Shrubs include mountain laurel (*Kalmia latifolia*), blueberries (*Vaccinium* spp.), flowering dogwood (*Cornus florida*), witch-hazel (*Hamamelis virginiana*), spice bush (*Lindera benzoin*), and hop-hornbeam (*Ostrya virginiana*). The herbaceous stratum is highly variable across the evaluated study area. Representative species include wood ferns (*Dryopteris* spp.), New York fern (*Thelypteris noveboracensis*), rattle-snake fern (*Botrychium virginianum*), may-apple (*Podophyllum peltatum*), wild leek (*Allium tricoccum*), violets (*Viol*a spp.), false Solomon's-seal (Smilacina racemosa), and Pennsylvania sedge (*Carex pennsylvanica*).

Botanical Field Survey Forms were recorded at each of the 26 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as BTF can be found in Table 4 (Appendix D).

4.1.3 BROADLEAF TERRESTRIAL WOODLAND

The Broadleaf Terrestrial Woodland (BTW) habitat type occurs commonly throughout the project area, usually in association with BTF. Soils conditions within these habitats are commonly dry and/or acidic. Various tree species observed include Chestnut oak (*Quercus montana*), Yellow oak (*Quercus muhlenbergii*), black-oak (*Quercus velutina*), sweet birch (*Betula lenta*), and black-gum (*Nyssa sylvatica*). Conifers are also occur in the BTW habitat, but make up a smaller percentage of the tree canopy. Common conifers found in the BTW habitat include pitch pine (*Pinus rigida*) and eastern white pine (*Pinus strobus*). Common shrubs in the habitat include viburnums (*Viburnum* spp.), blueberries (*Vaccinium* spp.), mountain laurel (*Kalmia latifolia*), witch-hazel (*Hamamelis virginiana*), and hackberry (*Celtis occidentalis*). Common herbs include wood ferns (*Dryopteris* spp.), Pennsylvania sedge (*Carex pennsylvanica*), wild sarsaparilla (*Aralia nudicaulis*), and Virginia creeper (*Parthenocissus quinquefolia*). Bryophytes and lichens occur in some communities.

Botanical Field Survey Forms were recorded at each of the 25 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as BTW can be found in Table 4.

4.1.4 CONIFEROUS - BROADLEAF TERRESTRIAL FOREST

Soils conditions within the Coniferous – Broadleaf Terrestrial Forest (CBTF) habitats are generally dry and sandy. Some communities may exhibit a rocky forest floor with exposed bedrock. Common trees observed in the habitat consist of eastern white pine (*Pinus strobus*), Virginia pine (*Pinus virginiana*), red pine (*Prunus resinosa*), and eastern hemlock (*Tsuga canadensis*). Hardwood associates include chestnut oak (*Quercus montana*), red oak (*Quercus rubra*), white oak (*Quercus alba*), black cherry (*Prunus serotina*), sweet birch (*Betula lenta*), and white ash (*Fraxinus Americana*). Shrubs consist of witch-hazel (*Hamamelis virginiana*), spice bush (Lindera benzoin), mountain laurel (*Kalma latifolia*), blueberries (*Vaccinium* spp.), and maple-leaved viburnum (*Viburnum acerifolium*). Herbs consist of may-apple (*Podophyllum peltatum*), wood ferns (*Dryopteris* spp.), Christmas fern (*Polystichum acrostichoides*), Pennsylvania sedge (*Carex pennsylvanica*), and common-wood sorrel (*Oxalis acetosella*).

Botanical Field Survey Forms were recorded at each of the 8 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as CBTF can be found in Table 4 (Appendix D).

4.1.5 CONIFEROUS - BROADLEAF TERRESTRIAL WOODLAND

The Coniferous – Broadleaf Terrestrial Woodland (CBTW) habitat type is rare within the project area, often occurring in association with BTF and/or BTW habitat types. Soils conditions within the habitat are commonly dry and acidic. Some communities exhibit calcareous shale outcrops with "shale barren" characteristics. CBTW closely resembles the species composition in CBTF. Common trees consist of red pine (*Prunus resinosa*), Virginia pine (*Pinus virginiana*), red-cedar (*Juniperus virginiana*), eastern white pine (*Pinus strobus*), chestnut oak (*Quercus montana*), red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*). Common shrubs consist of blueberries (*Vaccinium* spp.), shadbush (*Amelanchier arborea*), and mountain laurel (*Kalma latifolia*). Herbs consist of Canada may-apple (*Podophyllum peltatum*), wood ferns (*Dryopteris* spp.), Christmas fern (*Polystichum acrostichoides*), Pennsylvania sedge (*Carex pennsylvanica*), and common-wood sorrel (*Oxalis acetosella*).

Botanical Field Survey Forms were recorded at each of the 3 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as CBTW can be found in Table 4.

4.1.6 CONIFEROUS TERRESTRIAL FOREST

Within Coniferous Terrestrial Forest (CTF) habitats conifers generally exceed 75% of the canopy cover within the habitat area. Soils conditions within the habitat are commonly dry and sandy. Typical conifers include Eastern hemlock (*Tsuga canadensis*), pitch pine (*Pinus rigida*), and Virginia pine (*Pinus virginiana*). Associate species include a variety of northern hardwoods and oaks. Typical representatives include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*) red oak (*Quercus rubra*), and witch-hazel (*Hamamelis virginiana*). Typical herbs found within the habitat include Christman fern (*Polystichum acrostichoides*) and wood ferns (*Dryopteris* spp.).

Botanical Field Survey Forms were recorded at each of the 4 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as CTF can be found in Table 4 (Appendix D).

4.1.7 MESIC BROADLEAF TERRESTRIAL WOODLAND & MESIC BROADLEAF WOODLAND

Mesic Broadleaf Terrestrial Woodlands (MBTW) and Mesic Broadleaf Woodlands (MSB) are rich community types that typically occur on rich, deep soils. Soils conditions are generally mesic to wet. Tree species typically include American beech (*Fagus grandifolia*), box elder (*Acer negundo*), red maple (*Acer rubrum*), and tuliptree (*Liriotendron tulipifera*). Common shrubs consist of spice bush (*Lindera benzoin*), witch-hazel (*Hamamelis virginiana*), and common privet (*Ligustrum vulgare*). Typical herbs consist of wood ferns (*Dryopteris* spp.), garlic mustard (*Alliaria petiolata*), bedstraw (*Gallium* spp.), and may-apple (*Podophyllum peltatum*).

A Botanical Field Survey Form was recorded at the 3 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as MBTF and MSF can be found in Table 4 (Appendix D).

4.1.8 MESIC BROADLEAF TERRESTRIAL FOREST (MBTF) & MESIC BROADLEAF FOREST

Mesic Broadleaf Terrestrial Forest (MBTF) and Mesic Broadleaf Forest (MSF) are rich habitat types that typically occur on rich, deep soils. Soils conditions are generally mesic to wet. Tree species typically include slippery elm (Ulmus rubra), black walnut (*Juglans nigra*), silver maple (*Acer saccharinum*), Acer box elder (*Acer negundo*), red maple (*Acer rubrum*), and tuliptree (*Liriotendron tulipifera*). Common shrubs consist of spice bush (*Lindera benzoin*) and silky dogwood (*Cornus amomum*). Typical herbs consist of Jewel weed (*Impatiens capensis*), clearweed (*Pilea pumila*), white avens (*Geum canadense*), and garlic mustard (*Alliaria petiolata*).

Botanical Field Survey Forms were recorded at each of the 5 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as MBTW and MSB can be found in Table 4 (Appendix D).

4.1.9 PALUSTRINE EMERGENT WETLAND

The Palustrine Emergent Wetland (PE) habitat type occurs sporadically throughout the project area, usually in association with the palustrine forested wetland (PF) and/or palustrine scrub-shrub wetland (PS) habitat types. PE is an herb dominated habitat that occurs on temporarily saturated to permanently flooded soils. Herbaceous vegetation typically consists of sedges (*Carex* spp.), soft rush (*Juncus effusus*), path rush (*Juncus tenuis*), rice-cut grass (*Leersia oryzoides*), smartweeds (*Persicaria* spp.), reed canary grass (*Phalaris arundinacea*), Jewel weed (*Impatiens* spp.), bulrushes (*Scirpus* spp.), and sensitive fern (*Onoclea sensibilis*). Tree and shrub cover is typically sparse within the habitat type. Representative species include slippery elm (*Ulmus rubra*), red maple (*Acer rubrum*), muscle wood (*Carpinus caroliniana*), American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), black walnut (*Junglans nigras*), spice bush (*Lindera benzoin*), and dogswoods (*Cornus* spp.).

Botanical Field Survey Forms were recorded at each of the 10 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as PE can be found in Table 4 (Appendix D).

4.1.10 PALUSTRINE FORESTED FLOODPLAIN

The Palustrine Forested Wetalnd (PF) habitat type occurs sporadically throughout the project area, usually in association with the PE and/or PS habitat types. PF is a tree dominated habitat that occurs on temporarily saturated to permanently flooded soils. Common trees within the habitat consist of slippery elm (*Ulmus rubra*), black willow (*Salix nigra*), red maple (*Acer rubrum*), muscle wood (*Carpinus caroliniana*), American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), ash (*Fraxinus* spp.), Eastern cottonwood (*Populus deltoids*), and black walnut (*Juglans nigra*). Shrubs may make up a significant part of the habitat. Typical shrubs consist of spice bush (*Lindera benzoin*), dogwoods (*Cornus* spp.), and American elder (*Sambucus nigra*). Herbaceous cover may be sparse to dense. Common herbs include sedges (*Carex* spp.), soft rush (*Juncus effusus*), path rush (*Juncus tenuis*), rice-cut grass (*Leersia oryzoides*), smartweeds (*Persicaria* spp.), reed canary grass (*Phalaris arundinacea*), Jewel weed (*Impatiens* spp.), bulrushes (*Scirpus* spp.), and sensitive fern (*Onoclea sensibilis*).

Botanical Field Survey Forms were recorded at each of the 9 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as PF can be found in Table 4 (Appendix D).

4.1.11 PALUSTRINE SCRUB-SHRUB WETLAND

The Palustrine Scrub-Shrub Wetland (PS) habitat type is rare within the project area and usually occurs in association with the PE and/or PF habitat types. PS is a shrub and immature tree dominated habitat that occurs on temporarily saturated to permanently flooded soils. This habitat is commonly associated with PE or PF habitats. Typical shrub species include spice bush (*Lindera benzoin*), dogwoods (*Cornus* spp.), and American elder (*Sambucus nigra*). Immature trees include slippery elm (*Ulmus rubra*), black willow (*Salix nigra*), red maple (*Acer rubrum*), muscle wood (*Carpinus caroliniana*), American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), ash (*Fraxinus* spp.), Eastern cottonwood (*Populus deltoids*), and black walnut (*Juglans nigra*). Mature trees may be present, but do not make up a significant part of the habitat. Herbaceous cover may be sparse to dense. Common herbs include sedges (*Carex* spp.), soft rush (*Juncus effusus*), path rush (*Juncus tenuis*), rice-cut grass (*Leersia oryzoides*), smartweeds (*Persicaria* spp.), reed canary grass (*Phalaris arundinacea*), Jewel weed (*Impatiens* spp.), bulrushes (*Scirpus* spp.), and sensitive fern (*Onoclea sensibilis*).

Botanical Field Survey Forms were recorded at each of the 2 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as PS can be found in Table 4 (Appendix D).

4.1.12 PALUSTRINE SUCCESSIONAL FARM POND

The Palustrine Successional Farm Pond (PSFP) habitat is rare within the project area and only occurs once. Soil conditions within the habitat are wet to inundated. The habitat consists of a PE habitat type fringing an impounded farm pond. Typical herbaceous vegetation includes rice-cut grass (*Leersia oryzoides*), duck-potato (*Sagittaria latifolia*), arrow-leaved tear thumb (*Persicaria sagittata*), spike-rush (*Eleocharis obtuse*), Canada rush (*Juncus canadensis*), and bulrush (*Scirpus atrovirens*). No trees are present in the habitat, shrubs are sparse and include buttonbush (*Cephalanthus occidentalis*).

A Botanical Field Survey Form was recorded at the habitat area that are represented by this habitat category. A list of the recorded habitat areas that were categorized as PSFP can be found in Table 4 (Appendix D).

4.1.13 RIVERINE BROADLEAF TERRESTRIAL FOREST

The Riverine Broadleaf Terrestrial Forest (RBTF) habitat occurs sporadically throughout the project area adjacent to large streams and rivers. Soil conditions within the habitat are commonly mesic to wet and often sandy. Some areas may be seasonally saturated or ponded. Typical trees found in this habitat include American sycamore (*Platanus occidentalis*), bitter-nut hickory (*Carya cordiformis*), box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), sweet birch (*Betula lenta*), elm (*Ulmus* spp.), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), eastern hemlock (*Tsuga canadensis*), black willow (*Salix nigra*), and tuliptree (*Liriodendron tulipifera*). Shrubs include spice bush (*Lindera benzoin*), witch hazel (*Hamamelis virginiana*), dog wood (*Cornus* spp.), honeysuckle (*Lonicera* spp.). The herbaceous stratum is highly variable across the evaluated study area. Representative species include ramblers rose (*Rosa multiflora),* Japanese knotweed (*Polygonum cuspidatum*), river bank rye (*Elymus riparius*), Virginia bluebells (*Mertensia virginica*), buttercup (*Ranunculus spp.),* mother-of-the-evening (*Hesperis matronalis*), poison ivy (*Taraxicum officinale*), Virginia creeper (*Parthenocissus quinquefolia*), and Japanese stilt grass (*Microstegium vimineum*).

Botanical Field Survey Forms were recorded at each of the 6 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as RBTF can be found in Table 4 (Appendix D).

4.1.14 RIVERINE BROADLEAF TERRESTRIAL WOODLAND (RBTW)

The Riverine Broadleaf Terrestrial Woodland (RBTW) habitat type is rare and occurs only once in the project area. Soil conditions within the habitat are mesic to wet. Common tree species include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), and black cherry (*Prunus serontina*). Shrubs include gray dogwood (*Cornus racemosa*), Flowering dogwood (*Cornus florida*), honeysuckle (*Lonicera* spp.), and black elder (*Sambucus nigra*). Herbs include garlic mustard (*Alliaria petiolata*), jewel weed (*Impatiens* spp.), early meadow rue (*Thalictrum dioicum*), buttercup (*Ranunculus* spp.), goldenrod (*Solidago* spp.), violets (*Viola* spp.), and rough bedstraw (*Galium asprellum*).

A Botanical Field Survey Form was recorded at the habitat area that are represented by this habitat category. A list of the recorded habitat areas that were categorized as RBTW can be found in Table 4 (Appendix D).

4.1.15 SERPENTINE GRASSLAND

The Serpentine Grassland (SGL) habitat is listed as a Community of Concern (COC) on the PNDI search receipt. The habitat is rare within the project area, with only a single instance of the habitat having been identified. The SGL habitat type is part of the "Serpentine barren complex". It is restricted to areas underlain by serpentinite bedrock. The dense, prairie-like graminoid cover is usually dominated by warm-season grasses (Zimmerman et al. 2012). Common vegetation identified included panic grass (*Panicum* sp.), little bluestem (*Schizachyrium scoparium*), sandrush (*Bulbostylis capillaris*), slender knotweed (*Polygonum tenue*), and common ragweed (*Ambrosia artemisiifolia*).

A Botanical Field Survey Form was recorded at the habitat area that are represented by this habitat category. A list of the recorded habitat areas that were categorized as SGL can be found in Table 4 (Appendix D).

4.1.16 TERRESTRIAL HERBACEOUS OPENING

The Terrestrial Herbaceous Opening (THO) habitat type is an herb dominated habitat that occurs commonly throughout the project area. The THO habitat type is usually associated with maintained ROWs and other non-residential/non-agricultural maintained herb communities. Soils conditions within the habitat are dry to mesic and commonly disturbed. Common herbaceous vegetation with the habitat includes garden birds-foot-trefoil (*Lotus corniculatus*), crown vetch (*Securigera varia*), clover (*Trifolium* spp.), great plantain (*Plantago major*), common yarrow (*Achillea millefolium*), Japanese stilt grass (*Microstegium vimineum*), cinquefoil (*Potentilla* spp.), goldenrod (*Solidago* spp.), and various grasses (Poaceae). Various small shrubs and saplings are also common in the habitat. Representative species include American beech (*Fagus grandifolia*), autumn olive (*Elaeagnus umbellata*), black locust (*Robinia pseudoacacia*), pitch pine (*Pinus rigida*), white pine (*Pinus strobus*), and red maple (*Acer rubrum*).

Botanical Field Survey Forms were recorded at each of the 21 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as THO can be found in Table 4 (Appendix D).

4.1.17 TERRESTRIAL OPEN MEADOW

The Terrestrial Open Meadow (TOM) habitat type is an herb dominated habitat that occurs sporadically throughout the project area. TOM habitat exhibits meadow type characteristics, with little or no disturbance evident. Soils conditions within the habitat are commonly dry to mesic. Common species include black-eyed-susan (*Rudbeckia hirta*), common milkweed (*Asclepias syriaca*), horse nettle (*Solanum carolinense*),

sunflower (*Helianthus* spp.), aster (*Symphyotrichum* spp.), Indian-hemp (*Apocynum cannabinum*), and various grasses (Poaceae).

Botanical Field Survey Forms were recorded at each of the 3 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as TOM can be found in Table 4 (Appendix D).

4.1.18 TERRESTRIAL SHRUB OPENING/TERRESTRIAL SHRUBLAND

The Terrestrial Shrub Opening/Terrestrial Shrubland (TS) habitat type occurs sporadically throughout the project area. TS is a shrub and immature tree dominated habitat that occurs on dry to mesic soils. Various shrub species observed include flowering dogwood (*Cornus florida*), redbud (*Cercis canadensis*), hawthorn (*Crataegus* spp.), Russian olive (*Elaeagnus angustifolia*), honeysuckle (*Lonicera* spp.), shrubby oak (*Quercus ilicifolia*), and viburnums (*Virburnum* spp.). Immature trees include black walnut (*Juglans nigra*), box elder (*Acer negundo*), pitch pine (*Pinus rigida*), white oak (*Quercus alba*), white pine (*Pinus strobus*), and red maple (*Acer rubrum*). Mature trees may be present, but do not make up a significant part of the habitat. Common herbs include cinquefoil (*Potentilla* spp.), whorled loosestrife (*Lysmachia quadrifolia*), common ragweed (*Ambrosia artemisifolia*), Virginia creeper (*Parthenocissus quinquefolia*), Northern dewberry (*Rubus flagellaris*), common black berry (*Rubus allegheniensis*), and goldenrod (*Solidago* spp.).

Botanical Field Survey Forms were recorded at each of the 6 habitat areas that are represented by this habitat category. A list of the recorded habitat areas that were categorized as TS can be found in Table 4 (Appendix D).

4.1.19 URBAN-RESIDENTIAL-DEVELOPED

Urban-Residential-Developed (URD) property consists of urban, residential, and developed areas. These areas are greatly influenced by anthropogenic disturbances and may completely lack vegetative communities or are generally made up of actively maintained vegetation and planted grasses. No botanical field survey forms were completed for this habitat type due to a lack of habitat suitability for any of the target species. A list of the recorded habitat areas that were categorized as URD can be found in Table 4 (Appendix D).F

4.2 AREAS OF CONCERN

4.2.1 AOC W8

A survey for thick-leaved meadow-rue (*Thalictrum coriaceum*) within AOC W8, located in Indiana County, Pennsylvania was assigned due to potential habitat suitability within the PA DCNR defined AOC polygons. AOC W8 is located on private land and also within Pine Ridge Park. Area of Concern W8 is comprised of multiple habitat types including: BTW, MSB, MSF, THO, RBTF, and BTF. W8 was generally dominated by broadleaf terrestrial woodlands, broadleaf terrestrial forests, and terrestrial herbaceous openings [ROW]. Habitats are illustrated on the aerial habitat maps for AOC W8 (Figures 2-1 to 2-5, Appendix C). No potential habitat suitability for *T. coriaceum* exists within habitat areas A, D, E, F, H, or I. Habitat B is considered poor potential habitat. Moderate potential habitat suitability is present within habitats C and G. No *T. coriaceum* or any other SOSC was identified within AOC W8 during the 2014 field investigations (Table 4 and Table 5, Appendix D). The lack of substantial habitat suitability for the thick-leaved meadow-rue within AOC W8 is likely due to the prevalence of invasive species and moderate to high disturbances within the proposed LOD. Where potential habitat exists there are less invasives and a lower level of anthropologic disturbances.

due to the prevalence of invasive species and moderate to high disturbances within the proposed LOD. Where potential habitat exists there were more suitable general habitat characteristics, less invasives, and a lower level of anthropologic disturbances.

4.2.7 AOC W13

A survey for Torrey's rush (*Juncus torreyi*) and Marguerite's clubmoss (*Lycopodiella margueritae*) within AOC W13, located in Blair County, Pennsylvania was assigned due to potential habitat suitability within palustrine emergent wetlands present in the PA DCNR defined AOC polygon. As noted in the search receipt comments from the PA DCNR, potential wetland habitat with some wetland areas containing acidic conditions may provide suitable potential habitat for these AOC specific target species. AOC W13 is located entirely on privately owned land. AOC W13 is comprised of two distinct habitat types including: PE and PSFP. This AOC was dominated by palustrine emergent wetlands and a palustrine successional farm pond. Habitats are illustrated on the aerial habitat maps for AOC W13 (Figure 2-35, Appendix C). No potential habitat suitability for *L. margueritae* exists within either of the recorded habitat areas. Good potential habitat suitability for *J. torreyi* exists within both recorded habitats within AOC W13. No *J. torreyi* or *L. margueritae* or any other SOSC was identified within AOC W13 during the 2014 field investigations (Table 4 and Table 5, Appendix D). The lack of more substantial habitat suitability for the AOC specific target SOSC within AOC W13 is likely due to the high level and frequency of disturbances within the proposed LOD. Where potential habitat exists there were more suitable general habitat characteristics.

4.2.8 AOC W14

A survey for shale barren pussytoes (*Antennaria virginica*) within AOC W14, located in Blair County, Pennsylvania was assigned due to potential habitat suitability within the PA DCNR defined AOC polygon. As noted in the search receipt comments from the PA DCNR, the potential dry open woodland habitat with a Virginia pine (*Pinus virginiana*) canopy and acidic shale soils may provide potentially suitable habitat for *A. virginica* within the assigned AOC. AOC W14 is located entirely on privately owned land. Area of Concern W14 is comprised of eight distinct habitat types including: CBTF, BTF, CTF, THO, CBTW, and BTW. W14 was generally dominated by broadleaf terrestrial woodlands, coniferous - broadleaf terrestrial woodland, and coniferous terrestrial forest. Good or moderate potential habitat suitability for *A. virginica* existed within all of the recorded habitat areas except habitats H and I. 20 populations of *A. virginica* were observed, identified, delineated, and photographed. . A voucher was collected and submitted to the CMNH herbarium. Detailed information on population locations, numbers, habitat characteristics, and more is provided on the botanical field survey forms (Appendix D) and within Tables 4 and 5 (Appendix I). Habitats and identified SOSC populations are illustrated on the aerial habitat maps for AOC W14 (Figures 2-36 to 2-38, Appendix C). No other SOSC were identified within AOC W14 during the 2014 field investigation. The lack of habitat suitability for the shale barren pussytoes within recorded habitat areas H and I was directly correlated to the density of invasives and high level of disturbance present within these habitat areas.

4.2.9 AOC W15 & ALT W5

A survey for thick-leaved meadow-rue (*Thalictrum coriaceum*) and spreading rockcress (*Arabis patens*) within AOC W15 and AOC ALT W5, located in Blair County, Pennsylvania was assigned due to potential habitat suitability within the PA DCNR defined AOC polygons. A locally documented population of *T. coriaceum* was located within Project buffer and potentially suitable stony woodland habitat may exist within the Project buffer. AOC W15 and AOC ALT W5 were combined due to their proximity to one another, similarity in target SOSC request, and similar potential habitat throughout each AOC. Tetra Tech assumed that the habitat that exists between these two AOC polygons [through which an access road travels] would need to be surveyed for the same two listed target SOSC. AOC W15 and AOC ALT W5 are located on

private land and State Gamelands. Areas of Concern W15 and ALT W5 are comprised of five distinct habitat types including: BTW, BTF, CBTF, RBTW, and THO. AOC W15 and AOC ALT W5 were generally dominated by broadleaf terrestrial woodlands and broadleaf terrestrial forests. Habitats are illustrated on the aerial habitat maps for AOC W8 (Figures 2-39 to 2-49, Appendix C). No potential habitat suitability for *T. coriaceum* exists within habitat areas A, B, C, D, H, J, K, or L. Habitat E is considered moderate potential habitat for *A. patens*. Poor potential habitat suitability for *A. patens* is present within habitats E, F, and I. No potential habitat suitability for *A. patens* exists within habitat areas A, C, D, H, I, J, or L. Habitat G is considered good potential habitat for *T. coriaceum*. Poor potential habitat suitability for *T. coriaceum* is present within habitats B, D, F, and K. No *T. coriaceum*, *A. patens*, or any other SOSC was identified within AOC W15 and AOC ALT W5 during the 2014 and subsequent 2015 field investigations (Table 4 and Table 5, Appendix D). The lack of substantial habitat suitability for the thick-leaved meadow-rue and spreading rockcress within AOC W15 and AOC ALT W5 is likely due to a general lack in suitable habitat characteristics and the moderate disturbances within the AOCs. Where potential habitat exists there are more suitable SOSC specific habitat characteristics and a lower level of anthropologic disturbances.

4.2.10 AOC W16 & ALT W6

A survey for shale-barren evening primrose (*Oenothera argillicola*) and Kate's mountain clover (*Trifolium virginicum*) within AOC W16 and AOC ALT W6, located in Huntingdon County, Pennsylvania was assigned due to potential habitat suitability within the PA DCNR defined AOC polygons. As noted in the search receipt comments from the PA DCNR, potential steep shale derived soils may provide habitat for these two AOC specific target species. AOC W16 and AOC ALT W6 were combined due to their proximity to one another, similarity in target SOSC request, and similar potential habitat throughout each AOC. Tetra Tech assumed that the habitat that exists between these two AOC polygons [through which an access road travels] would need to be surveyed for the same two listed target SOSC. AOC W16 and AOC ALT W6 are located on private land and within the Raystown Lake Recreation Area. Areas of Concern W16 and ALT W6 are comprised of ten distinct habitat types including: THO, PF, BTF, MSB, AG/FF, BTW, CBTF, PE, TS, BTF, and TOM. AOC W16 and AOC ALT W6 were generally dominated by broadleaf terrestrial forest, coniferous - broadleaf terrestrial forests, and terrestrial herbaceous openings [ROW]. Habitats are illustrated on the aerial habitat maps for AOC W16 and AOC ALT W6 (Figures 2-50 to 2-59, Appendix C). No potential habitat suitability for *O. argillicola* or *T. virginicum* exists within habitat areas A1, A2, A6, B, C1, C2, D1, D2, E, F, G, H, I, J, K, L, M, N, or P. Habitats A3, A4, A5, and O were considered poor potential habitat for *O. argillicola* and *T. virginicum*. No *O. argillicola*, *T. virginicum*, or any other SOSC was identified within AOC W16 and AOC ALT W6 during the 2014 and subsequent 2015 field investigations (Table 4 and Table 5, Appendix D). The lack of substantial habitat suitability for the shale-barren evening primrose and Kate's mountain clover within AOC W16 and AOC ALT W6 is likely due to a general lack in suitable habitat characteristics and the moderate disturbances associated with ROW maintenance in these AOCs. Where potential habitat exists there are more suitable SOSC specific habitats characteristics like open, shale derived soil slopes and a lower level of anthropologic disturbances.

4.2.11 AOC E1

A survey for Short's sedge (*Carex shortiana*) within AOC E1, located in Juniata County, Pennsylvania was assigned due to potential habitat suitability and three known documented populations within the PA DCNR defined AOC polygon. As noted in the search receipt comments from the PA DCNR, three documented occurrences of *C. shortiana* are documented within this polygon and potential habitat exists elsewhere within the assigned AOC. AOC E1 is located entirely on privately owned land. Area of Concern E1 is comprised of three distinct habitat types including: BTF, PF, and THO. The coverage of the three recorded habitat areas were split evenly across AOC E1. Good potential habitat suitability for *C. shortiana* existed within all of the recorded habitat areas. Five populations of *C. shortiana* were observed, identified, delineated, and photographed. A voucher was collected and submitted to the CMNH herbarium. Detailed information on population locations, numbers, habitat characteristics, and more is provided on the botanical field survey forms (Appendix D) and within Tables 4 and 5 (Appendix I). Habitats and identified SOSC

5.0 CONCLUSIONS

Field surveys were conducted during the 2014 and 2015 growing seasons within each of the assigned AOCs that the proposed pipeline Project traverses. Surveys were conducted during the appropriate time of year for the AOC specific target SOSC listed in the PA DCNR response letter. Although potential habitat for the target species was observed within the botanical survey corridor (Appendix I, Table 4), the prevalence of invasive species and human activities have reduced the potential for suitable habitat in which many of these species occur. Other disturbances include agriculture, grazing, logging, construction, residential development, periodic herbicide treatment, and mowing. These anthropogenic impacts extend throughout significant portions of the project and have severely limited the potential for target SOSCs and their associated habitats.

Sixty-three separate occurrences of PA state listed SOSCs were identified in 11 different AOCs. Eight of the 63 occurrences were identified outside of the 23 investigated AOCs (Table 5). Of the 63 populations of state listed target species identified during the botanical survey of the Project, one population of the federally listed Northeastern bulrush (*S. ancistrochaetus*) was observed. The Northeastern bulrush population was located within AOC ALT W1 during the USFWS requested Northeastern bulrush survey. The federally listed occurrence is located within a wetland that is anticipated to be HDD bored. All SOSC population information including SOSC identified, numbers of populations and individuals per population, AOCs of occurrences, population coordinate locations, and information regarding whether a voucher specimen was taken and submitted to a PA DCNR recognized herbarium is provided in Table 5. One Community of Concern (COC) was identified during the botanical survey within AOC E19. The serpentine grassland vegetative community with multiple SOSCs identified within it was observed outside of the anticipated LOD. Details concerning this habitat can be found in the serpentine grassland habitat description and in the AOC E19 descriptions.

Voluntary best management practices will be utilized when possible to minimize impacts to these SOSC populations unless further conservation measures are required by the PA DCNR.

6.0 SIGNATURES AND CONTACT INFORMATION

I hereby certify that the results contained within this survey report are accurate and that I am authorized under PA DCNR Wild Plant Management Permit Number 15-624 to conduct this botanical survey.

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APPENDIX A
Agency Coordination

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

January 30, 2014 **PNDI Number: 22275**

Preston Smith
Tetra Tech
661 Andersen Drive
Pittsburgh, PA 15220
Email: preston.smith@tetratech.com

Re: Sunoco Mariner East 2 Pipeline
Trans-Pennsylvania

Dear Mr. Smith,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Project Number 22024 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only. **The proposed project will affect State Forest Lands within the Gallitzin State Forest District**. Further coordination with the Bureau of Forestry is required (see "Projects on State Forest Lands").

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern.

Plant Species of Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)
Actaea podocarpa	Mountain Bugbane	Threatened	Rare	W10, W11
Amelanchier humilis	Low Serviceberry	Undetermined	Endangered	W12
Amelanchier sanguinea	Roundleaf Serviceberry	Undetermined	Endangered	W12
Antennaria virginica	Shale Barren Pussytoes	Not Listed	Rare	W14
Arabis patens	Spreading Rockcress	Not Listed	Threatened	W15
Asplenium pinnatifidum	Lobed Spleenwort	Not Listed	Rare	W6
Astragalus canadensis	Canadian Milkvetch	Not Listed	Undetermined	(W6)
Baptisia australis	Blue False-indigo	Not Listed	Threatened	W3
Carex aquatilis	Water Sedge	Threatened	Threatened	E14
Carex shortiana	Short's Sedge	Not Listed	Rare	W1, E1
Delphinium exaltatum	Tall Larkspur	Endangered	Endangered	W6
Desmodium nuttallii	Nuttall's Tick Trefoil	Unlisted	Threatened	E17
Dryopteris celsa	Log Fern	Unlisted	Endangered	E15
Ellisia nyctelea	Ellisia	Threatened	Threatened	E12, E13
Erythronium albidum	White Trout-lily	Not Listed	Undetermined	(W3), (W6)
Fimbristylis annua	Annual Fimbry	Threatened	Threatened	E18, E19, E21
Gentiana saponaria	Soapwort Gentian	Undetermined	Endangered	E20, E22
Iodanthus pinnatifidus	Purple Rocket	Endangered	Endangered	W3, W4, W6
Juncus biflorus	Grass-leaved Rush	Undetermined	Threatened	E20, E22
Juncus torreyi	Torrey's Rush	Threatened	Rare	W6, W11, W13
Leucothoe racemosa	Swamp Dog-Hobble	Undetermined	Threatened	E20, E22
Lycopodiella margueritae	Marguerite's Clubmoss	Not Listed	Endangered	W11, W13
Oenothera argillicola	Shale-barren Evening-primrose	Threatened	Threatened	W16
Opuntia humifusa	Eastern Prickly Pear-Cactus	Rare	Rare	E5, E6, E7, E8

Packera anonyma	Plain ragwort	Threatened	Threatened	E18, E19, E21
Passiflora lutea	Yellow Passion-flower	Endangered	Threatened	W6
Penstemon canescens	Beardtongue	Not listed	Undetermined	(E3), (E4)
Phemeranthus teretifolius	Round-leaved Fame-Flower	Threatened	Threatened	E18, E19, E21
Platanthera peramoena	Purple-fringeless Orchid	Undetermined	Threatened	W9
Polygama polygala	Racemed Milkwort	Undetermined	Endangered	E2
Quercus phellos	Willow Oak	Endangered	Endangered	E20, E22
Ribes missouriensis	Missouri Gooseberry	Endangered	Endangered	E3
Rotala ramosior	Tooth-cup	Rare	Rare	E9, E10, E11
Ruellia pedunculata	Stalked wild-petunia	Not listed	Undetermined	(E4)
Ruellia strepens	Limestone Petunia	Threatened	Threatened	E3, E4, E8
Smallanthus uvedalius	Hairy Leafcup	Not Listed	Rare	W6
Solidago erecta	Slender Goldenrod	Endangered	Endangered	E6
Spiranthes lucida	Shining Ladies'-tresses	Not Listed	Threatened	W9
Symphyotrichum depauperatum	Serpentine Aster	Threatened	Threatened	E18, E19, E21
Thalictrum coriaceum	Thick-leaved Meadow-rue	Endangered	Threatened	W8, W15
Trifolium virginicum	Kate's Mountain Clover	Endangered	Endangered	W16
Trillium nivale	Snow Trillium	Rare	Rare	W2, W5, W6, W7
Woodwardia areolata	Netted chain fern	Unlisted	Threatened	E15

Communities of Concern:

Community	Global Rank	State Rank	AOC
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W16)
Serpentine Grassland	GNR	S1	(E18), (E19), (E21)
Yellow Oak – Redbud Woodland	GNR	S2	(W6)

Please see the following resource for more information on these plant communities:
http://www.naturalheritage.state.pa.us/fikebook.aspx

Survey Request

DCNR requests a survey for the following species:

- ***Actaea podocarpa* (Mountain Bugbane):** locally documented in rich moist woods within stream valleys; prefers rich moist wooded slopes and coves in the mountains; flowers in August
- ***Amelanchier humilis* (Low Serviceberry):** locally documented on a steep rocky shrubby hillside; prefers dry open high ground and bluffs; flowers April – mid May; fruits June – early July
- ***Amelanchier sanguinea* (Roundleaf Serviceberry):** locally documented on a steep rocky shrubby hillside; prefers open woods, rocky slopes, and barrens; flowers mid April – late May; fruits June – early July
- ***Antennaria virginica* (Shale Barren Pussytoes):** locally documented on a dry open shale bank; prefers dry woods and openings; flowers late April – June
- ***Arabis patens* (Spreading Rockcress):** locally documented on a rocky wooded limestone slope; prefers moist rocky woods; flowers April – July
- ***Asplenium pinnatifidum* (Lobed Spleenwort):** locally documented on a vertical slope; prefers crevices of dry lightly shaded cliffs of noncalcareous rocks; evergreen
- ***Astragalus canadensis* (Canadian Milkvetch):** locally documented on a steep limey outcrop; prefers rocky roadside banks, limestone ledges, and shale barrens; flowers late June – early August
- ***Baptisia australis* (Blue False-indigo):** locally documented on a deciduous forest slope; prefers open woods, stream banks, and sandy floodplains; flowers May – June
- ***Carex aquatilis* (Water Sedge):** locally documented in an open seep; prefers marshy swales in more calcareous areas
- ***Carex shortiana* (Short's Sedge):** locally documented in a sedge-graminoid wet meadow; prefers calcareous wet meadows, swamps, and rich woods; fruits May – late July

- ***Delphinium exaltatum* (Tall Larkspur):** locally documented dry calcareous forest slopes; prefers rich shaded woods and rocky limestone bluffs; flowers July – August
- ***Desmodium nuttallii* (Nuttall's tick-trefoil)**; locally documented on a NE-facing slope in partial light with dry-mesic moisture in middle of pipeline; prefers open woods and edges; flowers July-September
- ***Dryopteris celsa* (Log Fern):** locally documented in a wet thicket along brook on steep rocky slope; prefers seepage slopes, hummocks, and logs in swamps; survey summer-fall
- ***Ellisia nyctelea* (Ellisia):** locally documented on a xeric flat lower slope with open partial light; prefers damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground
- ***Erythronium albidum* (White Trout-lily):** locally documented on wooded slopes and in riparian forest; prefers moist woods and rich slopes, especially on limestone; flowers April – May
- ***Fimbristylis annua* (Annual Fimbry);** locally documented in a moist swale area along ridge; prefers moist depressions on serpentine barrens; flowers and fruits from July–October
- ***Gentiana saponaria* (Soapwort Gentian)**; locally documented on a flat slope in shaded light with moist to saturated moisture; prefers moist open woods, roadsides and swamps; flowers in September - October
- ***Iodanthus pinnatifidus* (Purple Rocket):** locally documented on rich wooded slopes; prefers moist alluvial woods and wooded slopes; flowers May – June
- ***Juncus biflorus* (Grass-leaved Rush);** locally documented in an open, flat crest in moist mesic shrub meadow along pipeline; prefers open woods, boggy fields, gravel pits, and ditches; fruits July to early November
- ***Juncus torreyi* (Torrey's Rush):** locally documented in abandoned sand mine pits and stone quarry wetlands; prefers muddy or sandy shores, strip mine areas, swales, and ditches; flowers and fruits early summer – fall
- ***Leucothoe racemosa* (Swamp Dog-hobble);** locally documented in a youngish poorly drained wet woods with sweet gum and a sparse understory; prefers wet woods and thickets
- ***Lycopodiella margueritae* (Marguerite's Clubmoss):** locally documented along stream edges associated with abandoned coal strip mines and damp sandy open ground within abandoned sand mines; prefers bogs and moist acidic soils; deciduous, sporulates July – October
- ***Oenothera argillicola* (Shale-barren Evening-primrose):** locally documented on a riverside shale barren; prefers shale barrens; flowers July – September
- ***Packera anonyma* (Plain Ragwort);** locally documented on a ridge in a serpentine barren; prefers dry fields, open woods, and serpentine barrens; flowers May–September
- ***Passiflora lutea* (Yellow Passion-flower):** locally documented along the edge of a mixed hardwood forest; prefers most stream bank thickets; flowers in July
- ***Penstemon canescens* (Beard-tongue);** locally documented in a Virginia Pine-mixed hardwood shale woodland opening on steep forested WSW facing slopes; prefers dry, rocky, wooded slopes; flowers May-July, fruits July – August.
- ***Phemeranthus teretifolius* (Round-leaved Fame Flower);** locally documented in 20 acres of prairie, outcrop, and damp sandy community; prefers serpentine barrens; flowers late June-July and flowers are known to remain open only for a few hours
- ***Platanthera peramoena* (Purple-fringeless Orchid):** locally documented on swampy woodland ground; prefers moist meadows, low wet woods, and ditches; flowers July – August

- ***Polygala polygama* (Racemed Milkwort):** locally documented between two pipeline rights-of-way; prefers abandoned fields and wooded bogs; flowers June-July
- ***Quercus phellos* (Willow Oak)**; locally documented in a coastal plain forest; prefers moist to wet woods within Coastal Plain forests in SE PA; survey during growing season before leaf fall
- ***Ribes missouriensis* (Missouri Gooseberry);** locally documented on a west-facing xeric shale slope; prefers wooded slopes; flowers late April-May
- ***Rotala ramosior* (Tooth-cup);** locally documented in a floodplain of Yellow Breeches Creek; prefers wet sandy shores and other swampy open grounds
- ***Ruellia pedunculata* (Stalked Wild-petunia)**; locally documented on a xeric SE-facing slope in open to partial light; prefers dry rocky woods, ravines, lowlands, glades, and slopes; flowers June-August
- ***Ruellia strepens* (Limestone petunia);** locally documented in a Virginia Pine-mixed hardwood shale woodland opening on steep forested WSW facing slopes; prefers rich wooded slopes, bluffs, and roadsides on limestone
- ***Smallanthus uvedalius* (Hairy Leafcup):** locally documented in early successional woodland; prefers ravines, thickets, and river or stream banks; flowers July – September
- ***Solidago erecta* (Slender Goldenrod);** locally documented on a SW facing slope in partial light in xeric soil; prefers dry, acidic shaley banks; flowers late August–October
- ***Spiranthes lucida* (Shining Ladies'-tresses):** locally documented within an upland wetland; prefers moist banks, lake shores, and wet meadows, usually on calcareous soils; flowers May – July
- ***Symphyotrichum depauperatum* (Serpentine Aster)**; locally documented in an open serpentine barren; prefers open areas of serpentine barrens; flowers August–October
- ***Thalictrum coriaceum* (Thick-leaved Meadow-rue):** locally documented on wooded slopes; prefers rich rocky woods, thickets, moist alluviums; flowers late May – June
- ***Trifolium virginicum* (Kate's Mountain Clover):** locally documented on a riverside shale barren; prefers shale barrens; flowers May – August
- ***Trillium cernuum* (Nodding Trillium);** locally documented on a moist, lower slope: prefers moist woods; flowers April-May
- ***Trillium nivale* (Snow Trillium):** locally documented on wooded stream valley slopes, often with limestone float; prefers moist woods; flowers late March – April
- ***Woodwardia areolata (*Netted Chainfern*)***; locally documented in a small forested pond at headwaters of stream in seepy deciduous woods; prefers moist or wet woods and acidic bogs; deciduous fern, sporulates July-September

✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**

✓ Your botanist should *fill out the field survey form while performing their survey:* http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.

✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.

- ✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

IMPORTANT:
To assist with your botanical survey efforts, we are providing shapefiles of Areas of Concern (AOCs). These polygons are based on known locations or potential habitat of DCNR-regulated species or natural communities. Required surveys may be restricted to these AOCs. The survey may be further refined to suitable habitat within areas of anticipated disturbance. For example, if work is restricted to an existing open right-of-way, a survey for a forest-dwelling species would be unnecessary.

Plant communities and species that lack a currently listed or proposed conservation status are not required for survey. Surveys for these communities and species are voluntary. This applies to Red-cedar – Mixed Hardwood Rich Shale Woodland, Serpentine Grassland, and Yellow Oak – Redbud Woodland, as well as *Astragalus canadensis*, *Erythronium albidum*, *Penstemon canescens*, and *Ruellia pedunculata*.

PROJECTS ON STATE FOREST LANDS:
A portion of this project takes place on the Gallitzin State Forest (District 6). The DCNR Bureau of Forestry's *State Forest Resource Management Plan* sets forth guidelines for ecologically-sound management of State Forest Lands and resources including protection of wetlands, wildlife, native wild plants and invasive species management. As such, the DCNR Bureau of Forestry may request additional surveys in association with this project. **This letter applies to PNDI impacts only and does not authorize the initiation of any work on State Forest Lands. Further coordination with the Bureau of Forestry is required.** If you have not already done so, please contact Terence Stemmler, District Forester for Gallitzin State Forest, at (814) 472-1862 for additional information.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Ecological Information Specialists, Jason Ryndock (717-705-2822; c-jryndock@pa.gov) or Frederick Sechler (717-705-2823; c-frsechle@pa.gov).

Sincerely,

Rebecca H. Bowen

Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

pennsylvania
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF FORESTRY

March 13, 2014 **PNDI Number: 22275**

Preston Smith
Tetra Tech
661 Andersen Drive
Pittsburgh, PA 15220
Email: preston.smith@tetratech.com

Re: UPDATE – PA Pipeline Project (Sunoco Mariner East 2 Pipeline)
Trans-Pennsylvania

Dear Mr. Smith,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Project Number 22275 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern. **(NOTE: E10[r] of this update was deleted during review)**

Plant Species of Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)
Actaea podocarpa	Mountain Bugbane	Threatened	Rare	W1[r]
Amelanchier canadensis	Serviceberry	Not listed	Endangered	E19[r]
Amelanchier humilis	Low Serviceberry	Undetermined	Endangered	W3[r]
Amelanchier sanguinea	Roundleaf Serviceberry	Undetermined	Endangered	W3[r]
Andropogon gyrans	Elliott's Bluestem	Not listed	Rare	E15[r], E16[r]
Arabis patens	Spreading Rockcress	Not Listed	Threatened	W5[r]
Bartonia paniculata	Screw-stem	Not listed	Rare	E21[r]
Bouteloua curtipendula	Tall Gramma	Threatened	Threatened	E5[r]
Dicanthelium scoparium	Velvety Panic-grass	Endangered	Endangered	E18[r]
Desmodium nuttallii	Nuttall's Tick Trefoil	Unlisted	Threatened	E21[r]
Ellisia nyctelea	Ellisia	Threatened	Threatened	E12[r], E14[r]
Euthamia tenuifolia	Grass-leaved goldenrod	Threatened	Endangered	E19[r]
Gentiana saponaria	Soapwort Gentian	Undetermined	Endangered	E23[r]
Juncus torreyi	Torrey's Rush	Threatened	Rare	W4[r]
Leucothoe racemosa	Swamp Dog-Hobble	Undetermined	Threatened	E24[r]
Lycopodiella margueritae	Marguerite's Clubmoss	Not Listed	Endangered	W4[r]
Oenothera argillicola	Shale-barren Evening-primrose	Threatened	Threatened	W6[r]
Oxypolis rigidior	Stiff Cowbane	Undetermined	Threatened	E21[r]
Packera anonyma	Plain ragwort	Threatened	Threatened	E5[r]
Phemeranthus teretifolius	Round-leaved Fame-Flower	Threatened	Threatened	E4[r]
Poa autumnalis	Autumn Bluegrass	Endangered	Endangered	E3[r], E21[r], E23[r]
Poa paludigena	Bog Bluegrass	Threatened	Rare	E1[r]
Quercus phellos	Willow Oak	Endangered	Endangered	E25[r]
Rotala ramosior	Tooth-cup	Rare	Rare	E11[r]
Spiranthes vernalis	Spring Ladies'-Tresses	Endangered	Endangered	E22[r]

Thalictrum coriaceum	Thick-leaved Meadow-rue	Endangered	Threatened	W5[r]
Tipularia discolor	Cranefly Orchid	Rare	Rare	E17[r]
Trifolium virginicum	Kate's Mountain Clover	Endangered	Endangered	W6[r]
Trillium cernuum	Nodding Trillium	Not listed	Threatened	E1[r], E2[r], E4[r], E21[r]
Woodwardia areolata	Netted chain fern	Unlisted	Threatened	E2[r], E19[r]
Zizania aquatica	Indian Wild Rice	Rare	Rare	E6[r], E7[r], E8[r], E9[r], E11[r]

Communities of Concern:

Community	Global Rank	State Rank	AOC
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W6[r])

Please see the following resource for more information on these plant communities:
http://www.naturalheritage.state.pa.us/fikebook.aspx

Survey Request

DCNR requests a survey for the following species:

- ***Actaea podocarpa* (Mountain Bugbane)** locally documented in rich moist woods within stream valleys; prefers rich moist wooded slopes and coves in the mountains; flowers in August
- ***Amelanchier canadensis* (Serviceberry):** locally documented on three roadside areas–prefers moist woods and swamps–flowers mid April – mid May, fruits June – early July
- ***Amelanchier humilis* (Low Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers dry open high ground and bluffs; flowers April – mid May; fruits June – early July
- ***Amelanchier sanguinea* (Roundleaf Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers open woods, rocky slopes, and barrens; flowers mid April – late May; fruits June – early July
- ***Andropogon gyrans* (Elliott's Beardgrass)** locally documented in an old field on a north facing slope and also in a grassy power line cut in E20–prefers dry or moist fields or open woods-flowers in September – October
- ***Arabis patens* (Spreading Rockcress)** locally documented on a rocky wooded limestone slope; prefers moist rocky woods; flowers April – July
- ***Bartonia paniculata* (Screw-stem)** locally documented in an opening on the uphill side of the maintenance road–prefers bogs and peaty lake margins-flowers from August-October
- ***Bouteloua curtipendula* (Tall Gramma)**–locally documented in a small prairie serpentine barren with scattered Juniperus virginiana–prefers serpentine barrens, dry calcareous openings, and other dry, rocky, or sandy sites–flowers August-September
- ***Desmodium nuttallii* (Nuttall's Tick-trefoil)** locally documented on a NE-facing slope in partial light with dry-mesic moisture in middle of pipeline; prefers open woods and edges; flowers July-September
- ***Dicanthelium scoparium* (Velvety Panic-grass)** locally documented on the crest, mid-slope and lower-slope of an open meadow–prefers moist meadows and swales–vernal terminal panicles May-early July, or late summer or early fall
- ***Ellisia nyctelea* (Ellisia):** locally documented in a sand bar with no woody vegetation; prefers damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground
- ***Euthamia tenuifolia* (Grass-leaved Goldenrod)** locally documented in a powerline ROW with woods on both sides–prefers moist sandy or clayey fields-flowers in July–October
- ***Gentiana saponaria* (Soapwort Gentian)** locally documented on a flat slope in shaded light with moist to saturated moisture; prefers moist open woods, roadsides and swamps; flowers in September – October
- ***Juncus biflorus* (Grass-leaved Rush);** locally documented on open marshy ground in bottomland along river; prefers open woods, boggy fields, gravel pits, and ditches; fruits July to early November

- ***Juncus torreyi* (Torrey's Rush):** locally documented in abandoned sand mine pits and stone quarry wetlands; prefers muddy or sandy shores, strip mine areas, swales, and ditches; flowers and fruits early summer – fall
- ***Leucothoe racemosa* (Swamp Dog-hobble);** locally documented in a youngish poorly drained wet woods with sweet gum and a sparse understory; prefers wet woods and thickets
- ***Lycopodiella margueritae* (Marguerite's Clubmoss):** locally documented along stream edges associated with abandoned coal strip mines and damp sandy open ground within abandoned sand mines; prefers bogs and moist acidic soils; deciduous, sporulates July – October
- ***Oenothera argillicola* (Shale-barren Evening-primrose)** locally documented on a riverside shale barren; prefers shale barrens; flowers July – September
- ***Oxypolis rigidior*** (**Stiff Cowbane**) locally documented in a wedge of woods between road and a ROW with a small stream–prefers swamps, bogs, sedge meadows, sandy shores, and abandoned railroad beds–flowers from August – September
- ***Packera anonyma* (Plain Ragwort)** locally documented in a small attractive serpentine prairie; prefers dry fields, open woods, and serpentine barrens; flowers May–September
- ***Phemeranthus teretifolius* (Round-leaved Fame Flower)** locally documented in a small attractive serpentine prairie; prefers serpentine barrens; flowers late June-July and flowers are known to remain open only for a few hours
- ***Poa autumnalis*** (**Autumn Bluegrass**) locally documented floodplain woods, open at ground, with alluvial soils–prefers moist woods–flowers in late May-June
- ***Poa paludigena*** (**Bog Bluegrass**) locally documented in a scrub shrub/red maple sapling wetland–prefers boggy woods and swamps–flowers late May-June
- ***Quercus phellos* (Willow Oak)** locally documented in a coastal plain forest; prefers moist to wet woods within Coastal Plain forests in SE PA; survey during growing season before leaf fall
- ***Rotala ramosior* (Tooth-cup)** locally documented in a floodplain of Yellow Breeches Creek; prefers wet sandy shores and other swampy open grounds
- ***Spiranthes vernalis*** (**Spring Ladies'-tresses**): locally documented in a grassy opening in an old field remnant in young sweet gum-red maple woods–prefers moist, open sandy soils and serpentine barrens–flowers in May – August
- ***Symphyotrichum depauperatum* (Serpentine Aster)** locally documented in an open serpentine barren; prefers open areas of serpentine barrens; flowers August–October
- ***Thalictrum coriaceum* (Thick-leaved Meadow-rue)** locally documented on wooded slopes; prefers rich rocky woods, thickets, moist alluviums; flowers late May – June
- ***Trifolium virginicum* (Kate's Mountain Clover)** locally documented on a riverside shale barren; prefers shale barrens; flowers May – August
- ***Trillium cernuum* (Nodding Trillium)** locally documented on a moist, lower slope: prefers moist woods, also documented in a mesic hardwood forest in E19; flowers April-May
- ***Woodwardia areolata (*Netted Chainfern)** locally documented in a small artificial pond in the woods with little herbaceous vegetation, in E19 the plant was found in the eastern edge of a seep; prefers moist or wet woods and acidic bogs; deciduous fern, sporulates July-September
- ***Zizania aquatica*** (**Indian Wild-rice**) locally documented in a 2 acre monoculture marsh in the wettest area of the marsh–prefers tidal and non-tidal marshes–flowers in late May – early September

- ✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**
- ✓ Your botanist should *fill out the field survey form while performing their survey:* http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.
- ✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.
- ✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

IMPORTANT:
To assist with your botanical survey efforts, we are providing shapefiles of Areas of Concern (AOCs). These polygons are based on known locations or potential habitat of DCNR-regulated species or natural communities. Required surveys may be restricted to these AOCs. The survey may be further refined to suitable habitat within areas of anticipated disturbance. For example, if work is restricted to an existing open right-of-way, a survey for a forest-dwelling species would be unnecessary.

Plant communities and species that lack a currently listed or proposed conservation status are not required for survey. Surveys for these communities and species are voluntary. This applies to Red-cedar – Mixed Hardwood Rich Shale Woodland.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Ecological Information Specialists, Jason Ryndock (717-705-2822; c-jryndock@pa.gov) or Frederick Sechler (717-705-2823; c-frsechle@pa.gov).

Sincerely,

Rebecca H. Bowen

Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

March 13, 2014 **PNDI Number: 22275**

Preston Smith
Tetra Tech
661 Andersen Drive
Pittsburgh, PA 15220
Email: preston.smith@tetratech.com

Re: UPDATE – PA Pipeline Project (Sunoco Mariner East 2 Pipeline)
Trans-Pennsylvania

Dear Mr. Smith,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Project Number 22275 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern. **(NOTE: E10[r] of this update was deleted during review)**

Plant Species of Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)
Actaea podocarpa	Mountain Bugbane	Threatened	Rare	W1[r]
Amelanchier canadensis	Serviceberry	Not listed	Endangered	E21[r]
Amelanchier humilis	Low Serviceberry	Undetermined	Endangered	W3[r]
Amelanchier sanguinea	Roundleaf Serviceberry	Undetermined	Endangered	W3[r]
Andropogon gyrans	Elliott's Bluestem	Not listed	Rare	E15[r], E16[r], E19[r], E20[r]
Arabis patens	Spreading Rockcress	Not Listed	Threatened	W5[r]
Bartonia paniculata	Screw-stem	Not listed	Rare	E21[r]
Bouteloua curtipendula	Tall Gramma	Threatened	Threatened	E5[r]
Dicanthelium scoparium	Velvety Panic-grass	Endangered	Endangered	E18[r]
Desmodium nuttallii	Nuttall's Tick Trefoil	Unlisted	Threatened	E21[r]
Ellisia nyctelea	Ellisia	Threatened	Threatened	E12[r], E14[r]
Euthamia tenuifolia	Grass-leaved goldenrod	Threatened	Endangered	E21[r]
Gentiana saponaria	Soapwort Gentian	Undetermined	Endangered	E23[r]
Juncus torreyi	Torrey's Rush	Threatened	Rare	W4[r]
Leucothoe racemosa	Swamp Dog-Hobble	Undetermined	Threatened	E24[r]
Lycopodiella margueritae	Marguerite's Clubmoss	Not Listed	Endangered	W4[r]
Oenothera argillicola	Shale-barren Evening-primrose	Threatened	Threatened	W6[r]
Oxypolis rigidior	Stiff Cowbane	Undetermined	Threatened	E21[r]
Packera anonyma	Plain ragwort	Threatened	Threatened	E5[r]
Phemeranthus teretifolius	Round-leaved Fame-Flower	Threatened	Threatened	E4[r]
Poa autumnalis	Autumn Bluegrass	Endangered	Endangered	E3[r], E21[r], E23[r]
Poa paludigena	Bog Bluegrass	Threatened	Rare	E1[r]
Quercus phellos	Willow Oak	Endangered	Endangered	E25[r]
Rotala ramosior	Tooth-cup	Rare	Rare	E11[r]
Spiranthes vernalis	Spring Ladies'-Tresses	Endangered	Endangered	E22[r]

Thalictrum coriaceum	Thick-leaved Meadow-rue	Endangered	Threatened	W5[r]
Tipularia discolor	Cranefly Orchid	Rare	Rare	E17[r]
Trifolium virginicum	Kate's Mountain Clover	Endangered	Endangered	W6[r]
Trillium cernuum	Nodding Trillium	Not listed	Threatened	E1[r], E2[r], E4[r], E21[r]
Woodwardia areolata	Netted chain fern	Unlisted	Threatened	E2[r], E19[r]
Zizania aquatica	Indian Wild Rice	Rare	Rare	E6[r], E7[r], E8[r], E9[r], E11[r]

Communities of Concern:

Community	Global Rank	State Rank	AOC
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W6[r])

Please see the following resource for more information on these plant communities:
http://www.naturalheritage.state.pa.us/fikebook.aspx

Survey Request

DCNR requests a survey for the following species:

- ***Actaea podocarpa* (Mountain Bugbane)** locally documented in rich moist woods within stream valleys; prefers rich moist wooded slopes and coves in the mountains; flowers in August
- ***Amelanchier canadensis* (Serviceberry):** locally documented on three roadside areas–prefers moist woods and swamps–flowers mid April – mid May, fruits June – early July
- ***Amelanchier humilis* (Low Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers dry open high ground and bluffs; flowers April – mid May; fruits June – early July
- ***Amelanchier sanguinea* (Roundleaf Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers open woods, rocky slopes, and barrens; flowers mid April – late May; fruits June – early July
- ***Andropogon gyrans* (Elliott's Beardgrass)** locally documented in an old field on a north facing slope and also in a grassy power line cut in E20–prefers dry or moist fields or open woods-flowers in September – October
- ***Arabis patens* (Spreading Rockcress)** locally documented on a rocky wooded limestone slope; prefers moist rocky woods; flowers April – July
- ***Bartonia paniculata* (Screw-stem)** locally documented in an opening on the uphill side of the maintenance road–prefers bogs and peaty lake margins-flowers from August-October
- ***Bouteloua curtipendula* (Tall Gramma)**–locally documented in a small prairie serpentine barren with scattered Juniperus virginiana–prefers serpentine barrens, dry calcareous openings, and other dry, rocky, or sandy sites–flowers August-September
- ***Desmodium nuttallii* (Nuttall's Tick-trefoil)** locally documented on a NE-facing slope in partial light with dry-mesic moisture in middle of pipeline; prefers open woods and edges; flowers July-September
- ***Dicanthelium scoparium* (Velvety Panic-grass)** locally documented on the crest, mid-slope and lower-slope of an open meadow–prefers moist meadows and swales–vernal terminal panicles May-early July, or late summer or early fall
- ***Ellisia nyctelea* (Ellisia):** locally documented in a sand bar with no woody vegetation; prefers damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground
- ***Euthamia tenuifolia* (Grass-leaved Goldenrod)** locally documented in a powerline ROW with woods on both sides–prefers moist sandy or clayey fields-flowers in July–October
- ***Gentiana saponaria* (Soapwort Gentian)** locally documented on a flat slope in shaded light with moist to saturated moisture; prefers moist open woods, roadsides and swamps; flowers in September – October
- ***Juncus biflorus* (Grass-leaved Rush);** locally documented on open marshy ground in bottomland along river; prefers open woods, boggy fields, gravel pits, and ditches; fruits July to early November

- ***Juncus torreyi* (Torrey's Rush):** locally documented in abandoned sand mine pits and stone quarry wetlands; prefers muddy or sandy shores, strip mine areas, swales, and ditches; flowers and fruits early summer – fall
- ***Leucothoe racemosa* (Swamp Dog-hobble);** locally documented in a youngish poorly drained wet woods with sweet gum and a sparse understory; prefers wet woods and thickets
- ***Lycopodiella margueritae* (Marguerite's Clubmoss):** locally documented along stream edges associated with abandoned coal strip mines and damp sandy open ground within abandoned sand mines; prefers bogs and moist acidic soils; deciduous, sporulates July – October
- ***Oenothera argillicola* (Shale-barren Evening-primrose)** locally documented on a riverside shale barren; prefers shale barrens; flowers July – September
- ***Oxypolis rigidior*** (**Stiff Cowbane**) locally documented in a wedge of woods between road and a ROW with a small stream–prefers swamps, bogs, sedge meadows, sandy shores, and abandoned railroad beds–flowers from August – September
- ***Packera anonyma* (Plain Ragwort)** locally documented in a small attractive serpentine prairie; prefers dry fields, open woods, and serpentine barrens; flowers May–September
- ***Phemeranthus teretifolius* (Round-leaved Fame Flower)** locally documented in a small attractive serpentine prairie; prefers serpentine barrens; flowers late June-July and flowers are known to remain open only for a few hours
- ***Poa autumnalis*** (**Autumn Bluegrass**) locally documented floodplain woods, open at ground, with alluvial soils–prefers moist woods–flowers in late May-June
- ***Poa paludigena*** (**Bog Bluegrass**) locally documented in a scrub shrub/red maple sapling wetland–prefers boggy woods and swamps–flowers late May-June
- ***Quercus phellos* (Willow Oak)** locally documented in a coastal plain forest; prefers moist to wet woods within Coastal Plain forests in SE PA; survey during growing season before leaf fall
- ***Rotala ramosior* (Tooth-cup)** locally documented in a floodplain of Yellow Breeches Creek; prefers wet sandy shores and other swampy open grounds
- ***Spiranthes vernalis*** (**Spring Ladies'-tresses**): locally documented in a grassy opening in an old field remnant in young sweet gum-red maple woods–prefers moist, open sandy soils and serpentine barrens–flowers in May – August
- ***Symphyotrichum depauperatum* (Serpentine Aster)** locally documented in an open serpentine barren; prefers open areas of serpentine barrens; flowers August–October
- ***Thalictrum coriaceum* (Thick-leaved Meadow-rue)** locally documented on wooded slopes; prefers rich rocky woods, thickets, moist alluviums; flowers late May – June
- ***Trifolium virginicum* (Kate's Mountain Clover)** locally documented on a riverside shale barren; prefers shale barrens; flowers May – August
- ***Trillium cernuum* (Nodding Trillium)** locally documented on a moist, lower slope: prefers moist woods, also documented in a mesic hardwood forest in E19; flowers April-May
- ***Woodwardia areolata (*Netted Chainfern)** locally documented in a small artificial pond in the woods with little herbaceous vegetation, in E19 the plant was found in the eastern edge of a seep; prefers moist or wet woods and acidic bogs; deciduous fern, sporulates July-September
- ***Zizania aquatica*** (**Indian Wild-rice**) locally documented in a 2 acre monoculture marsh in the wettest area of the marsh–prefers tidal and non-tidal marshes–flowers in late May – early September

- ✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**
- ✓ Your botanist should *fill out the field survey form while performing their survey:* http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.
- ✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.
- ✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

IMPORTANT:
To assist with your botanical survey efforts, we are providing shapefiles of Areas of Concern (AOCs). These polygons are based on known locations or potential habitat of DCNR-regulated species or natural communities. Required surveys may be restricted to these AOCs. The survey may be further refined to suitable habitat within areas of anticipated disturbance. For example, if work is restricted to an existing open right-of-way, a survey for a forest-dwelling species would be unnecessary.

Plant communities and species that lack a currently listed or proposed conservation status are not required for survey. Surveys for these communities and species are voluntary. This applies to Red-cedar – Mixed Hardwood Rich Shale Woodland.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Ecological Information Specialists, Jason Ryndock (717-705-2822; c-jryndock@pa.gov) or Frederick Sechler (717-705-2823; c-frsechle@pa.gov).

Sincerely,

Rebecca H. Bowen

Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

March 26, 2015 **PNDI Number: 22424**

Preston Smith
Tetra Tech, Inc.
661 Andersen Drive, Foster Plaza No. 7
Pittsburgh, PA 15220
Email: preston.smith@tetratech.com (hard copy will not follow)

Re: Sunoco Pipeline, L.P. - Ohio Pipeline Project (previously part of the Mariner East 2 Pipeline Project)
Washington County, PA

Dear Mr. Smith,

Thank you for the submission of your field survey for Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Large Project Number 22424 for review (previously part of the Mariner East 2 Pipeline Project, PNDI 22275). PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated as per Survey (with Avoidance Measure)

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. DCNR requested a botanical survey for *Carex shortiana* (Short's sedge) on January 30, 2014. A survey was conducted by Tetra Tech on May 21 and October 10, 2014. Two populations of Short's sedge were documented within the proposed pipeline corridor.

Sunoco Pipeline has agreed to alter the limit-of-disturbance, moving the proposed route slightly south of the Short's sedge populations in an effort to avoid direct impacts. With the addition of this avoidance measure, DCNR has determined that no impact is likely.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Jason Ryndock, Ecological Information Specialist, by phone (717-705-2822) or via email (c-jryndock@pa.gov).

Sincerely,

Rebecca H. Bowen

Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

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DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

July 22, 2013 **PNDI Large Project Number: 22132**

Sandy Lare
Tetra Tech, Inc.
285 Ellicott Street
Buffalo, NY 14203
Email: sandy.lare@tetratech.com (hard copy not to follow)

Re: Sunoco Logistics L.P. SXL
Mariner East Project
Multiple Townships, Allegheny, Washington, and Westmoreland Counties, PA

Dear Ms. Lare,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Large Project Number **22132** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated per botanical survey

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. A botanical survey was requested for *Trillium nivale* (snow trillium), *Baptisia australis* (blue false indigo), *Iodanthus pinnatifidus* (purple rocket), *Trillium* x 1 (a trillium), *Juncus torreyi* (Torrey's rush), *Passiflora lutea* (Passiflora lutea), and *Smallanthus uvedalius* (leaf-cup). A voluntary observation survey was requested for *Erythronium albidum* (white trout-lily), which has an undetermined and unlisted status in Pennsylvania. Botanical surveys were conducted by Tetra Tech, Inc. from April 16, 2013 to July 8, 2013 at the project site. None of the target plant species of concern or any other listed PA plant species of concern were found during the botanical surveys. However, a population of *E. albidum* was found within habitat area 36, and voluntary best management practices will be utilized when possible to minimize impacts to this population. In addition, a suspected individual of *Cardamine maxima* (large toothwort) was found early in the growing season, but was later identified as *Cardamine diphylla* (toothwort). Therefore, based on the information you submitted concerning the nature of the project, the immediate location, and the botanical survey, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

This response represents the most up-to-date review of the PNDI data files and is valid for **two years** only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. For PNDI project updates, please see the PNHP website at www.naturalheritage.state.pa.us for guidance. As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review. Should you have any questions or concerns, please don't hesitate to contact me at 717.705.2819 or c-frsechle@pa.gov.

Sincerely,

Frederick C. Sechler, Jr, Ecological Information Specialist
Pennsylvania Natural Heritage Program
Bureau of Forestry, Ecological Services Section

Rebecca H. Bowen, Section Chief
Pennsylvania Natural Heritage Program
Bureau of Forestry, Ecological Services Section

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DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

March 5, 2013 **PNDI Number: 22132 (Update 22007)**

Sandy Lare
Tetratech, Inc.
Fax 716-849-9420

Re: Sunoco Logistics L.P. SXL
Mariner East Project
Allegheny, Washington and Westmoreland Counties, PA

Dear Ms. Lare,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number **22132** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern. Please note our new survey protocols are available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx .

Survey Request
DCNR requests a survey for the ***attached species list***:

- A survey for the attached species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review.* **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**
- Your botanist should *fill out the field survey form while performing their survey*: http://www.gis.dcnr.state.pa.us/hgis-er/hgis/Internet%20Field%20Survey%20Form_2007.pdf. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.
- Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.
- If the land type(s) does not exist onsite a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types and species found onsite.

Conservation Measure—Voluntary Action

The following species is currently Tenatively Undetermined in PA and therefore, is not a target species for a survey. However, because of its ecological significance, please note if this species is identified during the required survey and avoid potential impacts to this species.

- *Erythronium albidum*—moist woods and rich slopes, especially on limestone; flowers April-May

This response represents the most up-to-date review of the PNDI data files and is valid for two years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. For PNDI project updates, please see the PNHP website at www.naturalheritage.state.pa.us for guidance. As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review. Should you have any questions or concerns, please don't hesitate to contact me at 717.705.2823 or c-arohrbau@pa.gov.

Sincerely,

Andrew Rohrbaugh, Environmental Review Manager
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

PNDI 22132
Species of Special Concern near Sunoco Logistics Mariner East Project Phase 1

Sheets 3, 6
Please conduct a survey for the following species during an appropriate time of year:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Trillium nivale	Snow Trillium	Rare	Rare	n/a	moist woods	flowers late March -April

Please note if the following species of concern are observed during the required survey:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Erythronium albidum	White Trout-lily	None	Tentatively Undetermined	FACU	moist woods and rich slopes, especially on limestone	flowers April - May

PNDI 22132
Species of Special Concern near Sunoco Logistics Mariner East Project Phase 1

Sheet 5
Please conduct a survey for the following species during an appropriate time of year:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Baptisia australis	Blue False-indigo	None	Threatened	n/a	open woods, stream banks and sandy floodplains	flowers May-June
Iodanthus pinnatifidus	Purple Rocket	Endangered	Endangered	FACW	moist alluvial woods and wooded slopes	flowers May-June
Trillium nivale	Snow Trillium	Rare	Rare	n/a	moist woods	flowers late March -April
Trillium x 1			Threatened		moist woods	flowers late March -April

Please note if the following species of concern are observed during the required survey:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Erythronium albidum	White Trout-lily	None	Tentatively Undetermined	FACU	moist woods and rich slopes, especially on limestone	flowers April - May

PNDI 22132
Species of Special Concern near Sunoco Logistics Mariner East Project Phase 1

Sheets 7, 8
Please conduct a survey for the following species during an appropriate time of year:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Delphinium exaltatum	Tall Larkspur	Endangered	Endangered	n/a	rich shaded woods and on rocky limestone bluffs	flowers July - August
Iodanthus pinnatifidus	Purple Rocket	Endangered	Endangered	FACW	moist alluvial woods and wooded slopes	flowers May-June
Juncus torreyi	Torrey's Rush	Threatened	Rare	FACW	muddy or sandy shores, strip mine areas, swales or ditches	flowers/fruits Summer
Passiflora lutea	Passion-flower	Endangered	Threatened	n/a	moist stream bank thickets	flowers July
Smallanthus uvedalius	Leaf-cup	None	Rare	n/a	ravines, thickets and river or stream banks	flowers July-September
Trillium nivale	Snow Trillium	Rare	Rare	n/a	moist woods	flowers late March-April

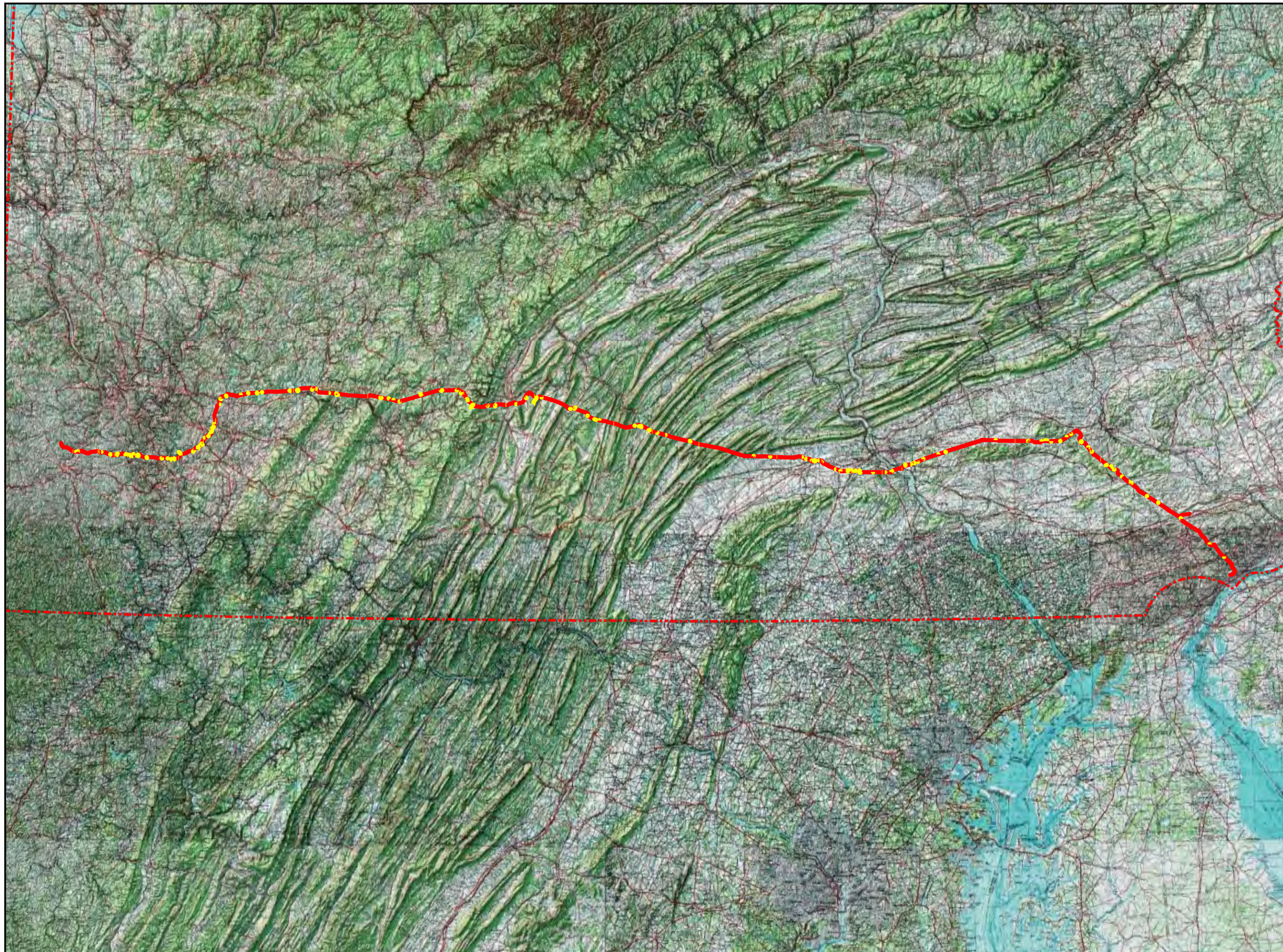
Please note if the following species of concern are observed during the required survey:

Scientific Name	Common Name	PA Status	Proposed PA Status	Wetland Indicator	Habitat	Survey Period
Erythronium albidum	White Trout-lily	None	Tentatively Undetermined	FACU	moist woods and rich slopes, especially on limestone	flowers April - May

APPENDIX B
Mariner East 1 – Houston to Delmont
Botanical Report Submittal - 2013

APPENDIX C
Figures

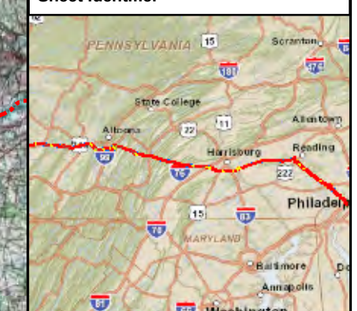
Figure 1	**USGS Project Location Map**
Figures 2-Index-1 to 2-Index-19	**USGS Project Index Maps**
Figures 2-1 to 2-72	**Aerial Habitat Maps [Arranged by AOC]**



Legend

- Access Road
- Alignment Centerline
- PA State Boundary

Sheet Identifier



N

0 10 20 Miles

0 16.095 32.19 Kilometers

FIGURE 1
USGS PROJECT LOCATION MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
COUNTY,

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT_USGS_PLM.MXD 08/14/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

FIGURE 2-INDEX-1
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Bolivar

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

FIGURE 2-INDEX-2
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

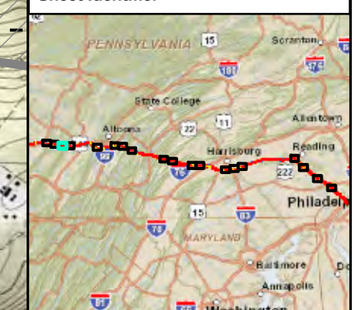
Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Bolivar, New Florence

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

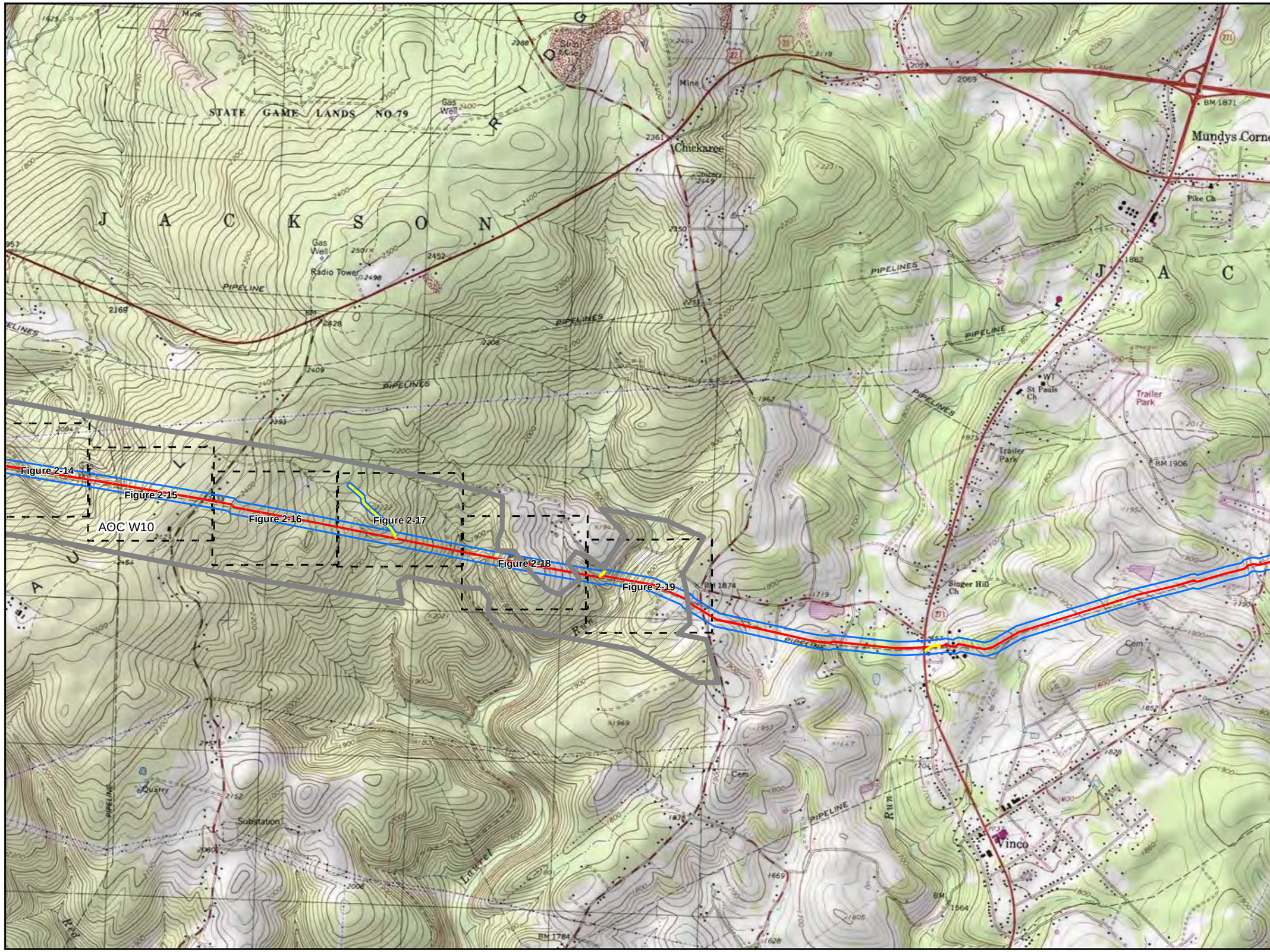
FIGURE 2-INDEX-3
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
New Florence, Vintondale

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

FIGURE 2-INDEX-4
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

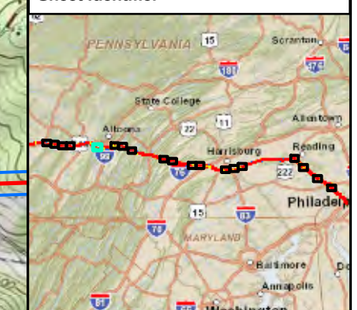
Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Nanty Glo, Vintondale

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 09/17/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

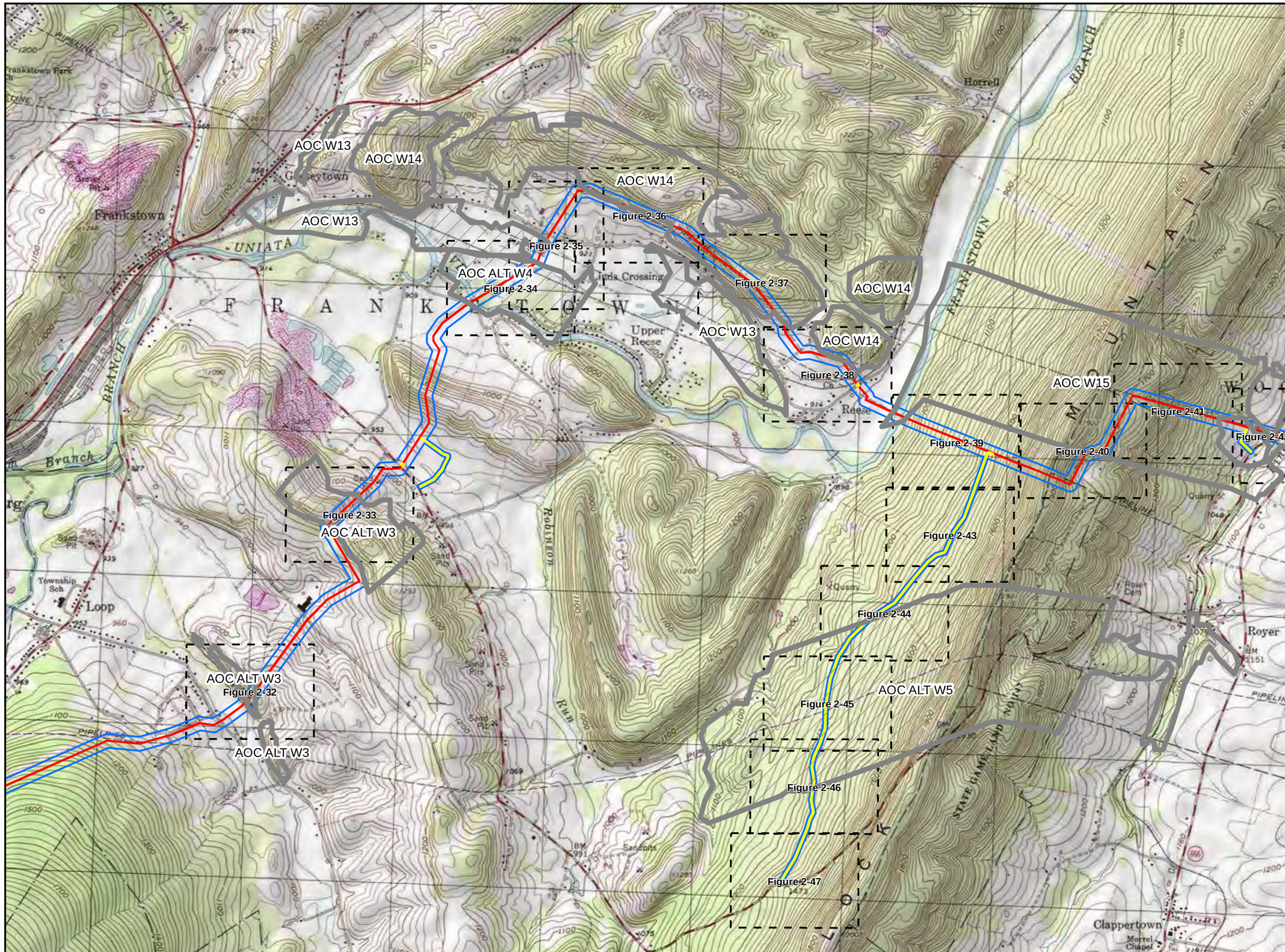
FIGURE 2-INDEX-5
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Cresson, Ebensburg

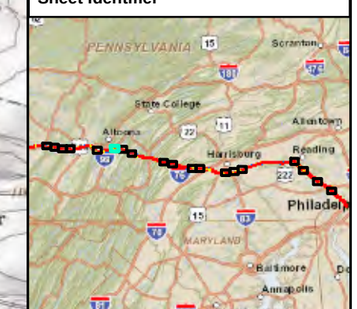
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

FIGURE 2-INDEX-6
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

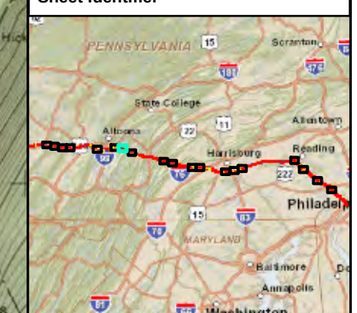
Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed: Frankstown, Hollidaysburg

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

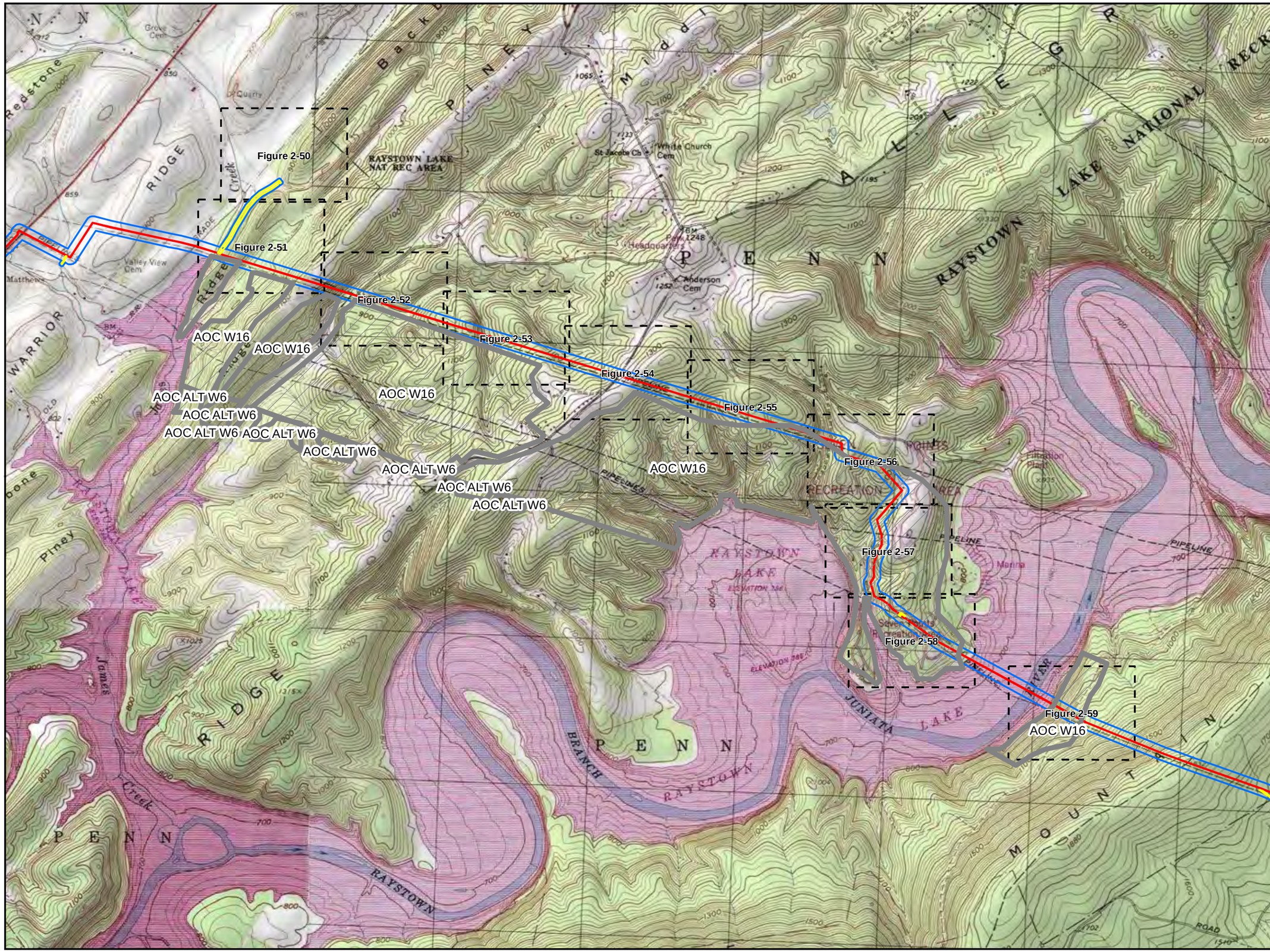
FIGURE 2-INDEX-7
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Frankstown, Williamsburg

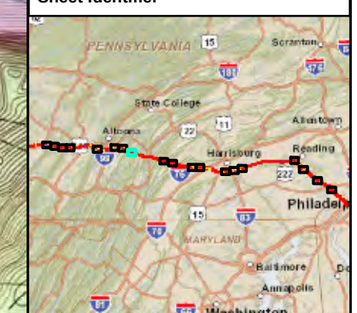
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

FIGURE 2-INDEX-8
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA

TETRA TECH

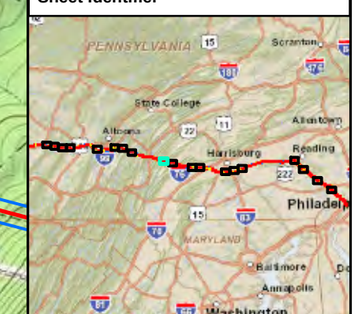
Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Cassville, Entriken, Huntingdon, Williamsburg

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT_USGS.MXD 08/17/15 JN

Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

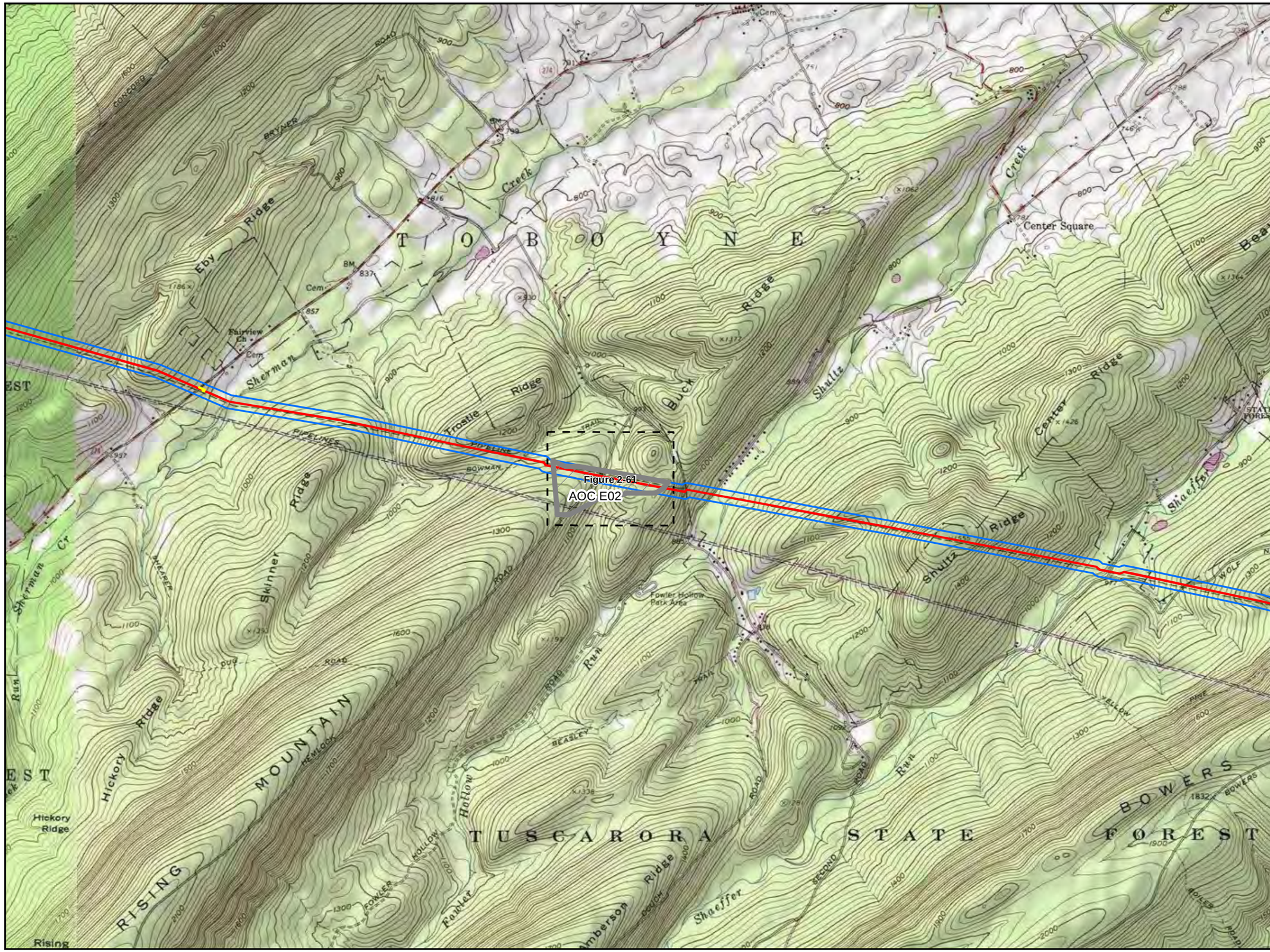
FIGURE 2-INDEX-9
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
PERRY COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Blain, Blairs Mills

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

N

0 1,000 2,000 Feet

0 304.8 609.6 Meters

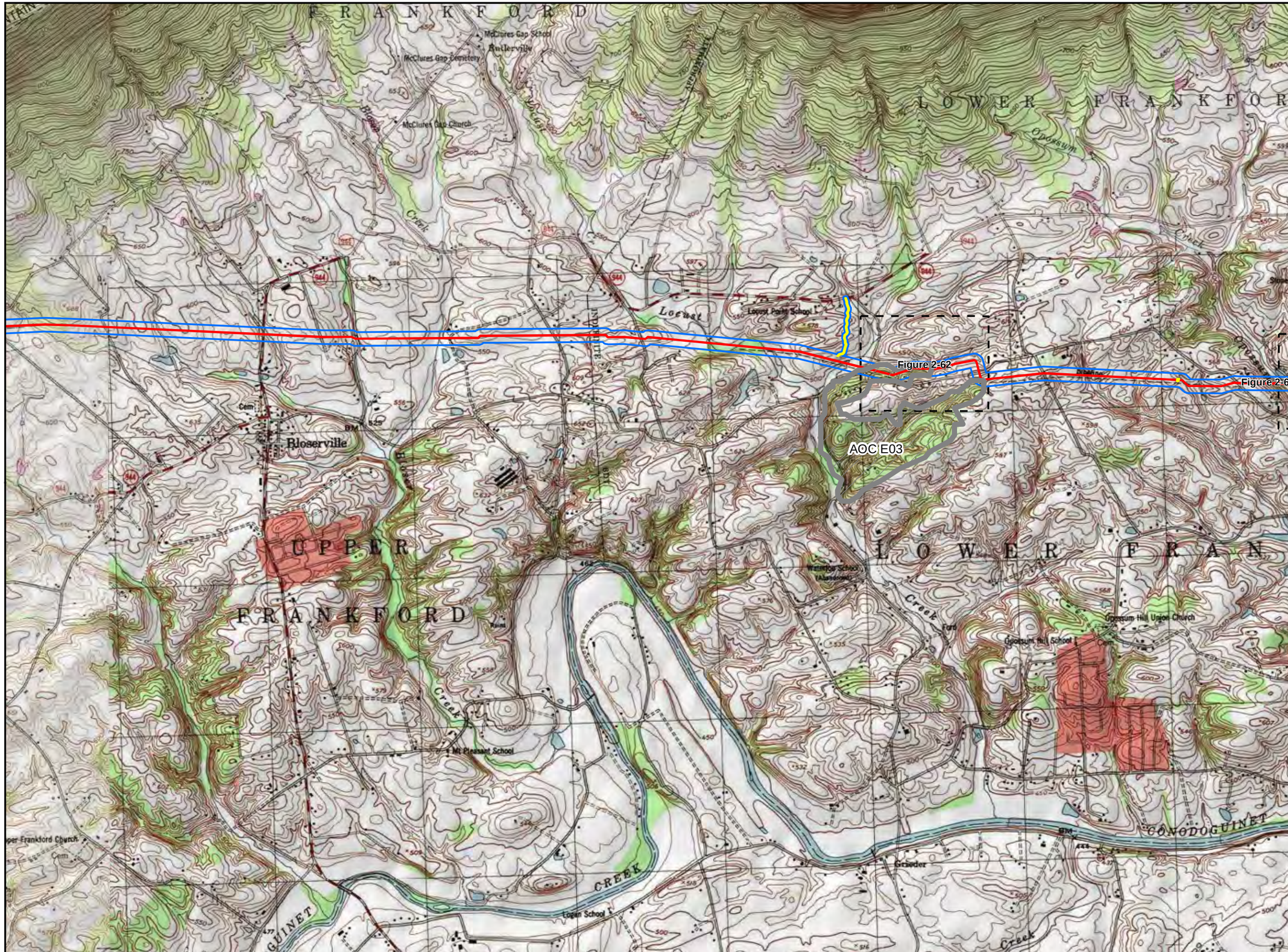
FIGURE 2-INDEX-10
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
PERRY COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Andersonburg, Blain

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

N

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

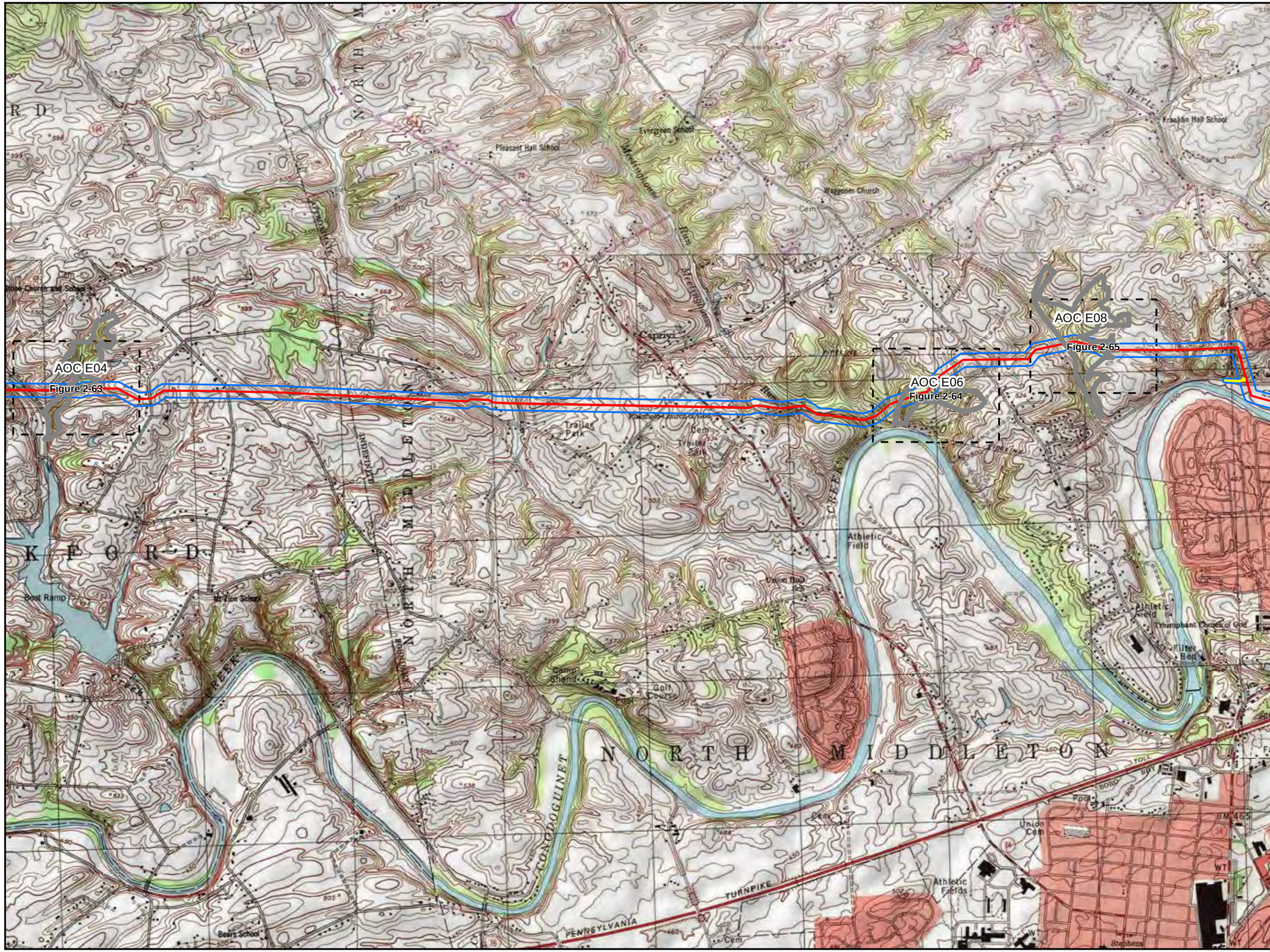
FIGURE 2-INDEX-11
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Andersonburg, Landisburg, Newville, Plainfield

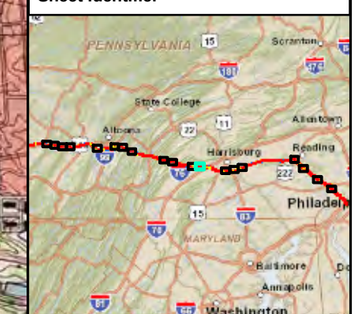
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

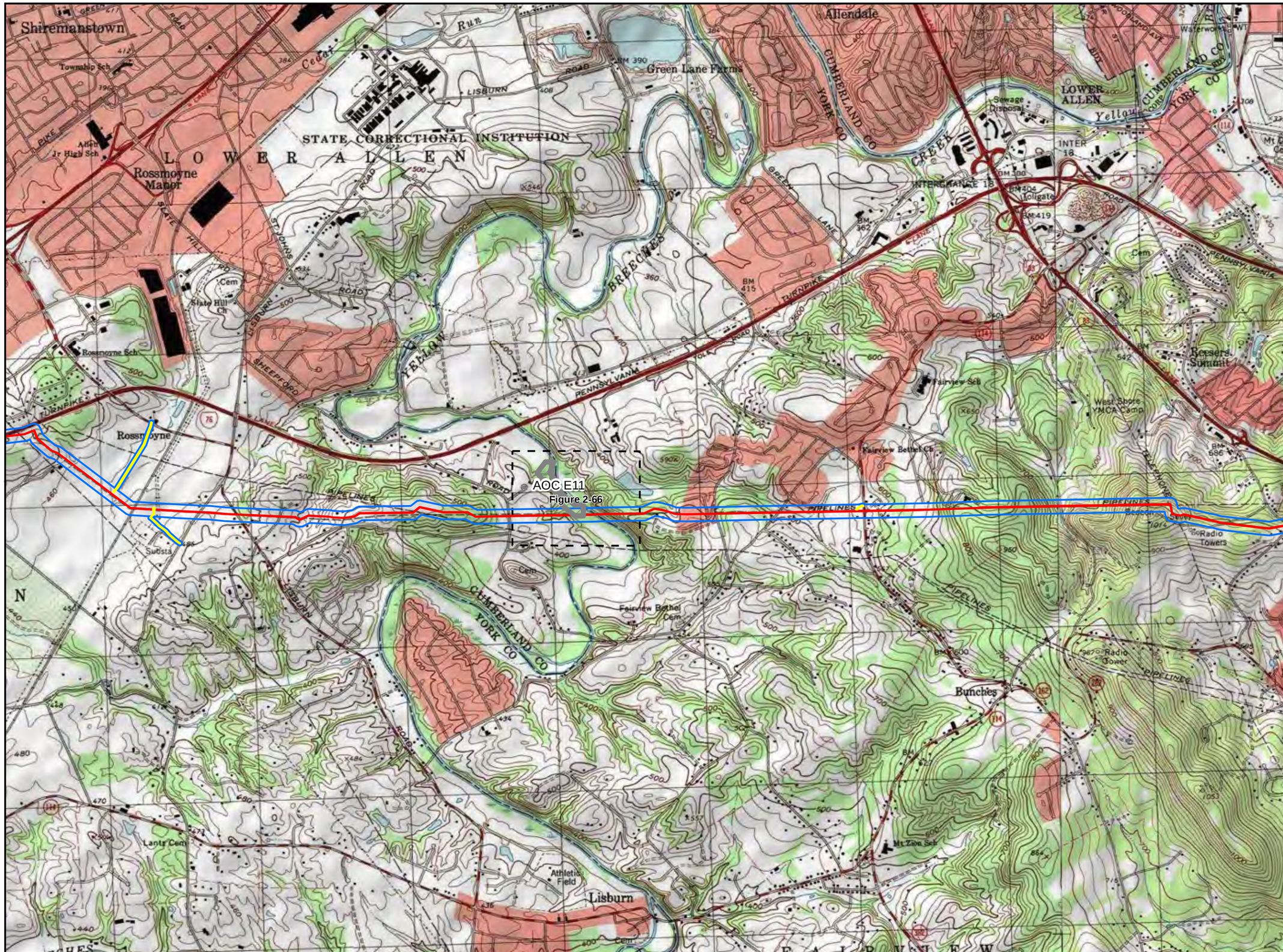
FIGURE 2-INDEX-12
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Carlisle, Landisburg, Plainfield, Shermans Dale

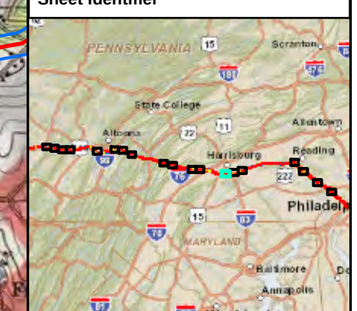
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/07/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

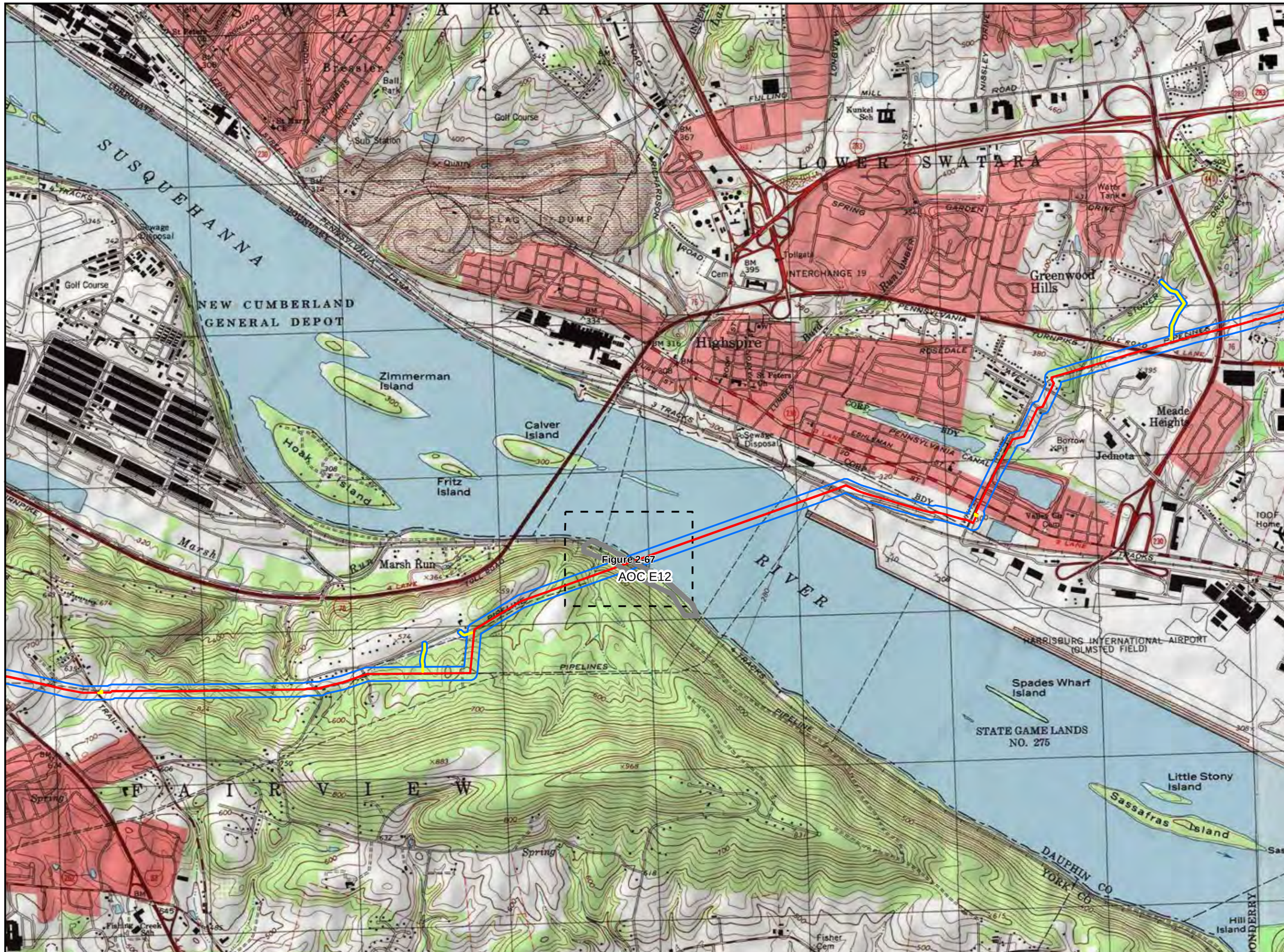
FIGURE 2-INDEX-13
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
YORK COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Lemoyne

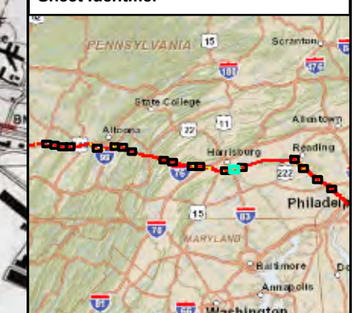
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/27/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

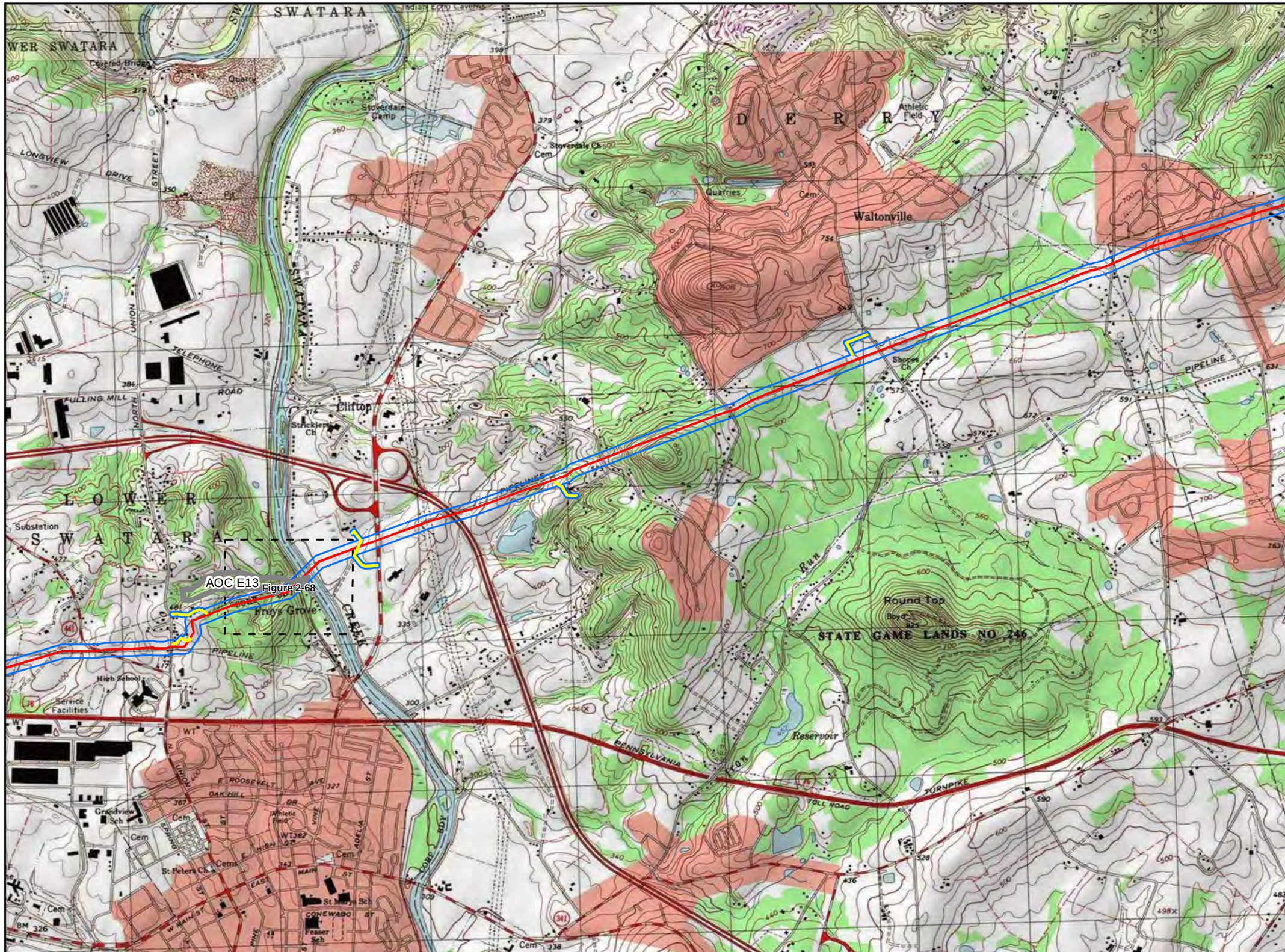
FIGURE 2-INDEX-14
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
DAUPHIN COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Lemoyne, Steelton

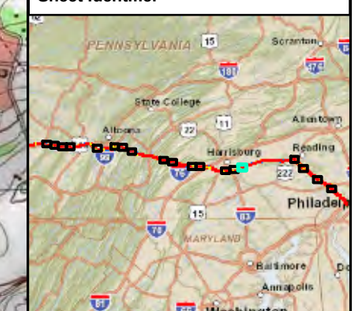
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

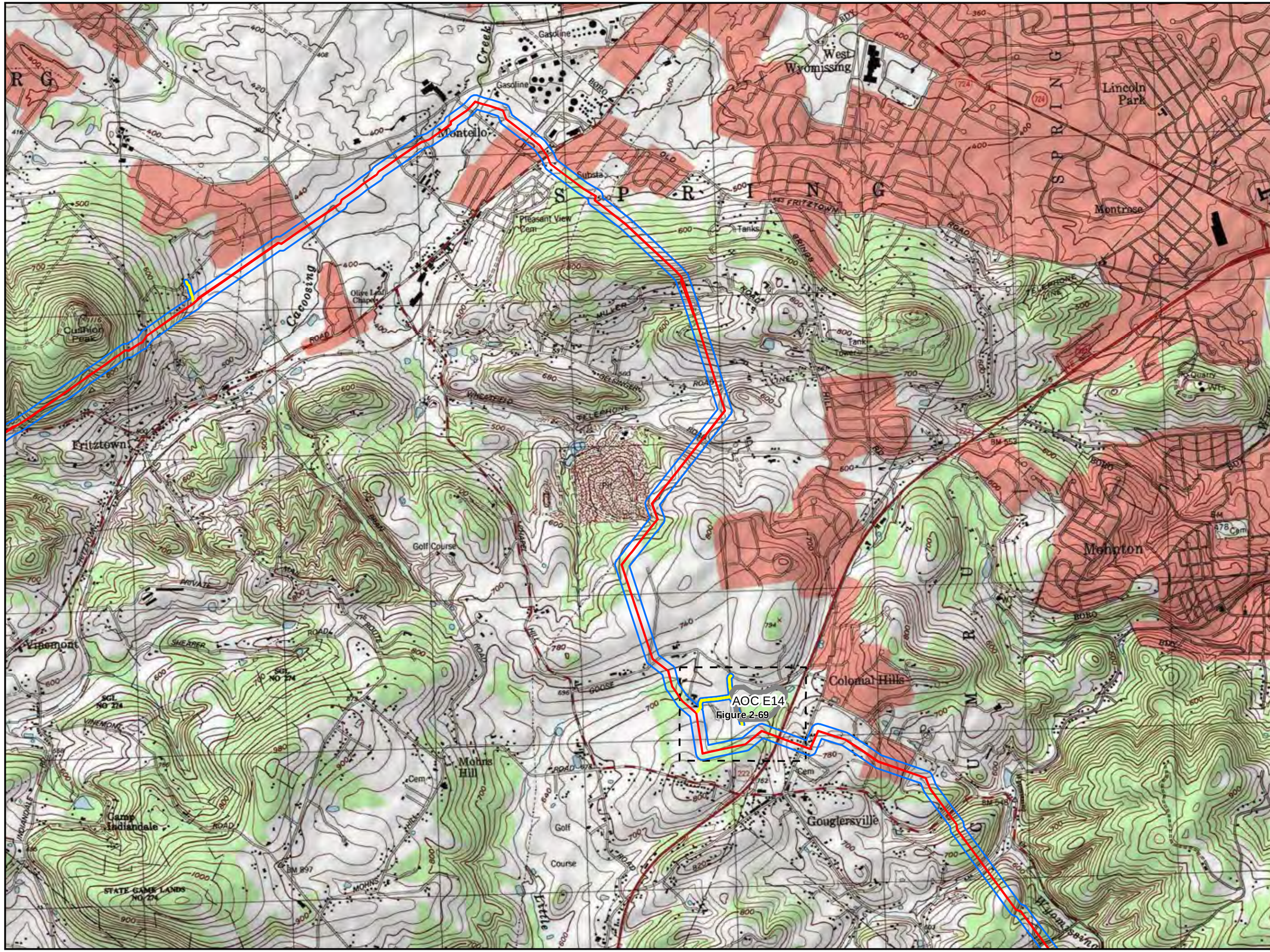
FIGURE 2-INDEX-15
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
DAUPHIN COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Middletown, Steelton

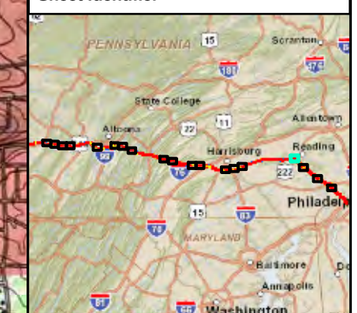
PGH P:\GIS\SUNOCO\WARRINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

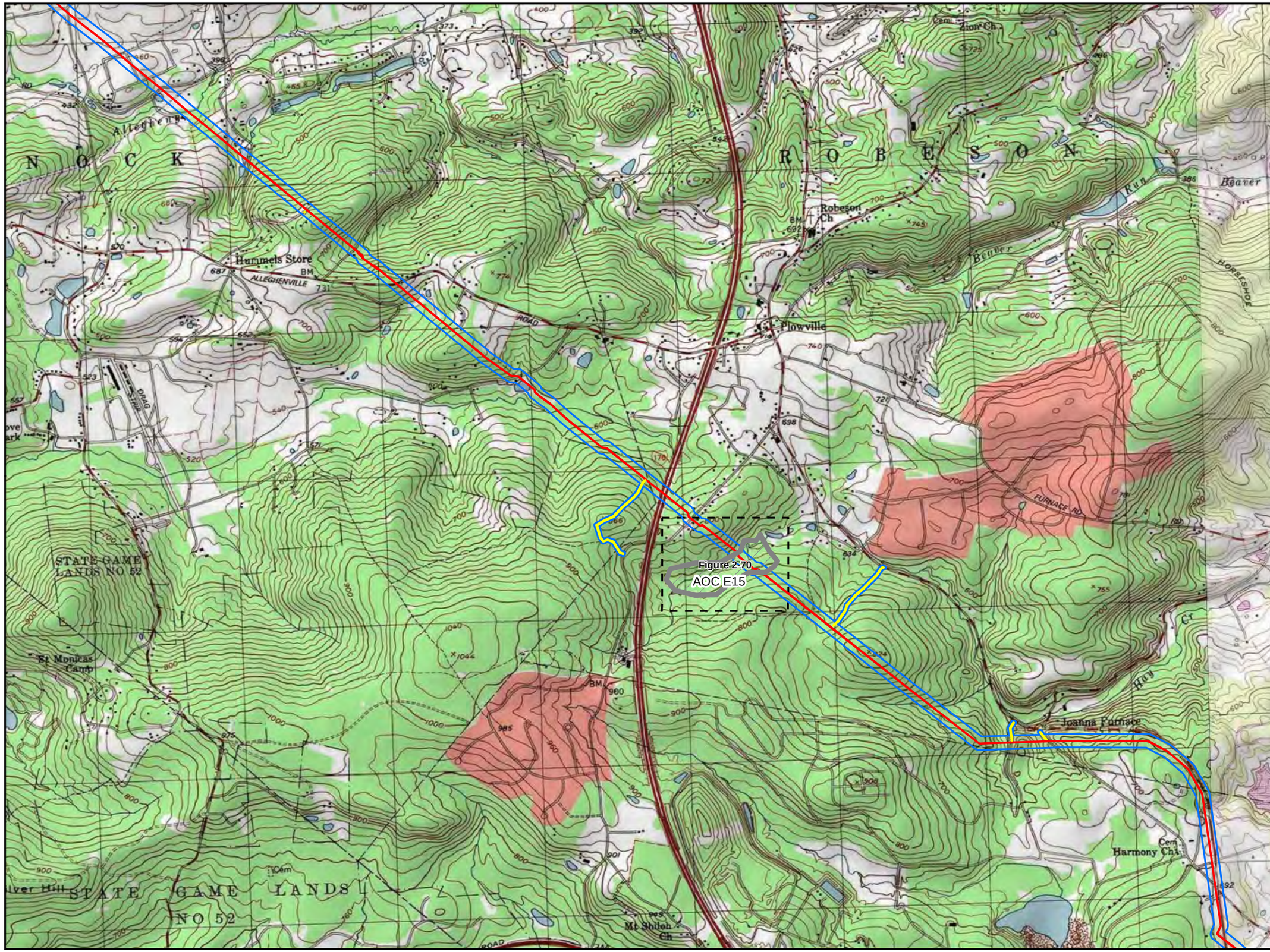
FIGURE 2-INDEX-16
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BERKS COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Reading, Sinking Spring

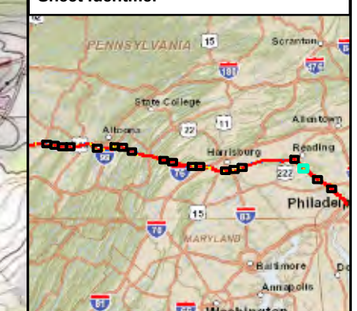
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 1,000 2,000

Meters: 0 304.8 609.6

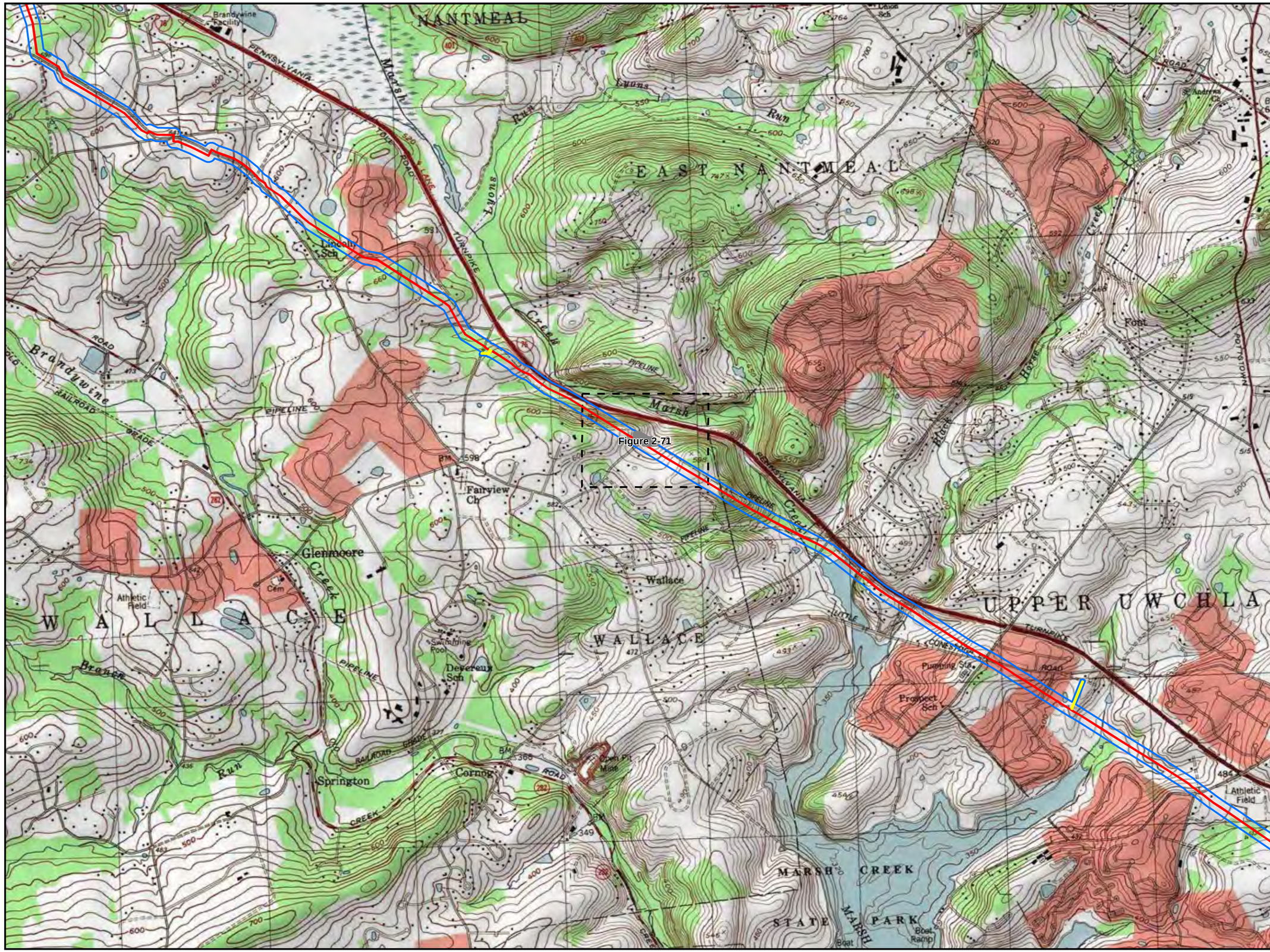
FIGURE 2-INDEX-17
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BERKS COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Elverson, Morgantown

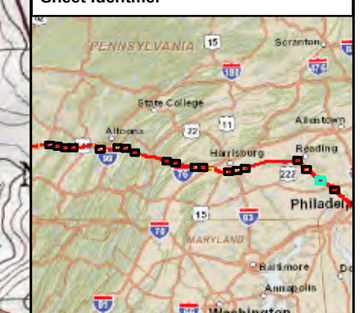
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 — 1,000 — 2,000

Meters: 0 — 304.8 — 609.6

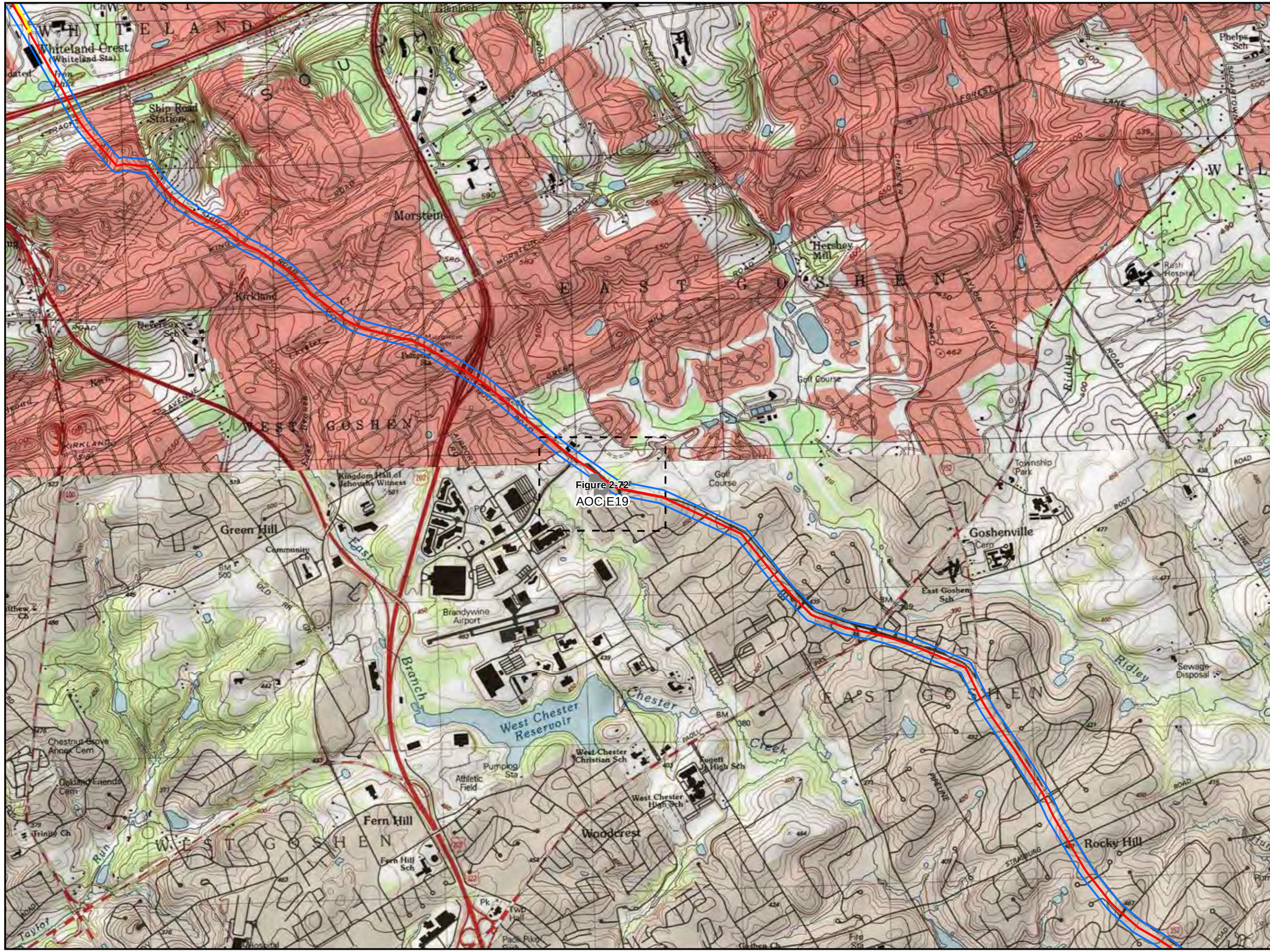
FIGURE 2-INDEX-18
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CHESTER COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed: Downingtown, Washingtown

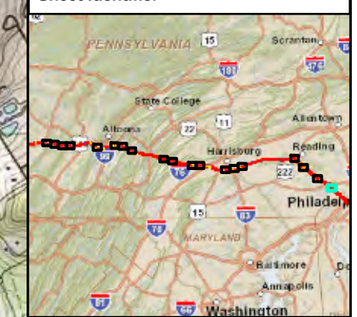
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 8/01/15 JN



Legend

- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet: 0 — 1,000 — 2,000
Meters: 0 — 304.8 — 609.6

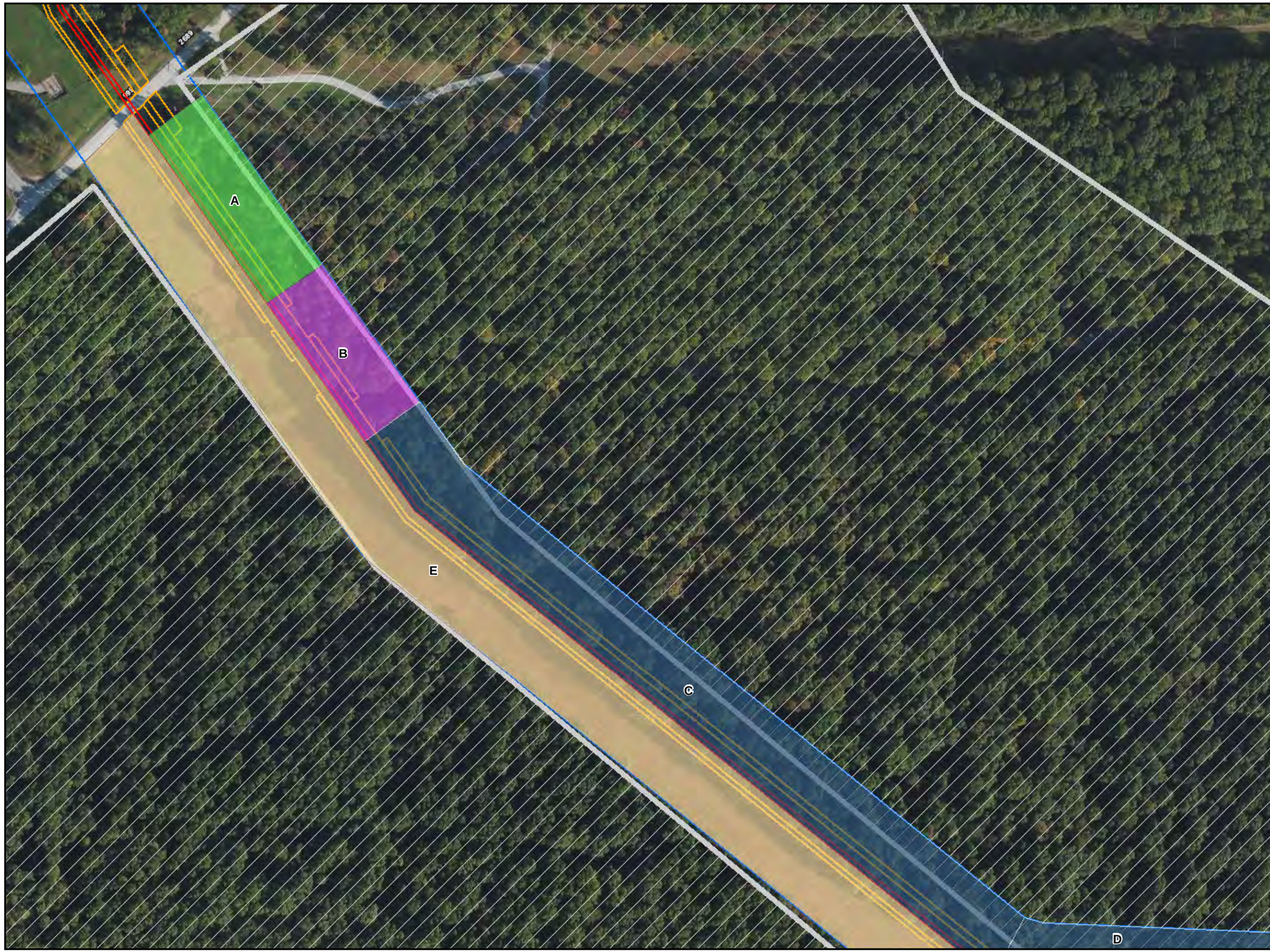
FIGURE 2-INDEX-19
USGS PROJECT INDEX MAP

PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CHESTER COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).
2) Quadrangles being displayed:
Malvern, West Chester

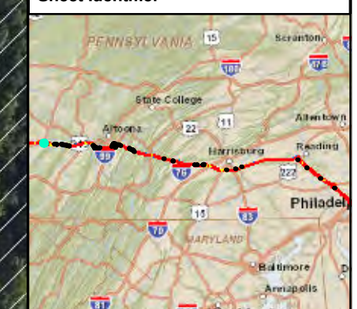
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT_USGS.MXD 08/17/15 JN



Legend

- Broadleaf Terrestrial Woodland
- Mesic Broadleaf Forest
- Mesic Broadleaf Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

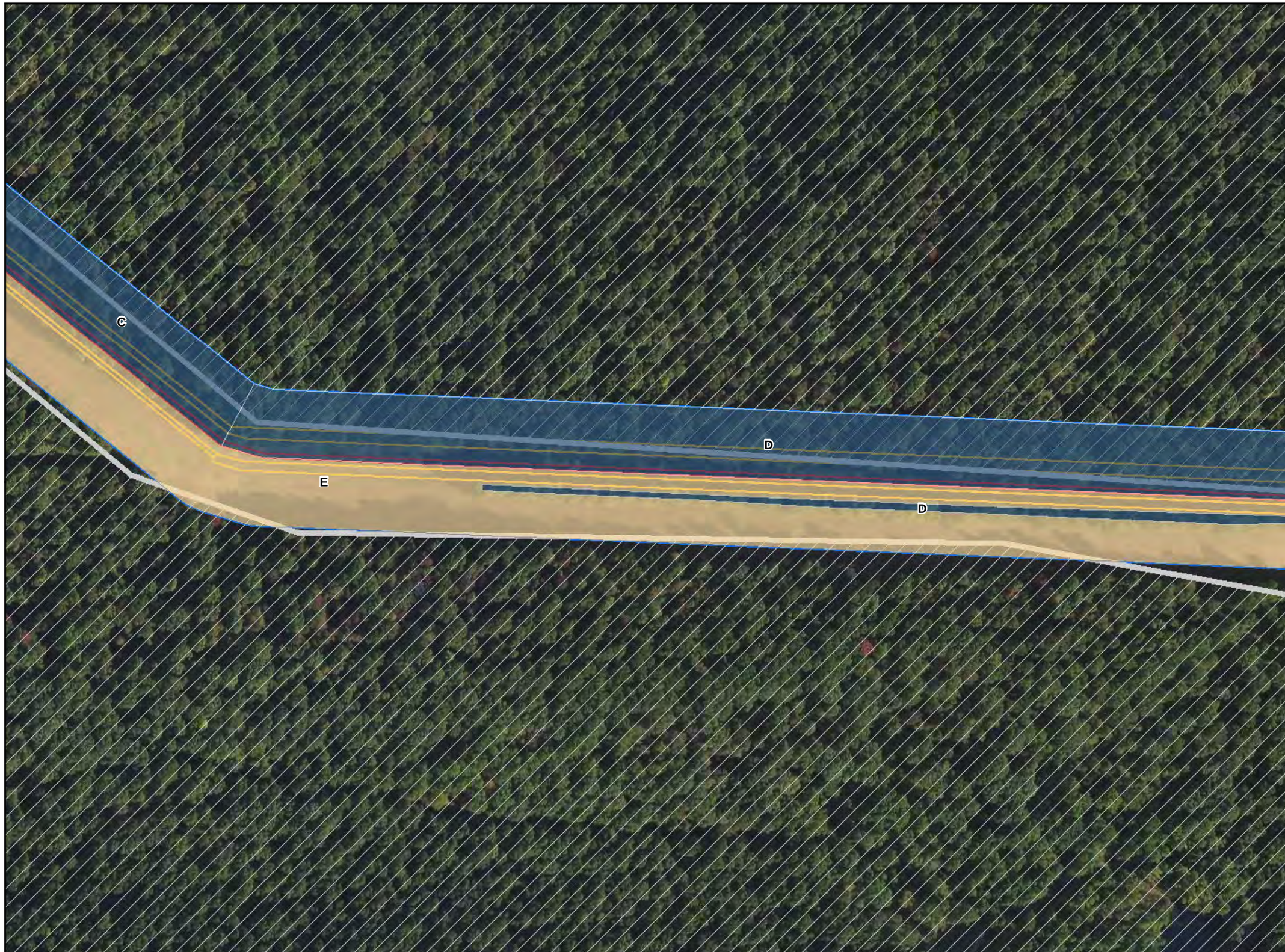
Meters: 0 30.48 60.96

AOC W8
FIGURE 2-1
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

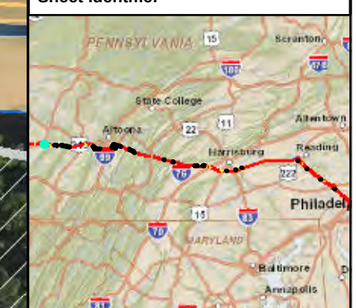
P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT.MXD 08/17/15 JN



Legend

- Mesic Broadleaf Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W8
FIGURE 2-2
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

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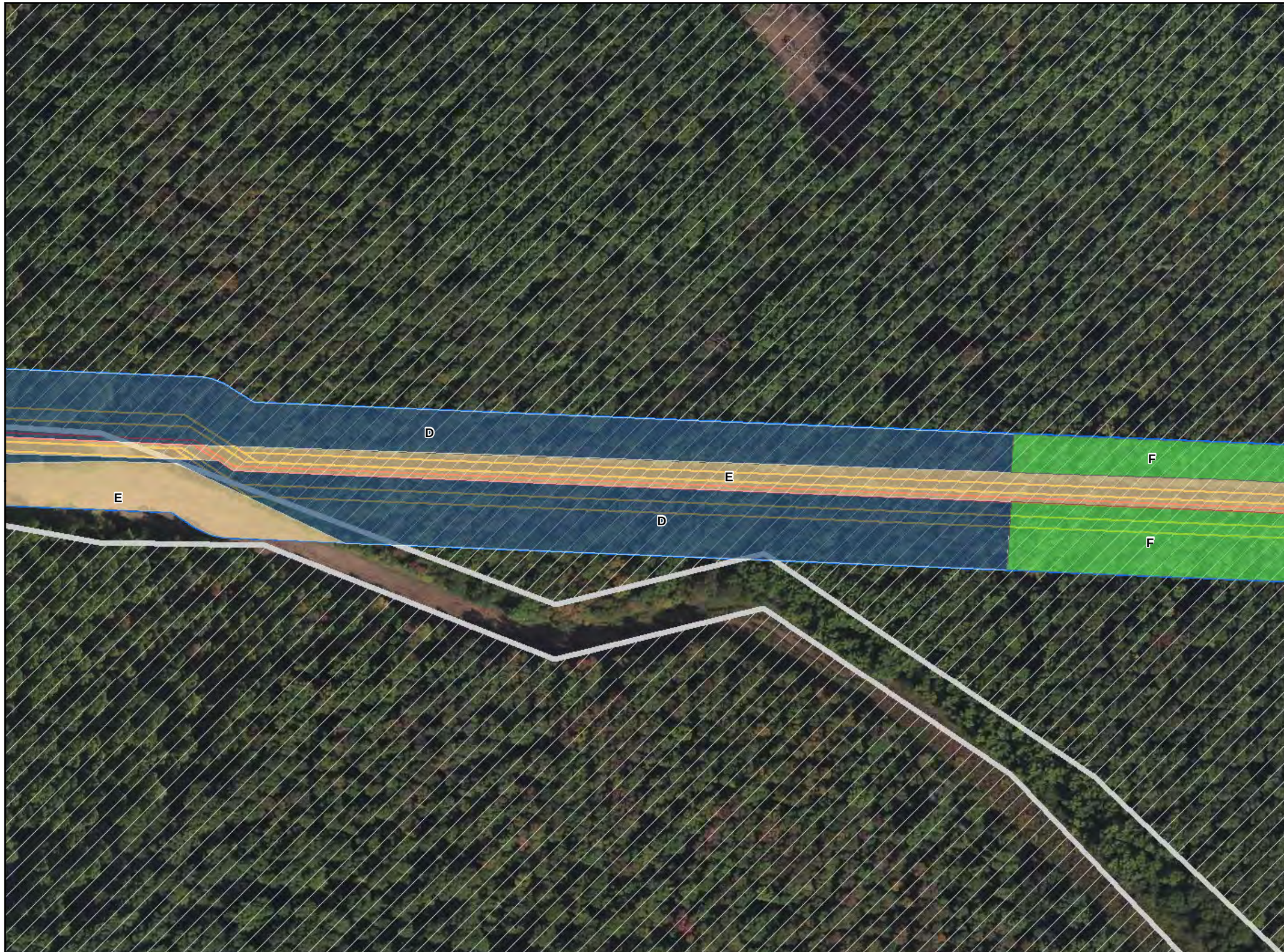
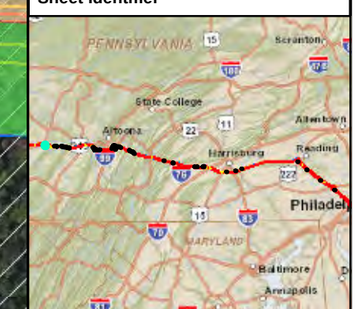


Legend

- Broadleaf Terrestrial Woodland
- Mesic Broadleaf Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W8
FIGURE 2-3
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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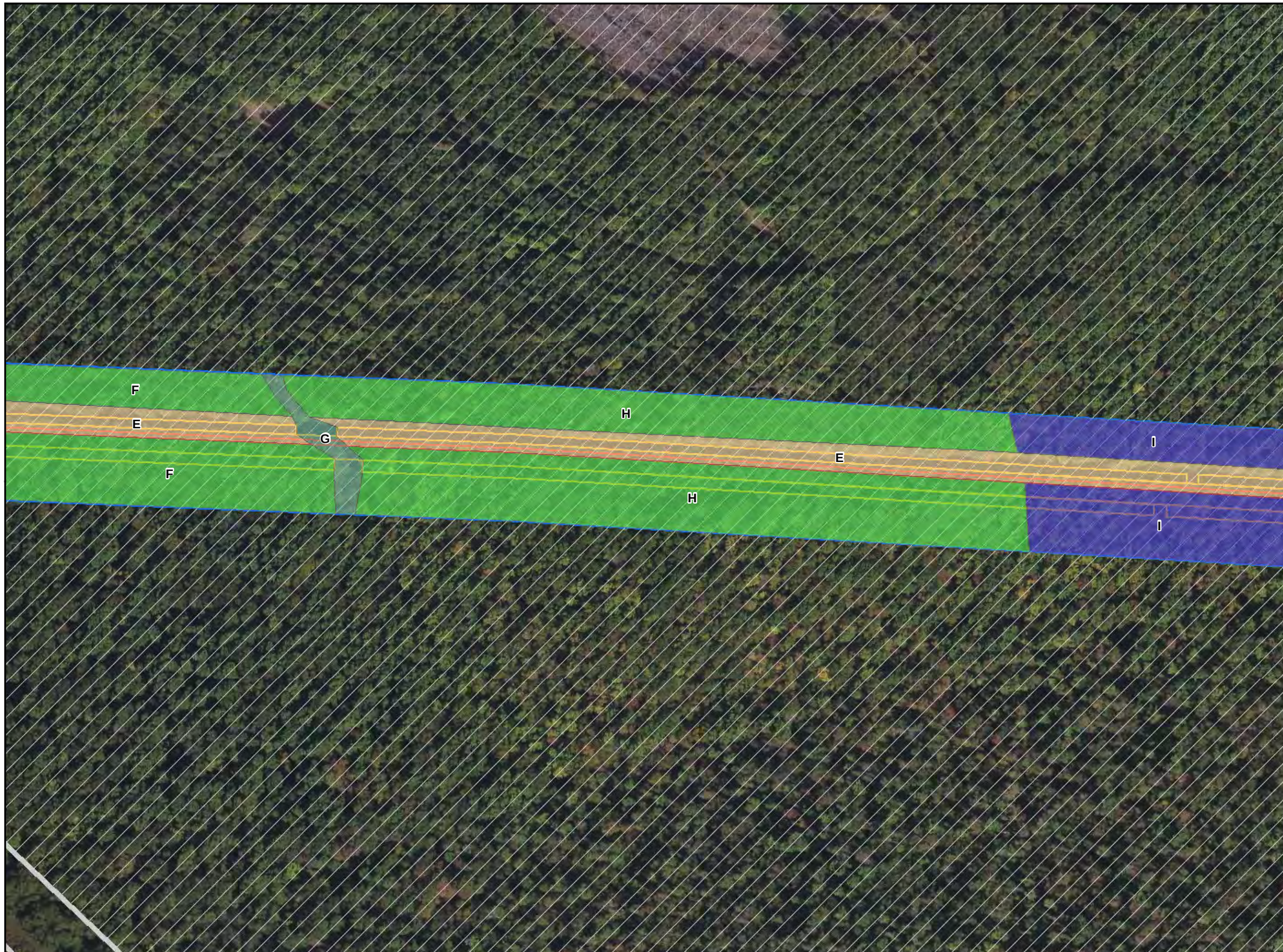
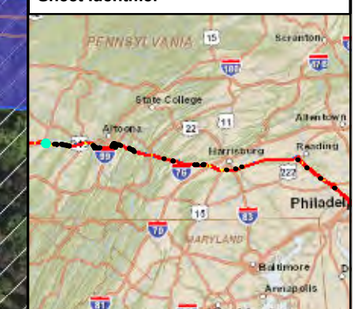


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Riverine Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W8
FIGURE 2-4
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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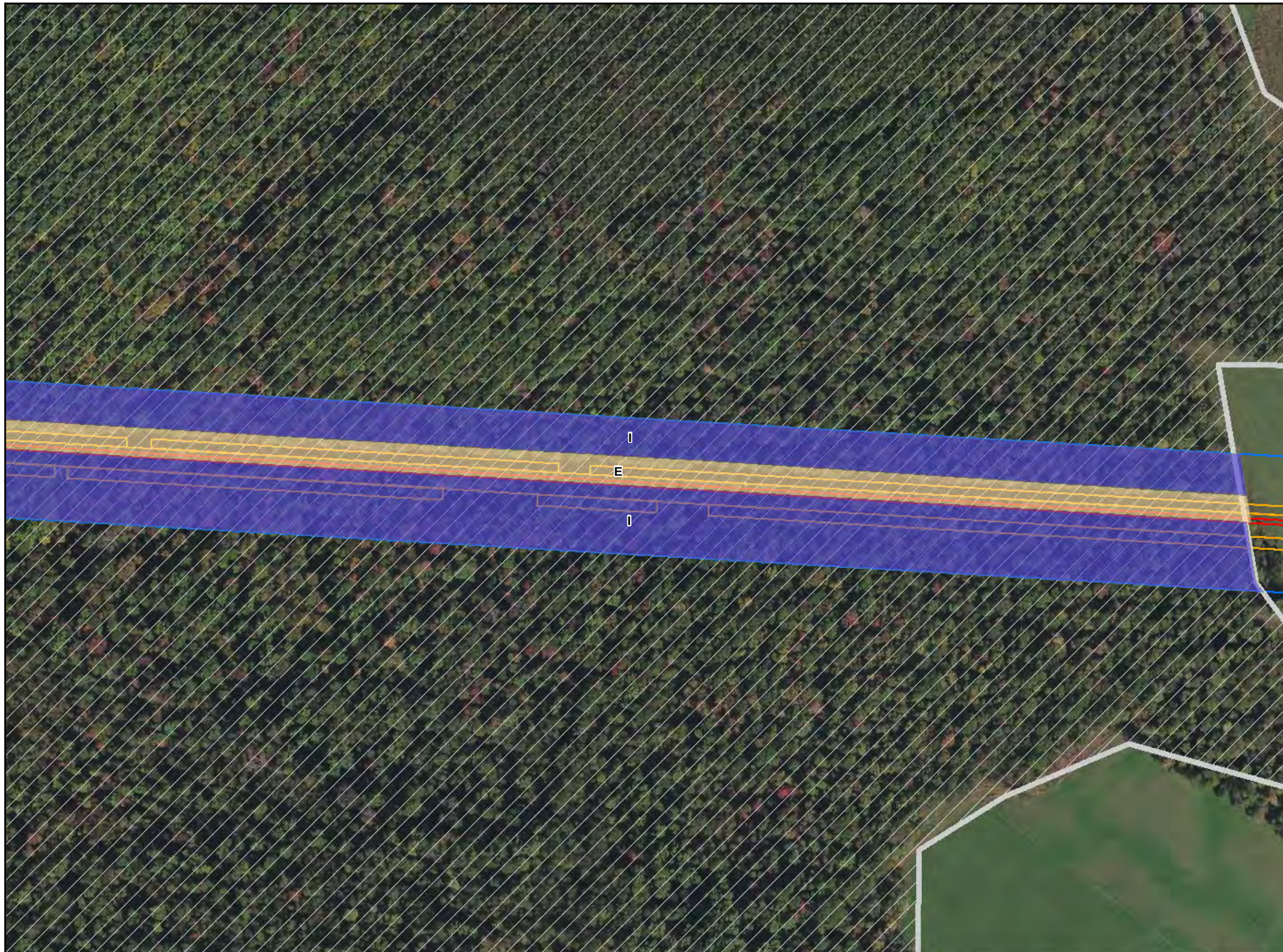
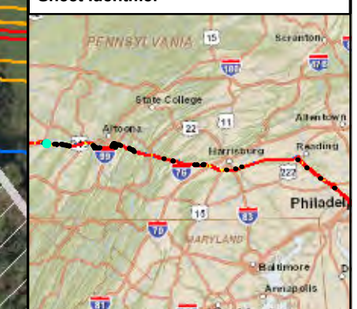


Legend

- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W8
FIGURE 2-5
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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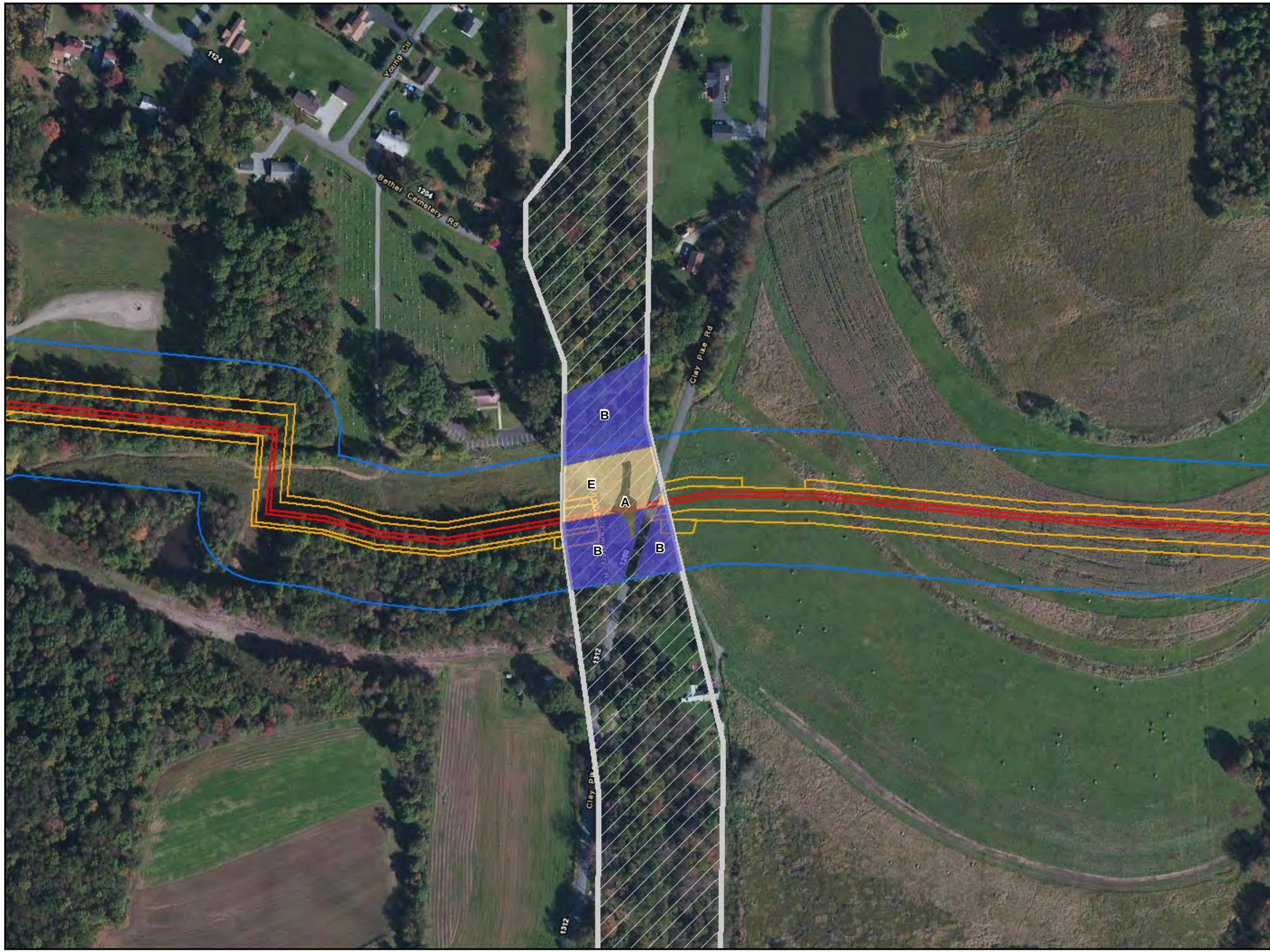

Legend

- Broadleaf Terrestrial Forest
- Palustrine Emergent/Scrub-Shrub
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

Feet
0 100 200
Meters
0 30.48 60.96

AOC W9
FIGURE 2-6
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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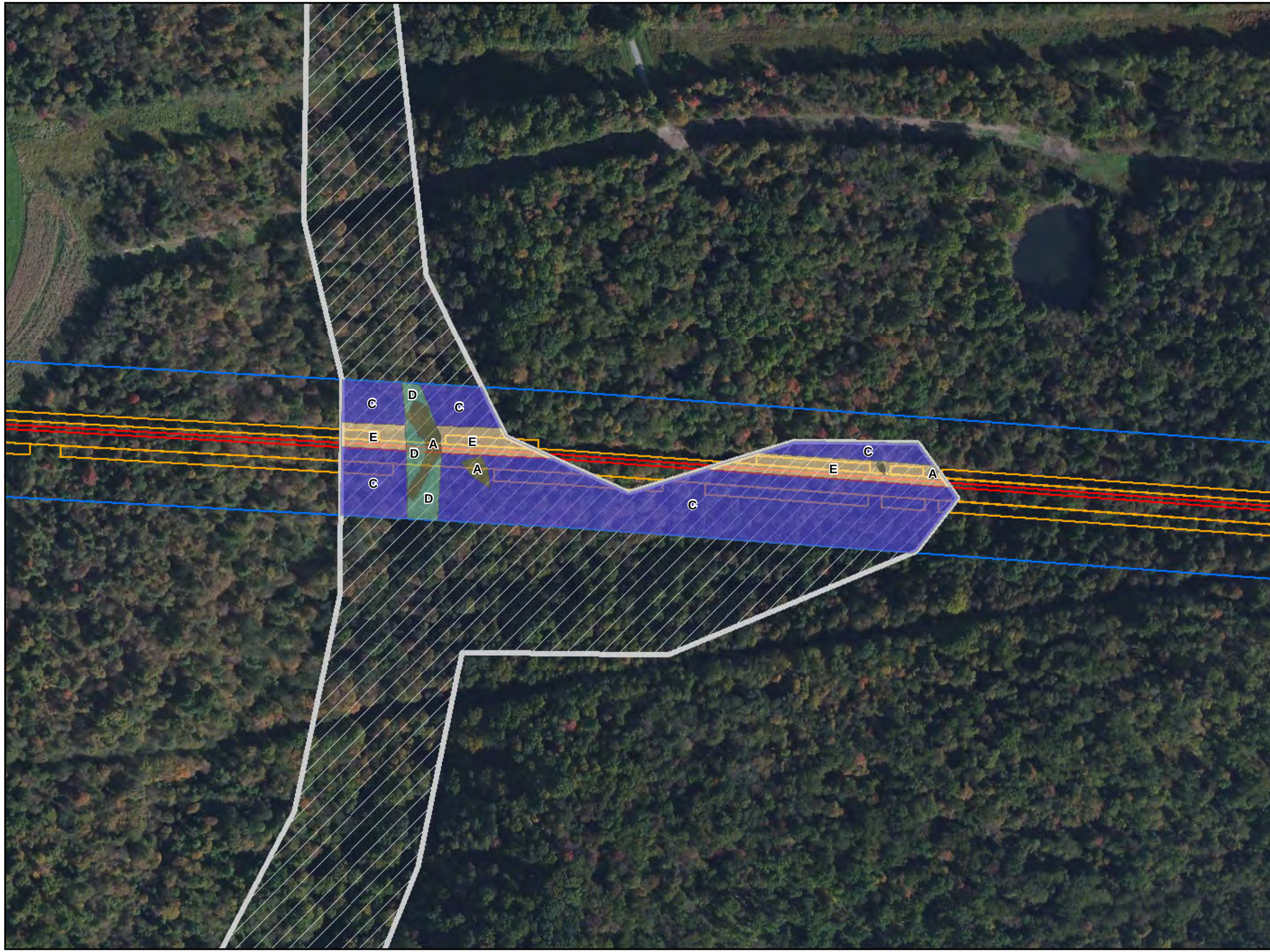


Legend

- Broadleaf Terrestrial Forest
- Palustrine Emergent/Scrub-Shrub
- Riverine Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

N

Feet: 0 100 200

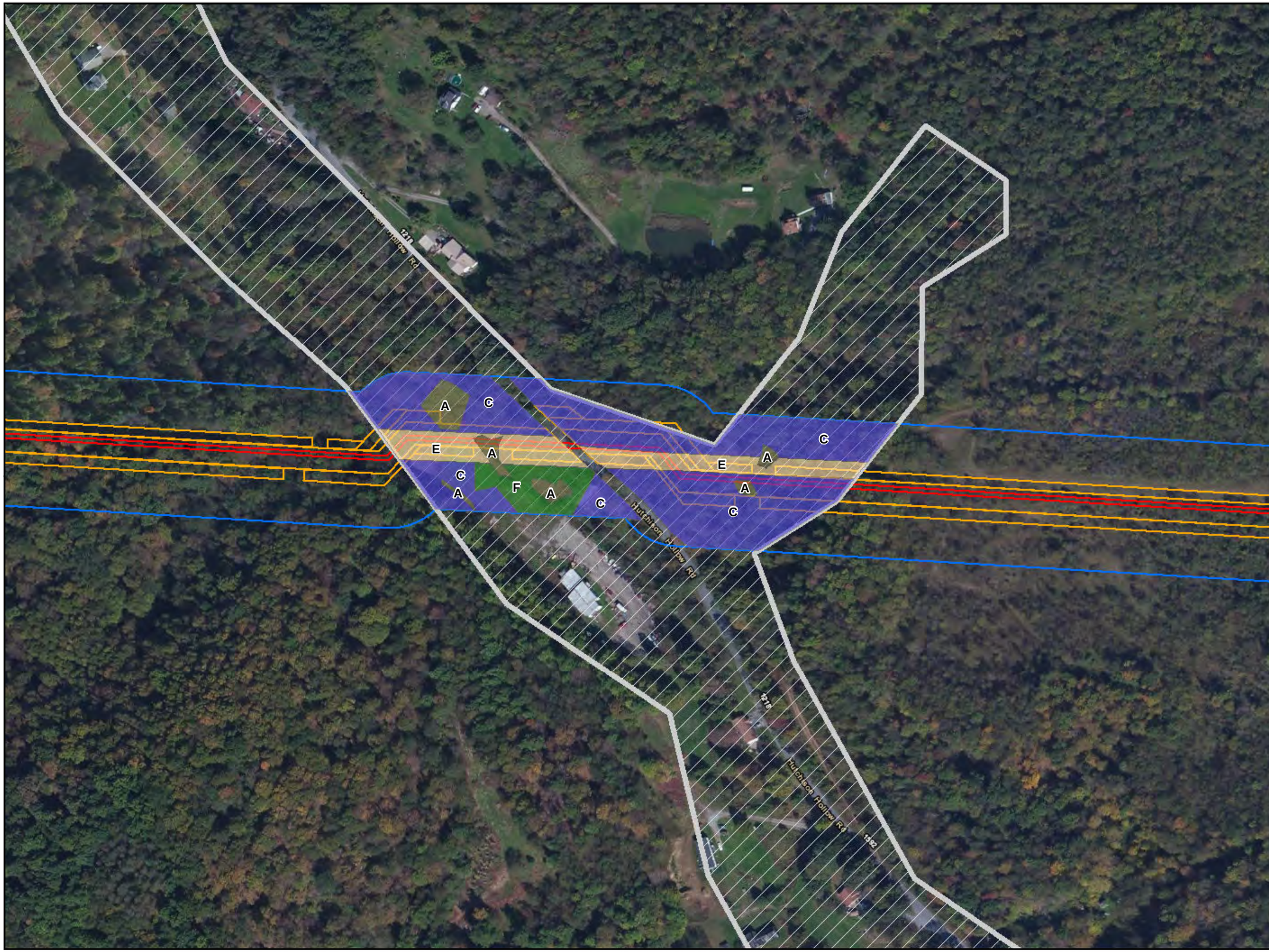
Meters: 0 30.48 60.96

AOC W9
FIGURE 2-7
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

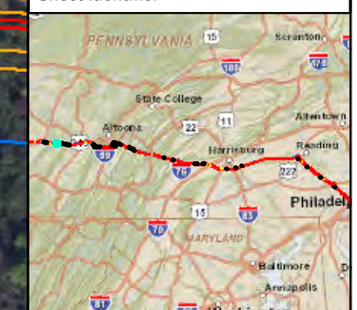
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT.MXD 8/8/17/15 JN



Legend

- Broadleaf Terrestrial Forest
- Palustrine Emergent/Scrub-Shrub
- Terrestrial Herbaceous Opening
- Urban-Residential-Developed
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W9
FIGURE 2-8
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

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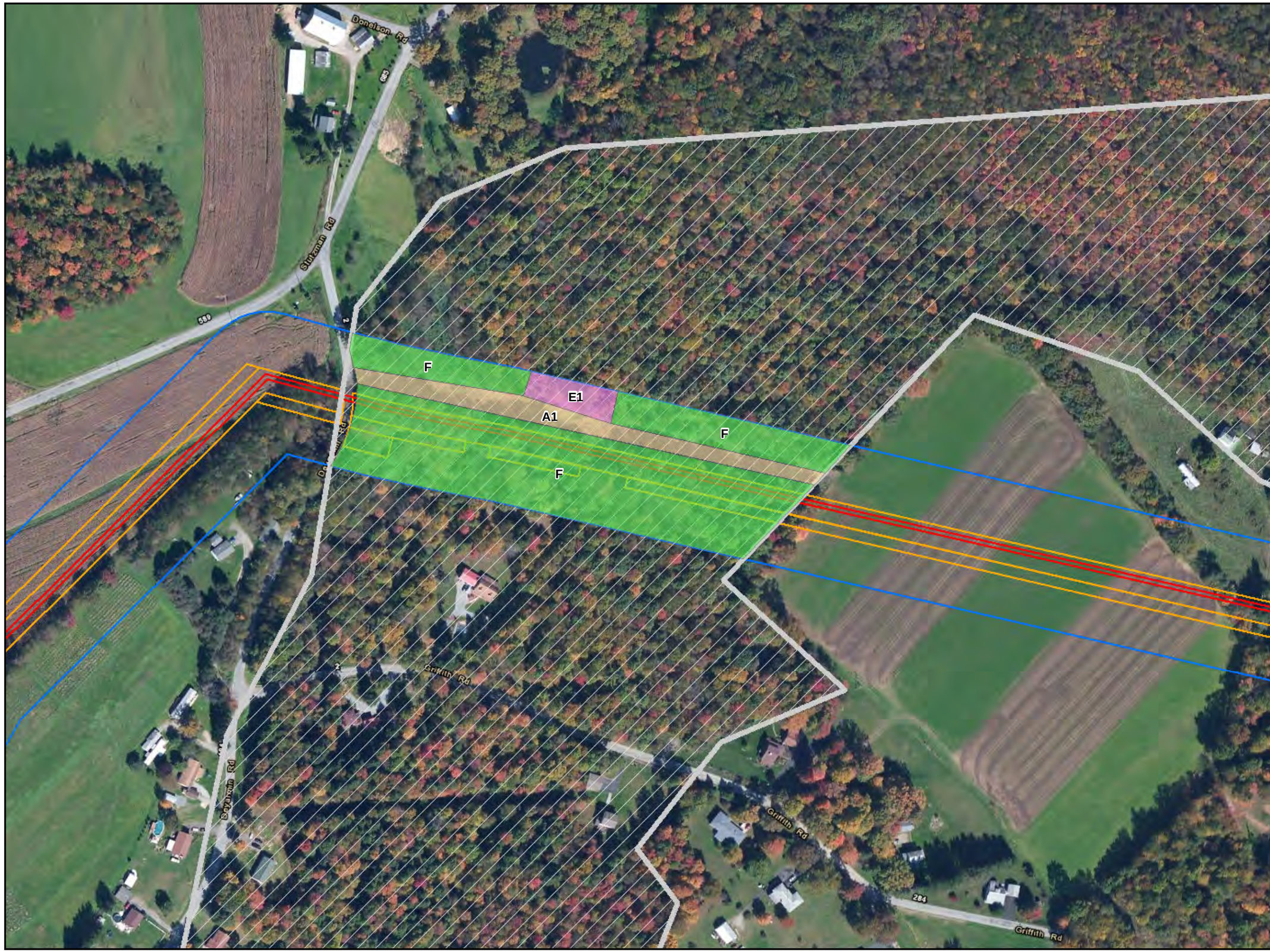
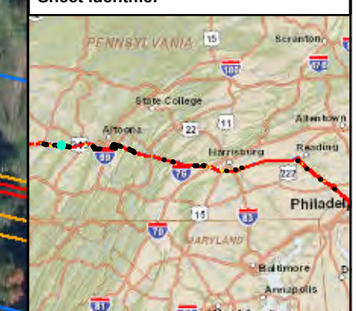


Legend

- Broadleaf Terrestrial Woodland
- Coniferous-Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-9
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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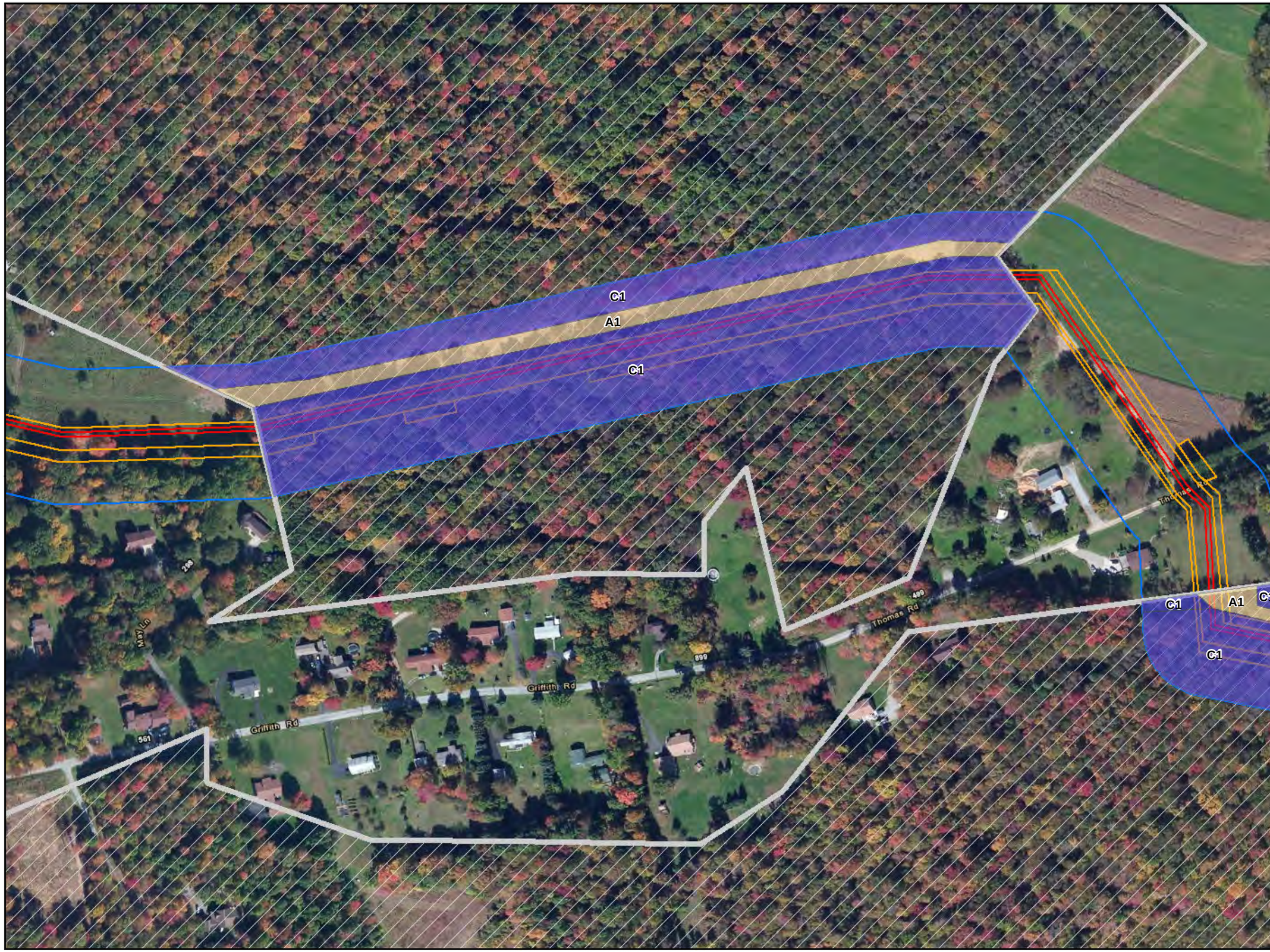
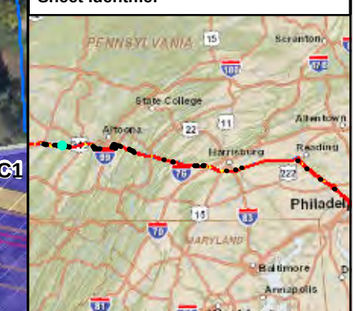


Legend

- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-10
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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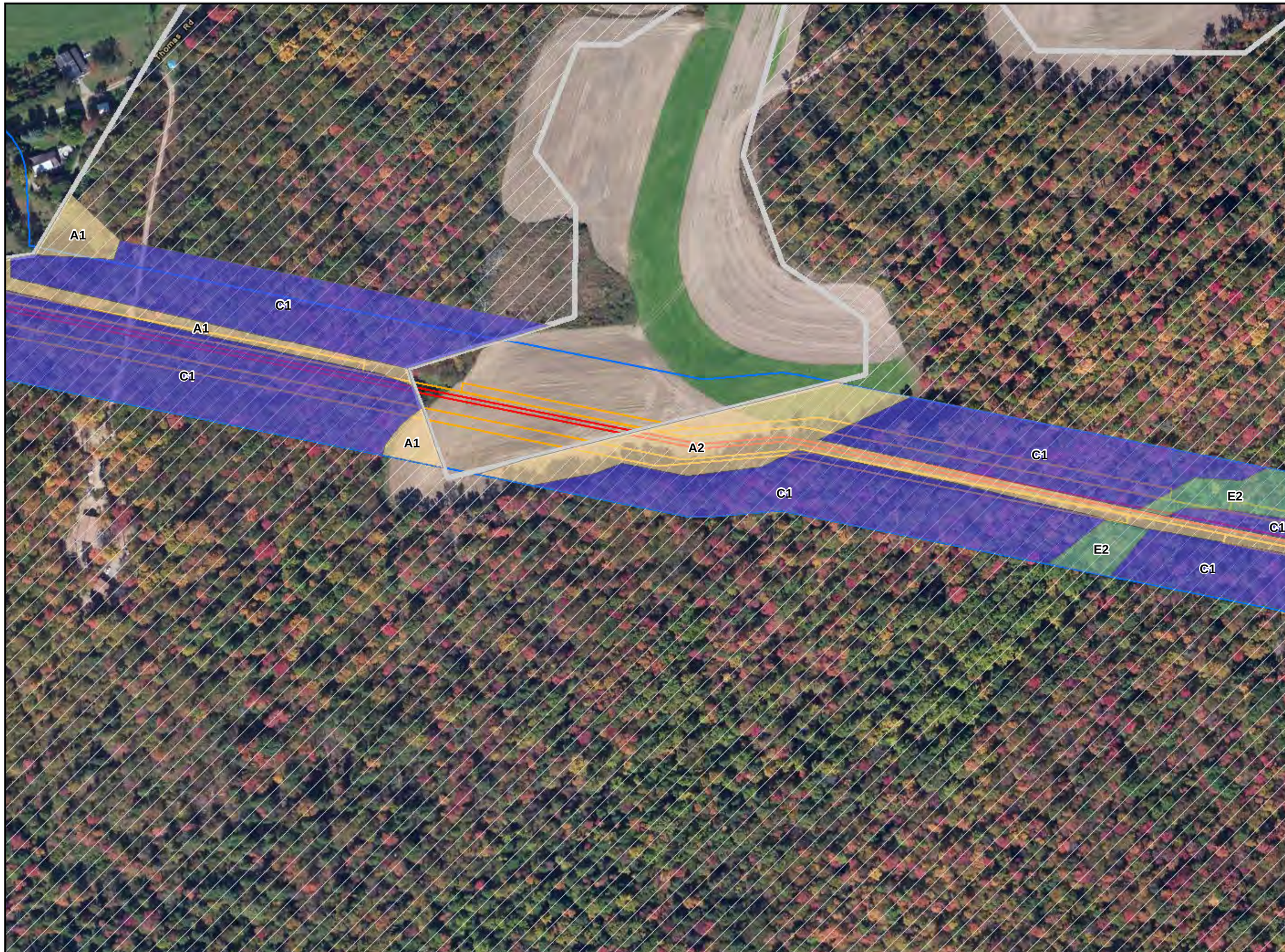
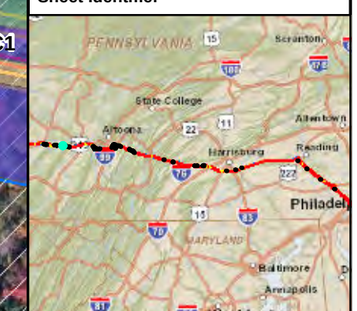
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICALHABITAT.MXD 08/17/15 JN



Legend

- Broadleaf Terrestrial Forest
- Riverine Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-11
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA

TETRA TECH

Notes:
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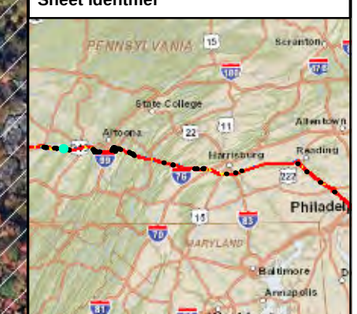
Legend

- Broadleaf Terrestrial Forest
- Riverine Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-12
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

Notes:
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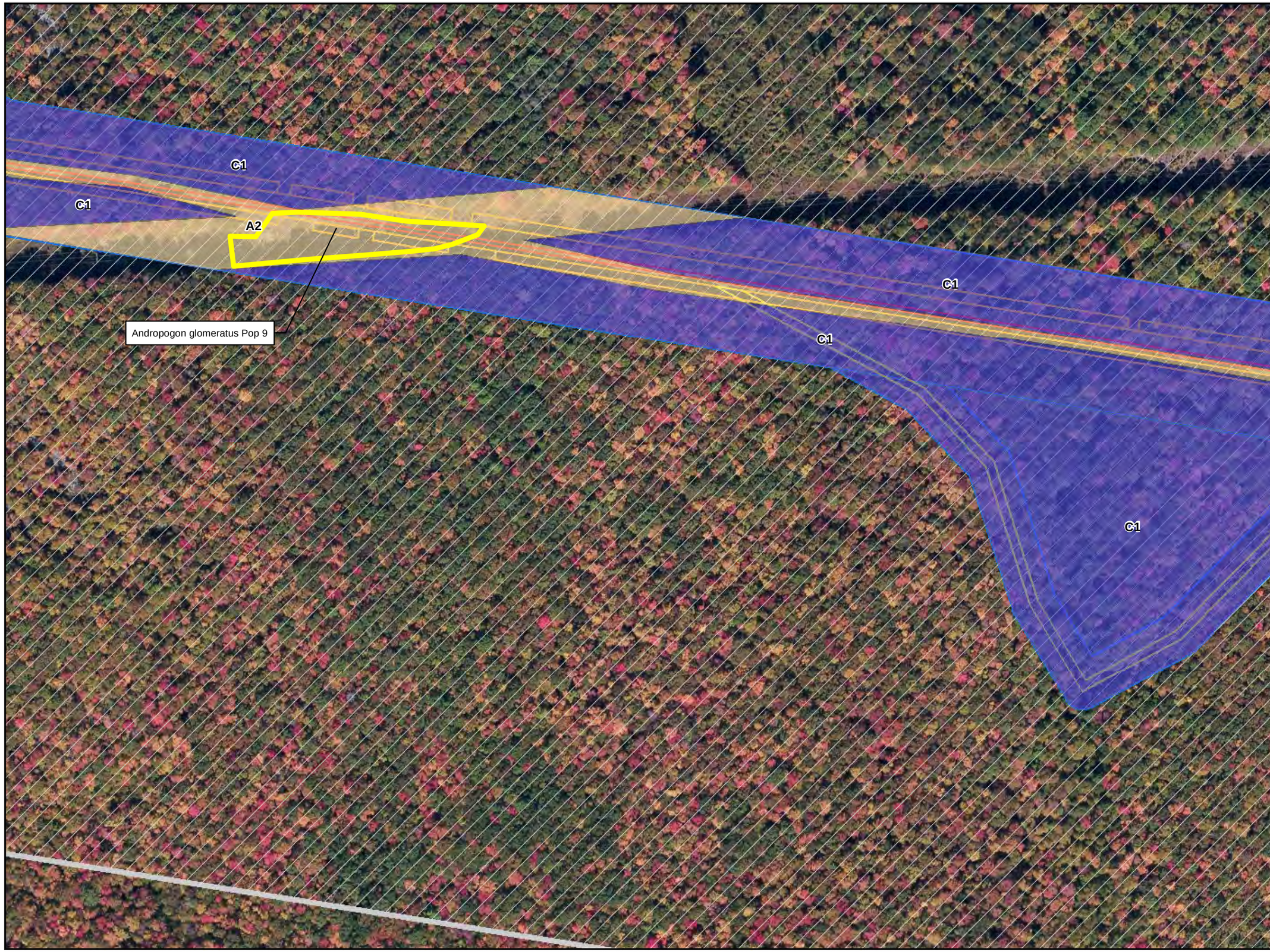
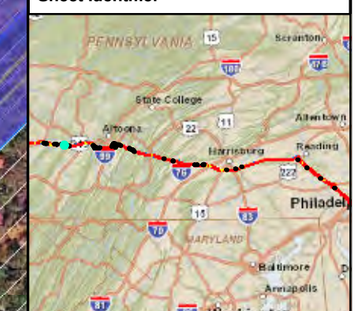


Legend

- Identified Species of Special Concern (SOSC)
- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-13
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

Notes:
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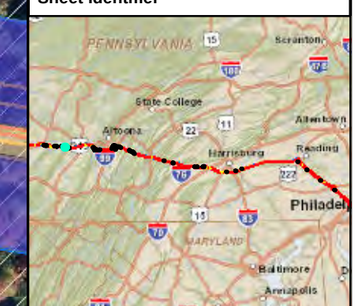
Legend

- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-14
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

Notes:
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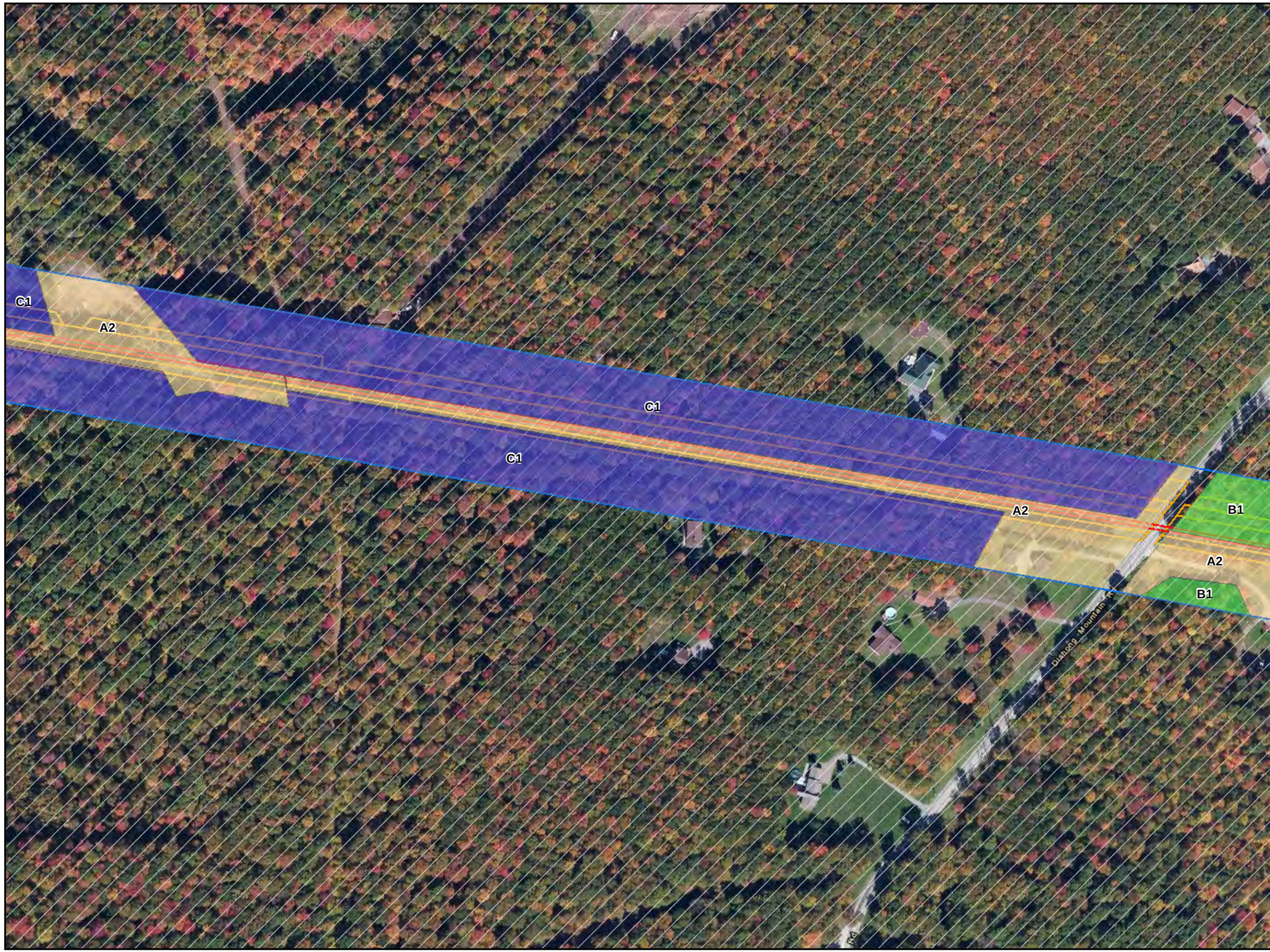
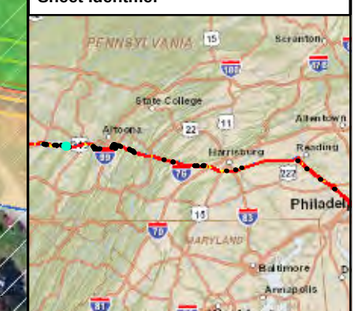


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-15
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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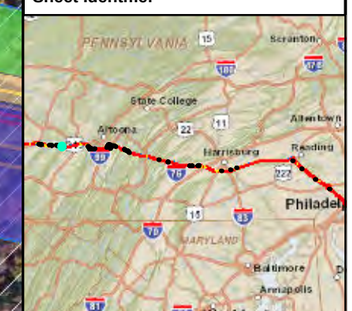
Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-16
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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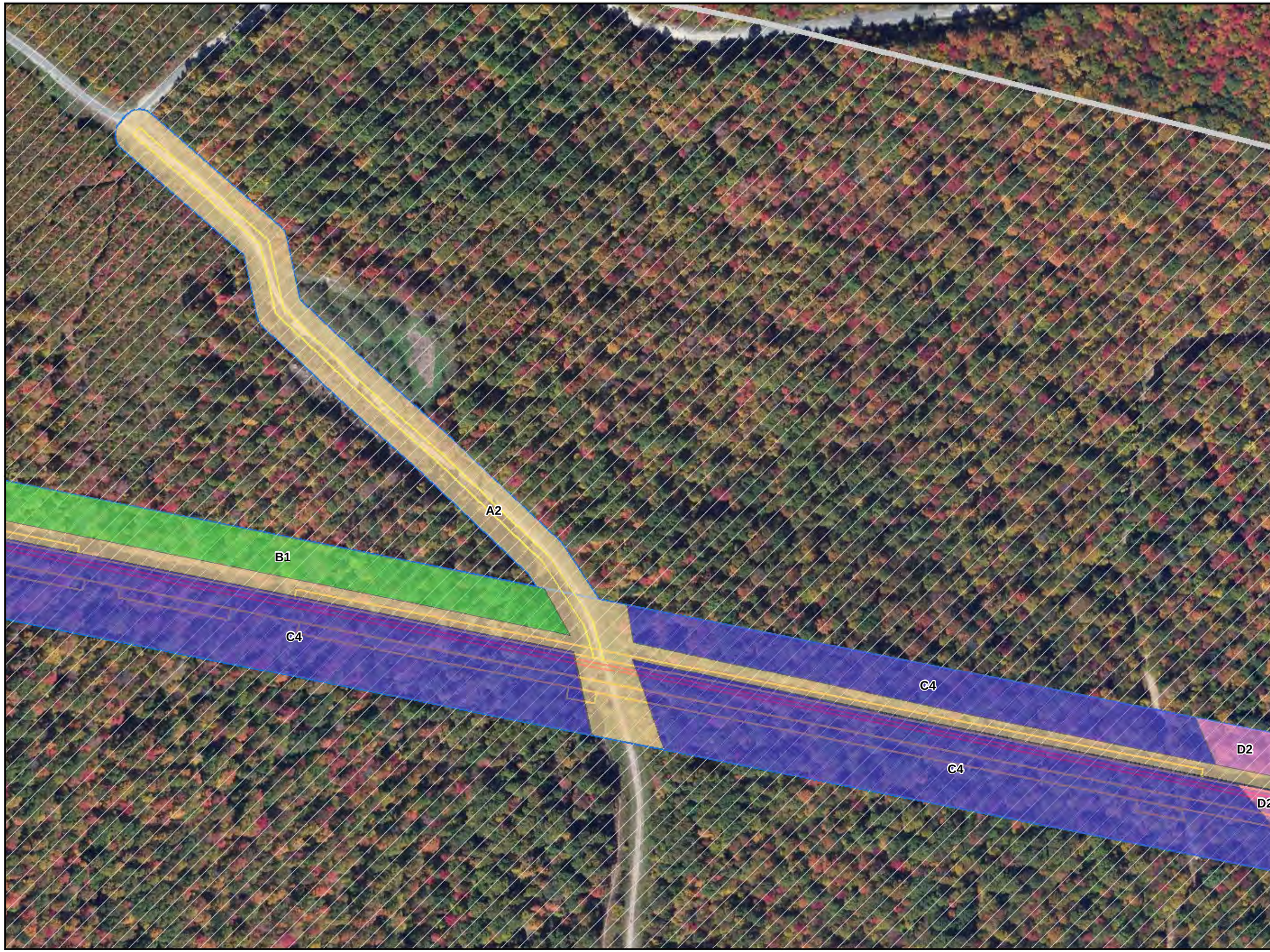
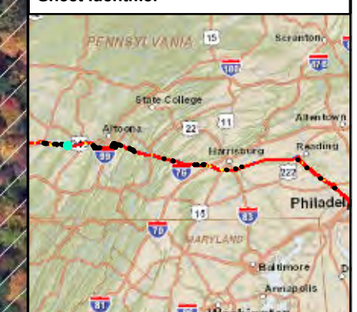


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Coniferous-Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet
0 100 200

Meters
0 30.48 60.96

AOC W10
FIGURE 2-17
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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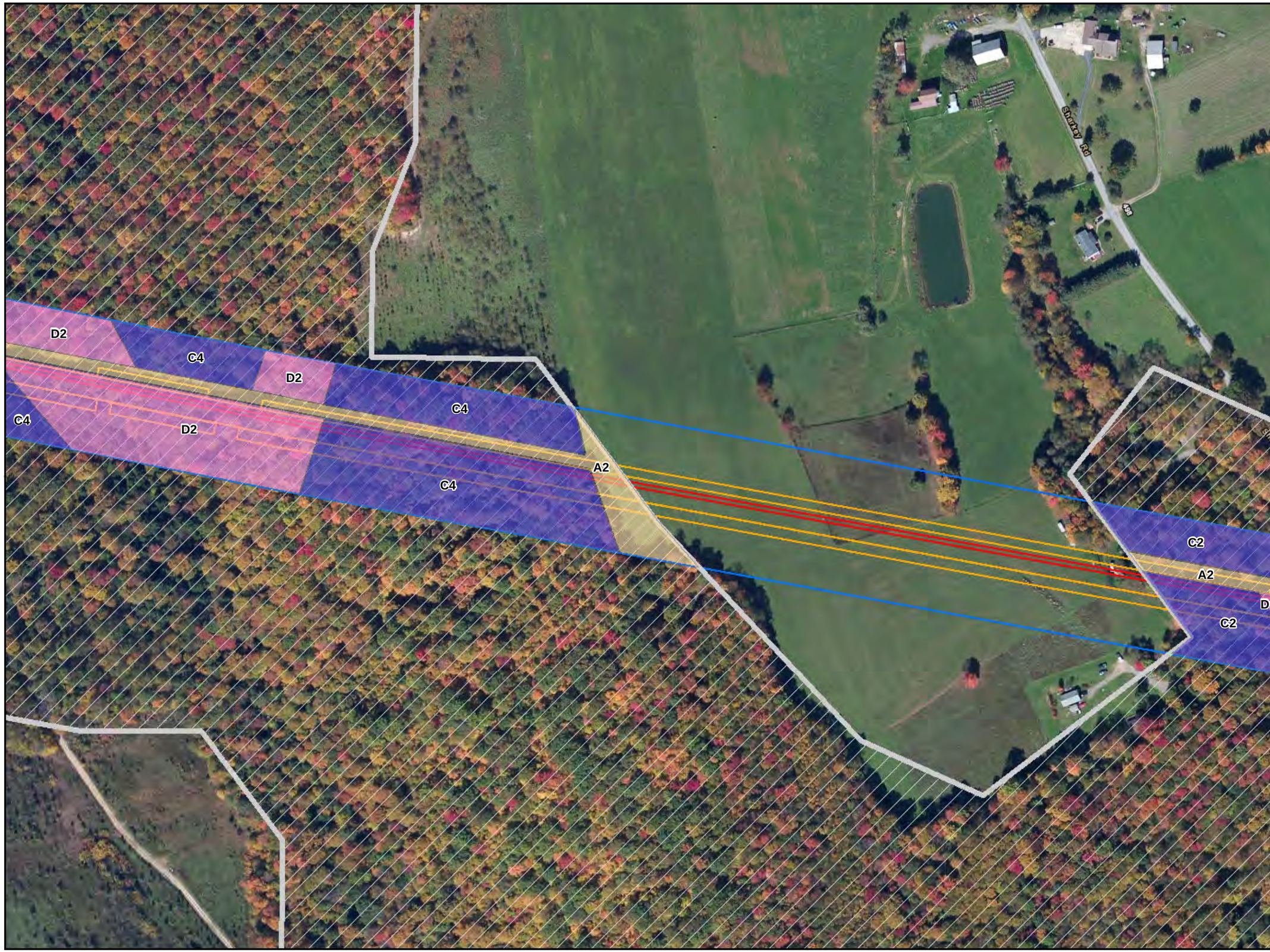
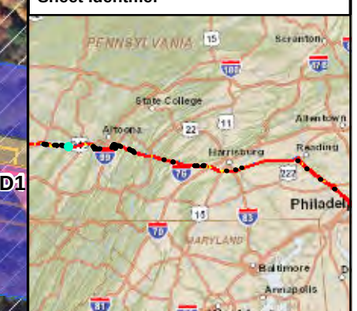


Legend

- Broadleaf Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-18
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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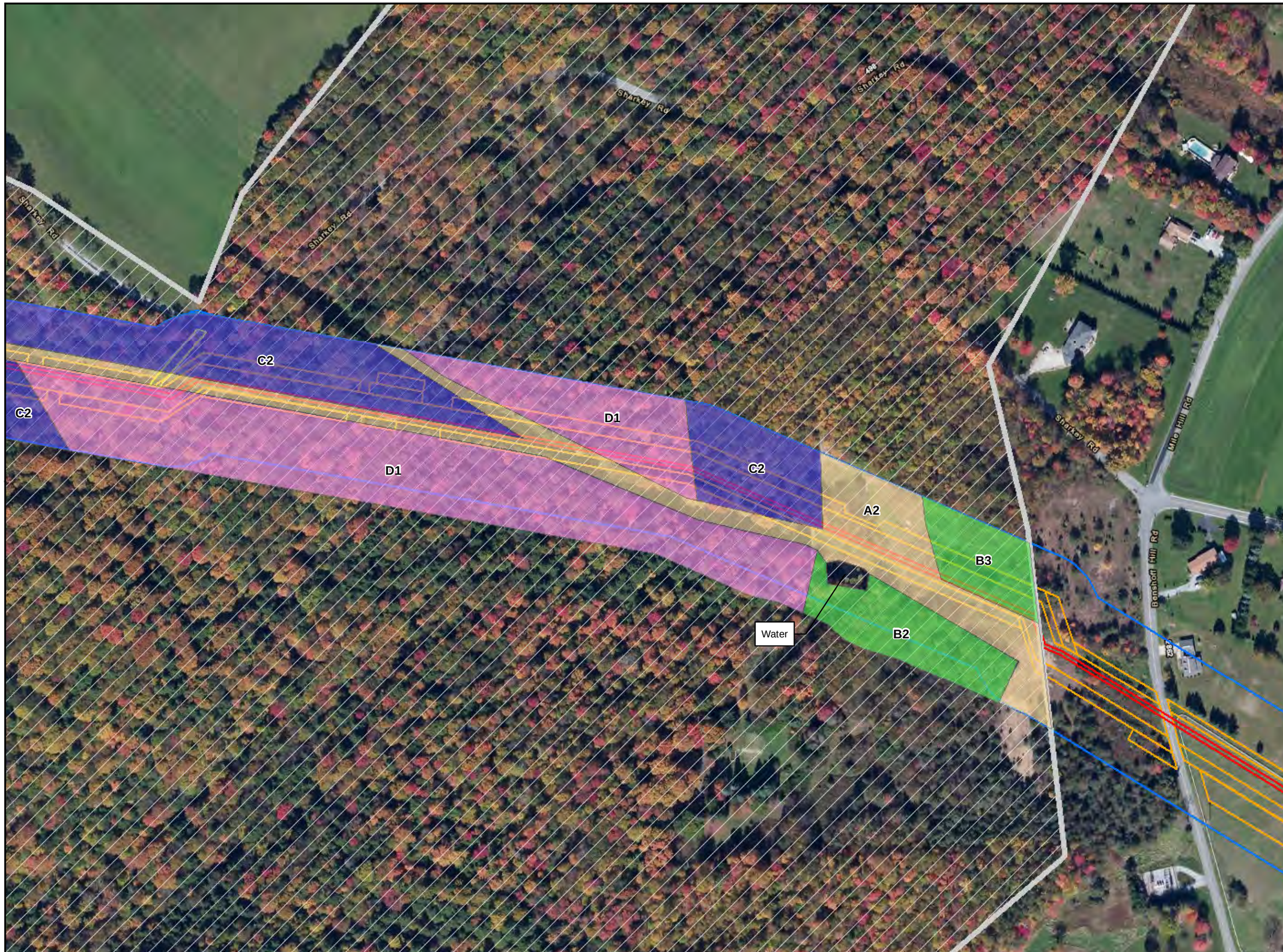
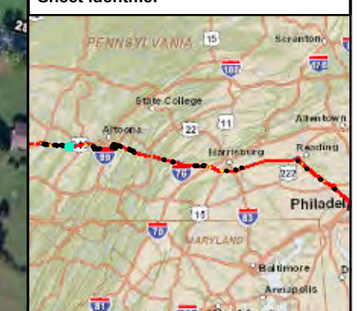


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Coniferous-Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W10
FIGURE 2-19
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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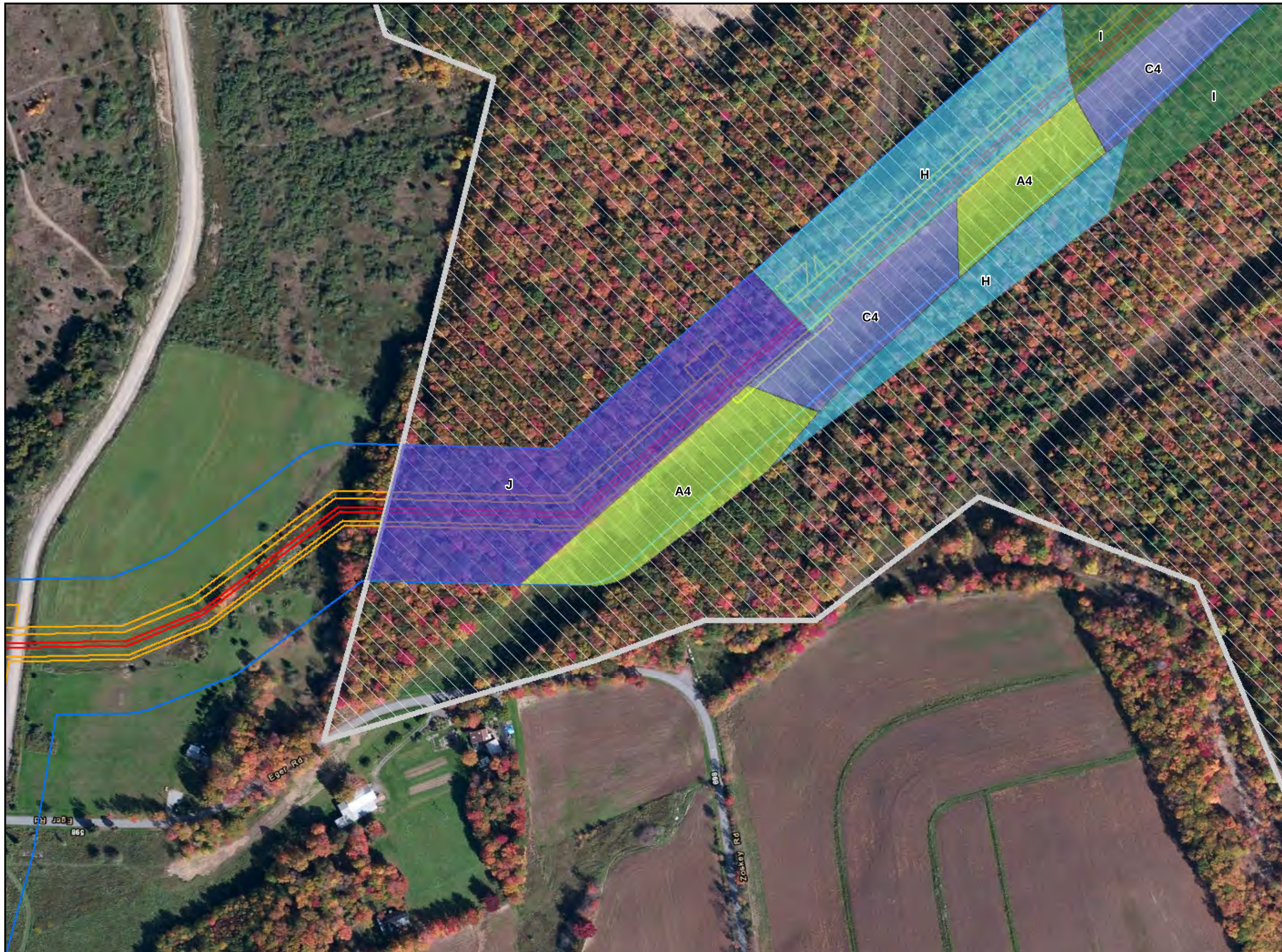

Legend

- Broadleaf Terrestrial Forest
- Coniferous Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier

Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-20
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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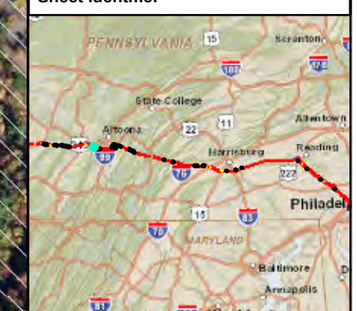
Legend

- Coniferous Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-21
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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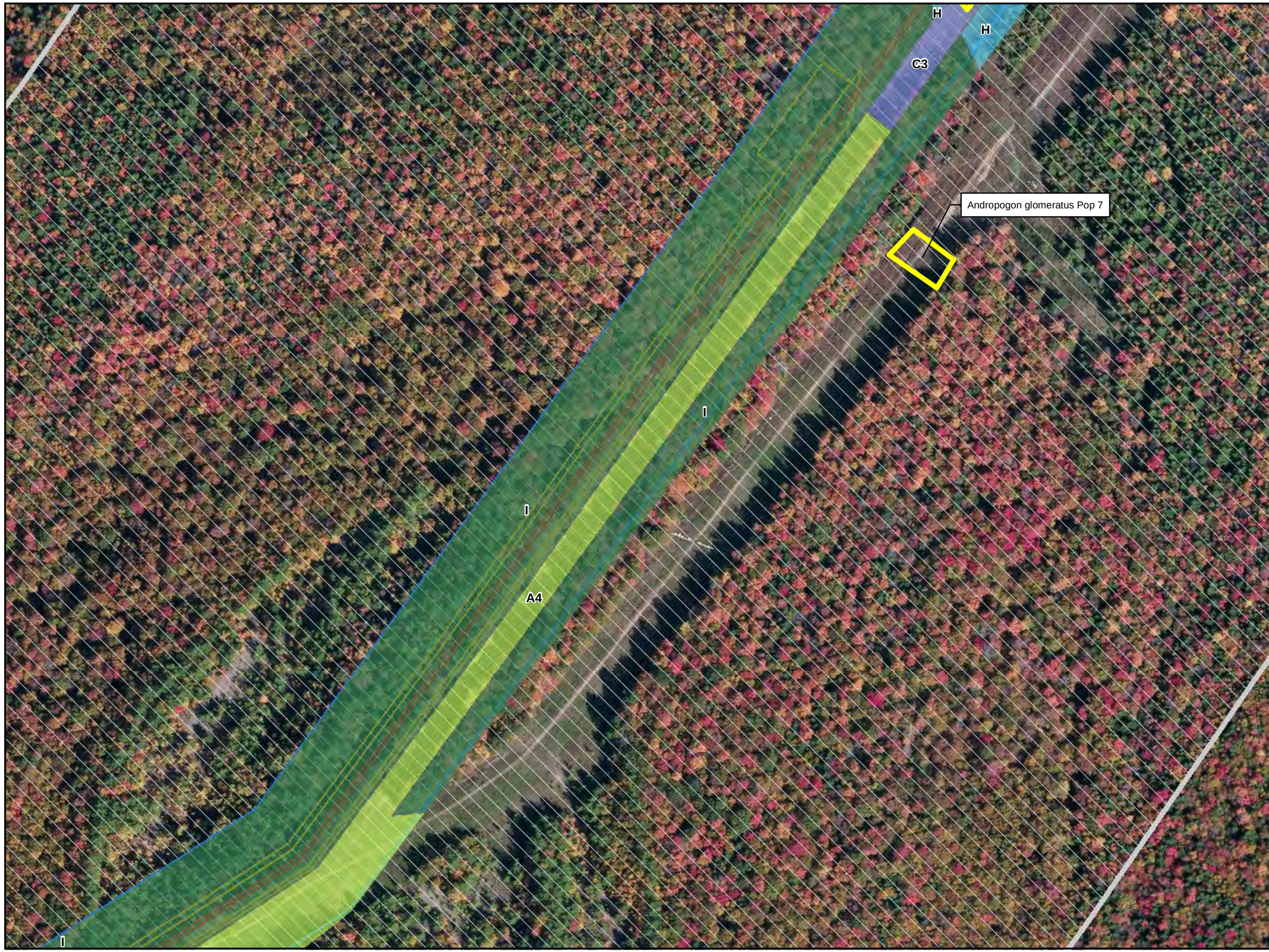
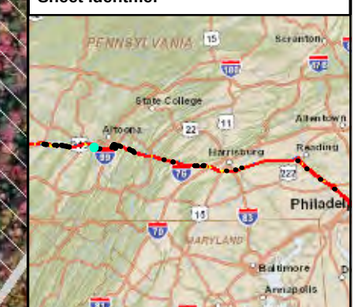


Legend

- Identified Species of Special Concern (SOSC)
- Coniferous Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-22
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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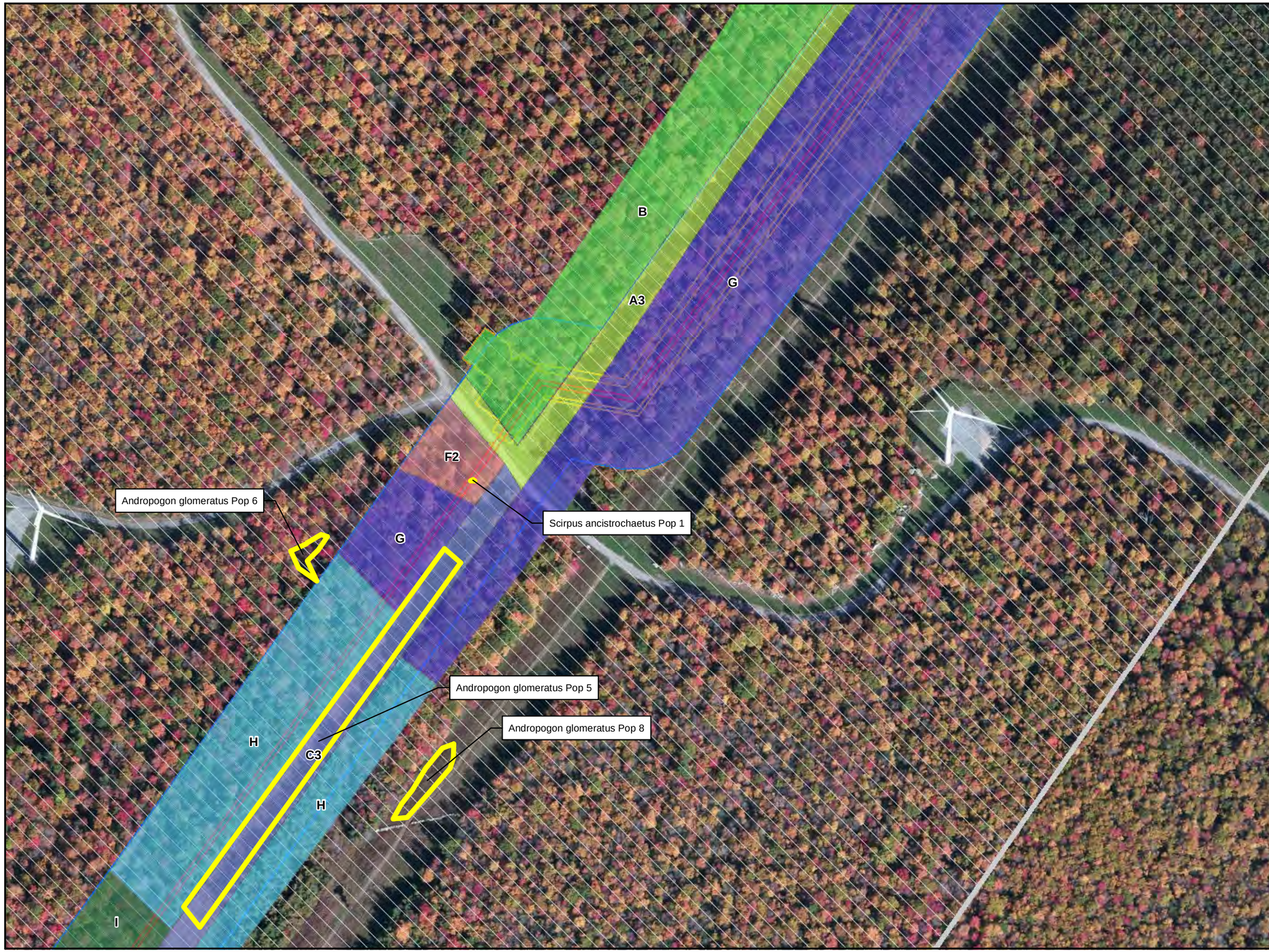
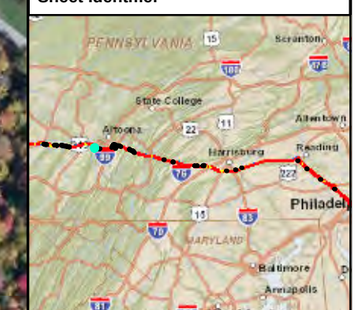


Legend

- Identified Species of Special Concern (SOSC)
- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Coniferous Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Palustrine Forested Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-23
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA

TETRA TECH

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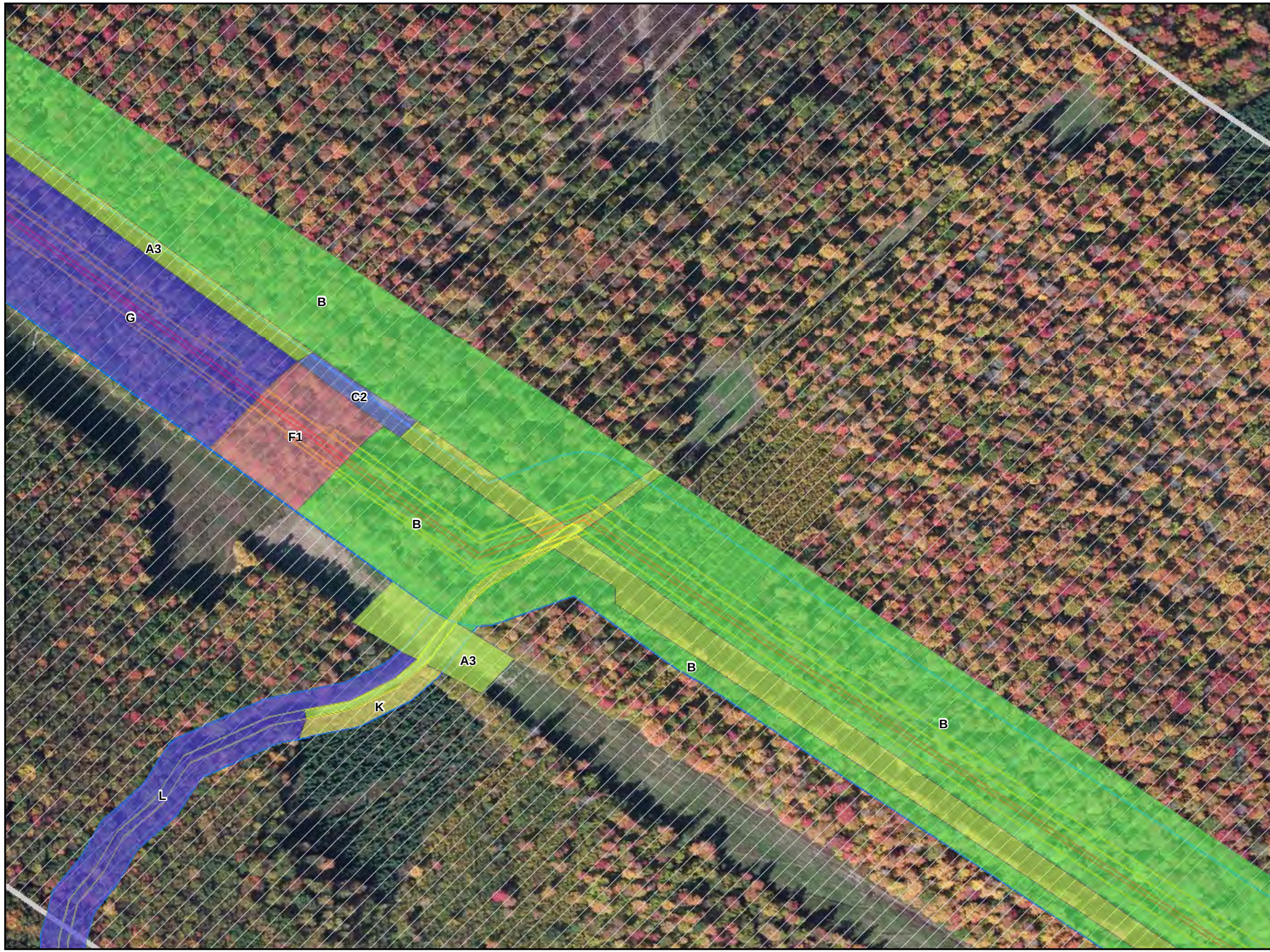
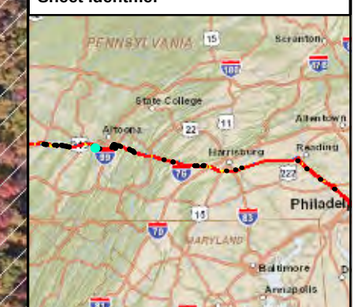


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Coniferous Terrestrial Woodland
- Palustrine Emergent Wetland
- Palustrine Forested Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W1
FIGURE 2-24
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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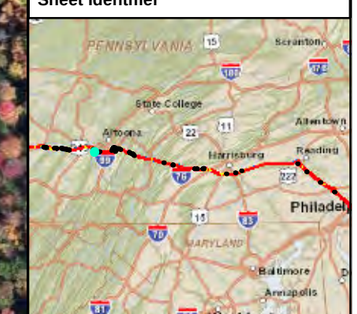
Legend

- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-25
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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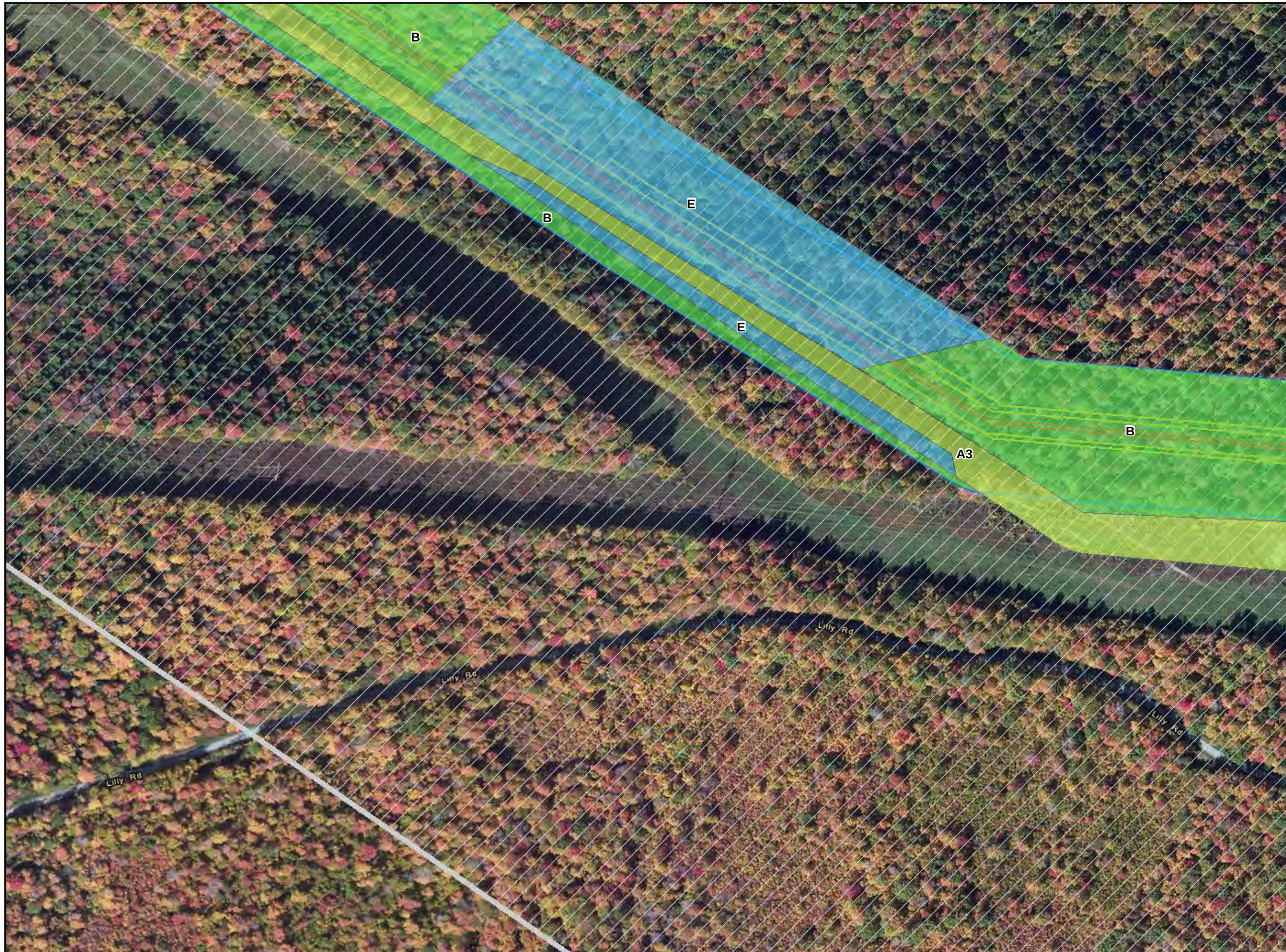
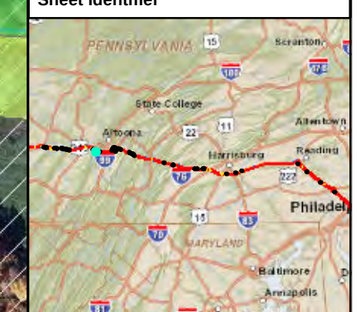


Legend

- Broadleaf Terrestrial Woodland
- Coniferous Terrestrial Forest
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-26
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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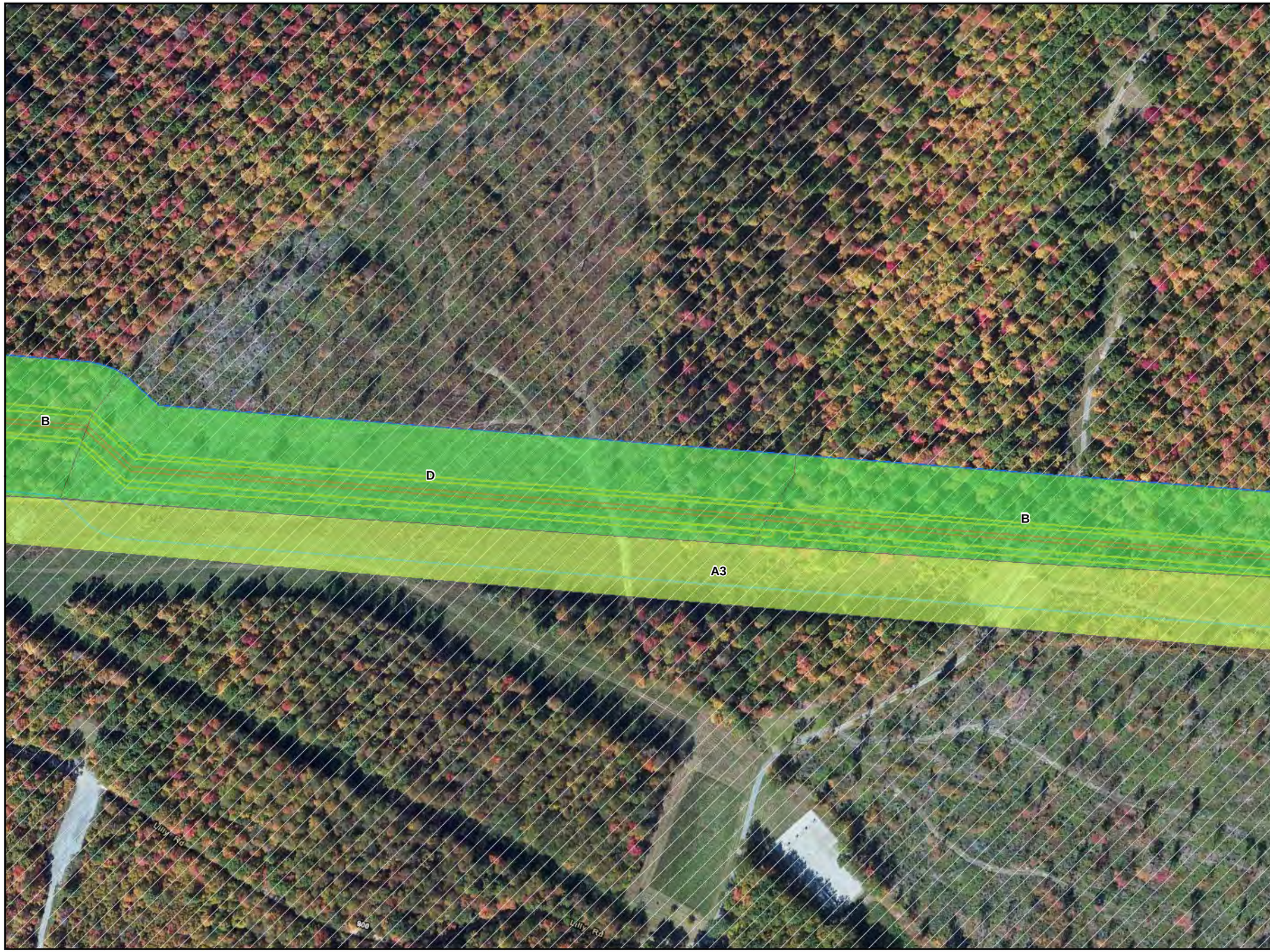
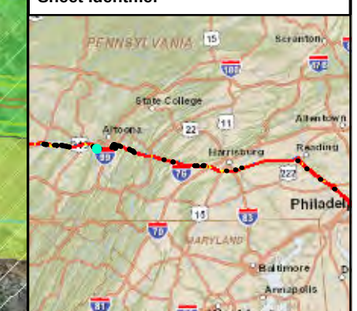


Legend

- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W1
FIGURE 2-27
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

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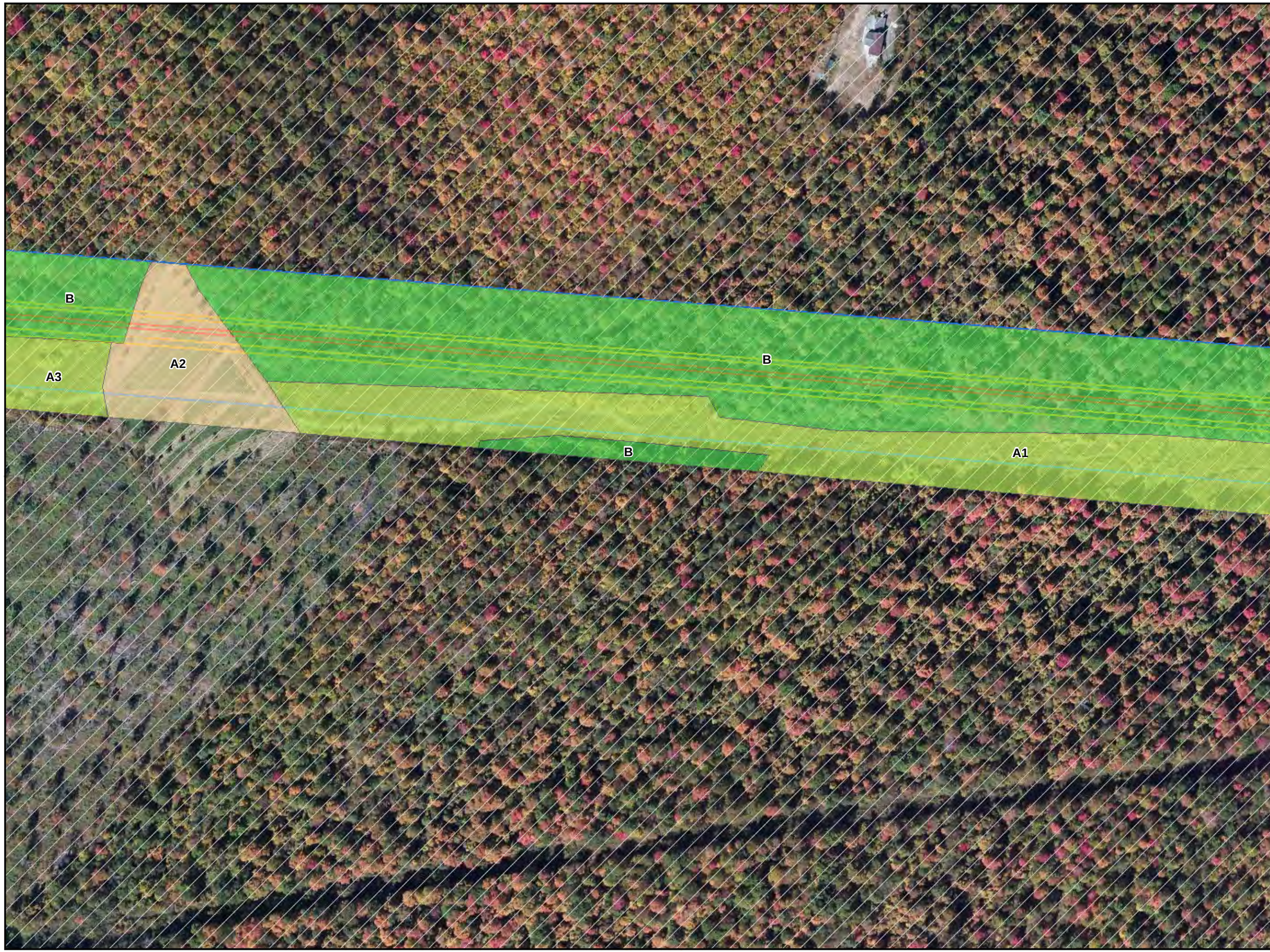
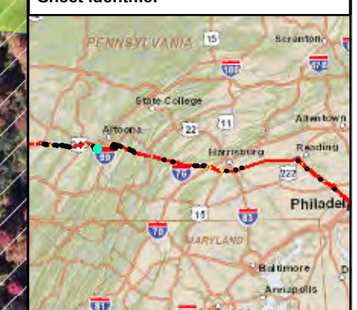


Legend

- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W1
FIGURE 2-28
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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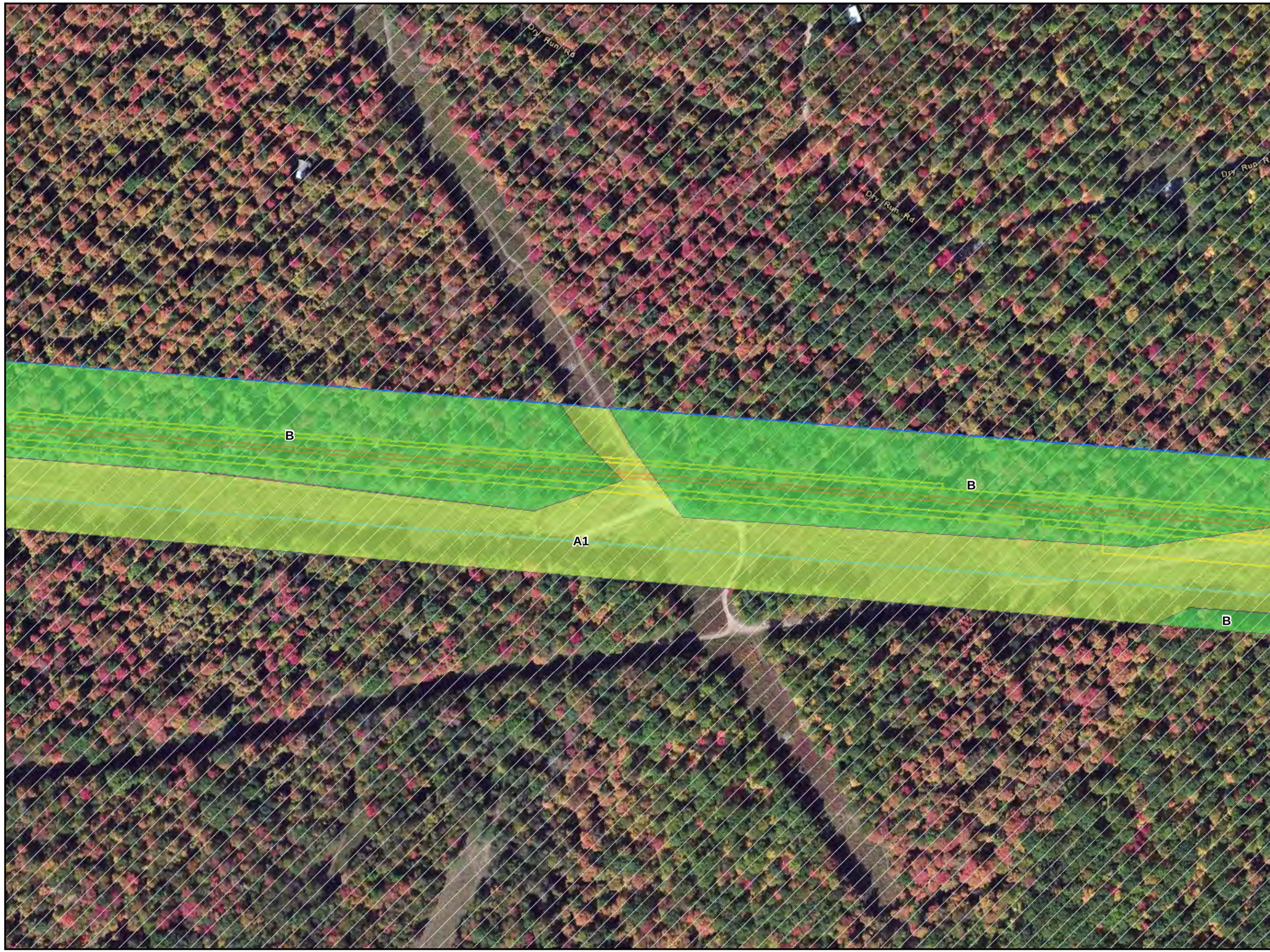
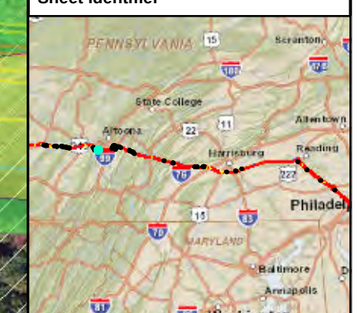


Legend

- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet
0 100 200

Meters
0 30.48 60.96

AOC ALT W1
FIGURE 2-29
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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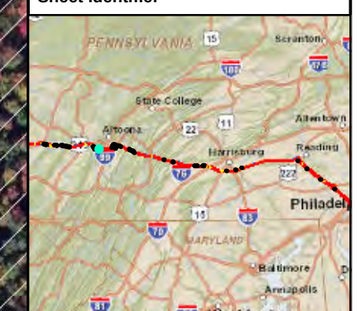
Legend

- Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Terrestrial Herbaceous Shrub Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

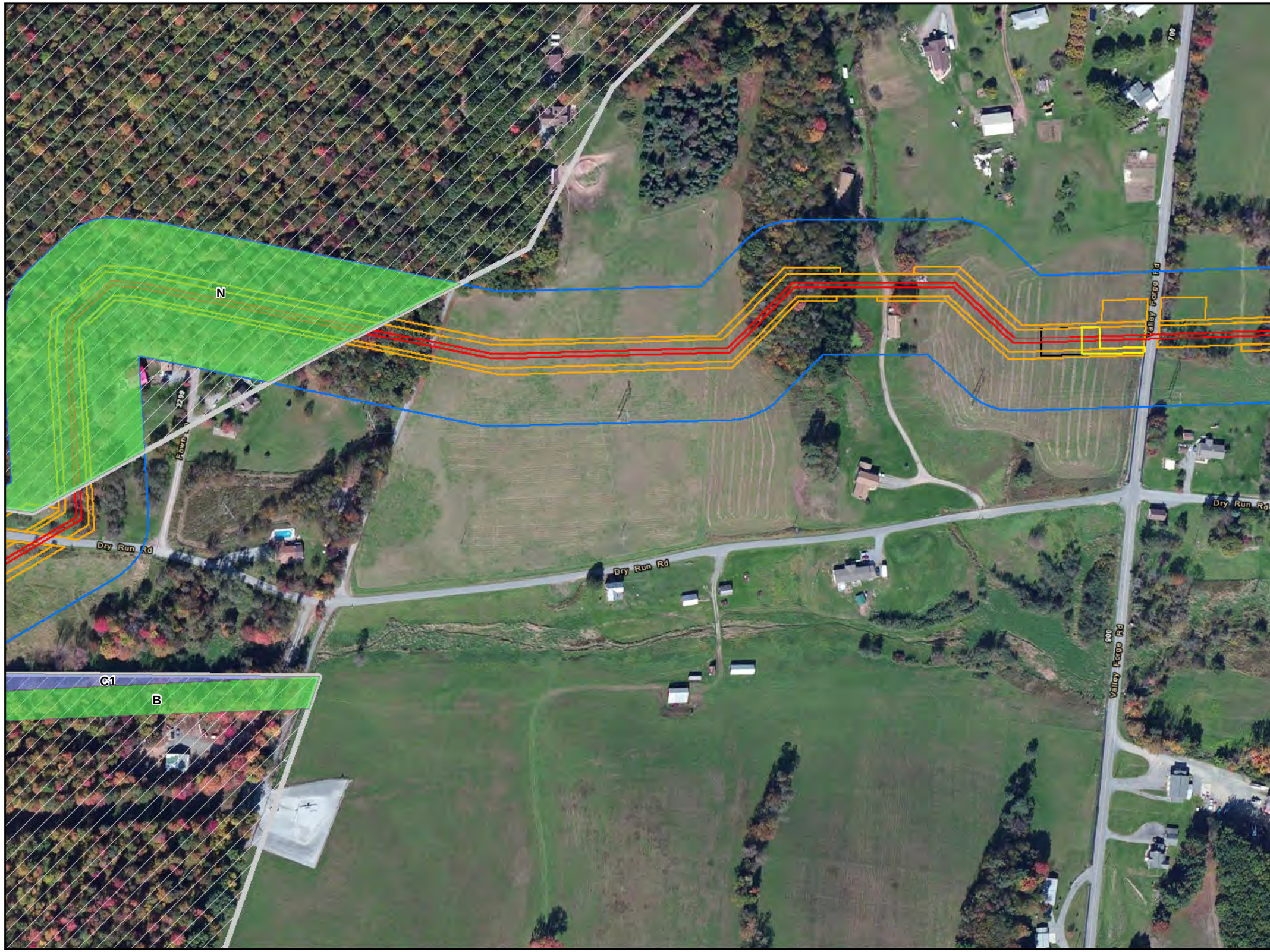
Meters: 0 30.48 60.96

AOC ALT W1
FIGURE 2-30
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

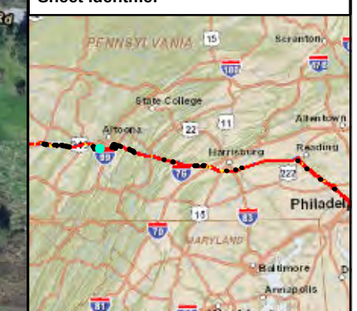
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT.MXD 08/17/15 JN



Legend

- Broadleaf Terrestrial Woodland
- Palustrine Emergent Wetland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W1
FIGURE 2-31
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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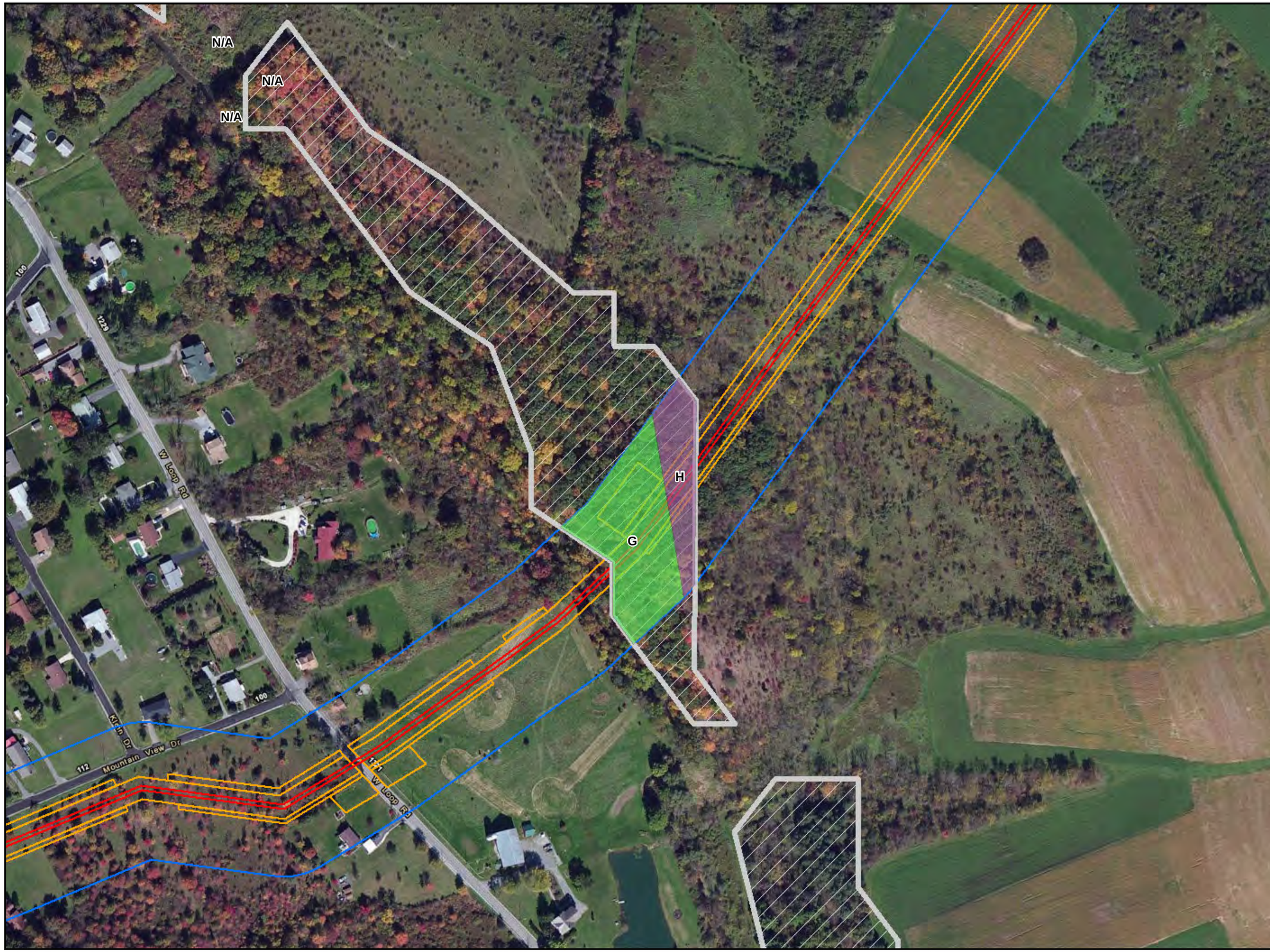
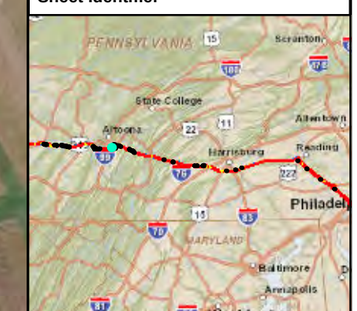


Legend

- Broadleaf Terrestrial Woodland
- Terrestrial Shrubland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W3
FIGURE 2-32
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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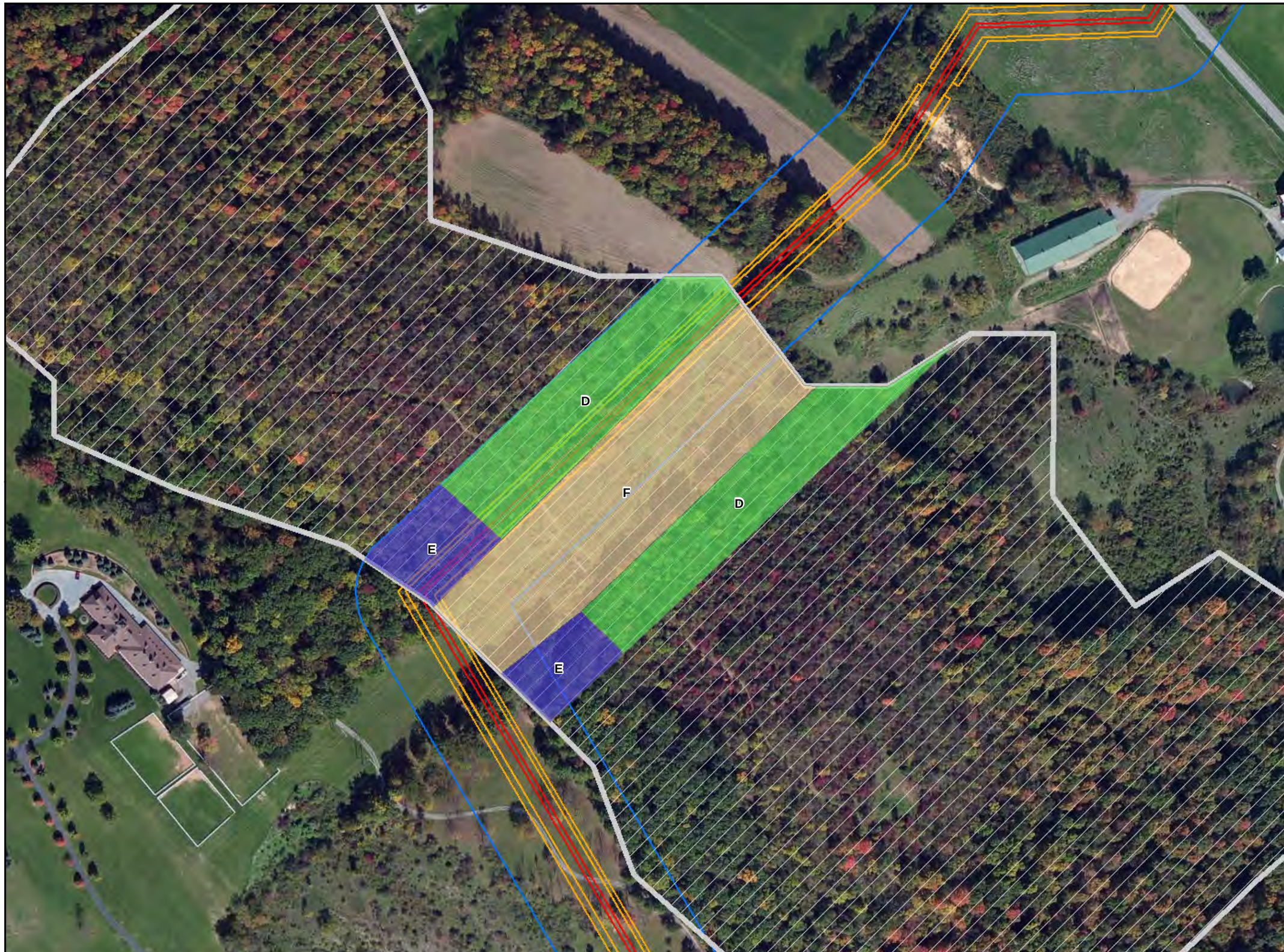
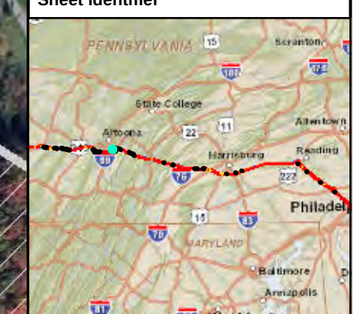


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W3
FIGURE 2-33
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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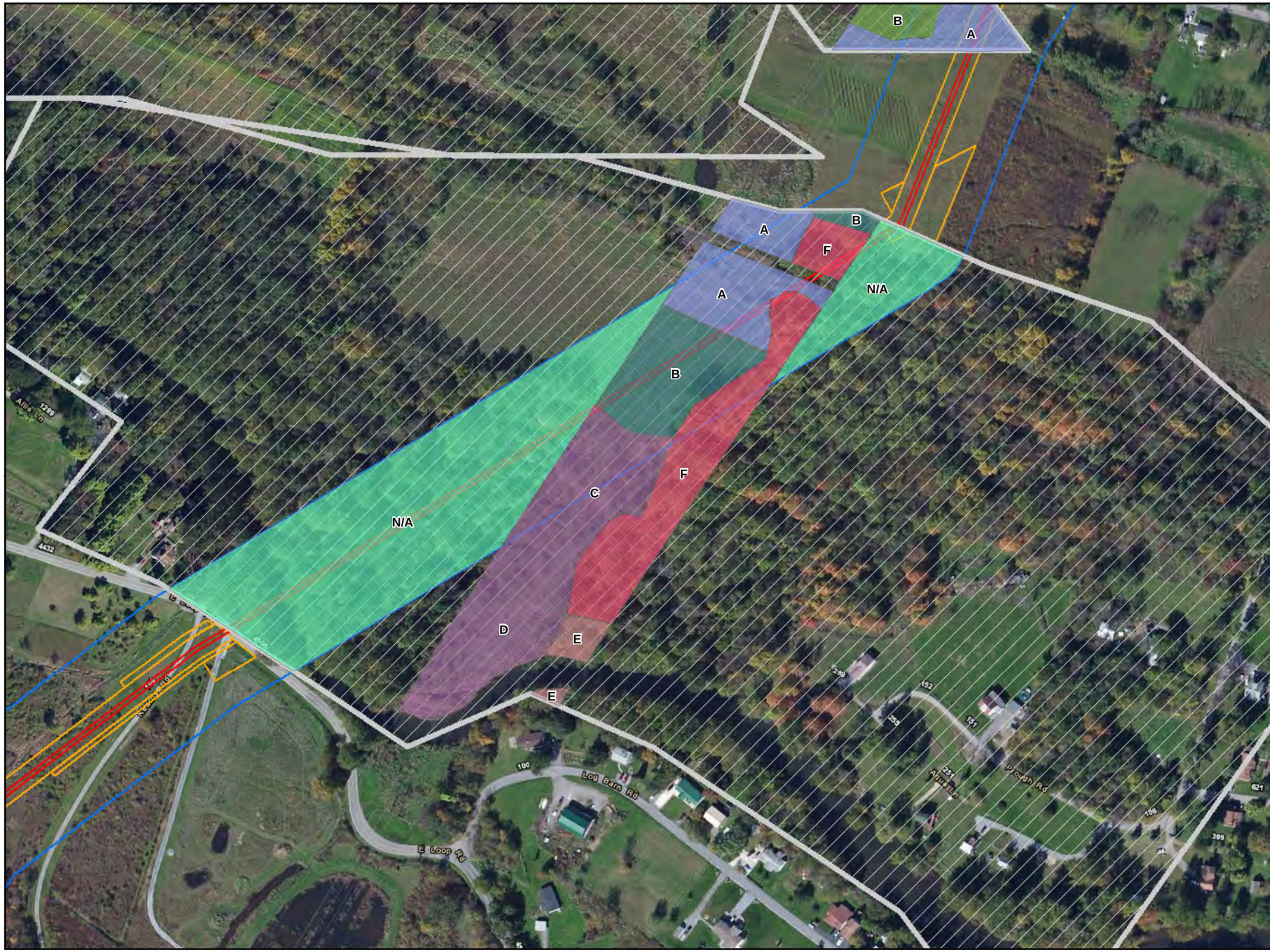
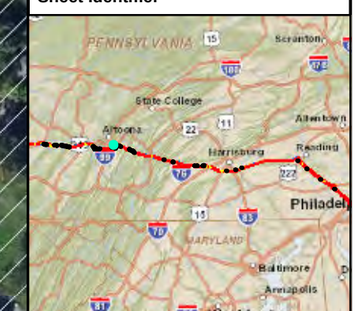


Legend

- Mesic Broadleaf Terrestrial Woodland
- No Alternate Survey Required by PA DCNR
- Palustrine Emergent Wetland
- Palustrine Forested Wetland
- Palustrine Successional Farm Pond
- Terrestrial Open Meadow
- Terrestrial Shrubland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC ALT W4
FIGURE 2-34
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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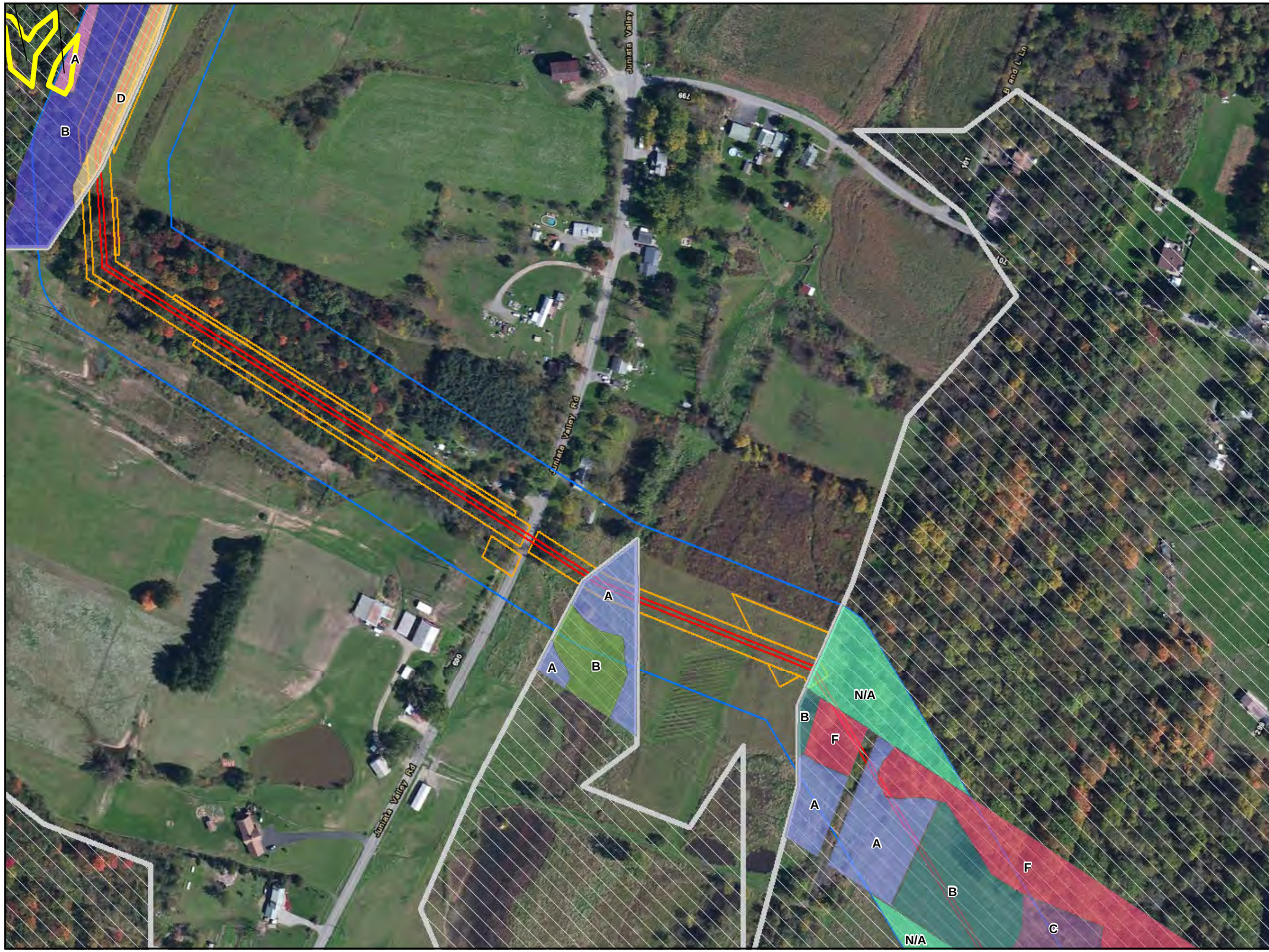
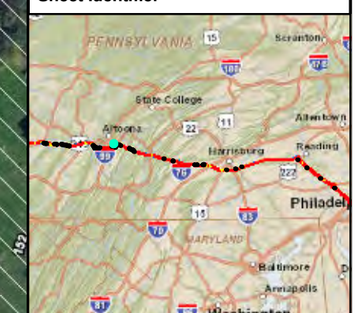


Legend

- Identified Species of Special Concern (SOSC)
- Broadleaf Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Forest
- Mesic Broadleaf Terrestrial Woodland
- No Alternate Survey Required by PA DCNR
- Palustrine Emergent Wetland
- Palustrine Successional Farm Pond
- Terrestrial Herbaceous Opening
- Terrestrial Open Meadow
- Terrestrial Shrubland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



Feet
0 100 200
Meters
0 30.48 60.96

AOC W13
FIGURE 2-35
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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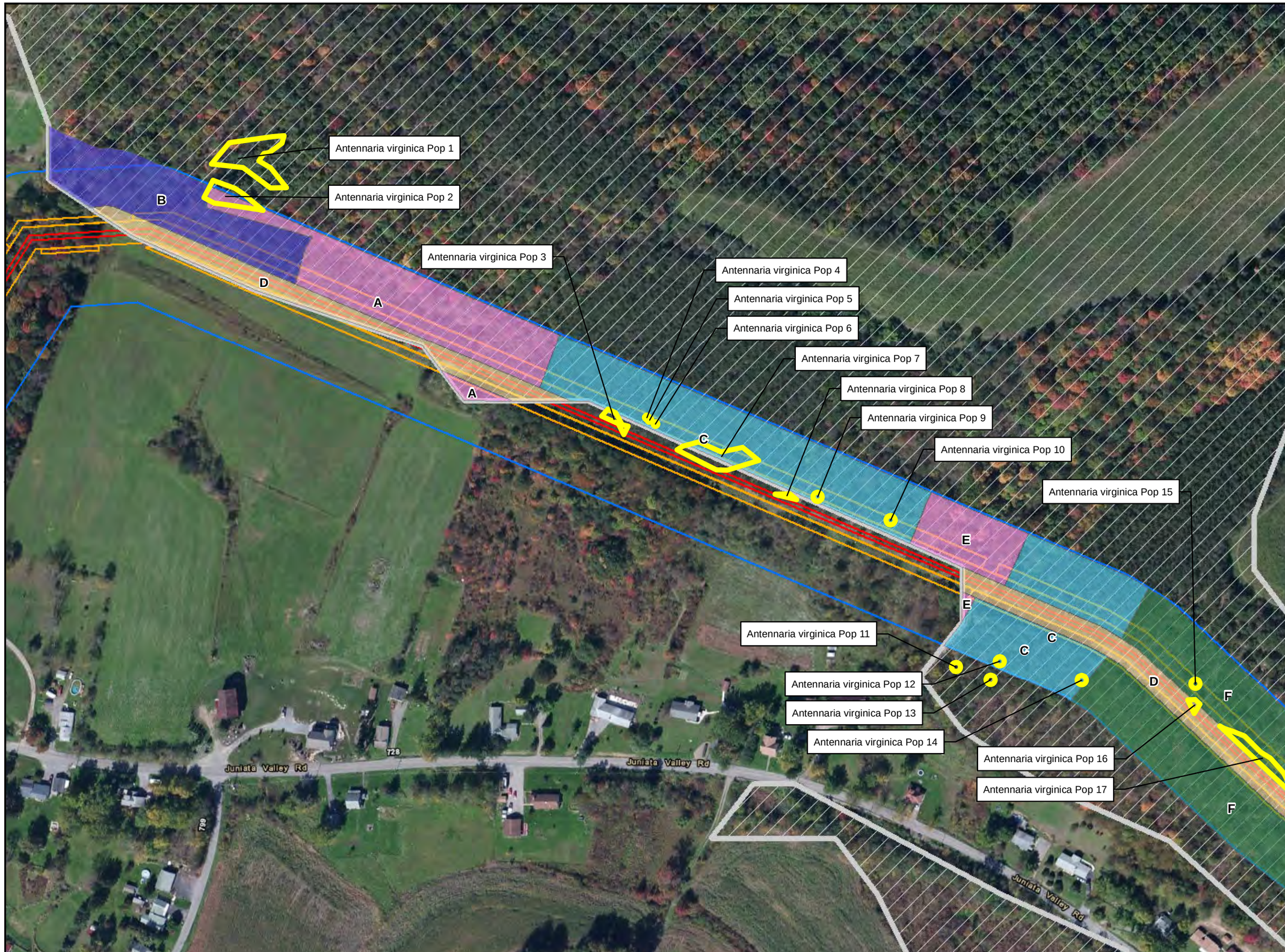
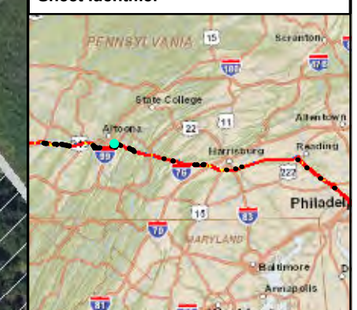


Legend

- Identified Species of Special Concern (SOSC)
- Broadleaf Terrestrial Forest
- Coniferous Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W14
FIGURE 2-36
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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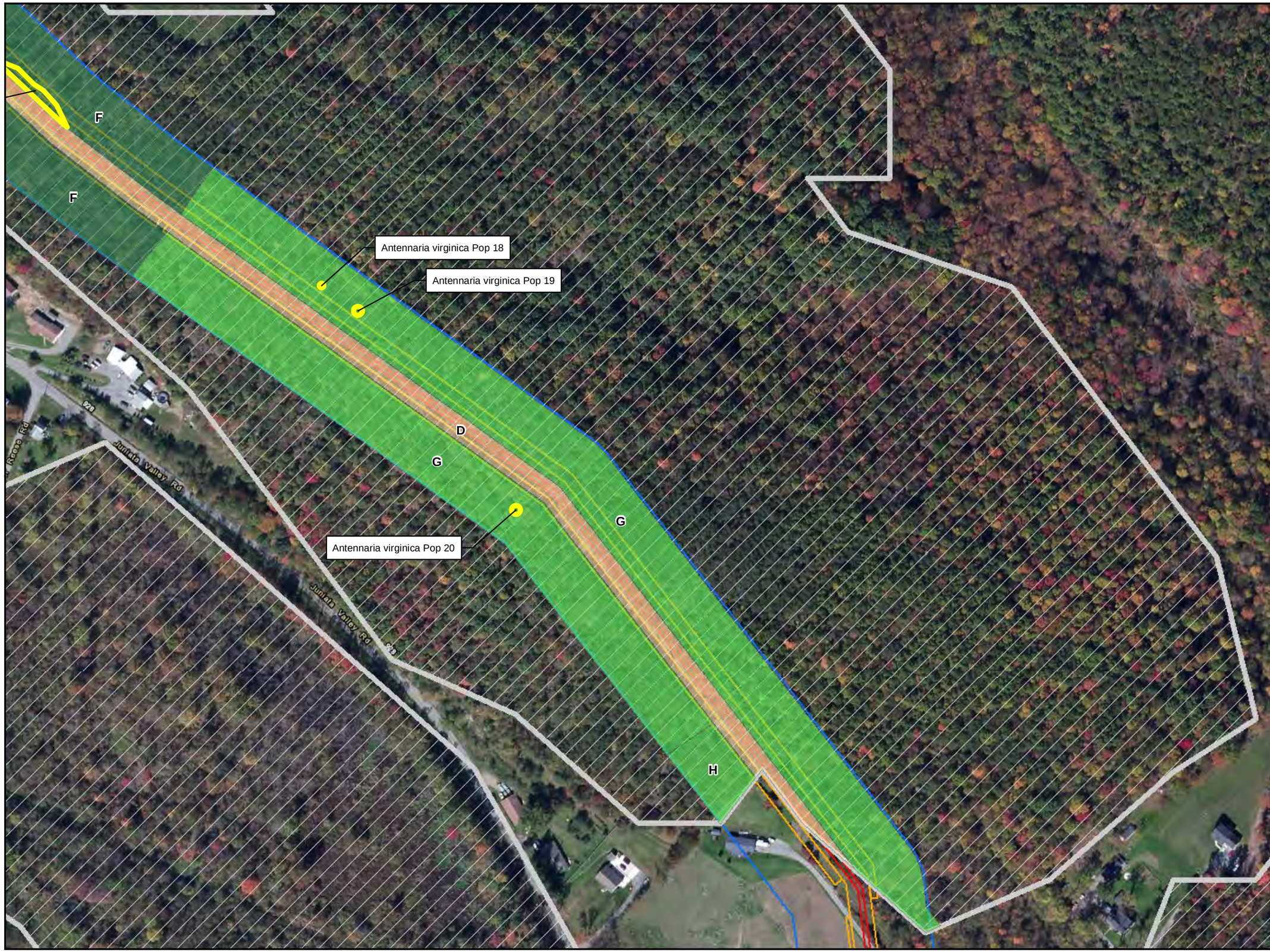
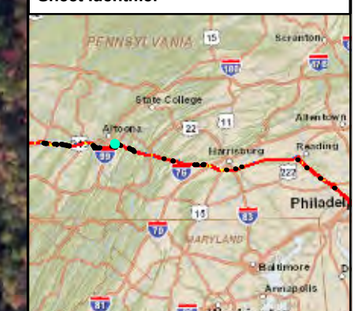


Legend

- Identified Species of Special Concern (SOSC)
- Broadleaf Terrestrial Woodland
- Coniferous-Broadleaf Terrestrial Woodland
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W14
FIGURE 2-37
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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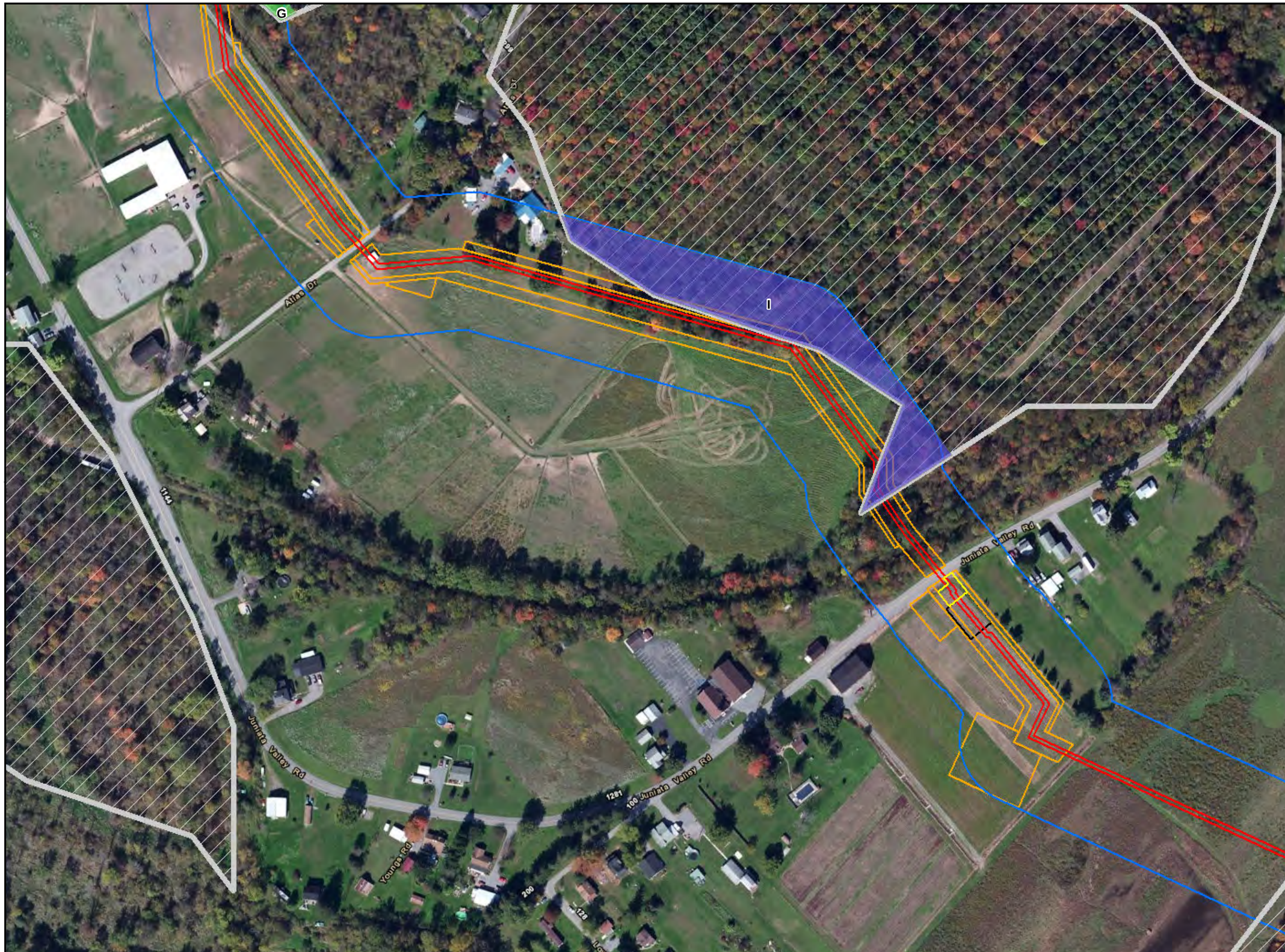
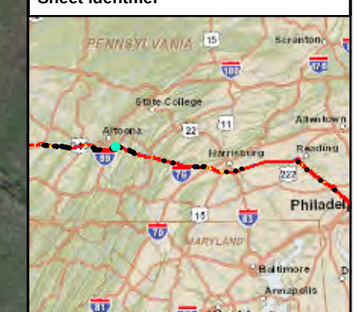


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W14
FIGURE 2-38
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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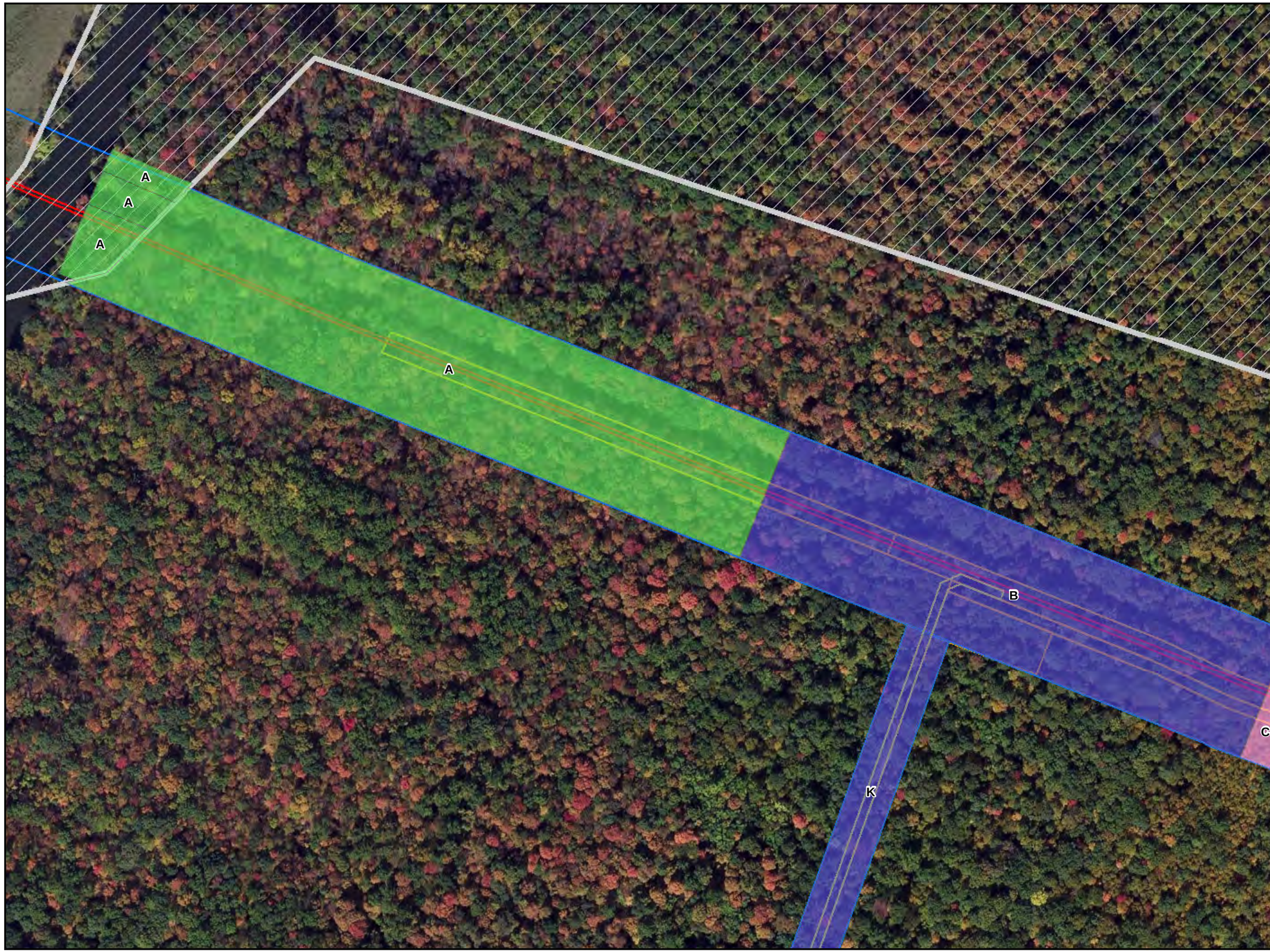
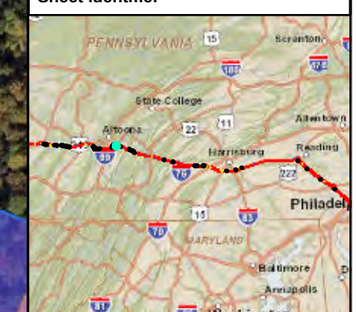


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Coniferous-Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-39
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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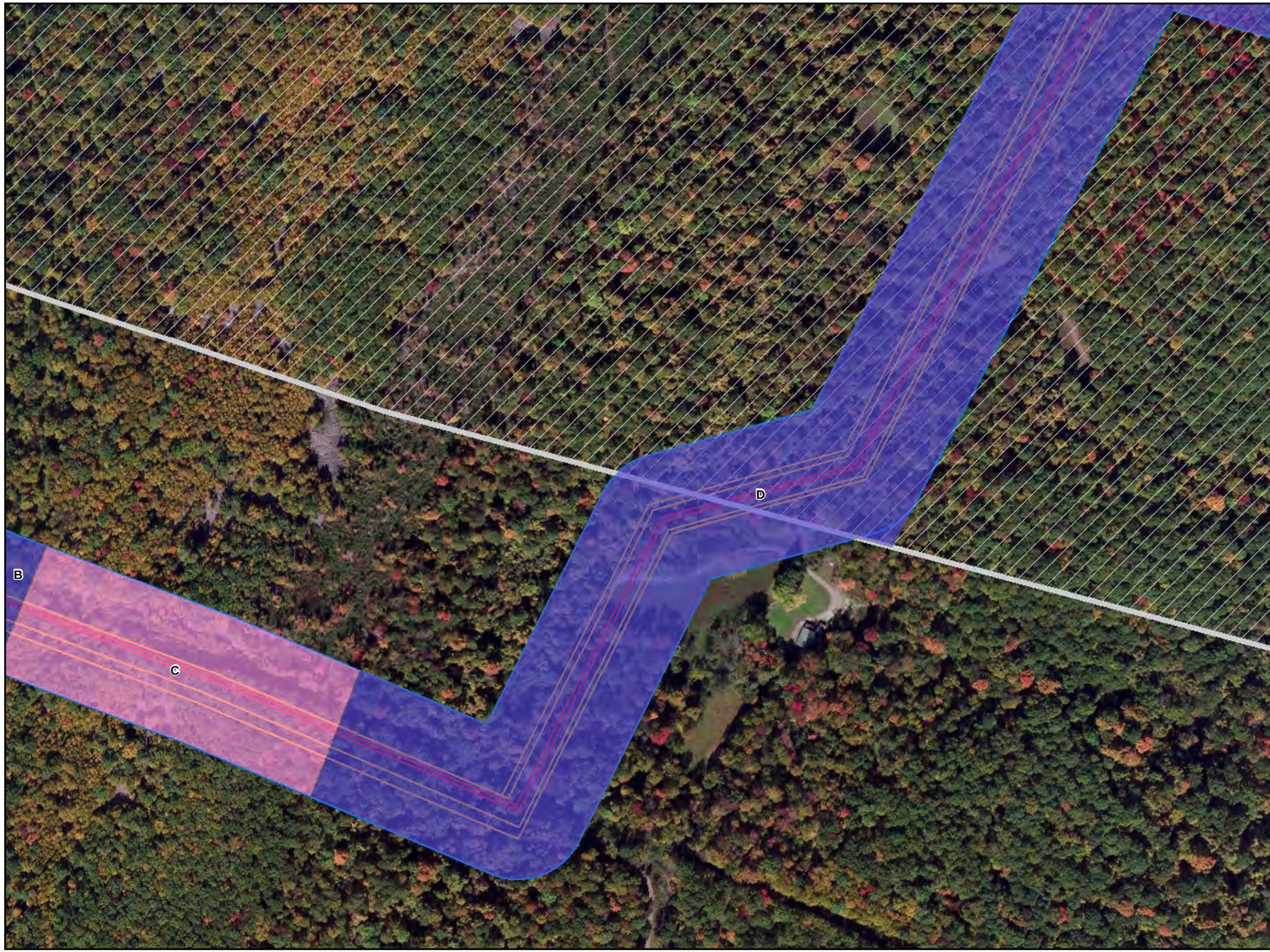
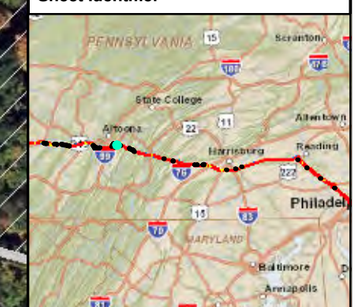


Legend

- Broadleaf Terrestrial Forest
- Coniferous-Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-40
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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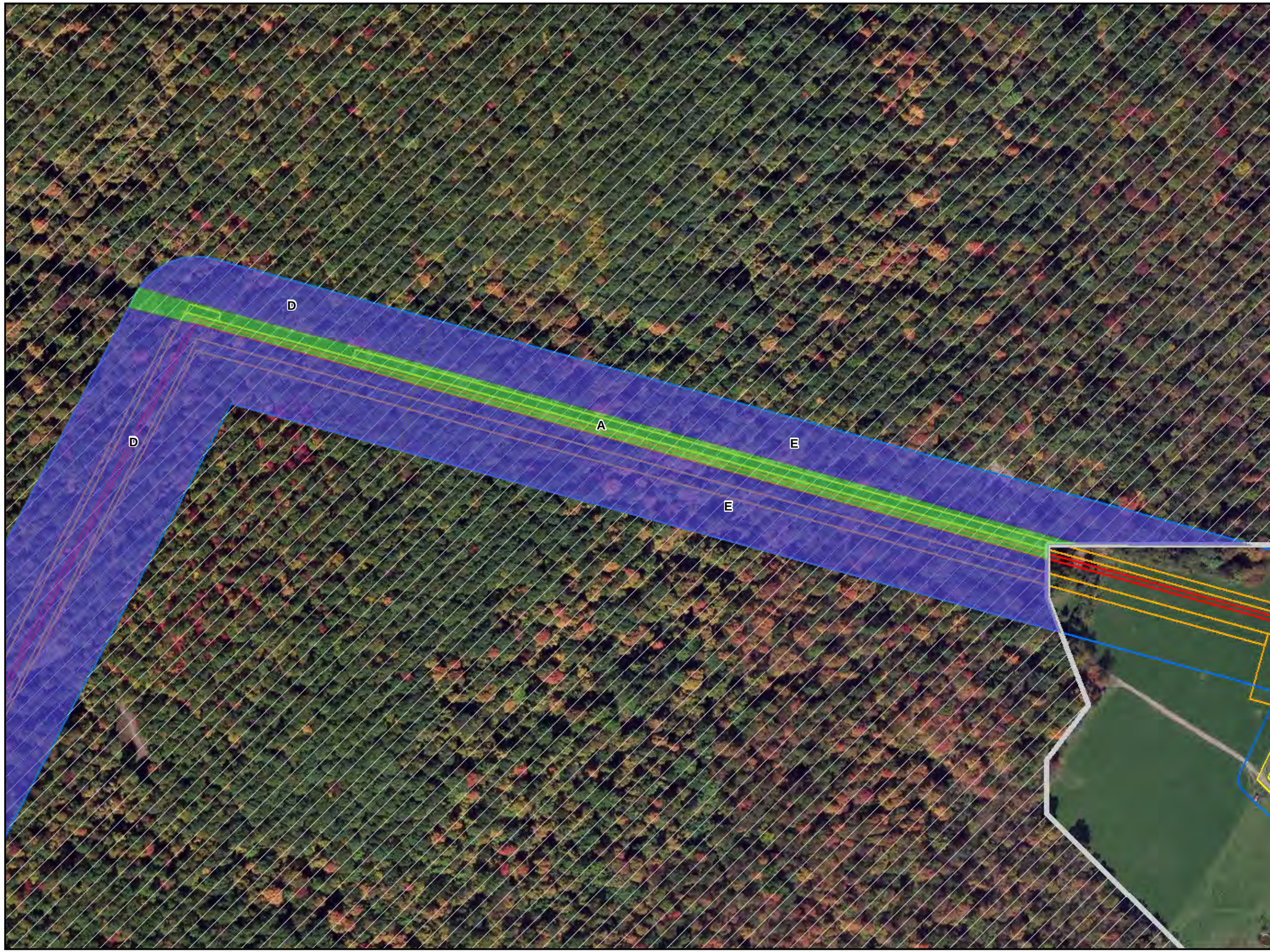
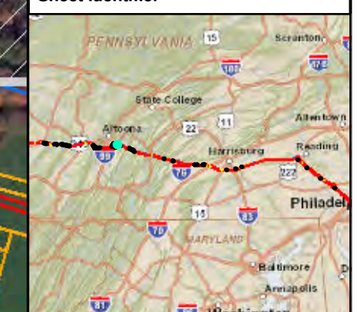


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-41
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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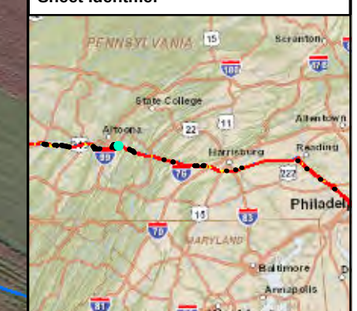
Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Riverine Broadleaf Terrestrial Woodland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-42
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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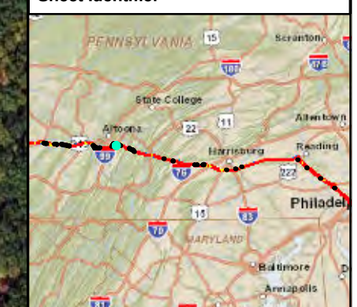
Legend

- Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-43
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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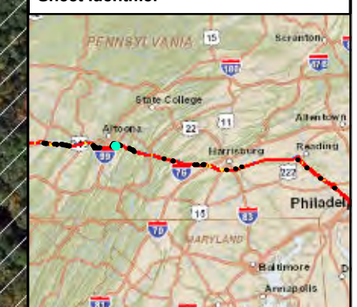
Legend

- Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-44
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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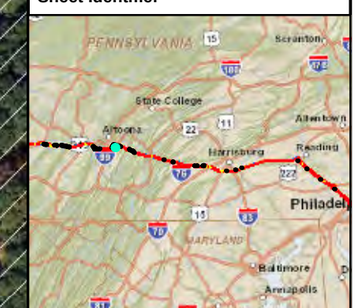
Legend

- Broadleaf Terrestrial Forest
- Terrestrial Herbaceous Opening
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-45
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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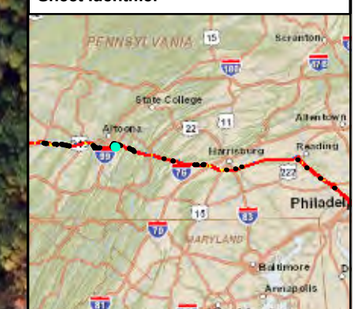
Legend

- Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-46
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

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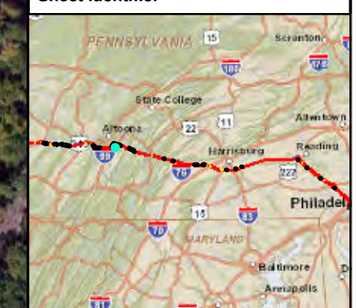
Legend

- Broadleaf Terrestrial Forest
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-47
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

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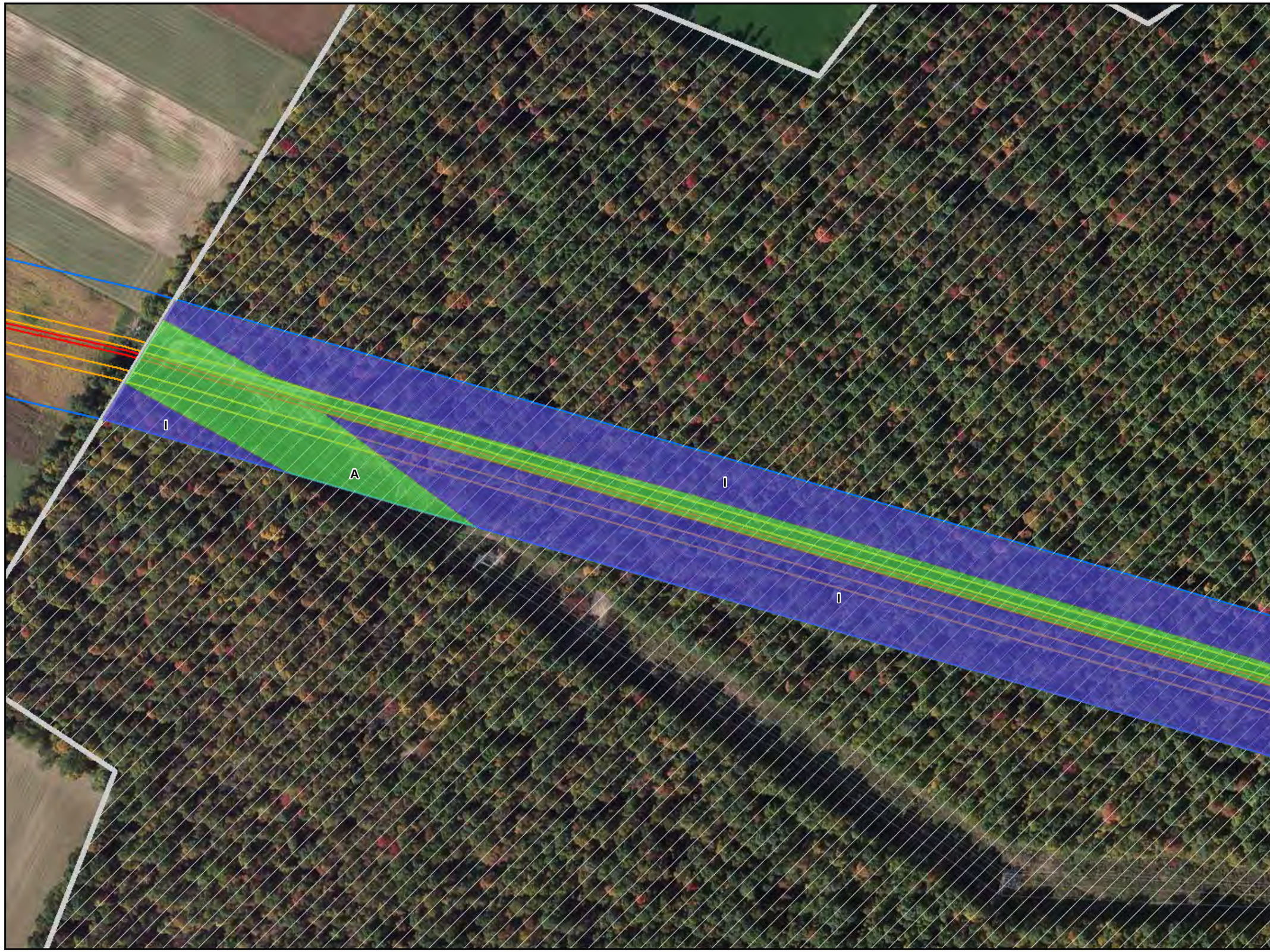
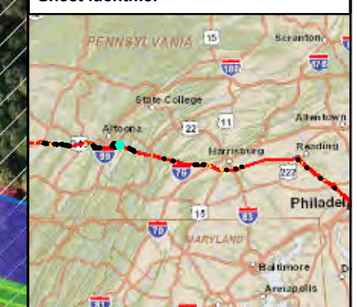


Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet: 0 100 200

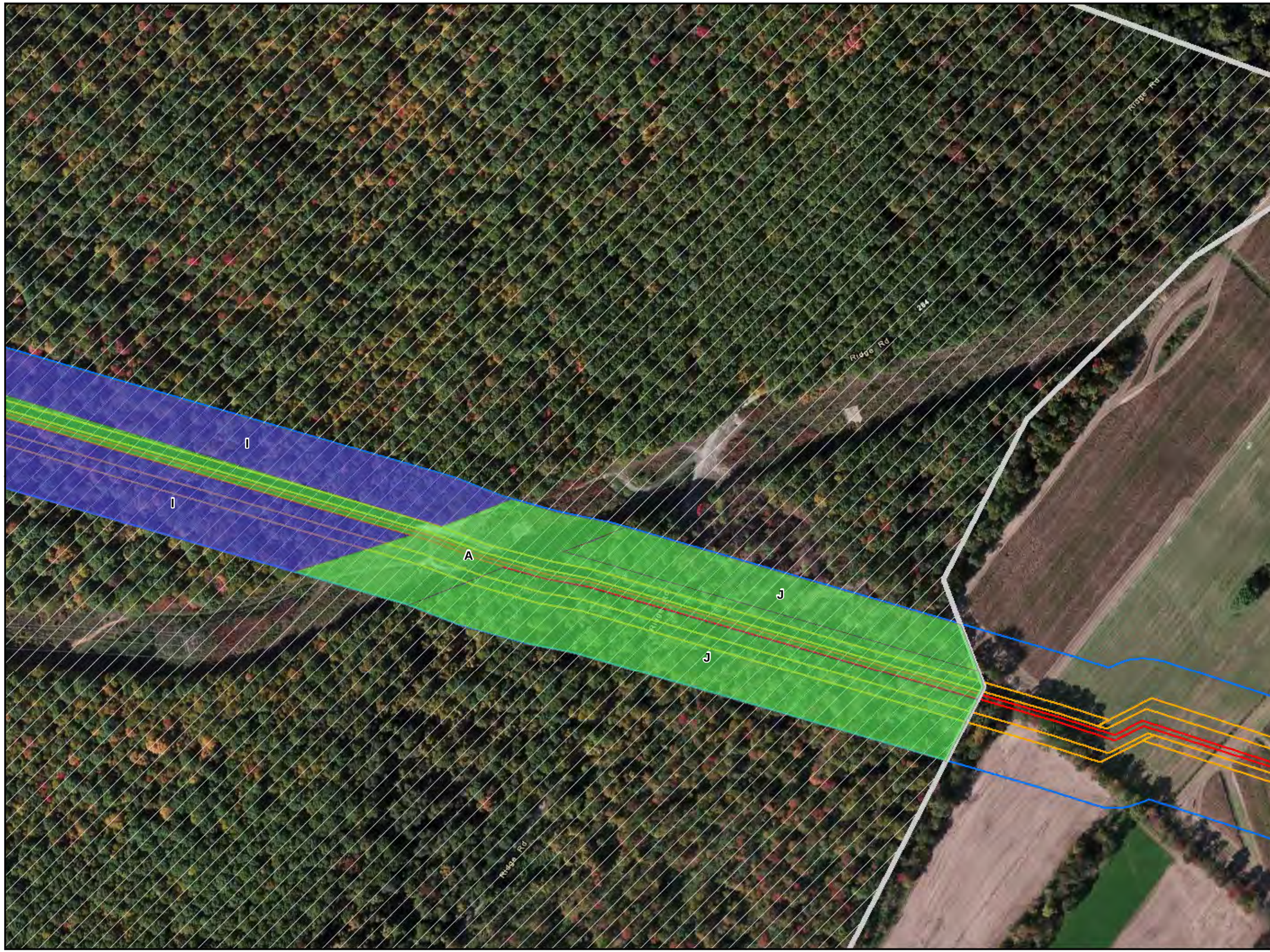
Meters: 0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-48
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

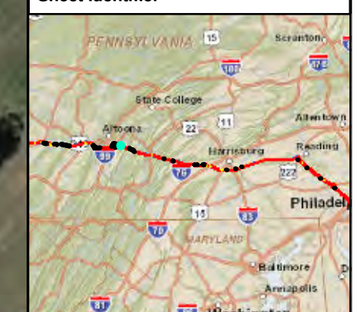
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT.MXD 08/17/15 JN



Legend

- Broadleaf Terrestrial Forest
- Broadleaf Terrestrial Woodland
- Area of Concern
- Access Road
- Alignment Centerline
- ATWS/Limit of Disturbance
- Block Valve Site Layout
- Botanical Survey Corridor

Sheet Identifier



N

Feet
0 100 200

Meters
0 30.48 60.96

AOC W15/ALT W5
FIGURE 2-49
AERIAL HABITAT MAP
PENNSYLVANIA PIPELINE PROJECT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA

TETRA TECH

Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

PGH: P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_BOTANICAL\HABITAT.MXD 08/17/15 JN

APPENDIX D
Tables

Table 1	**Plant Species of Special Concern**
Table 2	**Communities of Concern**
Table 3	**Soils within the Surveyed Areas of Concern**
Table 4	**Habitat Suitability and Presence/Absence**
Table 5	**Identified Species of Special Concern**

Table 1.
Plant Species of Special Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)	Survey Conducted?
Actaea podocarpa	Mountain Bugbane	Threatened	Rare	W10, W11, ALT W1	Yes
Amelanchier humilis	Low Serviceberry	Undetermined	Endangered	W12, ALT W3	Yes
Amelanchier sanguinea	Roundleaf Serviceberry	Undetermined	Endangered	W12, ALT W3	Yes
Antennaria virginica	Shale Barren Pussytoes	Not Listed	Rare	W14	Yes
Arabis patens	Spreading Rockcress	Not Listed	Threatened	W15, ALT W5	Yes
Asplenium pinnatifidum	Lobed Spleenwort	Not Listed	Rare	W6	NS – ME1
Astragalus canadensis	Canadian Milkvetch	Not Listed	Undetermined	W6	NS – ME1
Baptisia australis	Blue False-indigo	Not Listed	Threatened	W3	NS – ME1
Carex aquatilis	Water Sedge	Threatened	Threatened	E14	Yes
Carex shortiana	Short's Sedge	Not Listed	Rare	W1, E1	W1 included in OPP Report
Delphinium exaltatum	Tall Larkspur	Endangered	Endangered	W6	NS – ME1
Desmodium nuttallii	Nuttall's Tick Trefoil	Unlisted	Threatened	E17	Yes
Dryopteris celsa	Log Fern	Unlisted	Endangered	E15	Yes
Ellisia nyctelea	Ellisia	Threatened	Threatened	E12, E13	Yes
Erythronium albidum	White Trout-lily	Not Listed	Undetermined	W3, W6	NS – ME1
Fimbristylis annua	Annual Fimbry	Threatened	Threatened	E18, E19, E21	E18, E21 Outside Study corridor
Gentiana saponaria	Soapwort Gentian	Undetermined	Endangered	E20	NS – Outside Corridor
Iodanthus pinnatifidus	Purple Rocket	Endangered	Endangered	W3, W4, W6	NS – ME1
Juncus biflorus	Grass-leaved Rush	Undetermined	Threatened	ALT W2, E20	NS – Outside Corridor
Juncus torreyi	Torrey's Rush	Threatened	Rare	W6, W11, W13, ALT W4	Survey of W13 & ALT W4
Leucothoe racemosa	Swamp Dog-Hobble	Undetermined	Threatened	E20	NS – Outside Corridor
Lycopodiella margueritae	Marguerite's Clubmoss	Not Listed	Endangered	W11, W13, ALT W4	Surveys of W13 & ALT W4
Oenothera argillicola	Shale-barren Evening-Primrose	Threatened	Threatened	W16, ALT W6	Yes
Opuntia humifusa	Eastern Prickly Pear-Cactus	Rare	Rare	E5, E6, E7, E8	Surveys of E6 & E8
Packera anonyma	Plain ragwort	Threatened	Threatened	E18, E19, E21	E18, E21 Outside Study corridor
Passiflora lutea	Yellow Passion-flower	Endangered	Threatened	W6	NS – ME1
Phemeranthus teretifolius	Round-leaved Fame-Flower	Threatned	Threatned	E18. E19, E21	E18, E21 Outside Study corridor
Penstemon canescens	Beardtongue	Not listed	Undetermined	E3, E4	Yes

Table 1.
Plant Species of Special Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)	Survey Conducted?
Platanthera peramoena	Purple-fringeless Orchid	Undetermined	Threatened	W9	Yes
Polygama polygala	Racemed Milkwort	Undetermined	Endangered	E2	Yes
Quercus phellos	Willow Oak	Endangered	Endangered	E20, E22	NS – Outside Corridor
Ribes missouriensis	Missouri Gooseberry	Endangered	Endangered	E3	Yes
Rotala ramosior	Tooth-cup	Rare	Rare	E9, E10, E11	Yes
Ruellia pedunculata	Stalked wild-petunia	Not listed	Undetermined	(E4)	Yes - Voluntary Survey
Ruellia strepens	Limestone Petunia	Threatened	Threatened	E3, E4, E8	Yes
Smallanthus uvedalius	Hairy Leafcup	Not Listed	Rare	W6	NS – ME1
Solidago erecta	Slender Goldenrod	Endangered	Endangered	E6	Yes
Spiranthes lucida	Shining Ladies'-tresses	Not Listed	Threatened	W9	Yes
Symphyotrichum depauperatum	Serpentine Aster	Threatened	Threatened	E18, E19, E21	E18, E21 Outside Study corridor
Thalictrum coriaceum	Thick-leaved Meadow-rue	Endangered	Threatened	W8, W15, ALT W5	Yes
Trifolium virginicum	Kate's Mountain Clover	Endangered	Endangered	W16, ALT W6	Yes
Trillium cernuum	Nodding Trillium	Not Listed	Threatened	E16	NS – Outside Corridor
Trillium nivale	Snow Trillium	Rare	Rare	W2, W5, W6, W7	NS – ME1
Woodwardia areolata	Netted chain fern	Unlisted	Threatened	E15	Yes

Table 2.
Communities of Concern:

Community	Global Rank	State Rank	AOC	Survey Conducted?
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W16, ALT W6)	Yes - Voluntary Survey
Serpentine Grassland	GNR	S1	(E18, E19, W7)	Yes - Voluntary Survey
Yellow Oak – Redbud Woodland	GNR	S2	(W6)	NS – ME1 - Voluntary Survey

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Berks County			
E14	JnC	Joanna loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
E14	ReB	Readington silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Ultic Hapludalfs
E14	AbA	Abbottstown silt loam, 0 to 3 percent slopes	Fine-loamy, mixed, superactive, mesic Ultic Hapludalfs
E15	JpD	Joanna loam, 8 to 25 percent slopes, extremely stony	Fine-silty, mixed, active, mesic Typic Fragiaqualfs
E15	AbB	Abbottstown silt loam, 3 to 8 percent slopes	Fine-silty, mixed, active, mesic Typic Fragiaqualfs
Blair			
ALT W3	Ho	Holly silt loam	Coarse-loamy, mixed, active, nonacid, mesic Mollic Udifluvents
W15	MrC	Morrison sandy loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
ALT W3	EmD	Edom-Weikert complex, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
W15	MsF	Morrison very stony sandy loam, 25 to 50 percent slopes	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
ALT W1	LLF	Leck kill channery silt loam, very steep	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W2	BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiaquults
W13	BrB	Brinkerton silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W1	LkD	Leck kill channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
W15	HuC	Hublersburg cherty silt loam, 8 to 15 percent slopes	Clayey, illitic, mesic Typic Hapludults
ALT W3	OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Fine, mixed, semiactive, mesic Typic Hapludalfs
W15	AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
W15	MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W4	Ba	Basher soils	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
W14	BrB	Brinkerton silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Blair			
ALT W5	BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	
ALT W1	LLF	Leck kill channery silt loam, very steep	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W1	LkC	Leck kill channery silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Typic Fragiudults
ALT W1	HgB	Hazleton channery sandy loam, 3 to 8 percent slopes	Coarse-loamy, siliceous, active, mesic Typic Hapludults
ALT W1	CyD	Clymer very stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W15	MsD	Morrison very stony sandy loam, 8 to 25 percent slopes	Mesic, coated Typic Quartzipsamments
W15	Ba	Basher soils	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
W15	MuD	Murrill gravelly silt loam, 15 to 25 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W15	MsB	Morrison very stony sandy loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
W14	ErC	Ernest silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
ALT W3	CbB	Clarksburg silt loam, 3 to 8 percent slopes	Fine-silty, mixed, active, mesic Typic Fragiaqualfs
ALT W5	BxB	Buchanan extremely stony silt loam, 3 to 8 percent slopes	
ALT W1	HgB	Hazleton channery sandy loam, 3 to 8 percent slopes	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W15	BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W1	LeB	Laidig extremely stony loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W1	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
W15	MsD	Morrison very stony sandy loam, 8 to 25 percent slopes	Mesic, coated Typic Quartzipsamments

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Blair			
W15	OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Fine, mixed, semiactive, mesic Typic Hapludalfs
ALT W1	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W1	HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W14	WeD	Weikert channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
ALT W2	Ba	Basher soils	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
W15	MxB	Murrill extremely stony silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W1	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W5	LeF	Laidig extremely stony loam, 25 to 45 percent slopes	Fine-loamy, siliceous, active, mesic Typic Fragiudults
ALT W3	MnD	Mertz channery silt loam, 15 to 25 percent slopes	Clayey, illitic, mesic Typic Hapludults
ALT W1	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
W15	HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
ALT W1	LkC	Leck kill channery silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Typic Fragiudults
ALT W1	MkD	Meckesville very stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
W15	MeC	Meckesville gravelly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
W15	MuB	Murrill gravelly silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W1	UD	Udifluvents-Dystrochrepts complex	Fluvents

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Blair			
ALT W1	HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W3	HxC2	Hublersburg cherty silty clay loam, 8 to 15 percent slopes, eroded	Clayey, illitic, mesic Typic Hapludults
ALT W3	OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Fine, mixed, semiactive, mesic Typic Hapludalfs
ALT W1	AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
W14	ErC	Ernest silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
ALT W1	MeB	Meckesville gravelly silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudalfs
ALT W3	HeD	Hagerstown-Rock outcrop complex, 8 to 25 percent slopes	
W14	BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W4	Ba	Basher soils	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
ALT W1	HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W2	Ba	Basher soils	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
ALT W1	HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
ALT W3	OxF	Opequon-Hagerstown-Rock outcrop complex, 25 to 50 percent slopes	Fine, mixed, semiactive, mesic Typic Hapludalfs
W15	BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiaquults
W15	HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W15	MuB	Murrill gravelly silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Blair			
ALT W1	LeF	Laidig extremely stony loam, 25 to 45 percent slopes	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W13	Ho	Holly silt loam	Coarse-loamy, mixed, active, nonacid, mesic Mollic Udifluvents
ALT W1	LkD	Leck kill channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W4	Lo	Linden soils	Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts
W15	HeD	Hagerstown-Rock outcrop complex, 8 to 25 percent slopes	
W15	MkD	Meckesville very stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
ALT W1	HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
ALT W1	HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	LeB	Laidig extremely stony loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W1	MeC	Meckesville gravelly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
ALT W1	LkB	Leck kill channery silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W1	HhC	Hazleton very stony sandy loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
ALT W1	LeF	Laidig extremely stony loam, 25 to 45 percent slopes	Fine-loamy, siliceous, active, mesic Typic Fragiudults
ALT W5	MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
W15	W	Water	
W15	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Blair			
ALT W1	HgC	Hazleton channery sandy loam, 8 to 15 percent slopes	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W15	UD	Udifluvents-Dystrochrepts complex	Fluvents
ALT W4	Ho	Holly silt loam	Coarse-loamy, mixed, active, nonacid, mesic Mollic Udifluvents
ALT W4	Ty	Tyler silt loam	Fine-silty, mixed, active, mesic Aeric Fragiaquults
W15	OuD	Opequon silty clay loam, 15 to 25 percent slopes	Clayey, mixed, active, mesic Lithic Hapludalfs
ALT W1	AcB	Albrights very stony silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W3	MnC	Mertz channery silt loam, 8 to 15 percent slopes	Clayey, illitic, mesic Typic Hapludults
W15	MxD	Murrill extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
W14	BmF	Berks-Weikert channery silt loams, 25 to 70 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
W14	WeD	Weikert channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
ALT W1	HhF	Hazleton very stony sandy loam, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	MkB	Meckesville very stony silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudalfs
W15	MuC	Murrill gravelly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
W15	MuB	Murrill gravelly silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
ALT W5	BxD	Buchanan extremely stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiaquults
Cambria			
W 10	CvB	Cookport and Ernest very stony soils, 0 to 8 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Cambria			
W 10	LkC	Leck kill silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Typic Hapludults
W 10	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
AOC UNK	CvB	Cookport and Ernest very stony soils, 0 to 8 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	HbD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W 10	LDF	Laidig soils, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	Hx	Hazleton extremely bouldery sandy loam	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
ALT W1	LaB	Laidig loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	HbD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
AOC UNK	W	Water	
W 10	Ph	Philo silt loam, 0 to 3 percent slopes, occasionally flooded	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
W 10	Hx	Hazleton extremely bouldery sandy loam	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W 10	LaC	Laidig loam, 8 to 15 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	LDF	Laidig soils, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	LaB	Laidig loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	LaC	Laidig loam, 8 to 15 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	CbB	Cavode very stony silt loam, 0 to 8 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W 10	LDF	Laidig soils, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	HbD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W 10	LkD	Leck kill silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Typic Hapludults
ALT W1	NoB	Nolo very stony sandy loam, 0 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Typic Fragiaquults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Cambria			
ALT W1	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	LaC	Laidig loam, 8 to 15 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
W 10	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	HbB	Hazleton channery sandy loam, 3 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
ALT W1	AbB	Albrights silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Aquic Fragiudalfs
W 10	CeC	Cookport and Ernest soils, 8 to 15 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W1	HbB	Hazleton channery sandy loam, 3 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W 10	HbD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W 10	HbB	Hazleton channery sandy loam, 3 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
ALT W1	BmB	Blairton silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W1	CeB	Cookport and Ernest soils, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
ALT W1	HbB	Hazleton channery sandy loam, 3 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W 10	At	Atkins silt loam, 0 to 3 percent slopes, frequently flooded	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
ALT W1	UDC	Udorthents, strip mine, sloping	Fine-loamy, mixed, active, mesic Typic Hapludults
W 10	LkD	Leck kill silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Typic Hapludults
W 10	WgD	Wharton-Gilpin silt loams, 15 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W 10	Hx	Hazleton extremely bouldery sandy loam	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W 10	LDF	Laidig soils, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Cambria			
ALT W1	CvB	Cookport and Ernest very stony soils, 0 to 8 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	CeB	Cookport and Ernest soils, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W 10	AbC	Albrights silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, semiactive, mesic Aquic Fragiudalfs
W 10	LkC	Leck kill silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Typic Hapludults
ALT W1	UDC	Udorthents, strip mine, sloping	Fine-loamy, mixed, active, mesic Typic Hapludults
W 10	HbB	Hazleton channery sandy loam, 3 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
AOC UNK	BtB	Brinkerton soils, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
ALT W1	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	LaC	Laidig loam, 8 to 15 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W 10	LkC	Leck kill silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Typic Hapludults
ALT W1	LtB	Leetonia very stony loamy sand, 3 to 8 percent slopes	Sandy-skeletal, siliceous, mesic Entic Haplorthods
W 10	LDF	Laidig soils, 25 to 70 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	HaC	Hazleton channery loam, 8 to 15 percent slopes	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
ALT W1	NoB	Nolo very stony sandy loam, 0 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Typic Fragiaquults
W 10	HbD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W 10	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
ALT W1	LeB	Laidig extremely stony loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Cambria			
ALT W1	LeD	Laidig extremely stony loam, 8 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
ALT W1	HhB	Hazleton very stony sandy loam, 3 to 8 percent slopes	Fine-loamy, siliceous, mesic Typic Fragiudults
ALT W1	AbB	Albrights gravelly silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
Chester			
PaE	E17	Parker gravelly loam, 25 to 35 percent slopes	Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts
CaB	E17	Califon loam, 3 to 8 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
ChB2	E19	Chrome silt loam, 3 to 8 percent slopes	Loamy, mixed, superactive, mesic Lithic Hapludolls
GgB	E19	Glenelg silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
GdC	E17	Gladstone gravelly loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
GdB	E17	Gladstone gravelly loam, 3 to 8 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
Cumberland			
E08	BeB	Berks channery silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E03	WkF	Weikert and Klinesville very shaly silt loams, 25 to 75 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
E03	BrA	Brinkerton silt loam, 0 to 3 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E04	BrB	Brinkerton silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, mesic Aquic Fragiudults
E06	Aw	Atkins silt loam	Fine-loamy, mixed, active, acid, mesic Fluvaquentic Endoaquepts
E06	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E04	WkF	Weikert and Klinesville very shaly silt loams, 25 to 75 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
E11	NeC	Neshaminy gravelly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, superactive, mesic Ultic Hapludalfs
E11	Ls	Lindside silt loam	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Cumberland			
E08	Mf	Middlebury soils	Coarse-loamy, mixed, superactive, mesic Fluvaquentic Eutrudepts
E08	BeC	Berks shaly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E06	WeB	Weikert very channery silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E08	BpB	Blairton silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E06	BeC	Berks shaly silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E08	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E07	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E06	BeB	Berks channery silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E04	BeB	Berks channery silt loam, 3 to 8 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E03	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E03	WeC	Weikert very channery silt loam, 8 to 15 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E03	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
Dauphin			
E13	Lt	Lindside silt loam	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
E13	LrD2	Lewisberry gravelly sandy loam, 15 to 25 percent slopes, moderately eroded	Coarse-loamy, mixed, semiactive, mesic Ultic Hapludalfs
E13	W	Water	
Huntingdon			
W16	KlC	Klinesville shaly silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Huntingdon			
W16	BkC	Berks channery silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
W16	CaD	Calvin shaly silt loam, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	CaD	Calvin shaly silt loam, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	AbB	Albrights silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Aquic Fragiudalfs
W16	CaC	Calvin shaly silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	MkD	Meckesville very stony silt loam, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiudults
W16	CaD	Calvin shaly silt loam, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	CaB	Calvin shaly silt loam, 3 to 8 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	ErB	Ernest silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	BkC	Berks channery silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
W16	CaD	Calvin shaly silt loam, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	CaC	Calvin shaly silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	AbB	Albrights silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Aquic Fragiudalfs
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	KlD	Klinesville shaly silt loam, 15 to 25 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
W16	BMF	Berks-Weikert association, steep	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	CaC	Calvin shaly silt loam, 8 to 15 percent slopes	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
W16	W	Water	
Indiana			
W09	BkB	Brinkerton silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W09	SxF	Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes, very stony	Fine-loamy, mixed, active, mesic Typic Hapludults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Indiana			
W08	HxB	Hazleton-Clymer complex, 0 to 8 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	BxB	Buchanan loam, 0 to 8 percent slopes, extremely stony	Loamy-skeletal, mixed, superactive, mesic Fluventic Dystrudepts
W09	ErC	Ernest silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W08	BxB	Buchanan loam, 0 to 8 percent slopes, extremely stony	Loamy-skeletal, mixed, superactive, mesic Fluventic Dystrudepts
W09	SxF	Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes, very stony	Fine-loamy, mixed, active, mesic Typic Hapludults
W08	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W10	RnC	Rayne-Gilpin channery silt loams, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W10	GnD	Gilpin channery silt loam, 8 to 25 percent slopes, very stony	Fine-loamy, mixed, active, mesic Aquic Hapludults
W09	WhD	Wharton silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Hapludults
W09	WhA	Wharton silt loam, 0 to 3 percent slopes	Fine-loamy, mixed, active, mesic Aquic Hapludults
W08	HsD	Hazleton channery sandy loam, 8 to 25 percent slopes, extremely stony	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W10	CoB	Cookport loam, 3 to 8 percent slopes	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W10	BxB	Buchanan loam, 0 to 8 percent slopes, extremely stony	Loamy-skeletal, mixed, superactive, mesic Fluventic Dystrudepts
W10	BxD	Buchanan loam, 8 to 25 percent slopes, extremely stony	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W09	CaB	Cavode silt loam, 3 to 8 percent slopes	Fine, mixed, active, mesic Aeric Endoaquults
W10	ClB	Clymer channery loam, 3 to 8 percent slopes	Coarse-loamy, siliceous, active, mesic Typic Hapludults
W10	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	LaE	Laidig gravelly loam, 25 to 35 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Indiana			
W08	HsF	Hazleton channery sandy loam, 25 to 70 percent slopes, extremely stony	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W08	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	HsF	Hazleton channery sandy loam, 25 to 70 percent slopes, extremely stony	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W10	ErB	Ernest silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W08	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W10	HnC	Hazleton channery sandy loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W10	GnD	Gilpin channery silt loam, 8 to 25 percent slopes, very stony	Fine-loamy, mixed, active, mesic Aquic Hapludults
W09	SxF	Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes, very stony	Fine-loamy, mixed, active, mesic Typic Hapludults
W08	HnB	Hazleton channery sandy loam, 3 to 8 percent slopes	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
W08	HnC	Hazleton channery sandy loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	HsF	Hazleton channery sandy loam, 25 to 70 percent slopes, extremely stony	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W10	BuB	Buchanan loam, 3 to 8 percent slopes	Fine-loamy, mixed, active, mesic Typic Fragiaquults
W08	HxD	Hazleton-Clymer complex, 8 to 25 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W08	RsB	Rayne-Gilpin channery silt loams, 0 to 8 percent slopes, very stony	Fine, mixed, active, mesic Aeric Endoaquults
W08	DkB	Dekalb-Hazleton channery sandy loams, 0 to 8 percent slopes, extremely stony	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Indiana			
W09	HxB	Hazleton-Clymer complex, 0 to 8 percent slopes, extremely stony	Fine-loamy, mixed, active, mesic Aquic Fragiudults
W09	RnD	Rayne-Gilpin channery silt loams, 15 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Hapludults
W09	ErB	Ernest silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
W08	BxD	Buchanan loam, 8 to 25 percent slopes, extremely stony	Fine-loamy, siliceous, active, mesic Typic Fragiudults
W08	RnC	Rayne-Gilpin channery silt loams, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W10	CvD	Cookport and Ernest very stony soils, 8 to 25 percent slopes	Fine-loamy, mixed, active, mesic Aquic Fragiudults
Perry			
E02	LgD	Laidig very stony loam, 8 to 25 percent slopes	Fine-loamy, siliceous, active, mesic Typic Fragiudults
E02	WeD	Weikert very channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, mesic Aquic Hapludults
E02	WeC	Weikert very channery silt loam, 8 to 15 percent slopes	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs
E02	EtC	Ernest silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults
E02	WkF	Weikert and Klinesville very shaly silt loams, 25 to 75 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
E02	WkF	Weikert and Klinesville very shaly silt loams, 25 to 75 percent slopes	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
E02	HfD	Hazleton extremely stony sandy loam, 8 to 25 percent slopes	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
Westmoreland			
W06	LwB	Lowell silty clay loam, 3 to 8 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W07	Ln	Lindside silt loam, 0 to 2 percent slopes	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
W06	Ln	Lindside silt loam, 0 to 2 percent slopes	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
W06	GoF	Gilpin-Rock outcrop complex, 45 to 100 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Westmoreland			
W06	CuD	Culleoka channery silt loam, 15 to 25 percent slopes	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
W06	FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W06	GyB	Guernsey silt loam, 3 to 8 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W06	ChA	Chavies fine sandy loam, 0 to 2 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Fragiudults
W06	LwD	Lowell silty clay loam, 15 to 25 percent slopes, eroded	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
W06	MoC	Monongahela silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Fragiudults
W06	LwC	Lowell silty clay loam, 8 to 15 percent slopes, eroded	Fine, mixed, active, mesic Typic Hapludalfs
W06	ClC	Clarksburg silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs
W06	Ln	Lindside silt loam, 0 to 2 percent slopes	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
W06	LxF	Lowell-Culleoka complex, 25 to 80 percent slopes, very rocky	Fine, mixed, superactive, mesic Aquic Hapludalfs
W05	MoB	Monongahela silt loam, 3 to 8 percent slopes	Fine-loamy, mixed, semiactive, mesic Typic Fragiudults
W06	GoF	Gilpin-Rock outcrop complex, 45 to 100 percent slopes	Fine-loamy, mixed, active, mesic Typic Hapludults
W06	ClB	Clarksburg silt loam, 3 to 8 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W05	Ln	Lindside silt loam, 0 to 2 percent slopes	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
W05	FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W06	LxF	Lowell-Culleoka complex, 25 to 80 percent slopes, very rocky	Fine, mixed, superactive, mesic Aquic Hapludalfs
W07	CuC	Culleoka channery silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
W05	LxF	Lowell-Culleoka complex, 25 to 80 percent slopes, very rocky	Fine, mixed, superactive, mesic Aquic Hapludalfs
W05	ClC	Clarksburg silt loam, 8 to 15 percent slopes	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs
W06	W	Water	

Table 3.
Soils within the Surveyed Areas of Concern

AOC	Soil Symbol	Mapped Soil Unit	Soil Classification
Westmoreland			
W05	FaF	Fairpoint very channery silt loam, 25 to 75 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
W05	LxF	Lowell-Culleoka complex, 25 to 80 percent slopes, very rocky	Fine, mixed, superactive, mesic Aquic Hapludalfs
W05	FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	Fine, mixed, superactive, mesic Aquic Hapludalfs
York			
E11	Ls	Lindside silt loam	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
E12	NdD	Neshaminy channery silt loam, 8 to 25 percent slopes, extremely bouldery	Fine-loamy, mixed, superactive, mesic Ultic Hapludalfs

Table 4.
Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Thalictrum coriaceum
AOC W8	Potential rocky wooded habitat throughout project buffer zone.	A	Broadleaf Terrestrial Woodland (BTW)	40.44499	-79.20285	None / No
		B	Mesic Broadleaf Woodland (MSB)	40.44406	-79.20197	Poor / No
		C	Mesic Broadleaf Forest (MSF)	40.44203	-79.19914	Moderate / No
		D	Mesic Broadleaf Forest (MSF)	40.44011	-79.18788	None / No
		E	Terrestrial Herbaceous Opening (THO)	40.44011	-79.18788	None / No
		F	Broadleaf Terrestrial Woodland (BTW)	40.43973	-79.17856	None / No
		G	Riverine Broadleaf Terrestrial Forest (RBTF)	40.43971	-79.17632	Moderate / No
		H	Broadleaf Terrestrial Woodland (BTW)	40.43964	-79.17355	None / No
		I	Broadleaf Terrestrial Forest (BTF)	40.43935	-79.16494	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Platanthera peramoena	*Spiranthes lucida*
AOC W9	Potential low wooded/stream side/wet ROW habitat, stream connectivity with known populations of target SOSCs.	A	Palustrine Emergent/Scrub-Shrub (PE/PS)	40.43241	-79.06666	Moderate / No	Moderate / No
		B	Broadleaf Terrestrial Forest (BTF)	40.43255	-79.06677	None / No	None / No
		C	Broadleaf Terrestrial Forest (BTF)	40.43196	-79.05593	None / No	None / No
		D	Riverine Broadleaf Terrestrial Forest (RBTF)	40.43210	-79.05768	Moderate / No	Moderate / No
		E	Terrestrial Herbaceous Opening (THO)	40.43216	-79.05590	None / No	None / No
		F	Urban-Residential-Developed (URD)	40.43134	-79.03874	None / No	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Actaea podocarpa
AOC W10	Potential wooded slope habitat withing project buffer.	A1	Terrestrial Herbaceous Opening (THO)	40.43354	-78.98276	None / No
		A2	Terrestrial Herbaceous Opening (THO)	40.41897	-78.88276	None / No
		B1	Broadleaf Terrestrial Woodland (BTW)	40.42362	-78.91817	None / No
		B2	Broadleaf Terrestrial Woodland (BTW)	40.41817	-78.88077	Poor / No
		B3	Broadleaf Terrestrial Woodland (BTW)	40.41862	-78.88019	None / No
		C1	Broadleaf Terrestrial Forest (BTF)	40.43146	-78.96794	None / No
		C2	Broadleaf Terrestrial Forest (BTF)	40.41916	-78.88201	Poor / No
		C3	Broadleaf Terrestrial Forest (BTF)	40.42865	-78.95055	Moderate / No
		C4	Broadleaf Terrestrial Forest (BTF)	40.42116	-78.90017	None / No
		D1	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.41909	-78.88476	None / No
		D2	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.42067	-78.89652	None / No
		E1	Riverine Broadleaf Terrestrial Forest (RBTF)	40.43370	-78.98276	None / No
		E2	Riverine Broadleaf Terrestrial Forest (RBTF)	40.43022	-78.95703	Poor / No
		F	Broadleaf Terrestrial Woodland (BTW)	40.43323	-78.98282	None / No
		G	Palustrine Emergent Wetland (PE)	40.42693	-78.94386	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Actaea podocarpa
AOC ALT W1	Potential wooded slope habitat withing project buffer.	A1	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.40087	-78.51625	None / No
		A2	Terrestrial Herbaceous Opening (THO)	40.40160	-78.53074	None / No
		A3	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.40320	-78.54227	None / No
		A4	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.42380	-78.57912	None / No
		B	Broadleaf Terrestrial Woodland (BTW)	40.40186	-78.50417	None / No
		C1	Palustrine Emergent Wetland (PE)	40.40269	-78.50170	None / No
		C2	Palustrine Emergent Wetland (PE)	40.40840	-78.55611	None / No

Table 4.

Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Actaea podocarpa
AOC ALT W1	Potential wooded slope habitat withing project buffer.	C3	Palustrine Emergent Wetland (PE)	40.41305	-78.56484	None / No
		C4	Palustrine Emergent Wetland (PE)	40.42222	-78.57738	None / No
		D	Broadleaf Terrestrial Woodland (BTW)	40.40233	-78.53879	None / No
		E	Coniferous Terrestrial Forest (CTF)	40.40406	-78.54662	None / No
		F1	Palustrine Forested Wetland (PF)	40.40815	-78.55662	None / No
		F2	Palustrine Forested Wetland (PF)	40.41217	-78.56238	None / No
		G	Broadleaf Terrestrial Forest (BTF)	40.41247	-78.56302	None / No
		H	Coniferous Terrestrial Forest (CTF)	40.42441	-78.57905	None / No
		I	Coniferous - Broadleaf Terrestrial Woodland (CBTW)	40.42129	-78.57588	None / No
		J	Broadleaf Terrestrial Forest (BTF)	40.42651	-78.58131	None / No
		K	Coniferous Terrestrial Forest (CTF)	40.40651	-78.55599	None / No
		L	Broadleaf Terrestrial Forest (BTF)	40.40601	-78.55742	None / No
		M	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.40746	-78.55323	None / No
		N	Broadleaf Terrestrial Woodland (BTW)	40.40480	-78.50119	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Amelanchier humilis	*Amelanchier sanguinea*
AOC ALT W3	Potential rock outcrop habitat with connectivity to documented populations.	D	Broadleaf Terrestrial Woodland (BTW)	40.42793	-78.33933	None / No	None / No
		E	Broadleaf Terrestrial Forest (BTF)	40.42695	-78.34071	Poor / No	Poor / No
		F	Terrestrial Herbaceous Opening (THO)	40.42801	-78.34022	None / No	None / No
		G	Broadleaf Terrestrial Woodland (BTW)	40.42818	-78.33902	Moderate / No	Moderate / No
		H	Terrestrial Shrub Opening (TS)	40.42876	-78.33812	Poor / No	Poor / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Juncus torreyi	*Lycopodiella margueritae*
AOC ALT W4	Potential wetland habitat; some areas may be acidic.	A	Palustrine Emergent Wetland (PE)	40.44331	-78.32649	Poor / No	None / No
		B	Terrestrial Open Meadow (TOM)	40.44242	-78.32721	None / No	None / No
		C	Terrestrial Shrub Opening (TS)	40.44161	-78.32794	None / No	None / No
		D	Terrestrial Shrub Floodplain (TS)	40.44076	-78.32870	None / No	None / No
		E	Palustrine Forested Floodplain (PF)	40.44045	-78.32816	Poor / No	None / No
		F	Mesic Broadleaf Terrestrial Woodland (MBTW)	40.44319	-78.32597	None / No	Moderate / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Juncus torreyi	*Lycopodiella margueritae*
AOC W13	Potential wetland habitat; some areas may be acidic.	A	Palustrine Emergent Wetland (PE)	40.44452	-78.32504	Good / No	None / No
		B	Palustrine Successional Farm Pond (PSFP)	40.44468	-78.32537	Good / No	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Antennaria virginica
AOC W14	Potential dry open woodland habitat, with Virginia Pine canopy and acidic shale soils.	A	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.44730	-78.31924	Good / Yes
		B	Broadleaf Terrestrial Forest (BTF)	40.44787	-78.32114	Good / Yes
		C	Coniferous Terrestrial Forest (CTF)	40.44648	-78.31666	Good / Yes
		D	Terrestrial Herbaceous Opening (THO)	40.44313	-78.31037	Moderate / Yes
		E	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.44549	-78.31484	Good / Yes
		F	Coniferous - Broadleaf Terrestrial Woodland (CBTW)	40.44469	-78.31237	Good / Yes

Table 4.

Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Antennaria virginica
AOC W14	Potential dry woodland habitat, acidic shale soils.	G	Broadleaf Terrestrial Woodland (BTW)	40.44197	-78.30812	Moderate / Yes
		H	Broadleaf Terrestrial Woodland (BTW)	40.44045	-78.30706	None / No
		I	Broadleaf Terrestrial Forest (BTF)	40.43764	-78.30147	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Arabis patens	*Thalictrum coriaceum*
AOC W15 & ALT W5	*T. coriaceum* population located within project buffer; potential stony woodland habitat.	A	Broadleaf Terrestrial Woodland (BTW)	40.43332	-78.29377	None / No	None / No
		B	Broadleaf Terrestrial Forest (BTF)	40.43197	-78.28925	Poor / No	None / No
		C	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.43100	-78.28598	None / No	None / No
		D	Broadleaf Terrestrial Forest (BTF)	40.43275	-78.28076	Poor / No	None / No
		E	Broadleaf Terrestrial Forest (BTF)	40.43462	-78.27389	Moderate / No	Poor / No
		F	Broadleaf Terrestrial Woodland (BTW)	40.43364	-78.26860	Poor / No	Poor / No
		G	Riverine Broadleaf Terrestrial Woodland (RBTW)	40.43298	-78.26640	None / No	Good / No
		H	Terrestrial Herbaceous Opening (THO)	40.42974	-78.25163	None / No	None / No
		I	Broadleaf Terrestrial Forest (BTF)	40.42813	-78.24357	None / No	Poor / No
		J	Broadleaf Terrestrial Woodland (BTW)	40.42631	-78.23554	None / No	None / No
		K	Broadleaf Terrestrial Forest (BTF)	40.42418	-78.29616	Poor / No	None / No
		L	Terrestrial Herbaceous Opening (THO)	40.41662	-78.30242	None / No	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Oenothera argillicol	*Trifolium virginicum*
AOC W16 & ALT W6	Potential steep shaly habitat; **Red-cedar Mixed Hardwood Rich Forest* - survey voluntary.	A1	Terrestrial Herbaceous Opening (THO)	40.39579466620	-78.12882306560	None / No	None / No
		A2	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.39286	-78.11622	None / No	None / No
		A3	Terrestrial Herbaceous Opening (THO)	40.38515	-78.08220	Poor / No	Poor / No
		A4	Terrestrial Herbaceous Opening (THO)	40.38387	-78.07949	Poor / No	Poor / No
		A5	Terrestrial Herbaceous Opening (THO)	40.37220	-78.07320	Poor / No	Poor / No
		A6	Terrestrial Herbaceous Opening (THO)	40.36863	-78.06462	None / No	None / No
		B	Palustrine Forested Wetland (PF)	40.39402	-78.12171	None / No	None / No
		C1	Broadleaf Terrestrial Forest (BTF)	40.39387	-78.12158	None / No	None / No
		C2	Broadleaf Terrestrial Forest (BTF)	40.37318	-78.07600	None / No	None / No
		D1	Mesic Broadleaf Woodland (MSB)	40.39666	-78.13235	None / No	None / No
		D2	Mesic Broadleaf Woodland (MSB)	40.39583	-78.13002	None / No	None / No
		E	Agriculture or Fallow Field (AG/FF)	40.39461	-78.12505	None / No	None / No
		F	Broadleaf Terrestrial Woodland (BTW)	40.37285	-78.07487	None / No	None / No
		G	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.38550	-78.08406	None / No	None / No
		H	Palustrine Emergent Wetland (PE)	40.38131	-78.07898	None / No	None / No
		I	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.37662	-78.08061	None / No	None / No
		J	Palustrine Emergent Wetland (PE)	40.38099	-78.07941	None / No	None / No
		K	Broadleaf Terrestrial Woodland (BTW)	40.40104	-78.12738	None / No	None / No
		L	Coniferous - Broadleaf Terrestrial Forest (CBTF)	40.39994	-78.12897	None / No	None / No
		M	Terrestrial Shrub Opening (TS)	40.39788	-78.13093	None / No	None / No
		N	Broadleaf Terrestrial Forest (BTF)	40.39861	-78.13076	None / No	None / No
		O	Terrestrial Herbaceous Opening (THO)	40.39924	-78.12981	Poor / No	Poor / No
		P	Terrestrial Open Meadow (TOM)	40.38295	-78.07777	None / No	None / No
		*No (Red-cedar - Mixed Hardwood Rich Shale Woodland) Communities were observed within the evaluated survey area of AOC W16 & ALT W6.					

Table 4.
Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Carex shortiana
AOC E1	Three documented occurrences of *Carex shortiana* within this polygon; potential habitat exists elsewhere also.	A	Terrestrial Herbaceous Opening (THO)	40.30128	-77.69599	Good / Yes
		B	Broadleaf Terrestrial Forest (BTF)	40.30105	-77.69612	Poor / Yes
		C	Palustrine Forested Wetland (PF)	40.30113	-77.69581	Good / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Polygala polygama
AOC E2	A documented occurrence within the pipeline right-of-way in Tuscarora State Forest.	A	Terrestrial Herbaceous Opening (THO)	40.27941	-77.58015	Good / Yes
		B	Broadleaf Terrestrial Woodland (BTW)	40.28021	-77.58459	None / No
		C	Coniferous - Broadleaf Terrestrial Woodland (CBTW)	40.27937	-77.57836	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present		
						Ruellia strepens	*Penstemon canescens*	*Ribes missouriensis*
AOC E3	Occurrence to south; potential habitat with Weikert and Klinesville shaly silt loams soil Units.	A	Broadleaf Terrestrial Forest (BTF)	40.24211	-77.30666	None / No	None / No	Good / Yes
		B	Broadleaf Terrestrial Woodland (BTW)	40.24299	-77.31234	None / No	Poor / No	Good / Yes
		C	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.24222	-77.30662	None / No	None / No	None / No
		D	Urban-Residential-Developed (URD)	40.24268	-77.31270	None / No	None / No	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present			
						Ruellia strepens	*Ruellia pedunculata*	*Ribes missouriensis*	*Penstemon canescens*
AOC E4	Occurrence to south; potential habitat with Weikert and Klinesville shaly silt loams soil Units.	A	Broadleaf Terrestrial Woodland (BTW)	40.24231	-77.27782	None / No	None / No	Good / Yes	None / No
		B	Terrestrial Herbaceous-Shrub Opening (THO/TS)	40.24205	-77.27862	None / No	None / No	None / No	None / No
		C	Agriculture or Fallow Field (AG/FF)	40.24193	-77.27852	None / No	None / No	None / No	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Opuntia humifusa	*Solidago erecta*
AOC E6	Documented occurrence of Opuntia humifusa; similar soil types occur on these slopes.	A	Terrestrial Herbaceous Opening (THO)	40.24139	-77.21072	Good / Yes	Moderate / No
		B	Terrestrial Shrubland (TS)	40.24111	-77.21155	Good / Yes	Moderate / No
		C	Broadleaf Terrestrial Woodland (BTW)	40.24148	-77.21144	None / No	None / No

Table 4.
Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Opuntia humifusa	*Ruellia strepens*
AOC E8	Potential habitat for Opuntia humifusa and Ruellia strepens - similar soil types occur on these slopes.	A	Terrestrial Herbaceous Opening (THO)	40.24483	-77.19992	Poor / No	None / No
		B	Terrestrial Shrubland (TS)	40.24445	-77.19678	Poor / No	None / No
		C	Broadleaf Terrestrial Woodland (BTW)	40.24434	-77.19813	None / No	None / No
Area of Concern (AOC)	**PA DCNR AOC Notes**	**Habitat Area**	**Habitat Type**	**Northing**	**Easting**	**Suitable Habitat Present[1] / Plants Present**	
						Rotala ramosior	
AOC E11	Potential suitable habitat for Rotala if there are any open wet swampy areas within this mostly forested swamp.	A	Palustrine Emergent Wetland (PE)	40.19230	-76.91282	Moderate / No	
		B	Palustrine Forested Floodplain (PF)	40.19224	-76.91240	None / No	
Area of Concern (AOC)	**PA DCNR AOC Notes**	**Habitat Area**	**Habitat Type**	**Northing**	**Easting**	**Suitable Habitat Present[1] / Plants Present**	
						Ellisia nyctelea	
AOC E12	A narrow patch of potential habitat for *Ellisia nyctelea* - [possible] marginal habitat.	A	Riverine Broadleaf Terrestrial Forest (RBTF)	40.19894	-76.79905	Poor / No	
		B	Palustrine Forested Floodplain (PF)	40.19886	-76.79919	None / No	
Area of Concern (AOC)	**PA DCNR AOC Notes**	**Habitat Area**	**Habitat Type**	**Northing**	**Easting**	**Suitable Habitat Present[1] / Plants Present**	
						Ellisia nyctelea	
AOC E13	Not sure if this ravine is rich enough to sustain *Ellisia nyctelea* but it's worth a look.	A	Mesic Broadleaf Terrestrial Woodland (MBTW)	40.21826	-76.72550	Poor / No	
		B	Mesic Broadleaf Terrestrial Forest (MBTF)	40.21818	-76.72646	Poor / No	
		C	Palustrine Forested Wetland (PF)	40.21813	-76.72740	Moderate / No	
		D	[Steep] Riverine Broadleaf Terrestrial Forest (RBTF)	40.21844	-76.72789	None / No	
Area of Concern (AOC)	**PA DCNR AOC Notes**	**Habitat Area**	**Habitat Type**	**Northing**	**Easting**	**Suitable Habitat Present[1] / Plants Present**	
						Carex aquatilis	
AOC E14	Open sedge fen with documented occurrence of *Carex aquatilis* within the limit of disturbance polygon.	A	Terrestrial Open Meadow (TOM)	40.27808	-76.02185	None / No	
		B	Broadleaf Terrestrial Woodland (BTW)	40.27854	-76.02258	None / No	
		C	Palustrine Wetland Complex (PF/PS/PE)	40.27963	-76.02313	Poor / No	
		D	Palustrine Wetland Complex (PF)	40.27948	-76.02272	Good / No	

Table 4.

Habitat Suitability and Presence/Absence

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present	
						Dryopteris celsa	*Woodwardia areolata*
AOC E15	Potential habitat for these two fern species - moist woods.	A	Terrestrial Herbaceous Opening (THO)	40.19992	-75.91138	None / No	None / No
		B	Broadleaf Terrestrial Forest (BTF)	40.19983	-75.91176	Poor / No	Poor / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present
						Desmodium nuttallii
AOC E17	Documented occurrence of *Desmodium nuttallii* .	A	Terrestrial Herbaceous Opening (THO)	40.09634	-75.74393	Good / Yes
		B	Broadleaf Terrestrial Forest (BTF)	40.09627	-75.74344	None / No

Area of Concern (AOC)	PA DCNR AOC Notes	Habitat Area	Habitat Type	Northing	Easting	Suitable Habitat Present[1] / Plants Present			
						Phemeranthus teretifolius	*Packera anonyma*	*Fimbristylis annua*	*Symphyotrichum depauperatum*
AOC E19	Originally there were documented occurences of these species, but site looks like its been developed [at least most of it] - small remnants possible. Also, survey for Serpentine Grassland Community of Concern.	A	Serpentine Grassland (SGL) *(Community of Concern)	39.99828	-75.57202	Good / Yes	Good / Yes	Good / No	Good / No
		B	Broadleaf Terrestrial Forest (BTF)	39.99865	-75.57213	None / No	None / No	None / No	None / No
		*Serpentine Grassland Community of Concern (COC) was observed within the evaluated survey area of AOC E19.							

[1] **Suitable Habitat Present:** None – No potential habitat present; Good – Some good potential habitat present; Moderate – some moderate potential habitat present; Poor – some poor potential habitat present; Possible – Possibly some potential habitat present

	Information Regardng Communities of Concern
	Identified SOSC/COC
	Poor Suitability
	Moderate Suitability
	Good Suitability

Table 5.
Identified Species of Special Concern

AOC	Identified SOSC Population	Common Name	Number Identified	Voucher Collected?	Voucher ID	Latitude	Longitude
ALT W1	*Andropogon glomeratus* Pop 5	Bushy Bluestem	500+	Yes	N/A	40.41298	-78.56467
	Andropogon glomeratus Pop 6	Bushy Bluestem	100+	Yes	N/A	40.41306	-78.56318
	Andropogon glomeratus Pop 7	Bushy Bluestem	700+	Yes	N/A	40.41395	-78.56815
	Andropogon glomeratus Pop 8	Bushy Bluestem	500+	Yes	N/A	40.41232	-78.56498
	Andropogon glomeratus Pop 9	Bushy Bluestem	10,000+	No	N/A	40.42696	-78.94493
	Scirpus ancistrochaetus Pop 1	Northeastern Bulrush	55	Yes	Photographic Confirmation	40.41206	-78.56258
W14	*Antennaria virginica* Pop 1	Shale Barren Pussytoes	65	Yes	14-624-12	40.44814	-78.32049
	Antennaria virginica Pop 2	Shale Barren Pussytoes	50	Yes	14-624-12	40.44791	-78.32067
	Antennaria virginica Pop 3	Shale Barren Pussytoes	13	Yes	14-624-12	40.44658	-78.31762
	Antennaria virginica Pop 4	Shale Barren Pussytoes	8	Yes	14-624-12	40.44660	-78.31737
	Antennaria virginica Pop 5	Shale Barren Pussytoes	6	Yes	14-624-12	40.44658	-78.31734
	Antennaria virginica Pop 6	Shale Barren Pussytoes	16	Yes	14-624-12	40.44656	-78.31730
	Antennaria virginica Pop 7	Shale Barren Pussytoes	76	Yes	14-624-12	40.44636	-78.31680
	Antennaria virginica Pop 8	Shale Barren Pussytoes	20	Yes	14-624-12	40.44613	-78.31626
	Antennaria virginica Pop 9	Shale Barren Pussytoes	4	Yes	14-624-12	40.44613	-78.31602
	Antennaria virginica Pop 10	Shale Barren Pussytoes	5	Yes	14-624-12	40.44599	-78.31544
	Antennaria virginica Pop 11	Shale Barren Pussytoes	12	Yes	14-624-12	40.44511	-78.31492
	Antennaria virginica Pop 12	Shale Barren Pussytoes	8	Yes	14-624-12	40.44514	-78.31457
	Antennaria virginica Pop 13	Shale Barren Pussytoes	3	Yes	14-624-12	40.44503	-78.31464
	Antennaria virginica Pop 14	Shale Barren Pussytoes	3	Yes	14-624-12	40.44503	-78.31392
	Antennaria virginica Pop 15	Shale Barren Pussytoes	4	Yes	14-624-12	40.44501	-78.31303
	Antennaria virginica Pop 16	Shale Barren Pussytoes	13	Yes	14-624-12	40.44489	-78.31304
	Antennaria virginica Pop 17	Shale Barren Pussytoes	178+	Yes	14-624-12	40.44457	-78.31251
	Antennaria virginica Pop 18	Shale Barren Pussytoes	7	Yes	14-624-12	40.44339	-78.31021
	Antennaria virginica Pop 19	Shale Barren Pussytoes	30	Yes	14-624-12	40.44324	-78.30991
	Antennaria virginica Pop 20	Shale Barren Pussytoes	20	Yes	14-624-12	40.44203	-78.30864
E1	*Carex shortiana* Pop 1	Short's Sedge	1	Yes	14-101-1	40.30071	-77.69557
	Carex shortiana Pop 2 & 3	Short's Sedge	2	Yes	14-101-1	40.30079	-77.69549
	Carex shortiana Pop 4	Short's Sedge	1	Yes	14-101-1	40.30104	-77.69477
	Carex shortiana Pop 5	Short's Sedge	1	Yes	14-101-1	40.30113	-77.69478
E2	*Polygala polygama* Pop 1	Racemed Milkwort	38	Yes	14-100-1	40.27960	-77.58143
	Polygala polygama Pop 2	Racemed Milkwort	1	Yes	14-100-1	40.27998	-77.58397
	Polygala polygama Pop 3	Racemed Milkwort	3	Yes	14-100-1	40.27968	-77.58193
	Polygala polygama Pop 4	Racemed Milkwort	10	Yes	14-100-1	40.27915	-77.57822
	Polygala polygama Pop 5	Racemed Milkwort	15	Yes	14-100-1	40.27990	-77.58387
	Polygala polygama Pop 6	Racemed Milkwort	1	Yes	14-100-1	40.27998	-77.58397
E3	*Ribes missouriense* Pop 1	Missouri Gooseberry	13	Yes	14-624-13	40.24185	-77.30650
	Ribes missouriense Pop 2	Missouri Gooseberry	12	Yes	14-624-13	40.24282	-77.31161
	Ribes missouriense Pop 3	Missouri Gooseberry	22	Yes	14-624-13	40.24335	-77.31227
	Ribes missouriense Pop 4	Missouri Gooseberry	40+	Yes	14-624-13	40.24296	-77.31331
	Ribes missouriense Pop 5	Missouri Gooseberry	5	Yes	14-624-13	40.24287	-77.31546

Table 5.
Identified Species of Special Concern

AOC	Identified SOSC Population	Common Name	Number Identified	Voucher Collected?	Voucher ID	Latitude	Longitude
E3	*Ribes missouriense* Pop 6	Missouri Gooseberry	8	Yes	14-624-13	40.24322	-77.31516
E4	*Ribes missouriense* Pop 7	Missouri Gooseberry		Yes	14-624-13	40.24255	-77.27691
E6	*Opuntia humifusa* Pop 1	Prickly-pear Cactus	5	No	Photographic Confirmation	40.24145	-77.20753
	Opuntia humifusa Pop 2	Prickly-pear Cactus	20-30	No	Photographic Confirmation	40.24153	-77.20833
	Opuntia humifusa Pop 3	Prickly-pear Cactus	3	No	Photographic Confirmation	40.24104	-77.21183
	Opuntia humifusa Pop 4	Prickly-pear Cactus	50+	No	Photographic Confirmation	40.24093	-77.21236
E17	*Desmodium nuttallii* Pop 1	Nuttall's Tick Trefoil	2	No	Photographic Confirmation	40.09649	-75.74356
	Desmodium nuttallii Pop 2	Nuttall's Tick Trefoil	1	No	Photographic Confirmation	40.09671	-75.74398
E19	*Packera anonyma* Pop 1	Plain Ragwort	1	No	Photographic Confirmation	39.99828	-75.57206
	Packera anonyma Pop 2	Plain Ragwort	1	No		39.99824	-75.57207
	Packera anonyma Pop 3	Plain Ragwort	1	No		39.99825	-75.57206
	Phemeranthus teretifolius Pop 1	Round-leaved Fame Flower	14	No	Photographic Confirmation	39.99826	-75.57202
	Phemeranthus teretifolius Pop 2	Round-leaved Fame Flower	5	No	Photographic Confirmation	39.99813	-75.57196
	Serpentine Grassland Community	Serpentine Grassland	N/A	N/A	N/A	39.99832	-75.57200
Not Within Assigned AOC	*Actaea podocarpa* Pop 1	Mountain Bugbane	12	Yes	N/A	40.45088	-78.70442
	Andropogon glomeratus Pop 1	Bushy Bluestem	200-500	Yes	N/A	40.43597	-78.76891
	Andropogon glomeratus Pop 2	Bushy Bluestem	200-500	Yes	N/A	40.43568	-78.76992
	Andropogon glomeratus Pop 3	Bushy Bluestem	-	No	N/A	40.43377	-78.77830
	Andropogon glomeratus Pop 4	Bushy Bluestem	50	Yes	N/A	40.43627	-78.76791
	Viola appalachiensis Pop 1	Appalachian Blue Violet	1000+	Yes	N/A	40.45283	-78.64028
	Viola appalachiensis Pop 2	Appalachian Blue Violet	1000+	Yes	N/A	40.45334	-78.63110
	Viola appalachiensis Pop 3	Appalachian Blue Violet	50+	Yes	N/A	40.45437	-78.61711

APPENDIX E
PA DCNR Wild Plant Management Permits

APPENDIX F
Representative Photographs of Species of Special Concern

Thalictrum coriaceum – Thick-leaved Meadow-rue

Thalictrum coriaceum – Thick-leaved Meadow-rue

APPENDIX G
Botanical Field Survey Forms

BOTANICAL FIELD SURVEY FORM – PA PLANT SPECIES OF SPECIAL CONCERN

DCNR requests a Botanical Field Survey Form be submitted for each occurrence/population of a PA Plant Species of Special Concern (SOSC) found during a survey. Please attempt to complete as many fields as possible. Please direct any questions to DCNR Bureau of Forestry, Ecological Services Section at (717)-787-3444.

Species Name: AOC W8 • Thalictrum coriaceum * No SOSC identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McClusky, Greg Stevens, Cadie Vilano	**Survey Date(s):** 6/4/14	**Time Spent:** 30 min.
Site Name: AOC W8 - Habitat A	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Map + Aerial Habitat Detail Maps for AOC W8.		
Site Owner: Pine Ridge Park	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: •PA-IN-0026.0000 to •PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry to Moist, moderately to highly disturbed, Maple + Black cherry dominated, mid-successional, broadleaf terrestrial Woodlands.			
Estimate of Area of Potential Habitat: None			
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Dry to Moist, Medium brown, silt loam			
Relative age/Successional stage: mid-successional	**Aspect:** S-SE		**Elevation (provide units):** 1180' to 1240'
Moisture: ☐ Inundated (hydric) ☐ Saturated (wet-mesic) ☑ Moist (mesic) ☑ Dry (mesic) ☐ Dry (xeric)	**Light:** ☐ Open ☑ Partial ☐ Filtered ☐ Shaded	**Topo Position:** ☐ Crest ☐ Upper Slope ☑ Mid-slope ☐ Lower Slope ☐ Bottom	**Slope:** ☐ Flat ☑ 0-10% ☑ 10-35% ☐ 35+% ☐ Vertical

ACC: W8 Habitat: A (BTW)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Acer saccharum	Lindera benzoin	Alliaria petiolata
Liriodendron tulipifera	Rosa multiflora	Microstegium vimineum
Prunus serotina	Rubus allegheniensis	Ageratina altissima
	Sassafrass albidum	Podophyllum peltatum
		Lonicera japonica

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Quercus rubra	Rubus occidentalis	Toxicodendron radicans
Acer rubrum	Viburnum acerifolium	Parthenocissus quinquefolia
Sassafrass albidum	Crataegus sp.	Viola sororia
Celtis occidentalis	Ligustrum vulgare	Viola striata
	Fagus grandifolia	Smilax rotundifolia
		Polystichum acrostichoides
		Carex digitalis

* List cont. on back...

Invasive Species Present at Site (est. % Cover): Microstegium vimineum, Rosa multiflora, Lonicera japonica, Ligustrum vulgare, Alliaria petiolata.

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 • Thalictrum coriaceum * No SOSC identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Greg Stevens, Codie Vilano	**Survey Date(s):** 6/4/14	**Time Spent:** 45 min.
Site Name: AOC W8 - Habitat B	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project Location Map & Aerial Habitat Detail Maps for AOC W8.		
Site Owner: Pine Ridge Park	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Moist, slightly disturbed, filtered light, mid-successional mesic broadleaf terrestrial woodland.		
Estimate of Area of Potential Habitat: All of Habitat B exhibits poor habitat suitability.		
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Moist, Dark to Medium brown, Sandy Loam		
Relative age/Successional stage: mid-successional	**Aspect:** S-SE + NW	**Elevation (provide units):** 1190' to 1165'

Moisture:	Light:	Topo Position:	Slope:
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☐ Upper Slope	☑ 0-10%
☑ Moist (mesic)	☑ Filtered	☐ Mid-slope	☐ 10-35%
☐ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☐ Dry (xeric)		☑ Bottom	☐ Vertical

AOC: W8 Habitat: E (MSB)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd^2	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd^2	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd^2	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd^2	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd^2 – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Liriodendron tulipifera	Lindera benzoin	Impatiens sp.
Quercus bicolor	Ulmus rubra	Ranunculus repens
Quercus rubra	Liriodendron tulipifera	Ageratina altissima
Acer rubrum		Alliaria petiolata
		Thalictrum thalictroides

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Fraxinus americana	Hamamelis virginiana	Mitchella repens
Fagus grandifolia	Betula lenta	Symplocarpus foetidus
Tsuga canadensis	Ulmus americana	Parathelypteris noveboracensis
	Carpinus caroliniana	Dryopteris intermedia
		Dennestadia punctilobula
		Viola sororia, Viola striata

*List cont on back...

Invasive Species Present at Site (est. % Cover): Alliaria petiolata, Microstegium vimineum

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 • Thalictrum coriaceum *No SOSC identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Cedric Vilano, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 1.5 hrs
Site Name: AOC W8 - Habitat C	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Map + Aerial Habitat Detail Maps for AOC W8		
Site Owner: Pine Ridge Park	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Moist (mesic), slightly disturbed, black cherry, maple, and tulip poplar dominated mid-to late successional mesic broadleaf terrestrial forest.			
Estimate of Area of Potential Habitat: All of habitat C exhibits moderate potential habitat suitability.			
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Moist, Dark brown, silty clay loam			
Relative age/Successional stage: mid to late successional	**Aspect:** NW		**Elevation (provide units):** 1180' to 1420'
Moisture: ☐ Inundated (hydric) ☐ Saturated (wet-mesic) ☑ Moist (mesic) ☐ Dry (mesic) ☐ Dry (xeric)	**Light:** ☐ Open ☐ Partial ☑ Filtered ☑ Shaded	**Topo Position:** ☑ Crest ☑ Upper Slope ☑ Mid-slope ☐ Lower Slope ☐ Bottom	**Slope:** ☐ Flat ☐ 0-10% ☑ 10-35% ☑ 35+% ☐ Vertical

AOC: W8 Habitat: C (MSF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Prunus serotina	Juglans cinerea	Podophyllum peltatum
Acer saccharum	Lindera benzoin	Polystichum acrostichoides
Liriodendron tulipifera	Rosa multiflora	Viola Sororia
Quercus rubra	Quercus velutina	Maianthemum racemosa

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Betula lenta	Ligustrum vulgare	Actaea racemosa
Fagus grandifolia	Sassafras albidum	Thalictrum dioica
Robinia pseudoacacia	Betula lenta	Osmorhiza claytonii
Quercus montana		Impatiens sp.
Juglans cinerea		Ageratina altissima
Quercus velutina		Toxicodendron radicans

List cont. on back ::

Invasive Species Present at Site (est. % Cover):

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 · Thalictrum coriaceum * No SOSC's identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vileno, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 1.5 hrs
Site Name: AOC W8 - Habitat D	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project location Map + Aerial Habitat Detail Maps of AOC W8.		
Site Owner: Pine Ridge Park, Private land	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: · PA-IN-0026.0000 to · PA-IN-0032.0000	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Moist (mesic), mid- to late successional, Chestnut and Red Oak, and Sweet Birch broadleaf terrestrial Forest.

Estimate of Area of Potential Habitat: None. Too shaded.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry to Moist (mesic), Medium brown, silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid- to late Successional	SE	1400' to 1660'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☑ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☐ 0-10%
☑ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☐ Dry (mesic)	☑ Shaded	☐ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W8 Habitat: D (MSF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy: 90% cover	Sub-Canopy/Shrub: 50% cover	Herbaceous: 10% cover
Quercus montana	Hamamelis virginiana	* Smilax rotundifolia
Betula lenta	Lindera benzoin	Podophyllum peltatum
Quercus rubra	Sassafrass albidum	Betula lenta - seedlings
	Betula lenta	Quercus montana - seedlings
		Dennestadia punctilobula

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Liriodendron tulipifera	*Smilax rotundifolia	Eurybia divaricata
Prunus serotina	Liriodendron tulipifera	Sassafras albidum - seedlings
Juglans cinerea	Fagus grandifolia	Carex digitalis
Quercus velusina	Crataegus sp.	Dryopteris intermedia
Acer saccharum	Cornus florida	
Fagus grandifolia		

Invasive Species Present at Site (est. % Cover): –

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 • Thalictrum coriaceum * No SOSC identified within AOC W8	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Codie Villeno, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 3.5/4 hrs
Site Name: AOC W8 - Habitat E	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project Location Map + Aerial Habitat Detail Maps of AOC W8.		
Site Owner: Pine Ridge Park	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry, heavily disturbed, recently altered/modified, hayed/dirt + recently mowed, joined gas + OHE transmission line ROW. (Terrestrial Herbaceous opening)

*95% of width of ROW was recently cleared + seeded w/ Grass/Herb mix. [HAY]

Estimate of Area of Potential Habitat: None. Disturbed, periodically maintained (Cleared).

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry, Light brown, rocky silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional/maintained	Variable along ROW	Variable along ROW

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☑ Open	☑ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☐ Filtered	☑ Mid-slope	☑ 10-35%
☐ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☑ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W8 Habitat: E (Row) (THO)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy: Ø	Sub-Canopy/Shrub: Ø	Herbaceous:
		Bare Row
		Phleum pratense
		Dactylis glomerata
		Microstegium vimineum
		Potentilla simplex

Other Species Present:

Canopy: Ø	Sub-Canopy/Shrub: Ø	Herbaceous:
		Poacea spp. (Planted Row seed mix) — 1st season
		Taraxacum officinale
		Trifolium repens, Trifolium pratense
		Solidago canadensis, Solidago rugosa
		Dennestada punctilobula
		Osmunda cinnamomea
		Onoclea sensibilis

*List seasonal on back

Invasive Species Present at Site (est. % Cover):

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 • Thalictrum coriaceum *No SOSC identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Codie Vilano, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 1 hr
Site Name: AOC: W8 - Habitat F	~~**GPS Coordinates of Occurrence (include datum):**~~	

Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps for AOC W8.

Site Owner: Private Landowner	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~

General SOSC Habitat Description: Moist to Dry, heavily disturbed (recent logging), Oak + Poplar dominated, early successional, broadleaf terrestrial woodland.
→ Large canopy openings exist within woodland Habitat F where herbaceous growth exceeds canopy coverage.

Estimate of Area of Potential Habitat: None. Many many invasives + destruction of habitat.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):
Moist to Dry, Medium brown, silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	E-NE	1700' to 1550'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☑ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☐ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☐ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W8 Habitat: F (BTW)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Quercus montana	Acer rubrum	Podophyllum peltatum
Liriodendron tulipifera	Lindera benzoin	Smilax rotundifolia
Fraxinus americana	Acer saccharum	Microstegium vimineum*
Quercus rubra	Lonicera tatarica	Fraxinus americana-seedlings
		Phytolacca americana
		Liriodendron tulipifera

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Acer saccharum	Hamamelis virginiana	Pilea pumila, Actea racemosa,
Betula lenta	Fagus grandifolia	Viola Sororia, Potentilla simplex,
Acer rubrum	Rubus allegheniensis	Dennestadia punctilobula, Sedum ternatum,
Fagus grandifolia	Fraxinus americana, Crataegus sp.,	Dichanthelium clandestinum,
Prunus serotina	Cornus racemosa, Cornus florida,	Sassafrass albidum, Toxicodendron radicans,
	Sambucus nigra, Hamamelis virginiana,	Parthenocissus quinquefolia,
	Acer pensylvanicum	Maianthemum racemosum

Invasive Species Present at Site (est. % Cover): Lonicera tatarica, Microstegium vimineum,

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 • Thalictrum coriaceum * No SOSC identified within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Cadie Vilena, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 1 hrs
Site Name: AOC W8 - Habitat G	~~**GPS Coordinates of Occurrence (include datum):**~~	

Directions to Site: See attached USGS Project location Maps + Aerial Habitat Details Map for AOC W8.

Site Owner: Private Landowner	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~

General SOSC Habitat Description: Mesic to Wet, Steeply Sloped, Beech + Birch dominated, Mature Stream valley Riverine Broadleaf Forest.

Estimate of Area of Potential Habitat: All of the rocky sloped Habitat G is moderate potential suitable habitat. May be a bit too shaded though.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Moist to Wet, Dark brown + rocky, Sandy Loam

Relative age/Successional stage: Mature	**Aspect:** E + W on either side of Str.	**Elevation (provide units):** 1535' to 1545'

Moisture: ☐ Inundated (hydric) ☑ Saturated (wet-mesic) ☐ Moist (mesic) ☐ Dry (mesic) ☐ Dry (xeric)	**Light:** ☐ Open ☐ Partial ☐ Filtered ☑ Shaded	**Topo Position:** ☐ Crest ☐ Upper Slope ☐ Mid-slope ☐ Lower Slope ☐ Bottom	**Slope:** ☑ Flat (stream terrace) ☐ 0-10% ☐ 10-35% ☑ 35+% ☑ Vertical

AOC: W8 Habitat: G (RBTF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Fagus grandifolia	Lindera benzoin	Viola Sororia
Betula lenta	Fagus grandifolia	Ranunculus sp.
		Polystichum acrostichoides

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Liriodendron tulipifera	Ulmus rubra	Dennstaedtia punctilobula
Ulmus rubra	Hamamelis virginiana	Parathelypteris noveboracensis
Ulmus americana	Acer rubrum	Fagus grandifolia - seedlings
Quercus montana		Betula lenta - seedlings
Acer rubrum		Huperzia lucidula

Invasive Species Present at Site (est. % Cover): None

***Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.*

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Species Name: AOC W8 • Thalictrum coriaceum * No SOSC identifed within AOC W8.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	~~☐ New Occurrence~~ ~~☐ Update~~
Surveyor(s): Korey McCluskey, Codie Vileno, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 1 hr.
Site Name: AOC W8 - Habitat H	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Map + Aerial Habitat Details Map of AOC W8.		
Site Owner: Private landowner	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry, moderately disturbed, maple dominated, early successional broadleaf terrestrial woodland/Forest.

Estimate of Area of Potential Habitat: None.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):
Dry, Light to Medium brown, Shaley silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	W	1550' to 1775'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☐ Upper Slope	☐ 0-10%
☐ Moist (mesic)	☑ Filtered	☑ Mid-slope	☐ 10-35%
☑ Dry (mesic)	☐ Shaded	☑ Lower Slope	☑ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W8 Habitat: H (BTW)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy: (moderate)	Sub-Canopy/Shrub: (Dense)	Herbaceous: (Sparse)
Acer saccharum Acer rubrum	Acer saccharum Lindera benzoin Hamamelis virginiana	Polystichum acrostichoides Smilax rotundifolia Ageratina altissima

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Fagus grandifolia Liriodendron tulipifera Betula lenta Quercus rubra Quercus montana	Ulmus americana Acer rubrum Fagus grandifolia Sassafras albidum	Microstegium vimineum Sedum ternatum Persicaria virginiana Geum canadense Carex spp Toxicodendron radicans

Invasive Species Present at Site (est. % Cover): Microstegium vimineum,

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

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Species Name: AOC W8 - Thalictrum coriaceum * No SOSC identified within AOC W8	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilano, Greg Stevens	**Survey Date(s):** 6/4/14	**Time Spent:** 2.5 hrs
Site Name: AOC W8 - Habitat I	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project location Map + Aerial Habitat Details Map for AOC W8.		
Site Owner: Private Landowner	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-IN-0026.0000 to • PA-IN-0032.0000	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Dry, moderately disturbed, Tulip poplar + Birch dominated, mid-successional broadleaf terrestrial forest.

Estimate of Area of Potential Habitat: None.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):
Dry, Light to Medium brown, Shaley silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid-successional	E	1735' to 2005'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☑ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☐ 0-10%
☐ Moist (mesic)	☑ Filtered	☐ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☐ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W8 Habitat: I (BTF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Liriodendron tulipifera	Hamamelis virginiana	Liriodendron tulipifera - seedlings
Betula lenta	Lindera benzoin	Lycopodium digitatum
Prunus serotina	Betula lenta	Hamamelis virginiana - seedlings
		Viola sororia
		Dennstaedtia punctilobula

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Fagus grandifolia	Fagus grandifolia	Smilax rotundifolia
Quercus montana	Liriodendron tulipifera	Betula lenta - seedlings
Quercus rubra	Sassafras albidum	Dryopteris intermedia
Acer saccharum	Vaccinium angustifolium	Parathelypteris noveboracensis
Sassafras albidum	Kalmia latifolia	Microstegium vimineum
Carya glabra		Osmundastrum cinnamomeum

Invasive Species Present at Site (est. % Cover): Microstegium vimineum

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

(BTW)

AOC: W15 + ALT W5 Habitat: A

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum * No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilano, Greg Stevens	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 1.5 hr
Site Name: AOC W15 + AOC ALT W5 - Habitat A	**GPS Coordinates of Occurrence (include datum):**	

Directions to Site: See attached USGS Project Location Map + Aerial Habitat Map for AOC W15 + AOC ALT W5.

Site Owner: State Gamelands + Private landowners	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO

General SOSC Habitat Description: Dry to Moist. Heavily disturbed, partially Shaded to open, early successional, recently logged, Tulip tree - Maple - Beech dominated Broadleaf terrestrial woodland.

Estimate of Area of Potential Habitat: None. Too heavily disturbed.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry to Moist (along tributaries), Light brown to tarnish orange, rocky silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
Early Successional	Generally West	895' to 1245'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☑ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☐ Upper Slope	☐ 0-10%
☐ Moist (mesic)	☐ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☑ Lower Slope	☑ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15 + ALT W5 Habitat: A (BTW)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Liriodendron tulipifera	Fagus grandifolia	Polystichum acrostichoides
Acer saccharum	Liriodendron tulipifera	Claytonia virginiana
Fagus grandifolia	Ligustrum vulgare	Viola sororia
Acer pennsylvanica		Antennaria parlinii

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Carya ovata	Prunus serotina	Maianthemum canadense
Pinus virginiana	Carpinus caroliniana	Carex sp.
Ulmus americana	Ostrya virginiana	Podophyllum peltatum
Quercus rubra	Rosa multiflora	Mitchella repens
Acer saccharinum	Acer saccharum	Ranunculus hispidus
Prunus serotina	Acer pennsylvanica	Viola striata
Fraxinus americana		Viola pennsylvanica
Tsuga canadensis		

*List cont. on back...

Invasive Species Present at Site (est. % Cover):

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15 + ALT W5 Habitat: A (BTW)

Herbs Cont.

Sisyrinchium montanum

Thalictrum thalictroides

(BTF)

AOC: W15 + ALT W5 Habitat: B

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum *No SOSC identified in AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	~~☐ New Occurrence~~ ~~☐ Update~~
Surveyor(s): Korey McCluskey, Cadre Vilena, Greg Stevens	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 1.5 hrs
Site Name: AOC W15 + AOC ALT W5 - Habitat B	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project Location Map + Aerial Habitat Maps for AOC W15 + AOC ALT W5.		
Site Owner: State Gamelands	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry, Slightly disturbed, Shaded to filtered Light, Mid- to Late Successional. Chestnut + Chinkapin Oak + Striped Maple dominated Dry Oak - mixed hardwood forest. Rocky, Bouldery, Talus sloped; Limestone boulders.

Estimate of Area of Potential Habitat: None for Thalictrum coriaceum. Poor suitability for the Arabis patens.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry, Light Brown to grey, Rocky/Bouldery (Limestone), Silt Loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid-successional	West	1245' to 1645'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☑ 0-10% *Steep to Steeper
☐ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☑ Shaded	☐ Lower Slope	☑ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15 + Habitat: B (BTF)
ALT W5

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	____	EST #	____	____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
*Quercus montana	*Acer pensylvanicum	*Alliaria petiolata
*Quercus muehlenbergii	*Betula lenta	*Smilax rotundifolia
Quercus rubra	Hamamelis virginiana	Polystichum acrostichoides
Betula lenta *Acer pensylvanicum	Lindera benzoin	Viola sp. (Sororia, Striata, palmata, pubescens)

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Robinia pseudoacacia	Rubus allegheniensis	Mitchella repens
Fagus grandifolia	Rubus occidentalis	Osmorhiza claytonii
Pinus virginiana	Acer rubrum	Poacea sp.
Pinus strobus	Acer saccharum	Polygonatum virginiana
Liriodendron tulipifera	Fagus grandifolia	Microstegium vimineum
	Quercus spp. ←	
	* List cont. on back...	* List cont. on back...

Invasive Species Present at Site (est. % Cover):

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: WIS + Habitat: B (BTF)
ALT W5

Shrubs Cont.

Ligustrum vulgare
Ailanthus altissima
Rosa multiflora
Crataegus sp.
Platanus occidentalis
Lonicera morrowii

Herbs Cont.

Dennistadtia punctilobula
Parthenocisus quinquefolia
Vitis sp.
Podophyllum peltatum
Thalictrum thalicroides
Geranium maculatum
Actea racemosa
Galium aparine
Seed - Acer pensylvanicum
Seed - Pinus strobus
Seed - Ulmus rubra
Potentilla simplex
Smilacina racemosa

(CBTF)

AOC: W15 + ALT W5 Habitat: C

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BOTANICAL FIELD SURVEY FORM – PA PLANT SPECIES OF SPECIAL CONCERN

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum *NO SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	~~☐ New Occurrence~~ ~~☐ Update~~
Surveyor(s): Korey McCluskey, Codie Vilena, Greg Stevens	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 45 min
Site Name: AOC W15 + AOC ALT W5 - Habitat C	~~**GPS Coordinates of Occurrence (include datum):**~~	

Directions to Site: See attached USGS Project Location Maps + Aerial Habitat Maps for AOC W15 + AOC ALT W5.

Site Owner: State Gamelands	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~
Owner Contact Information: • PA-BL-0122.0001 - TAR to • PA-BL-0137.0001	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~

General SOSC Habitat Description: Dry, Slightly disturbed, Filtered to Partial light, White Pine, Mountain Laurel, + Oak/Beech dominated Mixed Forest.

On top slopes of Locke Mountain.

Estimate of Area of Potential Habitat: None

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Rocky, Bouldery (Limestone), Dry, Light brown to grey

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	W-NW	1645' to 1930'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☑ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☑ Upper Slope	☐ 0-10%
☐ Moist (mesic)	☑ Filtered	☐ Mid-slope	☐ 10-35%
☑ Dry (mesic)	☐ Shaded	☐ Lower Slope	☑ 35+%
☐ Dry (xeric)		☐ Bottom	☑ Vertical

AOC: W15 + ALT W5 Habitat: C (CBTF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous: (Low % cover)
Pinus strobus	Pinus strobus	Polystichum acrostichoides
Pinus virginiana	Pinus virginiana	Betula lenta - seed.
Quercus montana	Kalmia latifolia	Kalmia latifolia - seed.
Quercus muehlenbergii		Smilax rotundifolia

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
—	—	Quercus montana - seed.
		Quercus muehlenbergii - seed.
		Quercus rubra - seed.
		Microstegium vimineum

Invasive Species Present at Site (est. % Cover): Microstegium vimineum <5%

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

(BTF)

AOC: W15 + ALT W5 Habitat: D

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum * No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilero, Greg Stevens	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 1.5 hrs
Site Name: AOC W15 + AOC ALT W5 - Habitat D	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project Maps, + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.		
Site Owner: State Gamelands	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Dry, moderately disturbed, Partial to Filtered light, early successional northern hardwood broadleaf terrestrial forest.
* Crest of Mountain downslope to the East/North east.

Estimate of Area of Potential Habitat: No habitat for the Thalictrum coriaceum. Poor potential habitat suitability for the Arabis patens within the lower elevations of Hab. D.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):
Rocky/Bouldery (Limestone)

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	E + E-NE	1930' down to

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☑ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☑ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☐ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15 + ALT W5 Habitat: D (BTF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
*Betula lenta	*Acer pensylvanicum	*Alliaria petiolata
*Quercus rubra	Betula lenta	*Smilax rotundifolia
*Acer pensylvanicum	*Rubus alleghenensis	Allium vineale
Fagus grandifolia	Aralia spinosa	Poaceae sp.
		Euphorbia divaricata

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Prunus serotina	Acer saccharum	Toxicodendron radicans
Robinia pseudoacacia	Acer rubrum	Parthenocisus quinquefolia
Quercus alba	Lonicera tatarica	Podophyllum peltatum
Pinus Strobus	Rubus occidentalis	Dryopteris intermedia
Quercus montana	Rosa multiflora	Galium sp.
Quercus muehlenbergii		Geum canadense
		Carex sp.

*List cont. on back...

*List cont. on back...

Invasive Species Present at Site (est. % Cover): Rosa multiflora, Lonicera tatarica, Alliaria petiolata, Microstegium vimineum,

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15 + Habitat: D (BTF)
ALT W5

Herbs Cont.

Dicentra canadensis
Polystichum acrostichoides
Dennistadia punctilobula

Shrubs Cont.

Kalmia latifolia

AOC: W15 + ALT W5 Habitat: E (BTF)

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum * No SOSC identified within AOC	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vileno, Greg Stevens	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 2 hrs
Site Name: AOC W15+AOC ALT W5-Habitat E	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project Maps + Aerial Habitat Detail Maps for AOC W15 + AOC ALT W5.		
Site Owner: State Gamelands + Private Landowner	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Dry to Moist, moderately disturbed, Partial to Filtered light, mid-late successional Oak-mixed hardwood forest. Rocky/Shaley Hillslope w/ Stream

Estimate of Area of Potential Habitat: Poor suitability for Thalictrum coriaceum. Moderate potential habitat suitability for the Arabis patens.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Rocky/Shaley Hillslope w/Stream *Light to Medium brown, Shaley, Silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid-late Successional	E-NE	

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☑ Upper Slope	☑ 0-10%
☑ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15+ ALT W5 Habitat: E (BTF)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☑ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☑ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☑ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
*Quercus rubra	*Kalmia latifolia	*Persicaria virginiana
Quercus montana	* Acer pensylvanicum	*Alliaria petiolata
Betula lenta	* Hamamelis virginiana	Galium aparine
*Acer rubrum		*Sedum ternatum

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Pinus strobus	Pinus strobus	Boechera laevigata - NOT SOSC (UNH confirmed)
Pinus virginiana	Quercus alba	Polystichum acrostichoides
Quercus alba	Quercus montana	Aquilegia vulgaris
Quercus muehlenbergii	Betula lenta	Pilea pumila
Acer pensylvanicum	Ostrya virginiana	Phegopteris intermedia
		Dennstaedtia punctilobula

*List cont. on back...

*List cont. on back...

Invasive Species Present at Site (est. % Cover): Alliaria petiolata

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOCIWIS +
ALT W5

Habitat: E (BTF)

Herbs Cont.

Solidago rugosa
Parthenocissus quinquefolia
Vitis sp.
Cardamine concatenata

AOC: W15 + ALT W5 Habitat: F (BTW)

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Species Name: AOC W15 + AOC ALT W5 • Arabis patens • Thalictrum coriaceum *No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilcno, Greg Stevens.	**Survey Date(s):** 5/8/14 + 5/12/14	**Time Spent:** 30 min
Site Name: AOC W15 + AOC ALT W5 - Habitat F	**GPS Coordinates of Occurrence (include datum):**	

Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.

Site Owner: Private Landowner	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO

General SOSC Habitat Description: Moist to wet, rocky, moderately to highly disturbed, Partial light, Maple + Oak dominated, early Successional broadleaf terrestrial floodplain Woodland.
- Many invasives present

Estimate of Area of Potential Habitat: Habitat F is poorly suitable for Thalictrum coriaceum and Arabis patens.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):
Rocky / Bouldery, Light to Medium Brown, rocky silt loam, wet to moist.

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	SE	1110' to 1050'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☑ Saturated (wet-mesic)	☑ Partial	☐ Upper Slope	☑ 0-10%
☑ Moist (mesic)	☐ Filtered	☐ Mid-slope	☐ 10-35%
☐ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15+ Habitat: F (BTW)
ALT W5

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	____	EST #	____	____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
*Acer rubrum	*Acer negundo	*Alliaria petiolata*
*Acer saccharum	*Acer saccharum	*Podophyllum peltatum
*Acer negundo	*Acer rubrum	*Allium vineale
*Quercus rubra	Rubus allegheniensis	*Viola sororia

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Prunus serotina	Carya ovata	Thalictrum dioica - NOT SOSC (UNH confirmed)
Ailanthus altissima	Ulmus americana	Ranunculus repens
Ulmus rubra	Ulmus rubra	Cardamine diphylla
Ulmus americana	Rubus occidentalis	Polystichum acrostichoides
Pinus virginiana	Rosa multiflora	Achillea millefolium
Liriodendron tulipifera	Ligustrum vulgare	

*List cont. on back

Invasive Species Present at Site (est. % Cover): Alliaria petiolata - >30%, Rosa multiflora - <10%, Ailanthus altissima - 20%, Ligustrum vulgare - 10%.

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15+ Habitat: F (BTW)
ALT W5

Herbs cont.

Impatiens pallida
Impatiens capensis
Lonicera japonica
Tussilago farfara
Pilea pumila
Poa trivialis
Microstegium vimineum
Rumex obtusifolius
Rumex crispis
Acer negundo -seed
Acer rubrum -seed

Shrubs cont.

Lonicera morrowii
Lonicera tatarica
Carpinus caroliniana
Juglans nigra

AOC: W15+ ALT W5 Habitat: G (RBTW)

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Species Name: AOC W15 + ALT W5 • Arabis patens • Thalictrum coriaceum * No SOSC identified within AOC	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilena, Greg Stevens	**Survey Date(s):** 5/12/14	**Time Spent:** 1.5 hrs
Site Name: AOC W15 + AOC ALT W5 - Hab. G	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps for AOC W15 + AOC ALT W5.		
Site Owner: Private Landowners + State Game lands	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Moist (mesic), early to mid-successional, Moderately disturbed, Partial sunlight to Filtered, Riverine Broadleaf Terrestrial Woodland; Dominated by Sugar Maple, American Beech, + Red maple. Along Piney Creek.		
Estimate of Area of Potential Habitat: Habitat G provides good habitat suitability for the Thalictrum coriaceum, but no suitability for the Arabis patens.		
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Moist, Dark brown, silt loam (Shaley on slopes)		
Relative age/Successional stage: early to mid-successional	**Aspect:** E + W on either side of Stream	**Elevation (provide units):** 1080' to 1030' to 1080'

Moisture:	Light:	Topo Position:	Slope:
☐ Inundated (hydric)	☐ Open	☐ Crest	☑ Flat
☐ Saturated (wet-mesic)	☑ Partial	☐ Upper Slope	☑ 0-10%
☑ Moist (mesic)	☑ Filtered	☐ Mid-slope	☐ 10-35%
☐ Dry (mesic)	☐ Shaded	☐ Lower Slope	☐ 35+%
☐ Dry (xeric)		☑ Bottom	☐ Vertical

AOC: W15 + ALT W5 Habitat: G (RBTW)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
* Acer saccharum	*Acer saccharum	*Alliaria petiolata
* Acer rubrum	* Acer rubrum	* Impatiens spp.
*Fagus grandifolia	Cornus racemosa	* Thalictrum dioica (CMNH confirmed)
Prunus serotina	* Lonicera morrowii	* Ranunculus hispidus

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Fraxinus americana	Fagus grandifolia	Solidago rugosa
Robinia pseudoacacia	Fraxinus americana	Solidago canadensis
Salix nigra	Acer negundo	Viola striata
Ulmus rubra	Ligustrum vulgare	*Viola sororia
Juglans nigra	Rubus occidentalis	Viola pennsylvanica
Acer negundo	Rosa multiflora	Galium asprellum
	* List cont. on back	* List cont. on back

Invasive Species Present at Site (est. % Cover): Rosa multiflora, Lonicera morrowii - 10%, Ligustrum vulgare - 5%, Lonicera tatarica - 5%, Alliaria petiolata - 15%,

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15+ Habitat: G (RBTW)
ALT W5

SHRUBS Cont.

Cornus florida
Lonicera tatarica
Sambucus nigra

Herbs Cont.

Glechoma hederacea
Sedum sp.
Rudbeckia laciniata
Allium vineale
Phalaris arundinacea
Persicaria virginiana
Geum canadense
Symplocarpus foetidus
Symphyotrichum pilosus
Eurybia divaricata
Taraxacum officinale
* Parthenocisus quinquefolia - V
* Toxicodendron radicans - V
Hemerocallis fulva

AOC: W15+ ALT W5 Habitat: H (THO)

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BOTANICAL FIELD SURVEY FORM – PA PLANT SPECIES OF SPECIAL CONCERN

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Species Name: AOC W15+ AOC ALT W5 • Thalictrum coriaceum • Arabis patens * No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Codie Urleno, Greg Stevens	**Survey Date(s):** 5/12/14	**Time Spent:** 1.5 hrs
Site Name: AOC W15+ AOC ALT W5 - Habitat H	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.		
Site Owner: Private landowner + State Game lands	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry, frequently maintained, highly disturbed, Full Sunlight, early successional terrestrial Herbaceous Opening along existing Over-head Electric Transmission + Natural Gas pipeline ROWS.		
Estimate of Area of Potential Habitat: NONE		
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Dry, Shale + Limestone, Rocky, Light brown to Tan, Silt loam		
Relative age/Successional stage: early (maintained)	**Aspect:** Variable (E + W)	**Elevation (provide units):** Variable

Moisture:	Light:	Topo Position:	Slope:
☐ Inundated (hydric)	☑ Open	☐ Crest	☑ Flat
☐ Saturated (wet-mesic)	☐ Partial	☐ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☐ Filtered	☐ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☐ Shaded	☐ Lower Slope	☑ 35+%
☐ Dry (xeric)		☐ Bottom	~~☐ Vertical~~

ALL

AOC: WIS + Habitat: H (THO)
ALT WS

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy: ∅	Sub-Canopy/Shrub:	Herbaceous:
	* Rhus typhina * Rubus allegheniensis * Aralia spinosa	* Poaceae spp. * Elymus canadensis * Potentilla simplex * Solidago canadensis

Other Species Present:

Canopy: ∅	Sub-Canopy/Shrub:	Herbaceous:
	Lonicera tatarica Kalmia latifolia	Plantago major Plantago lanceolata Achillea millefolium Daucus carota Andropogon virginicana Phytolacca americana

*List Cont. on back..

Invasive Species Present at Site (est. % Cover): Lonicera tatarica – 5%,

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15+ Habitat: H (THO)
ALT W5

Herbs Cont.

Lotus corniculatas
Solidago rugosa
Dichanthelium clandestinum
Dennestadia punctilobula
Prunella vulgaris
Oxalis corniculata
Erigeron philadelphicus
Mentha arvense
*Common mullein

AOC: W15 + ALT W5 Habitat: I (BTF)

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Species Name: AOC W15 + AOC ALT W5 • Thalictrum coriaceum • Arabis patens * NO SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Codie Vileno, Greg Stevens	**Survey Date(s):** 5/12/14	**Time Spent:** 2 hrs.
Site Name: AOC W15 + AOC ALT W5 – Habitat I	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.		
Site Owner: Private Landowner + Game lands	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-BL-0122.0001-TAR to • PA-BL-0137.0001.	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Moist (mesic), Filtered to fully Shaded, Slightly disturbed, Oak + mixed hardwood broadleaf terrestrial Forest.

Estimate of Area of Potential Habitat: No potential habitat suitability for T. coriaceum. Poor habitat suitability for A. patens

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Moist, Dark brown, rocky silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid to late successional	SW + W	1173' to 1430'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☑ 0-10%
☑ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☐ Dry (mesic)	☑ Shaded	☑ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15+ Habitat: I (BTF)
ALT W5

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
* Quercus rubra	* Hamamelis virginiana	* Eurybia divaricata
* Acer saccharum	* Betula lenta	* Osmorhiza longistylis
* Quercus montana	* Rubus alleghenensis	Galium asprellum
* Quercus muehlenbergii	Acer rubrum	Viola sororia
	Acer saccharum	* Aralia nudicaulis

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Acer rubrum	Liriodendron tulipifera	Podophyllum peltatum
Betula lenta	* Viburnum acerifolium	Alliaria petiolata
Prunus serotina	Tsuga canadensis	* Parthenocissus quinquefolia
Quercus alba	Quercus alba	Vitis sp.
Fraxinus americana	Quercus rubra	Geum canadense
Carya ovata	Quercus montana	Viola pensylvanica
Quercus palustris	Quercus muehlenbergii	Maianthemum canadense

* List cont. on back...

Invasive Species Present at Site (est. % Cover): Alliaria petiolata - <5%, Rosa multiflora - 5%, Lonicera tatarica - 5%, Lonicera morrowii - 5%.

***Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.*

AOC: W15 + Habitat: I (BTF)
ALT W5

Shrubs cont.

Rubus occidentalis
Rosa multiflora
Acer pensylvanica
Lonicera morrowii
Lonicera ~~tatarica~~
Pinus strobus

Herbs Cont.

Maianthemum trifolium
Actaea racemosa (syn. Cimicifuga racemosa)
Boechera [Arabis] laevigata (CMNH - confirmed)

AOC: W15+ ALT W5 Habitat: J (BTW)

Version 4.2012

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Species Name: AOC W15+ AOC ALT W5 • Thalictrum coriaceum • Arabis patens * No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vileno, Greg Stevens	**Survey Date(s):** 5/12/14	**Time Spent:** 1.5 hrs
Site Name: AOC W15 + AOC ALT W5 - Habitat J	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps of AOC W15+ AOC ALT W5.		
Site Owner: Private Landowner	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-BL-0122.0001 - TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Dry, very disturbed, Partial to Fully open Canopy, early successional broadleaf terrestrial woodland dominated by black cherry, Sugar Maple, Tulip Poplar, + Shagbark Hickory.

Estimate of Area of Potential Habitat: None. Very disturbed + many invasives.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry, Medium to Light Brown, Silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
early successional	W-SW	1340' to 1195'

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☑ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☑ Partial	☐ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☐ Filtered	☑ Mid-slope	☐ 10-35%
☐ Dry (mesic)	☐ Shaded	☑ Lower Slope	☐ 35+%
☑ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: W15+ Habitat: J (BTW)
ALT W5

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
* Prunus serotina	*Acer saccharum	*Alliaria petiolata
* Acer saccharum	*Liriodendron tulipifera	*Glechoma hederacea
*Liriodendron tulipifera	*Aralia spinosa	*Allium vineale
* Carya ovata	* Rubus allegheniensis	*Microstegium vimineum
		*Dennstaedtia punctilobula

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Juglans nigra	Rosa multiflora	Verbesina alternifolia
Robinia pseudoacacia	Lonicera tatarica *	Viola sororia, Viola striata
Gleditsia triacanthos	Lonicera morrowii (bottom of slope)	Ageratina altissima
Juglans cinerea	Rubus occidentalis	Sedum ternatum
Ailanthus altissima	Pinus strobus Betula lenta	Lonicera japonica
Acer platanoides	Ulmus rubra Fagus grand.	Celastrus orbiculatus

*List cont. on back...

Invasive Species Present at Site (est. % Cover): Ailanthus altissima, Acer platanoides, Rosa multiflora, Alliaria petiolata, Microstegium vimineum, Lonicera japonica, Celastrus orbiculatus.

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15+ Habitat: J (BTW)
AOC ALT W5

SHRUBS Cont.

Ailanthus altissima
Acer rubrum
Quercus alba
Quercus muehlenbergii
Fagus grandifolia
Cornus florida
Acer negundo
Sambucus nigra
Carya ovata
Carya cordiformis

Herbs Cont.

Gallium aparine
Persicaria virginiana
Solidago rugosa
Solidago canadensis

AOC: W15+ ALT W5 Habitat: K (BTF)

Version 4.2012

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Species Name: AOC W15 + AOC ALT W5 • Thalictrum coriaceum • Arabis patens * NO SOSC identified in this AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ New Occurrence ☐ Update
Surveyor(s): Korey McCluskey, Codie Vilcno, Jen Bittner	**Survey Date(s):** 5/6/15	**Time Spent:** 3 hrs.
Site Name: AOC W15 + AOC ALT W5 - Habitat K	**GPS Coordinates of Occurrence (include datum):**	
Directions to Site: See attached USGS Project Location Map. + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.		
Site Owner: State Gamelands	**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO	
Owner Contact Information: • PA-BL-0122.0001 - TAR to • PA-BL-0137.0001	**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO **Landowner consent for voucher collection?** ☐ YES ☐ NO	

General SOSC Habitat Description: Dry, slightly disturbed, filtered to Shaded exposure, mid to late Successional Dry Oak - mixed hard wood broadleaf terrestrial forest.

Estimate of Area of Potential Habitat: None for the T. coriaceum. Poor habitat suitability for the A. patens.

Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.):

Dry, Light brown to gray, Rocky/Bouldery, Silt loam

Relative age/Successional stage:	**Aspect:**	**Elevation (provide units):**
mid-late Successional	West	Variable

Moisture:	**Light:**	**Topo Position:**	**Slope:**
☐ Inundated (hydric)	☐ Open	☐ Crest	☐ Flat
☐ Saturated (wet-mesic)	☐ Partial	☑ Upper Slope	☑ 0-10%
☐ Moist (mesic)	☑ Filtered	☑ Mid-slope	☑ 10-35%
☑ Dry (mesic)	☑ Shaded	☐ Lower Slope	☐ 35+%
☐ Dry (xeric)		☐ Bottom	☐ Vertical

AOC: WIS + Habitat: K (BTF)
ALT WS

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence:
☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
*Quercus montana	*Hamamelis virginiana	*Alliaria petiolata
*Quercus muehlenbergii	*Betula lenta	*Parthenocissus quinquefolia
*Betula lenta	*Lindera benzoin	Galium asprellum
*Acer pensylvanica	*Acer pensylvanica	Podophyllum peltatum
*Liriodendron tulipifera		

Other Species Present:

Canopy:	Sub-Canopy/Shrub:	Herbaceous:
Acer saccharum	Quercus montana	Polygonatum biflorum
Acer negundo	Quercus muehlenbergii	Persicaria virginiana
Acer rubrum	Ligustrum vulgare	Mitchella repens
Quercus alba	Ailanthus altissima	Galium obtusum
Fraxinus americana	Rosa multiflora	Smilax rotundifolia
Carya ovata	Crataegus sp.	Uvularia perfoliata

* List cont. on back:

Invasive Species Present at Site (est. % Cover): Ailanthus altissima <5%, Rosa multiflora <5%, Ligustrum vulgare <5%, Lonicera morrowii <5%, Alliaria petiolata >15%.

***Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.*

AOC: W15 + Habitat: K
ALT W5 (BTF)

Shrubs Cont.

Platanus occidentalis
Lonicera morrowii

Herbs Cont.

Viola pubescens
Microstegium vimineum
Polystichum acrostichoides
Viola palmata
Viola sororia
Viola rostratata
Dennestadia punctilobula
Anemonella thalictroides
Osmorhiza claytonii
Geranium maculatum
Cimicifuga racemosa
Taraxacum officinale
Trifolium repens
Onoclea sensibilis
Galium aparine
Geum canadense
Rubus allegheniensis
Rubus flaggelaris

* Along Access Rd. ↓

AOC: W15+ ALT W5 Habitat: L (THO)

Version 4.2012

BOTANICAL FIELD SURVEY FORM – PA PLANT SPECIES OF SPECIAL CONCERN

DCNR requests a Botanical Field Survey Form be submitted for each occurrence/population of a PA Plant Species of Special Concern (SOSC) found during a survey. Please attempt to complete as many fields as possible. Please direct any questions to DCNR Bureau of Forestry, Ecological Services Section at (717)-787-3444.

Species Name: AOC W15+AOC ALT W5 • Thalictrum coriaceum • Arabis patens * No SOSC identified within AOC.	**PNDI # (if applicable):** 22275 **EO ID # (if applicable):** -	☐ ~~New Occurrence~~ ☐ ~~Update~~
Surveyor(s): Korey McCluskey, Codie Vileno, Jen Bittner	**Survey Date(s):** 5-6-15	**Time Spent:** 35 min
Site Name: AOC W15 + AOC ALT W5- Habitat L	~~**GPS Coordinates of Occurrence (include datum):**~~	
Directions to Site: See attached USGS Project location Maps + Aerial Habitat Detail Maps of AOC W15 + AOC ALT W5.		
Site Owner: State Gamelands	~~**Landowner aware of Species of Special Concern?** ☐ YES ☐ NO~~	
Owner Contact Information: • PA-BL-0122.0001- TAR to • PA-BL-0137.0001	~~**Landowner consent for data submission to PA Heritage Program?** ☐ YES ☐ NO~~ ~~**Landowner consent for voucher collection?** ☐ YES ☐ NO~~	

General SOSC Habitat Description: Dry, frequently maintained, disturbed, Fully open, Natural Gas pipeline ROW; Terrestrial Herbaceous opening.			
Estimate of Area of Potential Habitat: None.			
Soil conditions (Substrate and soil type, soil moisture, underlying geology, etc.): Dry, Light brown, Rocky (Shale), Silt loam			
Relative age/Successional stage: early successional	**Aspect:** West		**Elevation (provide units):** 1295' to 1285'
Moisture: ☐ Inundated (hydric) ☐ Saturated (wet-mesic) ☐ Moist (mesic) ☐ Dry (mesic) ☑ Dry (xeric)	**Light:** ☑ Open ☐ Partial ☐ Filtered ☐ Shaded	**Topo Position:** ☐ Crest ☐ Upper Slope ☑ Mid-slope ☐ Lower Slope ☐ Bottom	**Slope:** ☐ Flat ☑ 0-10% ☐ 10-35% ☐ 35+% ☐ Vertical

AOC: WIS+ ALT WS Habitat: L (THO)

SOSC Occurrence Information (describe below)

Phenology:	# Plants: Ramets[1]		Genets[2]	Population Area:	Age Structure:	Vigor:
☐ In leaf	☐	1-10	☐	☐ 1 yd²	___ Annuals	☐ Very Feeble
☐ In bud	☐	11-50	☐	☐ 1-5 yd²	___ % Seedlings	☒ Feeble
☐ In flower	☐	51-100	☐	☐ 5-10 yd²	___ % Immature	☒ Normal
☐ Immature fruit	☐	101-1000	☐	☐ 10-100 yd²	___ % 1st Year	☒ Vigorous
☐ Mature fruit	☐	1001-10K	☐	☐ 100 yd² – 1 ac	___ % Mature	☐ Exceptional vigor
☐ Seed dispersing	☐	10K+	☐	☐ 1+ acres	___ % Senescent	
	_____	EST #	_____	_____ Est Area		

ID Confidence: ☐ Positive ID ☐ Somewhat certain ☐ Uncertain

ID Problems (explain):

_____Known or _____Inferred Land Use History:

Integrity/Fragmentation of Habitat:

Land Use/Disturbance Information:

Threats (on- or off-site):

Conservation or Management Recommendations:

Additional SOSC Comments:

[1]Ramet: individual reproduced vegetatively (a clone)
[2]Genet: individual generated by sexual reproduction (a seedling)

Associated Species :: Most Abundant/Dominant by Strata (est. % cover):

Canopy: ∅	Sub-Canopy/Shrub:	Herbaceous:
	*Rubus allegheniensis Sambucus nigra Rhus typhina	*Setaria pumila *Phleum pratense *Trifolium pratense *Potentilla simplex ~~*Achillea millefolium~~

Other Species Present:

Canopy: ∅	Sub-Canopy/Shrub: ∅	Herbaceous:
		Quercus rubra - seedlings Quercus prinus - seedlings Quercus muehlenbergii - seedlings Plantago major Solidago canadensis Mentha arvense

Invasive Species Present at Site (est. % Cover): Alliaria petiolata <5%, Microstegium vimineum

*List on back...

Please also submit site maps indicating species location, any photographs taken (to aid in confirming ID) and if a voucher specimen is collected, the label data, number, and repository.

AOC: W15+ Habitat: L
ALT W5
(THO)

Herbs cont.

Verbascum thapsus
Cirsium vulgare
Dichanthelium clandestinum
Dennstaedia punctilobula
Dactylis glomerata
Trifolium repens
Alliaria petiolata
Daucus carota
Viola sororia
Prunella vulgaris
Lamium purpurea
Barbarea vulgaris
Taraxacum officinale
Galium sp.
Cyperus esculentus
Solidago rugosa
Microstegium vimineum
Glechoma hederacea
Ranunculus abortivus

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
AG1&2 Site Name: Survey Date: 8/26/14
Form ? - page a of d

☐ *Update of known occurrence* ☑ *New occurrence*

Wetland: X1, X2

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria ~~Munic:~~ Cambria Twp Quad: Nanty Glo

Target species: *Scirpus ancistrochaetus* , Andropogon glomeratus

Survey Dates: 8/26/2014 Survey Team: ~~MB/SA/JC~~ MLS Survey Time: 30 mn

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

AG-1: 40.435966°, -78.768913°
AG-2: 40.435675°, -78.769924°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See

Additional directions to facilitate location of SOSC population: Wetland: W-X1, W-X2. Pond Around edge of large pond, down slope of pond next to & on existing pipeline Row.

Population Numbers and Population Area

Estimated Number of Individual Plants:

200-500

The above estimate represents (e.g., stems, clumps):

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: AG-1: 0.598ac , AG-2: 0.004ac

☑ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat: Adjacent areas could be potential habitat for A. glomeratus

Landowner and contact information:

Contact info: Neal P. Stager, Randdph P. Stager

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*

AG-142 **Site Name:** **Survey Date:** 8/26/14

☐ *Update of known occurrence* ☑ *New occurrence* **Form ? - page b of d**

Westland: X1, X2

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☑ Open	☑ Crest	☐ Inundated (hydric)	NW
☑ 0-10%	☐ Partial	☑ Upper slope	☑ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☑ Mid-slope	☑ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☑ Lower slope	☐ Dry (mesic)	2060 ft
☐ Vertical		☑ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*

Scrub shrub wetland, mowed ROW adjacent to wetland & Pond. Pond fringe.

Successional Stage:

☑ Known or ☐ Inferred land use history:

Integrity / Fragmentation of Habitat: Pipeline ROW, manmade pond maintained

Percent % cover / Dominants:

Canopy: 10 %/ Acer rubrum

Sub-canopy: %/ Prunus serotina, Vaccinium angustifolium

Herbaceous: %/ Rubus hispidus, Lycopodium clavatum, Lycopodium obscurum

Invasive Species and cover: none observed

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? no

Do other members of this genus that occur on site? yes Could hybridization be occurring? Andropogon virginicus

Specimen taken? yes Collection number / repository: LS- ; Carnegie Museum

Photographs taken?: yes

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: **Survey Date:** 8/26/14

☐ *Update of known occurrence* ☒ *New occurrence* AG-3 **Form ? - page a of d**

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Cambria Twp Quad: Nanty Glo

Target species: *Scirpus ancistrochaetus* Andropogon glomeratus

Survey Dates: Survey Team: MB/SAZ/SJCMLS Survey Time: 20mm

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.43377°, -78.778301°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See

Additional directions to facilitate location of SOSC population:

Along existing Pipeline ROW

Population Numbers and Population Area

Estimated Number of Individual Plants:

20 stems

The above estimate represents (e.g., stems, clumps):

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: 20ft²

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat:

Landowner and contact information:

Contact info: Vorhauer Farms Inc.

Is Landowner aware of SOSC? NO

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

Minimize mowing, adjust height of mowing

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC

Scientific name of SOSC Plant: ***Species Name***

Site Name: **Survey Date:** 8/26/14

☐ *Update of known occurrence* ☒ *New occurrence* A6-3 **Form ? - page b of d**

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☒ Open	☒ Crest	☐ Inundated (hydric)	S
☒ 0-10%	☐ Partial	☐ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☐ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☐ Lower slope	☒ Dry (mesic)	2030ft
☐ Vertical		☐ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*

Existing, maintained

Successional Stage:

☒ Known or ☐ Inferred land use history: Existing pipeline Row

Integrity / Fragmentation of Habitat:

Percent % cover / Dominants:

Canopy: 0% / —

Sub-canopy: 0% / —

Herbaceous: 100% / Thelypteris noveboracensis, Rubus hispidus, Brachyelytrum erectum

Invasive Species and cover:

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? no

Do other members of this genus that occur on site? yes Could hybridization be occurring? Andropogon virginicus

Specimen taken? No Collection number / repository: LS- ; Carnegie Museum

Photographs taken?: YES

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: Survey Date: 8/27/14
Form ? - page a of d

☐ *Update of known occurrence* ☒ *New occurrence* AG-4

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Cambria Twp Quad: Nanty Glo

Target species: *Scirpus ancistrochaetus* Andropogon glomeratus

Survey Dates: 8/27/2014 Survey Team: MB SAZ SJC MLS Survey Time: 20min

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.436271°, -78.767912°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See Figures

Additional directions to facilitate location of SOSC population:

along pond edge, next to existing pipeline ROW

Population Numbers and Population Area

Estimated Number of Individual Plants:

≈50 stems

The above estimate represents (e.g., stems, clumps):

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: 46ft²

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat: Adjacent area maybe potential habitat.

Landowner and contact information:

Contact info: Neal P. Stager, Randdph P. Stager

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC

Scientific name of SOSC Plant: ***Species Name***
Site Name: **Survey Date:**
Form ? - page b of d

☐ *Update of known occurrence* ☒ *New occurrence*

AG-4

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☐ Open	☐ Crest	☐ Inundated (hydric)	NW
☒ 0-10%	☒ Partial	☐ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☐ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☒ Lower slope	☐ Dry (mesic)	2060ft
☐ Vertical		☒ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*

Pond edge.

Successional Stage:

☒ Known or ☐ Inferred land use history: Pond edge. Next to residential property and existing maintained pipeline ROW.

Integrity / Fragmentation of Habitat:

Percent % cover / Dominants:

Canopy: 40 % / Acer rubrum

Sub-canopy: % /

Herbaceous: 100 % / Solidago canadensis. Lycopodium obscurum

Invasive Species and cover:

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? No

Do other members of this genus that occur on site? yes Could hybridization be occurring? Andropogon virginicus

Specimen taken? No Collection number / repository: LS- ; Carnegie Museum

Photographs taken?:

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
AP-1 Site Name: Survey Date: 8/27/14
Form ? - page a of d

☐ *Update of known occurrence* ☑ *New occurrence* Wetland: N 4

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Cambria Twp Quad: Ebensburg

Target species: *Scirpus ancistrochaetus* Actaea podocarpa

Survey Dates: 8-27-14 Survey Team: MB/SAZ/SJC/MLS Survey Time: 30min

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.450876°, -78.704415°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See Figures

Additional directions to facilitate location of SOSC population:

Population Numbers and Population Area

Estimated Number of Individual Plants: (12) total
(7) flowering

The above estimate represents (e.g., stems, clumps):

Plants ☐ appear ☒ do not appear to be a vegetative clone.

Estimated Population Area: 65 ft²

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat:

Landowner and contact information:

Contact info: Pristine Resources I

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

Avoidance. If permitted, transplant to an adjacent area. Timing of transplanting could be done before it flowers. Transplanting after flowering may allow seed collection for seeding the transplant area.

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*

☐ *Update of known occurrence* ☒ *New occurrence*

Site Name: AP-1 wetland N-4 **Survey Date:** 8/27/14

Form ? - page b of d

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☒ Open	☐ Crest	☐ Inundated (hydric)	west
☒ 0-10%	☐ Partial	☐ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☐ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☐ Lower slope	☐ Dry (mesic)	1700ft
☐ Vertical		☒ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*

edge of Hemlock-yellow birch forest adj. to gas pipeline

Successional Stage:

☒ Known or ☐ Inferred land use history:

Integrity / Fragmentation of Habitat: Pipeline corridor adjacent

Percent % cover / Dominants:

Canopy: % / Tsuga canadensis, Betula alleghenieniensis, Tilia americana

Sub-canopy: % / Tsuga canadensis, Acer saccharum (10), Carpinus caroliniana

Herbaceous: % / 100 / Dryopteris intermedia, Amphicarpaea bracteata, Carex sp., Tiarella cordifolia

Invasive Species and cover: Galium obtusum, Solidago rugosa, Impatiens capensis

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* Flowering

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* normal

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? None

Do other members of this genus that occur on site? No Could hybridization be occurring? —

Specimen taken? Yes Collection number / repository: LS- ; Carnegie Museum

Photographs taken?:

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: **Survey Date:** 9/4/14

☐ *Update of known occurrence* ☒ *New occurrence* VA-1 **Form ? - page a of d**

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Munster Twp Quad: Ebensburg

Target species: *Scirpus ancistrochaetus* Viola appalachiensis

Survey Dates: 9/4/2014 Survey Team: MB/SAZ/SJC/MLS Survey Time: 30 min

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.452829°, -78.640283°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See Figures

Additional directions to facilitate location of SOSC population:

Population Numbers and Population Area

Estimated Number of Individual Plants:

1000 +

The above estimate represents (e.g., stems, clumps):

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: 0.036ac

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat: Adjacent areas may be potential habitat.

Landowner and contact information:

Contact info: Ronald E. Davidson

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: **Survey Date:** 9/4/14
Form ? - page b of d

☐ *Update of known occurrence* ☒ *New occurrence* VA-1

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☒ Open	☐ Crest	☐ Inundated (hydric)	S
☒ 0-10%	☒ Partial	☒ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☒ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☐ Lower slope	☒ Dry (mesic)	1860 ft
☐ Vertical		☐ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*
Open moderately sloping pastured existing pipeline ROW, disturbed by cattle

Successional Stage:

☒ Known or ☐ Inferred land use history: Pasture

Integrity / Fragmentation of Habitat: Existing Pipeline ROW

Percent % cover / Dominants:

Canopy: % /

Sub-canopy: % /

Herbaceous: 100 % / Symphyotrichum lateriflorum, Solidago rugosa, Persicaria longiseta Symphyotrichum prenanthoides, Persicaria sagittata, Carex cf. digitalis

Invasive Species and cover:

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? No

Do other members of this genus that occur on site? yes Could hybridization be occurring? Viola striata

Specimen taken? Collection number / repository: LS- ; Carnegie Museum

Photographs taken?: yes

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: Survey Date: 9/4/14

☐ *Update of known occurrence* ☒ *New occurrence* VA-2 Form ? - page a of d

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Munster Twp Quad: Ebensburg

Target species: *Scirpus ancistrochaetus* Vida appalachiensis

Survey Dates: 9/4/2014 Survey Team: MB/SAZ/SJC/MLS Survey Time: 20mm

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.453335°, -78.631101°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See Figures

Additional directions to facilitate location of SOSC population: along existing pipeline Row

Population Numbers and Population Area

Estimated Number of Individual Plants: 1000 +

The above estimate represents (e.g., stems, clumps): stems

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: 0.486 ac

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat: Adjacent areas may be potential habitat

Landowner and contact information:

Contact info: Lawrence R. & Margery Lee Stem

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: **Survey Date:** 9/4/14
Form ? - page b of d

☐ *Update of known occurrence* ☒ *New occurrence*

VA-2

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☒ Open	☐ Crest	☐ Inundated (hydric)	N
☒ 0-10%	☒ Partial	☒ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☒ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☐ Lower slope	☒ Dry (mesic)	2000 ft
☐ Vertical		☐ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*

Existing maintained pipeline ROW

Successional Stage:

☒ Known or ☐ Inferred land use history: Pipeline ROW

Integrity / Fragmentation of Habitat:

Percent % cover / Dominants:

Canopy: 40% / Pinus strobus, Quercus rubra

Sub-canopy: % /

Herbaceous: 10% / Persicaria sagittata, Toxicodendron radicans, Rubus flagellaris

Invasive Species and cover:

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? No

Do other members of this genus that occur on site? Yes Could hybridization be occurring? Viola striata

Specimen taken? No Collection number / repository: LS- ; Carnegie Museum

Photographs taken?: Yes

NOT IN ANY AOC

Scientific name of SOSC Plant: *Species Name*
Site Name: VA-3 wetland: K27 Survey Date: 9/5/14
Form ? - page a of d

☐ *Update of known occurrence* ☒ *New occurrence*

Plant Species of Special Concern (SOSC) in Pennsylvania Documentation Form

Surveyor: Mark Bowers, 570 Beatty Rd., Monroeville, PA 15146 724-454-4012; mbowers@pasoilrock.com

Project: Sunoco Pennsylvania Pipeline USFWS #: 2014-0200

County: Cambria Munic.: Cresson Twp Quad: Cresson

Target species: *Scirpus ancistrochaetus* Viola appalachiensis

Survey Dates: 9/5/2014 Survey Team: MB/KAZ/SJC/MLS Survey Time: 45 min

GPS coordinates

☒ decimal degrees / WGS 84 ☐ other

40.454373°, −78.617114°

These coordinates represent: ☒ Center point of site of Radius

☐ Endpoints of linear site of length ☐ Multiple Perimeter Points of population polygon

Population location: See Figures

Additional directions to facilitate location of SOSC population:

Population Numbers and Population Area

Estimated Number of Individual Plants: 50

The above estimate represents (e.g., stems, clumps): clumps

Plants ☒ appear ☐ do not appear to be a vegetative clone.

Estimated Population Area: 0.032 ac

☒ This appears to represent the full extent of the occurrence at this site.

☐ This may not represent the full extent of occurrence at this site. Additional survey needed to determine extent of occurrence outside the boundaries of proposed project area.

Comments on potential habitat: Adjacent areas maybe potential habitat

Landowner and contact information:

Contact info: Gerald P. Neugebauer

Is Landowner aware of SOSC? No

Did landowner consent to data submission? No Did landowner consent for voucher collection? No

Conservation recommendations to avoid, minimize, and mitigate impacts:

During pipeline construction, use timber matting through the area. Where trenching, stockpile the upper 1 foot of soil and place at the top of the trench one the pipeline is placed. After construction, seed the area with a temporary cover such as cereal rye or oats to allow re-vegetation of native plants. Mowing for maintenance should be limited to late-spring to early-summer and no less than 6-inches in height

NOT IN ANY AOC.

Scientific name of SOSC Plant: *Species Name*
Site Name: **Survey Date:** 9/5/14
☐ *Update of known occurrence* ☒ *New occurrence* VA-3 **Form ? - page b of d**
Wetland: K27

Habitat Characteristics				
Slope	**Light**	**Topo Position**	**Moisture**	**Aspect**
☐ Flat	☐ Open	☐ Crest	☐ Inundated (hydric)	NE
☒ 0-10%	☒ Partial	☒ Upper slope	☐ Saturated (wet-mesic)	
☐ 10-35%	☐ Filtered	☒ Mid-slope	☒ Moist (mesic)	**Elevation**
☐ 35+%	☐ Shaded	☐ Lower slope	☐ Dry (mesic)	2030 ft
☐ Vertical		☐ Bottom	☐ Dry (xeric)	

Habitat description: *e.g., soils – substrate –natural or manmade disturbances*
Early successional wood lot ~300 ft from US22, moist soil

Successional Stage:

☒ Known or ☐ Inferred land use history: ~300 ft from US 22

Integrity / Fragmentation of Habitat:

Percent % cover / Dominants:

Canopy: 40 % / Populus tremloides, Fraxinus americana, Betula lenta

Sub-canopy: 75 % / Crataegus sp, Berberis thunbergii, Rubus occidentalis

Herbaceous: % / Carex c.f. digitalis, Carex c.f. laxiculmis, Glyceria striata, Symphyotrichum lateriflorum

Invasive Species and cover: Berberis thunbergii

Plant Biology

Phenology *(% in leaf, in bud, in flower, immature fruit, mature fruit, seed dispersing, seed dispersed):* in leaf

Age structure *(annuals, % seedlings, % immature, % 1st year, % mature, % senescent):* mature

Vigor *(very feeble, feeble, normal, vigorous, exceptional vigor):* vigorous

Additional biology comments:

Plant Species Identification and Documentation

Identification problems? no

Do other members of this genus that occur on site? Could hybridization be occurring?

Specimen taken? Collection number / repository: LS- ; Carnegie Museum

Photographs taken?:

APPENDIX H
Representative Habitat Photographs

Agriculture/ Fallow Field - AG/FF

Broadleaf Terrestrial Forest - BTF

Broadleaf Terrestrial Woodland - BTW

Coniferous-Broadleaf Terrestrial Forest - CBTF

Coniferous-Broadleaf Terrestrial Woodland - CBTW

Coniferous Terrestrial Forest - CTF

Mesic Broadleaf Terrestrial Forest - MBTF

Mesic Broadleaf Terrestrial Woodland - MBTW

Mesic Broadleaf Woodland - MSB

Mesic Broadleaf Forest-MSF

Palustrine Emergent Wetland - PE

Palustrine Forested Wetland or Floodplain - PF

Palustrine Scrub-Shrub Wetland - PS

Palustrine Successional Farm Pond - PSFP

Riverine Broadleaf Terrestrial Forest - RBTF

Riverine Broadleaf Terrestrial Woodland - RBTW

Serpentine Grassland - SGL

Terrestrial Herbaceous Opening - THO

Terrestrial Shrub Opening - TS

Urban-Residential-Developed - URD

APPENDIX I
Comprehensive Vegetation Lists

List of Vegetation Observed During the Botanical Survey of AOC W8	
Common Name	**Latin Name**
Ash-leaf maple	*Acer negundo*
Striped maple	*Acer pensylvanicum*
Red maple	*Acer rubrum*
Sugar maple	*Acer saccharum*
Black baneberry	*Actaea racemosa*
Northern maidenhair	*Adiantum pedatum*
White snakeroot	*Ageratina altissima*
Harvest lice	*Agrimonia parviflora*
Garlic-mustard	*Alliaria petiolata*
Nodding onion	*Allium cernuum*
American hog-peanut	*Amphicarpaea bracteata*
Broom-sedge	*Andropogon virginicus*
Indian-hemp	*Apocynum cannabinum*
Jack-in-the-pulpit	*Arisaema triphyllum*
Sweet birch	*Betula lenta*
Slender woodland sedge	*Carex digitalis*
Sedge	*Carex sp.*
Musclewood	*Carpinus caroliniana*
Bitter-nut hickory	*Carya cordiformis*
Pignut Hickory	*Carya glabra*
Shag-bark hickory	*Carya ovata*
Common hackberry	*Celtis occidentalis*
Flowering dogwood	*Cornus florida*
Gray dogwood	*Cornus racemosa*
Hawthorn	*Crataegus sp.*
Orchard grass	*Dactylis glomerata*
Hay-scented fern	*Dennstaedtia punctilobula*
Deer-tongue rosette grass	*Dichanthelium clandestinum*
Evergreen wood fern	*Dryopteris intermedia*
Eastern daisy fleabane	*Erigeron annuus*
White wood-aster	*Eurybia divaricata*
American beech	*Fagus grandifolia*
White ash	*Fraxinus americana*
Spotted crane's bill	*Geranium maculatum*
White avens	*Geum canadense*

Common Name	Latin Name
American witch-hazel	*Hamamelis virginiana*
Shining fir-moss	*Huperzia lucidula*
Touch-me-not sp.	*Impatiens sp.*
White walnut	*Juglans cinerea*
Lamp rush	*Juncus effusus*
Lesser poverty rush	*Juncus tenius*
Mountain-Laurel	*Kalmia latifolia*
European privet	*Ligustrum vulgare*
Northern spicebush	*Lindera benzoin*
Tuliptree	*Liriodendron tulipifera*
Japanese honeysuckle	*Lonicera japonica*
Twinsisters	*Lonicera tatarica*
Fan clubmoss	*Lycopodium digitatum*
Feathery false Solomon's seal	*Maianthemum racemosum*
Japanese stilt grass	*Microstegium vimineum*
Partridge-berry	*Mitchella repens*
Sensitive fern	*Onoclea sensibilis*
Cinnamon fern	*Osmunda cinnamomea*
New york fern	*Parathelypteris noveboracensis*
Virginia-creeper	*Parthenocissus quinquefolia*
Jumpseed	*Persicaria virginiana*
Timothy	*Phleum pratense*
Canadian clearweed	*Pilea pumila*
English plantain	*Plantago lanceolata*
Grass sp.	*Poaceae sp.*
Mayapple	*Podophyllum peltatum*
Christmas fern	*Polystichum acrostichoides*
Oldfield cinquefoil	*Potentilla simplex*
Black cherry	*Prunus serotina*
Northern white oak	*Quercus alba*
Chestnut oak	*Quercus montana*
Northern red oak	*Quercus rubra*
Black oak	*Quercus velutina*
Creeping buttercup	*Ranunculus repens*
Ranunculus sp.	*Ranunculus sp.*
Japanese-knotweed	*Reynoutria japonica*
Staghorn sumac	*Rhus typhina*
Multiflora rose	*Rosa multiflora*
Common blackberry	*Rubus allegheniensis*
Black raspberry	*Rubus occidentalis*

Common Name	Latin Name
Black elder	*Sambucus nigra*
Sassafras	*Sassafras albidum*
Woodland stonecrop	*Sedum ternatum*
Horsebrier	*Smilax rotundifolia*
Canadian goldenrod	*Solidago canadensis*
Wrinkle-leaf goldenrod	*Solidago rugosa*
Skunk-cabbage	*Symplocarpus foetidus*
Common dandelion	*Taraxacum officinale*
Early meadow-rue	*Thalictrum dioicum*
Rue-anemone	*Thalictrum thalictroides*
Poison-ivy	*Toxicodendron radicans*
Red clover	*Trifolium pratense*
White clover	*Trifolium repens*
Eastern hemlock	*Tsuga canadensis*
American elm	*Ulmus americana*
Slippery elm	*Ulmus rubra*
Late Lowbush Blueberry	*Vaccinium angustifolium*
Wingstem	*Verbesina alternifolia*
Maple-leaf arrow-wood	*Viburnum acerifolium*
Hooded blue violet	*Viola sororia*
Striped cream violet	*Viola striata*

List of Vegetation Observed During the Botanical Survey of AOC W15 and Alt W5	
Common Name	**Latin Name**
Ash-Leaf Maple	Acer negundo
Striped Maple	Acer pensylvanicum
Norway Maple	Acer platanoides
Red Maple	Acer rubrum
Silver Maple	Acer saccharinum
Sugar Maple	Acer saccharum
Common Yarrow	Achillea millefolium
Black Bugbane	Actaea racemona
White Snakeroot	Ageratina altissima
Tree-of-Heaven	Ailanthus altissima
Garlic-Mustard	Alliaria petiolata
Crow Garlic	Allium vineale
Broom-Sedge	Andropogon virginicus
Parlion's Pussytoes	Antennaria parlinni
European Columbine	Aquilegia vulgaris
Smooth Rockcress	Arabis laevigata
American Spikenard	Aralia racemosa
Devil's-Walkingstick	Aralia spinosa
Garden Yellow-Rocket	Barbarea vulgaris
Sweet Birch	Betula lenta
Smooth Rockcrest	Boechara laevigata
Cut-Leaf Toothwort	Cardamine concatenata
Crinkleroot	Cardamine diphylla
Unidentified Sedge	Carex sp.
American Hornbeam	Carpinus caroliniana
Bitter-Nut Hickory	Carya cordiformis
Shag-Bark Hickory	Carya ovata
Asian Bittersweet	Celastrus orbiculatus
Bull Thistle	Cirsium vulgare
Virginia Springbeauty	Claytonia virginica
Flowering Dogwood	Cornus florida
Gray Dogwood	Cornus racemosa
Unidentified Hawthorn	Crataegus sp.
Chufa	Cyperus esculentus
Orchard Grass	Dactylis glomerata

Common Name	Latin Name
Queen Anne's-Lace	Daucus carota
Hay-Scented Fern	Dennstaedtia punctilobula
Squirrel Corn	Dicentra canadensis
Deer-Tongue Rosette Grass	Dichanthelium clandestinum
Evergreen Wood Fern	Dryopteris intermedia
Nodding Wild Rye	Elymus canadensis
Philadelphia Fleabane	Erigeron philadelphicus
White Wood Aster	Eurybia divaricata
American Beech	Fagus grandifolia
White Ash	Fraxinus americana
Sticky-Willy	Galium aparine
Rough Bedstraw	Galium asprellum
Blunt-Leaf Bedstraw	Galium obtusum
Unidentified Bedstraw	Galium sp.
Spotted Crane's-Bill	Geranium maculatum
White Avens	Geum canadense
Groundivy	Glechoma hederacea
Honey-Locust	Gleditsia triacanthos
American Witch-Hazel	Hamamelis virginiana
Orange Day-Lily	Hemerocallis fulva
Spotted Touch-Me-Not	Impatiens capensis
Pale Touch-Me-Not	Impatiens pallida
Unidentified Touch-Me-Not	Impatiens sp.
Black Walnut	Juglans nigra
Mountain-Laurel	Kalmia latifolia
Purple Deadnettle	Lamium purpureum
European Privet	Ligustrum vulgare
Northern Spicebush	Lindera benzoin
Tuliptree	Liriodendron tulipifera
Japanese Honeysuckle	Lonicera japonica
Morrow's Honeysuckle	Lonicera morrowii
Twinsisters	Lonicera tatarica
Garden Bird's-Foot-Trefoil	Lotus corniculatus
False Lily-of-the-Valley	Maianthemum canadense
Three-Leaf False Solomon's-Seal	Maianthemum trifolium
American Wild Mint	Mentha arvensis
Japanese Stilt Grass	Microstegium vimineum
Partridgeberry	Mitchella repens
Sensitive Fern	Onoclea sensibilis
Hairy Sweet-Cicely	Osmorhiza claytonii

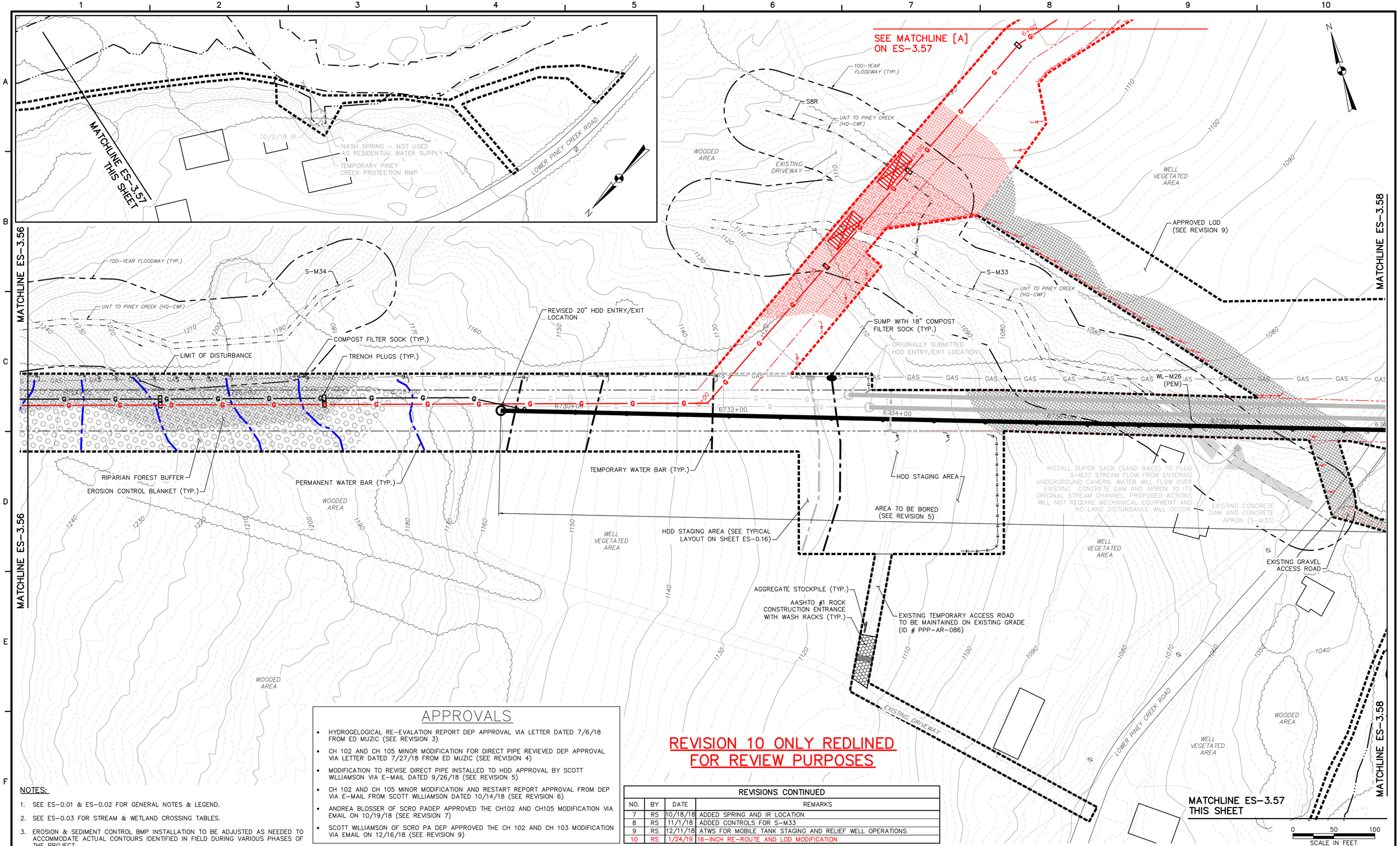
Common Name	Latin Name
Aniseroot	Osmorhiza longistylis
Eastern Hop-Hornbeam	Ostrya virginiana
Creeping Yellow Wood-Sorrel	Oxalis corniculata
Virginia-Creeper	Parthenocissus quinquefolia
Jumpseed	Persicaria virginiana
Reed Canary Grass	Phalaris arundinacea
Common Timothy	Phleum pratense
American Pokeweed	Phytolacca americana
Canadian Clearweed	Pilea pumila
Eastern White Pine	Pinus strobus
Virginia Pine	Pinus virginiana
English Plantain	Plantago lanceolata
Great Plantain	Plantago major
American Sycamore	Plantanus occidentalis
Rough-Stalk Blue Grass	Poa trivialis
Unidentified Grass	Poacae sp.
May-Apple	Podophyllum peltatum
King Solomon's-Seal	Polygonatum biflorum
Christmas Fern	Polystichum acrostichoides
Oldfield Cinquefoil	Potentilla simplex
Common Selfheal	Prunella vulgaris
Black Cherry	Prunus serotina
Northern White Oak	Quercus alba
Chestnut Oak	Quercus montana
Chinkapin Oak	Quercus muehlenbergii
Pin Oak	Quercus palustris
Dwarf Chinkapin Oak	Quercus prinoides
Northern Red Oak	Quercus rubra
Unidentified Oak	Quercus sp.
Kidney-Leaf Buttercup	Ranunculus abortivus
Bristly Buttercup	Ranunculus hispidus
Creeping Buttercup	Ranunculus repens
Staghorn Sumac	Rhus typhina
Black Locust	Robinia pseudoacacia
Rambler Rose	Rosa multiflora
Allegheny Blackberry	Rubus allegheniensis
Whiplash Dewberry	Rubus flagellaris
Black Raspberry	Rubus occidentalis
Green-Head Coneflower	Rudbeckia laciniata
Curly Dock	Rumex crispus

Common Name	Latin Name
Bitter Dock	Rumex obtusifolius
Black Willow	Salix nigra
Black Elder	Sambucus nigra
Unidentified Stonecrop	Sedum sp.
Woodland Stonecrop	Sedum ternatum
Yellow Bristle Grass	Setaria pumila
Strict Blue-Eyed-Grass	Sisyrinchium montanum
Solomon's Seal	Smilacina racemosa
Horsebrier	Smilax rotundifolia
Horsebrier	Smilax rotundifolia
Canadian Goldenrod	Solidago canadensis
Wrinkle-Leaf Goldenrod	Solidago rugosa
White Oldfield American-Aster	Symphyotrichum pilosum
Skunk-Cabbage	Symplocarpus foetidus
Common Dandelion	Taraxacum officinale
Early Meadow-rue	Thalictrum dioicum
Rue-Anemone	Thalictrum thalictroides
Rue-Anemone	Thalictrum thalictroides
Eastern Poison Ivy	Toxicodendron radicans
White Clover	Trifolium repens
Eastern Hemlock	Tsuga canadensis
Colt's-Foot	Tussilago farfara
American Elm	Ulmus americana
Slippery Elm	Ulmus rubra
Perfoliate Bellwort	Uvularia perfoliata
Great Mullein	Verbascum thapsus
Wingstem	Verbesina alternifolia
Maple-Leaf Arrow-Wood	Viburnum acerifolium
Early Blue Violet	Viola palmata
Alpine March Violet	Viola palustris
Downy Yellow Violet	Viola pensylvanica
Downy Yellow Violet	Viola pubescens
Long-Spur Violet	Viola rostrata
Hooded Blue Violet	Viola sororia
Striped Cream Violet	Viola striata
Unidentified Grape	Vitis sp.

APPENDIX J
Photographs of Identified Species of Special Concern

ATTACHMENT D

Applicable 102 Drawings
(E&S and Restoration)



APPROVALS

- HYDROGELOGICAL RE-EVALATION REPORT DEP APPROVAL VIA LETTER DATED 7/6/18 FROM ED MUZIC (SEE REVISION 3)
- CH 102 AND CH 105 MINOR MODIFICATION FOR DIRECT PIPE REVIEVED DEP APPROVAL VIA LETTER DATED 7/27/18 FROM ED MUZIC (SEE REVISION 4)
- MODIFICATION TO REVISE DIRECT PIPE INSTALLED TO HDD APPROVAL BY SCOTT WILLIAMSON VIA E-MAIL DATED 9/26/18 (SEE REVISION 5)
- CH 102 AND CH 105 MINOR MODIFICATION AND RESTART REPORT APPROVAL FROM DEP VIA E-MAIL FROM SCOTT WILLIAMSON DATED 10/14/18 (SEE REVISION 6)
- ANDREA BLOSSER OF SCRO PADEP APPROVED THE CH102 AND CH105 MODIFICATION VIA EMAIL ON 10/19/18 (SEE REVISION 7)
- SCOTT WILLIAMSON OF SCRO PA DEP APPROVED THE CH 102 AND CH 103 MODIFICATION VIA EMAIL ON 12/16/18 (SEE REVISION 9)

REVISION 10 ONLY REDLINED FOR REVIEW PURPOSES

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

REVISIONS CONTINUED

NO.	BY	DATE	REMARKS
7	RS	10/18/18	ADDED SPRING AND IR LOCATION
8	RS	11/1/18	ADDED CONTROLS FOR S-M33
9	RS	12/11/18	ATWS FOR MOBILE TANK STAGING AND RELIEF WELL OPERATIONS
10	RS	1/24/19	16-INCH RE-ROUTE AND LOD MODIFICATION

TETRA TECH
www.tetratech.com
661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	6/20/18	CENTERLINE AND HDD MODIFICATION
4	RS	7/12/18	CENTERLINE AND DIRECT PIPE MODIFICATION (REMOVED 9/27/18)
5	RS	7/27/18	CENTERLINE AND HDD MODIFICATION
6	RS	10/11/18	ADDITIONAL LOD FOR IR RESPONSE

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 57 OF 73

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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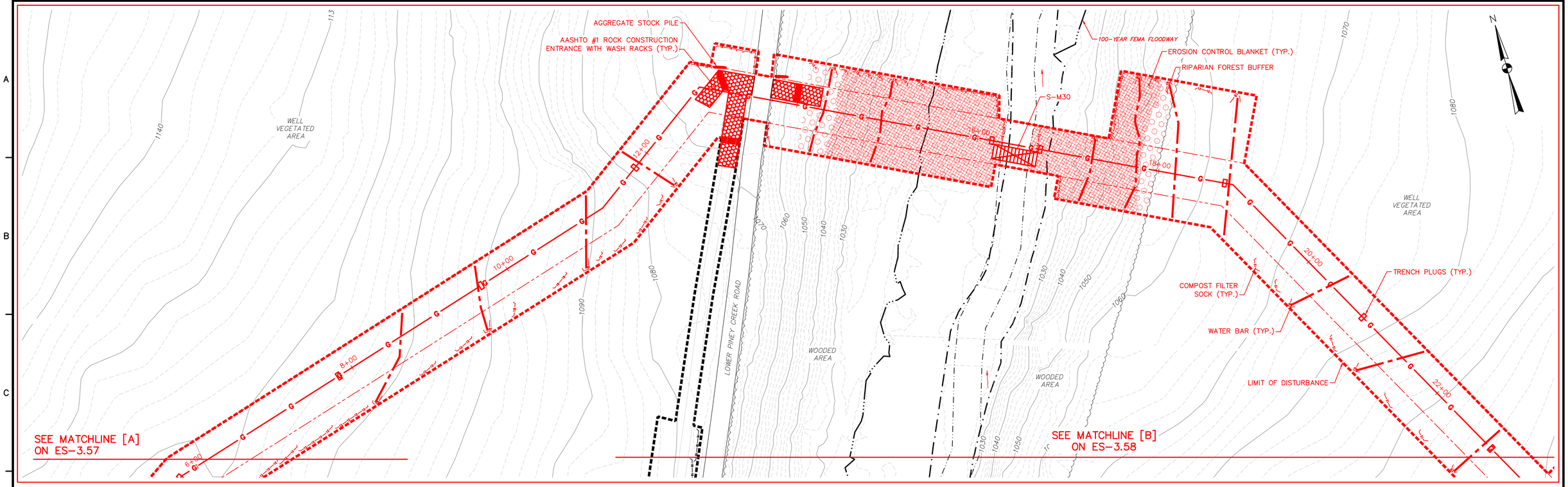
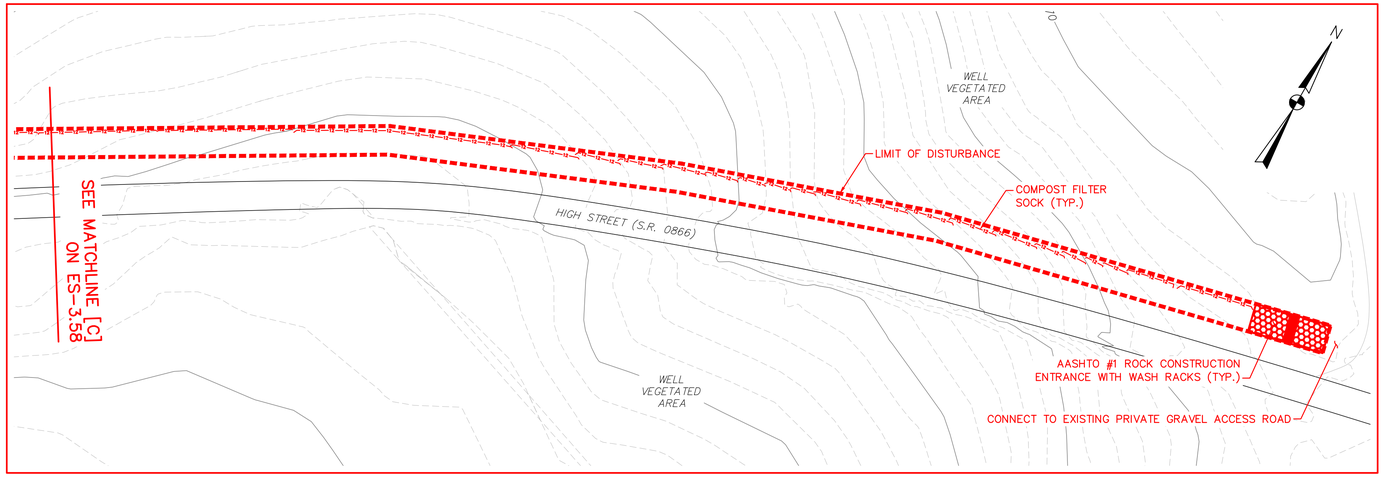
ES-3.57
SHEET 3.57 OF 102

R:_Marcellus Shale Projects\Sunoco\5958 – Penn Pipeline Project\6 – Blair\E&S\5958ES003.57 – REV 10.dwg PIT NICHOLENAJESKI 1/25/2019 1:58:28 PM





NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

RE-ROUTE ONLY REDLINED FOR REVIEW PURPOSES

0 50 100
SCALE IN FEET

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661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 57 OF 73

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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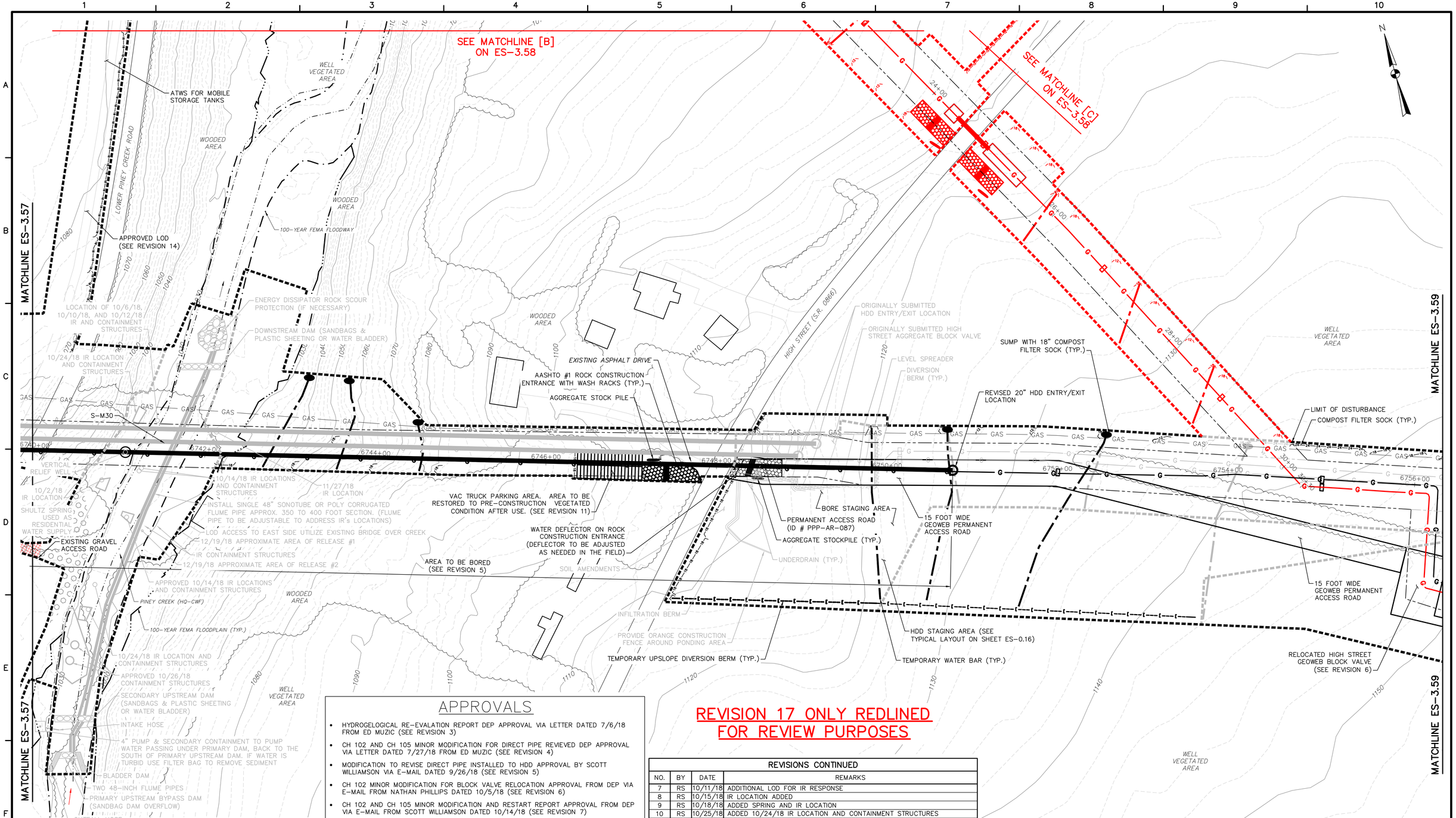
ES-3.57-RR
SHEET 3.57 OF 102



APPROVALS

- HYDROGELOGICAL RE-EVALATION REPORT DEP APPROVAL VIA LETTER DATED 7/6/18 FROM ED MUZIC (SEE REVISION 3)
- CH 102 AND CH 105 MINOR MODIFICATION FOR DIRECT PIPE REVIEVED DEP APPROVAL VIA LETTER DATED 7/27/18 FROM ED MUZIC (SEE REVISION 4)
- MODIFICATION TO REVISE DIRECT PIPE INSTALLED TO HDD APPROVAL BY SCOTT WILLIAMSON VIA E-MAIL DATED 9/26/18 (SEE REVISION 5)
- CH 102 MINOR MODIFICATION FOR BLOCK VALVE RELOCATION APPROVAL FROM DEP VIA E-MAIL FROM NATHAN PHILLIPS DATED 10/5/18 (SEE REVISION 6)
- CH 102 AND CH 105 MINOR MODIFICATION AND RESTART REPORT APPROVAL FROM DEP VIA E-MAIL FROM SCOTT WILLIAMSON DATED 10/14/18 (SEE REVISION 7)
- ANDREA BLOSSER OF SCRO PADEP APPROVED THE CH102 AND CH105 MODIFICATION VIA EMAIL ON 10/19/18 (SEE REVISION 9)
- CH 102 AND CH 105 MODIFICATION APPROVED BY SCOTT WILLIAMSON ON 11/9/18 (SEE REVISION 12)
- SCOTT WILLIAMSON OF SCRO PA DEP APPROVED THE CH 102 AND CH 103 MODIFICATION VIA EMAIL ON 12/16/18 (SEE REVISION 14)

REVISION 17 ONLY REDLINED FOR REVIEW PURPOSES

REVISIONS CONTINUED

NO.	BY	DATE	REMARKS
7	RS	10/11/18	ADDITIONAL LOD FOR IR RESPONSE
8	RS	10/15/18	IR LOCATION ADDED
9	RS	10/18/18	ADDED SPRING AND IR LOCATION
10	RS	10/25/18	ADDED 10/24/18 IR LOCATION AND CONTAINMENT STRUCTURES
11	RS	10/31/18	ADDITIONAL LOD FOR STAGING AREA
12	RS	11/1/18	EXTENDED LOD, ADDED STREAM DAMS, FLUME, PUMP, & 10/26 IR CONTAINMENTS
13	RS	11/28/18	ADDED 11/27/18 IR LOCATION
14	RS	12/11/18	AWTS FOR MOBILE TANK STAGING AND RELIEF WELL OPERATIONS
15	RS	12/17/18	20-INCH OPEN CUT RE-ROUTE AND LOD MODIFICATION
16	RS	12/20/18	ADDED IR AND CONTAINMENT STRUCTURES
17	RS	1/24/19	16-INCH RE-ROUTE AND LOD MODIFICATION

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	6/8/18	CENTERLINE AND HDD MODIFICATION
4	RS	7/12/18	CENTERLINE AND DIRECT PIPE MODIFICATION (REMOVED 9/27/18)
5	RS	9/26/18	CENTERLINE AND HDD MODIFICATION
6	RS	9/27/18	LOD AND BLOCK VALVE RELOCATION MODIFICATION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER 075364-E 6/4/19

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT EROSION & SEDIMENT CONTROL & SITE RESTORATION PLAN

SHEET 58 OF 73

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-3.58
SHEET 3.58 OF 102

R:_Marcellus Shale Projects\Sunoco\5958 – Penn Pipeline Project\6 – Blair\E&S\5958ES003.58 – REV 17.dwg PIT NICHOLE.NAJESKI 1/25/2019 1:39:33 PM

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN

FEBRUARY 2017

DRAWING INDEX

SHEET No.	DRAWING TITLE
ES-0.01 TO ES-0.24	EROSION & SEDIMENT CONTROL & SITE RESTORATION PLAN NOTES & DETAILS
ES-0.25 TO ES-0.26	KEY PLAN
ES-3.01 TO ES-3.73	EROSION & SEDIMENT CONTROL & SITE RESTORATION PLANS
ES-3.74 TO ES-3.76	ACCESS ROAD – EROSION & SEDIMENT CONTROL & SITE RESTORATION PLANS

PREPARED BY:

TETRA TECH

complex world | CLEAR SOLUTIONS™

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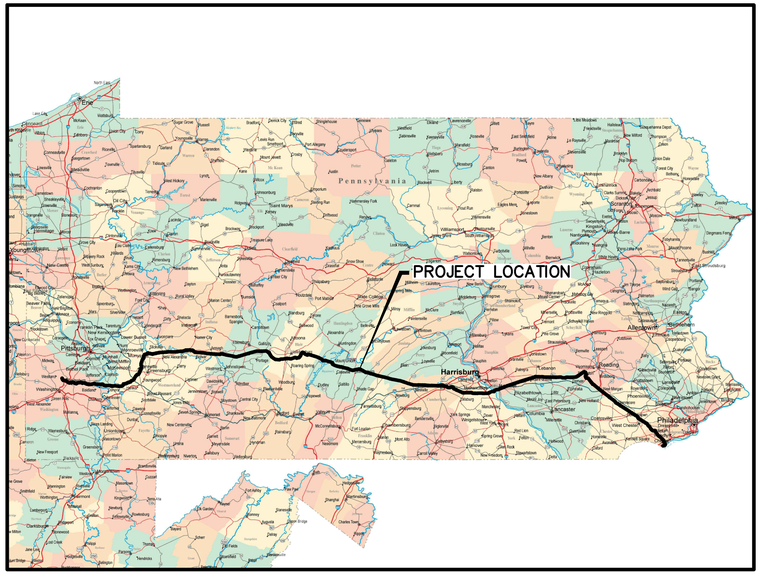
PREPARED FOR:

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA



LOCATION MAP
PENNSYLVANIA PIPELINE PROJECT
HOUSTON, PENNSYLVANIA TO MARCUS HOOK, PENNSYLVANIA

GENERAL EROSION & SEDIMENT CONTROL PLAN NOTES:

1. TOPOGRAPHIC MAPPING AND FEATURES COMPILED FROM WWW.PASDA.PSU.EDU.
2. THE PROJECT TAKES PLACE WITHIN BLAIR COUNTY, PENNSYLVANIA.
3. TOWNSHIP BOUNDARIES TAKEN FROM WWW.PASDA.PSU.EDU.
4. 100-YEAR FEMA FLOODPLAINS TAKEN FROM WWW.PASDA.PSU.EDU.
5. SEE SHEET ES-0.02 FOR STREAM AND WETLAND CROSSING TABLE.
6. ~~A PRECONSTRUCTION MEETING IS REQUIRED PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, AND A REPRESENTATIVE FROM THE LOCAL PADEP OR CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING AT LEAST SEVEN DAYS IN ADVANCE.~~ FOR EARTH DISTURBANCE ACTIVITIES AUTHORIZED BY THIS PERMIT, AT LEAST ONE PRE-CONSTRUCTION MEETING IS REQUIRED. THE PERMITTEE SHALL CONTACT DEP TO SCHEDULE THE PRE-CONSTRUCTION MEETING AND PROVIDE AT LEAST SEVEN (7) DAYS' NOTICE OF THE PRE-CONSTRUCTION MEETING TO ALL INVITED ATTENDEES, UNLESS OTHERWISE APPROVED BY DEP IN WRITING. PERMITTEES, CO-PERMITTEES, OPERATORS, AND LICENSED PROFESSIONALS, OR DESIGNEES RESPONSIBLE FOR EARTH DISTURBANCE ACTIVITY, INCLUDING IMPLEMENTATION OF E&S, PCSM AND PPC PLANS AND CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN, SHALL ATTEND THE PRE-CONSTRUCTION MEETING(S). PERMITTEES, CO-PERMITTEES, OPERATORS AND LICENSED PROFESSIONALS ARE RESPONSIBLE FOR ENSURING THAT ALL ACTIVITIES ON THE SITE COMPLY WITH THE REQUIREMENTS OF THE PERMIT. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION VI OF THE APPROVED CHAPTER 102 PERMIT).
7. A COPY OF THE APPROVED E&S PLANS MUST BE AVAILABLE AT THE PROJECT SITES AT ALL TIMES.
8. AT LEAST THREE DAYS PRIOR TO STARTING EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL NOTIFY PENNSYLVANIA ONE CALL SYSTEM, INC. AT 8-1-1. CONTRACTOR MUST RECEIVE ALL CLEARANCES BEFORE STARTING CONSTRUCTION ACTIVITIES.
9. PIPELINE LOCATIONS AND LIMIT OF DISTURBANCE (LOD) FROM SUNOCO PIPELINE L.P.
10. GENERAL LOCATION AND SPACING FOR WATER BARS ARE SHOWN ON THE PLAN. WATER BARS LOCATION MAY BE ADJUSTED IN THE FIELD DUE TO ACTUAL SITE CONDITIONS; HOWEVER, INSTALLATION AND SPACING MUST CONFORM TO THE DETAIL PROVIDED ON THE PLAN SHEET ES-0.08.
11. THE RIGHTS-OF-WAYS AND EASEMENTS SHOWN ON THIS PLAN ARE THE RESPONSIBILITY OF SUNOCO PIPELINE L.P. TO SECURE WITH THE INDIVIDUAL PROPERTY OWNER. THE RIGHTS-OF-WAY AND EASEMENTS SHOWN ON THIS PERMIT DRAWING REPRESENT THE BEST AVAILABLE PROPERTY INFORMATION AS PROVIDED TO TETRA TECH, INC. BY SUNOCO PIPELINE L.P. THE RIGHTS-OF-WAY AND EASEMENTS SHALL BE VERIFIED AND LOCATED IN THE FIELD BY SUNOCO PIPELINE L.P.
12. GENERAL E&S CONTROLS FOR SOIL STOCKPILE LOCATIONS ARE SHOWN ON THE TYPICAL DETAILS. ALONG THE ALIGNMENT, TOPSOIL WILL BE PUSHED TO ONE SIDE OF THE RIGHT OF WAY. THE TOPSOIL WILL BE PUSHED BACK DURING SITE RESTORATION. TOPSOIL WILL BE SEGREGATED AT ALL LOCATIONS THROUGHOUT THE PROJECT WHERE TOPSOIL EXISTS.
13. COMPOST FILTER SOCK INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.
14. IN-STREAM CONSTRUCTION IS RESTRICTED IN STOCKED TROUT STREAMS FROM MARCH 1 THROUGH JUNE 15 WHERE NOTED.
15. IN-STREAM CONSTRUCTION IS RESTRICTED IN WILD TROUT STREAMS FROM OCTOBER 1 THROUGH DECEMBER 31 WHERE NOTED.
16. THIS PROJECT WILL REQUIRE WATER FOR DUST CONTROL, PIPELINE CLEANING, HORIZONTAL DIRECTIONAL DRILLING AND HYDROSTATIC TESTING OF THE PIPELINE AND MAINLINE VALVES. ALL WATER FOR THESE ACTIVITIES WITHIN THE DELAWARE RIVER BASIN WILL BE SOURCED FROM MUNICIPAL WATER SOURCES. NO SURFACE WATER WITHDRAWAL WITHIN THE DELAWARE RIVER BASIN IS PROPOSED FOR THIS PROJECT.
17. ALL WATER USED FOR HYDROSTATIC TESTING OF THE PIPELINE AND MAINLINE VALVES WITHIN THE DELAWARE RIVER BASIN WILL BE DISCHARGED THROUGH THE DELAWARE COUNTY REGIONAL WATER QUALITY CONTROL AUTHORITY VIA SUNOCO FACILITIES AT MARCUS HOOK, DELAWARE COUNTY, PA.
18. PORTIONS OF THE PROJECT LOD HAVE BEEN DESIGNATED "TRAVEL LANES" WITH THE FOLLOWING CLASSIFICATIONS:
    A. TRAVEL AND CLEARING LOD – MECHANICAL CLEARING OF LAND BETWEEN HORIZONTAL DIRECTIONAL DRILL HDD WORKSPACES FOR LINE OF SIGHT AND, IN SOME CASES, ACCESS PURPOSES
    B. TRAVEL LOD – AREA NEEDED TO TRAVEL BETWEEN HORIZONTAL DIRECTIONAL DRILL WORKSPACES OR DOWN THE RIGHT-OF-WAY TO GET TO A HORIZONTAL DIRECTIONAL DRILL WORKSPACE
19. VOID MITIGATION PLAN FOR KARST TERRAIN AND UNDERGROUND MINING IS TO BE REVIEWED PRIOR TO CONSTRUCTION AND IMPLEMENTED AS NECESSARY OR REQUIRED THROUGHOUT CONSTRUCTION.
20. AT BLOCK VALVE SITES, FIELD SURVEYS WERE CONDUCTED TO ACCURATELY REFLECT FIELD CONDITIONS TO FACILITATE THE DESIGN OF THE SITES. THESE SURVEYS WERE CONDUCTED IN THE IMMEDIATE VICINITY OF THE PAD AND ROAD TO BE DESIGNED. DUE TO THE NATURE OF POST CONSTRUCTION STORMWATER DESIGN CRITERIA, SURVEY COULD NOT BE CONDUCTED FOR THE ENTIRE DRAINAGE AREAS AT EACH LOCATION. IN THESE AREAS, LIDAR DATA WAS SUBSTITUTED.

DRAWINGS BY TOWNSHIP

COUNTY	TOWNSHIP	PLAN SHEETS
BLAIR	JUNIATA	ES-3.01 TO ES-3.18
	ALLEGHENY	ES-3.18 TO ES-3.20
	BLAIR	ES-3.20 TO ES-3.34
	FRANKSTOWN	ES-3.34 TO ES-3.54
	WOODBURY	ES-3.54 TO ES-3.73

LIMIT OF DISTURBANCE/PROJECT AREA TABLE

	LIMIT OF DISTURBANCE	PROJECT AREA
BLAIR COUNTY	230 ACRES	230 ACRES

DETAIL INDICATOR

DETAIL NUMBER

SHEET SHOWN ON

LEGEND

- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING TREE LINE
- EXISTING FENCELINE
- EXISTING STREAM WITH FLOW DIRECTION
- EXISTING ELECTRIC OVERHEAD
- EXISTING ELECTRIC UNDERGROUND
- EXISTING LIGHT POLE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING DOMINION GAS LINE
- EXISTING SANITARY SEWER LINE
- EXISTING BUILDING
- PROPERTY LINE
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- 100-YEAR FLOODWAY
- 100-YEAR FEMA FLOODWAY
- 100-YEAR FEMA FLOODPLAIN
- WATERSHED BOUNDARY
- ORANGE CONSTRUCTION FENCE
- EXISTING PEM WETLAND
- EXISTING PFO WETLAND
- EXISTING PSS WETLAND
- PROPOSED PIPE LOCATION
- PROPOSED PERMANENT RIGHT-OF-WAY
- PROPOSED TEMPORARY RIGHT-OF-WAY
- PROPOSED TEMPORARY WORKSPACE
- RIPARIAN FOREST BUFFER
- OUTFALL FLOW DIRECTION ARROW
- LIMIT OF DISTURBANCE (ESCGP-2 PERMIT BOUNDARY)/ AREA TO BE RESTORED
- ROCK CONSTRUCTION ENTRANCE — 1 / 0.05
- ROCK CONSTRUCTION ENTRANCE WITH WASH RACKS — 3 / 0.05
- AGGREGATE STOCKPILE
- PERMANENT WATER BAR — 2 / 0.05
- TEMPORARY WATER BAR — 2 / 0.05
- EROSION CONTROL BLANKET — 4 / 0.05
- 12" COMPOST FILTER SOCK
- 18" COMPOST FILTER SOCK — 5 / 0.05
- 24" COMPOST FILTER SOCK
- COMPOST SOCK SEDIMENT TRAP — 6 / 0.06
- TRENCH PLUGS — 10 / 0.07
- TEMPORARY TIMBER MAT — 16 / 0.10
- TEMPORARY EQUIPMENT CROSSING — 15 / 0.10
- WATER DEFLECTOR — 13 / 0.07
- SPOIL STOCKPILE
- AREA TO BE BORED — HORIZONTAL DIRECTIONAL DRILL
- AREA TO BE BORED — CONVENTIONAL BORE
- ROW – TRAVEL AND CLEARING LOD
- ROW – TRAVEL LOD
- TEMPORARY UPSLOPE DIVERSION BERM
- TEMPORARY SLOPE PIPE
- A — TROUT STREAM RESTRICTION – NO IN-STREAM WORK BETWEEN OCT-DEC
- B — TROUT STREAM RESTRICTION – NO IN-STREAM WORK BETWEEN OCT-APR
- C — TROUT STREAM RESTRICTION – NO IN-STREAM WORK BETWEEN MAR-JUN & OCT-DEC
- D — TROUT STREAM RESTRICTION – NO IN-STREAM WORK BETWEEN MAR-JUN
- PFO — SPECIAL RESTORATION AREA – PFO TO PFO; SEE PFO RESTORATION PLANTING NOTES
- PSS — SPECIAL RESTORATION AREA – PSS TO PSS; SEE PSS RESTORATION NOTES
- SITE SPECIFIC PLAN DRAWING AREA. SITE SPECIFIC TOPOGRAPHIC SURVEY CONDUCTED IN THIS APPROXIMATE AREA. E&S CONTROL LAYOUT ON E&S PLAN MAY DIFFER FROM THE SITE SPECIFIC PLAN DUE ADDITIONAL SURVEY CONDUCTED IN THESE AREAS. SITE SPECIFIC PLAN SUPERSEDES E&S PLAN IN THESE AREAS.

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — ROBERT F. SIMCIK — ENGINEER — 072404205-E

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-0.01
SHEET 0.01 OF 102

Stream ID	Stream Name	Coordinates	Flow Regime	Bank to Bank Width (feet)	Crossing Method	PAFBC Stream Designation	Siltation Impaired	E&S Plan Sheet Number
S-BB42	UNT to Beaverdam Branch	-78.4227, 40.4075	Ephemeral	8	Dry Crossing	n/a	No	ES - 3.24
S-BB43	UNT to Oldtown Run	40.4178, -78.3466	Ephemeral	3	~~Open Cut Floodway~~ ~~Floodway Only~~	n/a ~~Drains to TNR~~	No	ES - 3.38
S-BB44	Oldtown Run	-78.3483, 40.4167	Perennial	~~40~~ 28	Dry Crossing	n/a ~~Drains to TNR~~	No	ES - 3.38
S-BB47	UNT to Oldtown Run	-78.3571, 40.4143	Perennial	4	Dry Crossing	n/a ~~Drains to TNR~~	No	ES - 3.36
S-BB48	Juniata River	-78.3736, 40.4133	Perennial	85	HDD	~~Drains to~~ TNR	No	ES - 3.33
S-BB49B	UNT to Juniata River	-78.3808, 40.4152	Perennial	6	Dry Crossing/Temporary Bridge	Drains to TNR	No	ES - 3.32
S-KP1	UNT to Juniata River	-78.3805, 40.4156	Intermittent	8	Dry Crossing/Temporary Bridge	Drains to TNR	No	ES - 3.32
S-BB66	UNT to Juniata River	-78.3051, 40.4073	Perennial	6	Floodway Crossing	n/a ~~Drains to TNR~~	No	ES - 3.53
S-BB67	UNT to Juniata River	-78.3045, 40.4077	Perennial	8	Temporary Bridge	n/a ~~Drains to TNR~~	No	ES - 3.53
S-BB68	UNT to Juniata River	-78.3039, 40.4093	Perennial	3	Temporary Bridge	n/a ~~Drains to TNR~~	No	ES - 3.53
S-BB69	UNT to Juniata River	-78.3035, 40.41	Ephemeral	8	Temporary Bridge	n/a ~~Drains to TNR~~	No	ES - 3.53
S-BB70	UNT to Juniata River	-78.3024, 40.416	Intermittent	5	~~Temporary Bridge~~ ~~Floodway Crossing~~	Drains to TNR	No	ES - 3.53
S-BB71	UNT to Juniata River	-78.3023, 40.4167	Intermittent	3	Floodway Crossing	Drains to TNR	No	ES - 3.53
S-STV2	UNT to Robinson Run	-78.3024, 40.4168	Intermittent	3.5	Temporary Bridge	Drains to TNR	No	ES - 3.53
S-BB72	UNT to Juniata River	-78.301, 40.4201	Intermittent	2	Temporary Bridge	Drains to TNR	No	ES - 3.53
S-BB73	UNT to Juniata River	-78.3001, 40.4211	Intermittent	5	~~Temporary Bridge~~ ~~Floodway Crossing~~	Drains to TNR	No	ES - 3.53
S-BB74	UNT to Juniata River	-78.2961, 40.4236	Perennial	8	~~Floodway Crossing~~ ~~Temporary Bridge~~	Drains to TNR	No	ES - 3.74
S-BB75	UNT to Juniata River	-78.296, 40.4237	Intermittent	4	~~Floodway Crossing~~ ~~Temporary Bridge~~	Drains to TNR	No	ES - 3.74
S-BB76	UNT to Juniata River	-78.2929, 40.4264	Perennial	4	Temporary Bridge	Drains to TNR	No	ES - 3.53
S-BB77	UNT to Juniata River	-78.2828, 40.4267	Intermittent	6	~~Temporary Bridge~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.74
S-BB78	UNT to Juniata River	-78.2924, 40.4273	Perennial	7	Temporary Bridge	Drains to TNR	No	ES - 3.53
S-BB79	UNT to Robinson Run	-78.3327, 40.4307	Intermittent	4	~~Temporary Bridge~~ ~~Avoid~~	Drains to TNR	No	ES - 3.42
S-BB80	UNT to Robinson Run	-78.3342, 40.4324	Intermittent	8	~~Floodway Only~~	Drains to TNR	No	ES - 3.42
S-BB88	UNT to Juniata River	-78.3353, 40.4313	Intermittent	5	~~Open Cut Floodway~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.42
S-BB89	UNT to Juniata River	-78.3349, 40.4323	Intermittent	3	Bore	Drains to TNR	No	ES - 3.42
S-KP2	UNT to Dry Run	-78.4624, 40.4065	Ephemeral	15	~~Temporary Bridge~~ ~~Floodway Crossing~~	Drains to STS	No	ES - 3.17
S-BB90	UNT to Juniata River	-78.3343, 40.4343	Ephemeral	1	~~Open Cut Floodway~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.43
S-L58	Clover Creek	-78.2123, 40.421	Perennial	20	~~HDD~~ Dry Crossing	~~STS, Class A, ATW, TNR~~ ATW, STS, TNR, Drains to Class A	No	ES - 3.67
S-L67	UNT to Frankstown Branch Juniata River	-78.3116, 40.4437	Ephemeral	2	~~Open Cut Floodway~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.49
S-L68	UNT to Frankstown Branch Juniata River	-78.3148, 40.4456	Ephemeral	3	Dry Crossing	Drains to TNR	No	ES - 3.48
S-L69	UNT to Frankstown Branch Juniata River	-78.3227, 40.4472	Ephemeral	5	Dry Crossing	Drains to TNR	No	ES - 3.46, 3.47
S-L70	UNT to Frankstown Branch Juniata River	~~40.4476,~~ -78.3226	Intermittent	2	Floodway Only	Drains to TNR	No	ES - 3.46
S-L72	UNT to Frankstown Branch Juniata River	-78.3241, 40.4462	Intermittent	4	~~Dry Crossing~~ ~~Bore/Temporary Bridge~~	Drains to TNR	No	ES - 3.46
S-L74	UNT to Frankstown Branch Juniata River	-78.3237, 40.446	Ephemeral	3	Dry Crossing	Drains to TNR	No	ES - 3.46
S-L75	UNT to Frankstown Branch Juniata River	-78.3243, 40.4455	Ephemeral	3	~~Open Cut Floodway~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.46
S-BB96	UNT to Frankstown Branch Juniata River	-78.3226, 40.4472	Ephemeral	1.5	Dry Crossing	Drains to TNR	No	ES - 3.46
S-L76	UNT to Frankstown Branch Juniata River	-78.3246, 40.4445	Intermittent	4	~~Dry Crossing~~ HDD	Drains to TNR	No	ES - 3.46
S-L77	Frankstown Branch Juniata River	-78.3295, 40.4403	Perennial	60	HDD	TNR	No	ES - 3.44, 3.45
S-BB91	UNT to Frankstown Branch Juniata River	-78.3335, 40.4393	Perennial		Floodway Only	~~Drains to WWF, MF~~ Drains to TNR	No	ES - 3.44
S-BB92	UNT to Frankstown Branch Juniata River	-78.3330, 40.4406	Perennial	8	HDD	~~Drains to WWF, MF~~ Drains to TNR	No	ES - 3.44
S-BB95	UNT to Frankstown Branch Juniata River	-78.3298, 40.4417	Ephemeral	3	HDD	~~Drains to WWF, MF~~ Drains to TNR	No	ES - 3.44
S-L79	UNT to Frankstown Branch Juniata River	-78.3737, 40.4104	Ephemeral	2	~~Floodway Crossing~~ ~~Floodway Only~~	Drains to TNR	No	ES - 3.34
S-L80	UNT to Frankstown Branch Juniata River	-78.3738, 40.4104	Intermittent	2	Temporary Bridge	Drains to TNR	No	ES - 3.34
S-L83	UNT to Poplar Run	-78.5142, 40.401	Ephemeral	7	Dry Crossing	Drains to STS, ATW, TNR	No	ES - 3.08
S-Q58	UNT to Poplar Run	-78.5144, 40.4011	Perennial	4	Dry Crossing	Drains to ATW and STS	No	ES - 3.08
S-L84	Dry Run	-78.5015, 40.4027	Perennial	3	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.10
S-L96	UNT to Blair Run	-78.5474, 40.4044	Perennial	~~15~~ 30	Dry Crossing	~~STS~~, Drains to TNR	No	ES - 3.02, 3.03
S-L97	UNT to Blair Run	40.4041, -78.5474	Perennial	5	Dry Crossing	~~STS~~, Drains to TNR	No	ES - 3.02, 3.03
S-L98	UNT to Blair Run	-78.5359, 40.402	Ephemeral	3	Dry Crossing	~~STS~~, Drains to TNR TNR	No	ES - 3.05
S-M30	Piney Creek	-78.2868, 40.4331	Perennial	30	HDD	~~Class A~~, TNR	No	ES - 3.58
S-M31	Frankstown Branch Juniata River	-78.2969, 40.4344	Perennial	~~150~~ 141	HDD	TNR	No	ES - 3.52
S-M32	UNT to Frankstown Branch Juniata River	-78.299, 40.4351	Ephemeral	4	~~HDD~~ HDD Temporary Bridge	Drains to TNR	No	ES - 3.51
S-M33	UNT to Piney Creek	-78.2884, 40.4336	Perennial	10	HDD	Drains to ~~Class A~~, TNR	No	ES - 3.57
S-M34	UNT to Piney Creek	-78.2732, 40.4347	Perennial	7	~~Open Cut Floodway~~ ~~Floodway Crossing~~	Drains to ~~Class A~~, TNR	No	ES - 3.56, 3.57
S-M35	UNT to Piney Creek	-78.2778, 40.4355	Intermittent	~~3~~ 9	Dry Crossing	Drains to ~~Class A~~, TNR	No	ES - 3.56
S-M38	UNT to Frankstown Branch Juniata River	-78.2934, 40.4335	Intermittent	3	~~Dry Crossing~~ HDD Clearing LOD	Drains to TNR	No	ES - 3.52, 3.53
S-M65	UNT to Frankstown Branch Juniata River	-78.3290, 40.4400	Ephemeral	5	HDD Floodway	Drains to TNR	No	ES - 3.44
S-M39	UNT to Frankstown Branch Juniata River	-78.2955, 40.4341	Intermittent	3	~~Open Cut Floodway~~ ~~HDD Floodway~~	Drains to TNR	No	ES - 3.52
S-M67	UNT to Beaverdam Branch	-78.4248, 40.4074	Ephemeral	2	Dry Crossing	n/a	No	ES - 3.24
S-M68	UNT to Dry Run	-78.4328, 40.4084	Ephemeral	2	~~Open Cut Floodway~~ ~~HDD Floodway~~	Drains to ~~STS~~ TNR	No	ES - 3.22
S-M69	Dry Run	-78.4408, 40.4089	Perennial	10	HDD	Drains to ~~STS~~ TNR	No	ES - 3.21
S-M70	UNT to Dry Run	-78.4567, 40.4066	Intermittent	6	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.18
S-M71	UNT to Dry Run	-78.4601, 40.4064	Ephemeral	2	~~Open Cut Floodway~~ ~~Floodway Only~~	Drains to ~~STS~~ TNR	No	ES - 3.18
S-M72	UNT to Dry Run	-78.4604, 40.4066	Ephemeral	4	Dry Crossing/Temporary Bridge	Drains to ~~STS~~ TNR	No	ES - 3.18
S-M73	UNT to Blair Gap Run	-78.469, 40.407	Ephemeral	2	Dry Crossing	~~STS~~, Drains to ATW, ~~TNR~~ ~~STS~~	No	ES - 3.16
S-M74	UNT to Dry Run	-78.4834, 40.4051	Perennial	11	Dry Crossing	Drains to STS	No	ES - 3.14
S-M75	UNT to Dry Run	-78.4836, 40.4054	Intermittent	8	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.14
S-M76	UNT to Dry Run	-78.4877, 40.405	Ephemeral	3	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.13
S-M77	UNT to Dry Run	-78.4879, 40.4047	Ephemeral	2	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.13
S-M78	UNT to Dry Run	-78.4916, 40.4048	Intermittent	7	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.12
S-M79	UNT to Dry Run	-78.4929, 40.4047	Ephemeral	1	~~Dry Crossing~~ ~~Bore/Temporary Bridge~~	Drains to ~~STS~~ TNR	No	ES - 3.12
S-M80	UNT to Dry Run	-78.4958, 40.4049	Intermittent	3	Dry Crossing	Drains to ~~STS~~ TNR	No	ES - 3.12
S-Q59	UNT to Dry Run	-78.5018, 40.4048	Intermittent	2	Dry Crossing	Drains to ~~STS and~~ TNR	No	ES - 3.11
S-STV1	UNT to Robinson Run	-78.3037, 40.4131	Intermittent	2	~~Floodway Crossing~~ Temporary Bridge	Drains to TNR	No	ES - 3.53
S-STV3	UNT to Robinson Run	-78.3026, 40.4173	Intermittent	2.5	Temporary Bridge	Drains to TNR	No	ES - 3.53
S-STV4	UNT to Robinson Run	-78.2986, 40.4225	Intermittent	1	~~Floodway Crossing~~ Temporary Bridge	Drains to TNR	No	ES - 3.53

Wetland ID	USFWS Cowardin Classification	Coordinates	Crossing Method	Exceptional Value	Site Plan Sheet Number
BB51	PEM	-78.3485, 40.4162	Open Cut	Wild Trout	ES - 3.37, 3.38
BB52	PEM	-78.3514, 40.4151	Open Cut	n/a Wild Trout Trib	ES - 3.37
BB56	PEM	-78.3552, 40.4143	Open Cut	n/a Wild Trout Trib	ES - 3.36
BB58	PEM	-78.3722, 40.4121	~~Open Cut~~ HDD	n/a Wild Trout	ES - 3.33
	PSS	-78.3728, 40.4123	HDD	n/a Wild Trout	ES - 3.33
BB59	PEM	-78.3797, 40.4152	Open Cut	n/a	ES - 3.32
BB60	PEM	-78.3802, 40.4157	Open Cut/Temporary Matting	Wild Trout	ES - 3.32
BB108	PEM	-78.3328, 40.4309	~~Open Cut~~ Temporary Matting	n/a	ES - 3.42
BB111	PEM	-78.5569, 40.4085	Open Cut	Wild Trout	ES - 3.01
BB120	PEM	-78.4622, 40.4070	~~Open Cut~~ HDD	n/a Wild Trout Trib	ES - 3.17
BB124	PEM	-78.3330, 40.4381	Open Cut/Temporary Matting	n/a Wild Trout Trib	ES - 3.43, 3.44
	PSS	-78.3323, 40.4396	Open Cut/Temporary Matting	n/a Wild Trout Trib	ES - 3.43, 3.44
BB125	PEM	-78.3309, 40.4412	HDD	n/a Wild Trout Trib	ES - 3.44
BB159	PEM	-78.3722, 40.4121	~~Open Cut~~ HDD/Temporary Matting	n/a	ES - 3.33
L35	PEM	-78.2123, 40.4212	~~HDD~~ Open Cut	Wild Trout Trib	ES - 3.67
L40	PEM	-78.3004, 40.4363	Open Cut	n/a Wild Trout	ES - 3.51
L42	PEM	-78.3042, 40.4381	Open Cut	n/a	ES - 3.50
L43	PEM	-78.3054, 40.4392	Open Cut	n/a	ES - 3.50
L44	PEM	-78.3209, 40.4472	Open Cut	n/a	ES - 3.47
L46	PEM	-78.3222, 40.4475	Open Cut	Wild Trout	ES - 3.46, 3.47
L48	PEM	-78.3226, 40.4476	Open Cut	Wild Trout Trib	ES - 3.47
L54	PEM	-78.3254, 40.4440	Open Cut/ HDD	Wild Trout Trib	ES - 3.45, 3.46
L55	PEM	-78.3269, 40.4428	HDD	Wild Trout	ES - 3.45
	PFO	-78.3264, 40.4426	HDD	Wild Trout	ES - 3.45
L56	PEM	-78.3282, 40.4418	HDD	Wild Trout	ES - 3.45
	PFO	-78.3294, 40.4419	HDD	Wild Trout	ES - 3.45
	PSS	~~-78.3289, 40.4421~~	HDD	Wild Trout	ES - 3.45
L59	PEM	-78.372, 40.4103	Temporary Matting	n/a	ES - 3.34
L61	PEM	-78.5019, 40.4029	Open Cut	n/a Wild Trout Trib	ES - 3.10
L70	PFO	-78.5566, 40.4083	Open Cut	Wild Trout Trib	ES - 3.01
M23	PEM	-78.2121, 40.4210	~~HDD~~ Open Cut	Wild Trout	ES - 3.67
M24	PEM	-78.2986, 40.4347	HDD/ Temporary Matting	Wild Trout	ES - 3.51
M26	PEM	-78.2681, 40.4333	HDD	Wild Trout Trib	ES - 3.57
M29	PEM	-78.2948, 40.4336	HDD	Wild Trout Trib	ES - 3.52
M35	PFO	-78.3358, 40.4331	HDD	Wild Trout Trib	ES - 3.42
M49	PFO	-78.4419, 40.4094	HDD	n/a Wild Trout Trib	ES - 3.21
M55	PEM	-78.4920, 40.4047	Open Cut	n/a Wild Trout Trib	ES - 3.12
M56	PEM	-78.4927, 40.4048	Open Cut	n/a Wild Trout Trib	ES - 3.12
M57	PEM	-78.4957, 40.4050	Open Cut	n/a Wild Trout Trib	ES - 3.12
M79	PFO	-78.4419, 40.4094	HDD	n/a Wild Trout Trib	ES - 3.21
Q51	PEM	40.4064, -78.5569	Temporary Matting	n/a	ES - 3.01
Q52	PEM	-78.4952, 40.4054	Open Cut	n/a Wild Trout Trib	ES - 3.12
Q54	PEM	-78.3833, 40.4163	Open Cut	n/a	ES - 3.31
Q56	PEM	-78.3827, 40.4162	Open Cut	n/a	ES - 3.31
Q57	PFO	-78.3807, 40.4158	Open Cut	Wild Trout	ES - 3.32
Q58	PEM	-78.3378, 40.4305	Open Cut	n/a	ES - 3.41
			42 Wetlands		

Site Specific Restrictions			
Indiana Bat [1]			
County	**E&S Sheet No.**	**Beginning Station**	**Ending Station**
Blair	ES-3.01	5762+00	5778+00
	ES-3.02	5780+00	5794+00
	ES-3.03	5796+00	5812+00
	ES-3.04	5814+00	5828+00
	ES-3.05	5830+00	5844+00
	ES-3.06	5846+00	5862+00
	ES-3.07	5862+00	5878+00
	ES-3.08	5880+00	5894+00
	ES-3.09	5896+00	5914+00
	ES-3.10	5914+00	5928+00
	ES-3.11	5930+00	5950+00
	ES-3.12	5950+00	5966+00
	ES-3.13	5968+00	5982+00
	ES-3.14	5984+00	6000+00
	ES-3.15	6000+00	6016+00
	ES-3.16	6018+00	6032+00
	ES-3.17	6034+00	6050+00
	ES-3.18	6050+00	6068+00
	ES-3.19	6070+00	6086+00
	ES-3.20	6086+00	6102+00
	ES-3.21	6104+00	6118+00
	ES-3.22	6120+00	6136+00
	ES-3.23	6138+00	6154+00
	ES-3.24	6156+00	6172+00
	ES-3.25	6172+00	6188+00
	ES-3.26	6188+00	6204+00
	ES-3.27	6206+00	6220+00
	ES-3.28	6222+00	6240+00
	ES-3.29	6240+00	6256+00
	ES-3.30	6258+00	6274+00
	ES-3.31	6276+00	6294+00
	ES-3.32	6294+00	6308+00
	ES-3.33	6310+00	6324+00
	ES-3.34	6338+00	6336+00
	ES-3.35	6348+00	6364+00
	ES-3.36	6364+00	6380+00
	ES-3.37	6382+00	6398+00
	ES-3.38	6398+00	6414+00
	ES-3.39	6416+00	6430+00
	ES-3.40	6430+00	6452+00
	ES-3.41	6448+00	6468+00
	ES-3.42	6470+00	6486+00
	ES-3.43	6486+00	6502+00
	ES-3.44	6500+00	6518+00
	ES-3.45	6520+00	6534+00
	ES-3.46	6534+00	6550+00
	ES-3.47	6548+00	6564+00
	ES-3.48	6568+00	6584+00
	ES-3.49	6584+00	6600+00
	ES-3.50	6602+00	6620+00
	ES-3.51	6622+00	6638+00
	ES-3.52	6640+00	6656+00
	ES-3.53	6658+00	6672+00
	ES-3.54	6672+00	6692+00
	ES-3.55	6690+00	6706+00
	ES-3.56	6704+00	6722+00
	ES-3.57	6724+00	6740+00
	ES-3.58	6756+00	6754+00
	ES-3.59	6758+00	6772+00
	ES-3.60	6774+00	6788+00
	ES-3.61	6790+00	6806+00
	ES-3.62	6806+00	6822+00
	ES-3.63	6824+00	6838+00
	ES-3.64	6840+00	6856+00
	ES-3.65	6856+00	6872+00
	ES-3.66	6874+00	6888+00
	ES-3.67	6890+00	6904+00
	ES-3.68	6906+00	6922+00
	ES-3.69	6924+00	6938+00
	ES-3.70	6940+00	6956+00
	ES-3.71	6956+00	6972+00
	ES-3.72	6974+00	6988+00
	ES-3.73	6990+00	7006+00
	ES-3.74	N/A	N/A
	ES-3.75	N/A	N/A
	ES-3.76	N/A	N/A
Timber Rattle Snake [2]			
County	**E&S Sheet No.**	**Beginning Station**	**Ending Station**
Blair	ES-3.01	5762+00	5778+00
	ES-3.02	5780+00	5794+00
	ES-3.03	5796+00	5812+00
	ES-3.04	5814+00	5828+00
	ES-3.05	5830+00	5844+00
	ES-3.06	5846+00	5862+00
	ES-3.07	5862+00	5878+00
	ES-3.08	5880+00	5894+00
	ES-3.09	5896+00	5914+00
	ES-3.33	6310+00	6324+00
	ES-3.34	6338+00	6336+00
	ES-3.35	6348+00	6364+00
	ES-3.36	6364+00	6380+00
	ES-3.71	6956+00	6972+00
	ES-3.72	6974+00	6988+00
	ES-3.73	6990+00	7006+00

[1] Bat clearing restriction area, no tree clearing between April 1 and November 14.

[2] Timber rattlesnake monitoring area, see timber rattlesnake conservation plan for requirements. Use only biodegradable Curlex® FibreNet™ 1 on slopes up to 2:1, for slopes up to 1.5:1, use Curlex® II.

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	REDLINE REVISIONS
3	RS	4/5/18	UPDATED STREAM AND WETLAND CROSSING TABLE

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER 075034425-E 4/4/18

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1–20" & 1–16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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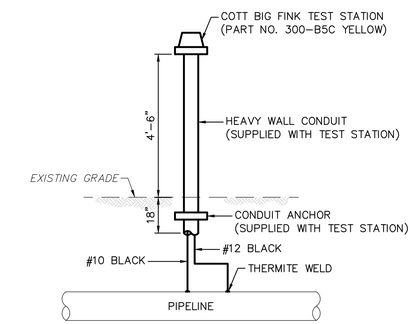
SHEET 0.02 OF 102

AVOIDANCE MEASURES TABLE

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)
Timber Rattlesnake	PAFBC	Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland	NA	Construction Monitoring	09/22/15	Timber Rattlesnake Conservation Plan (August 2015)

Species or Area	Agency	County/AOC/ Survey Area	Population	Pre-Construction, Construction and Restoration, Post-Construction Activity	Clearance Letter	Conservation Plan
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Restoration	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)
Eastern Small-footed bat	PGC	Cambria, Blair, Huntingdon, and Perry	NA	Monitoring	06/08/16	Eastern Small-footed Bat Conservation Plan (January 2016)
Bog turtle	USFWS	All	NA	Construction, Restoration	10/31/16	Bog Turtle Conservation Plan (April 2016)
Indiana bat	USFWS	Allegheny, Westmoreland, Cambria, Huntingdon, and Blair	NA	Pre-Construction	10/31/16	Myotis Conservation Plan (April 2016)
Antennaria virginica	PADCNR	Blair/AOC W14	Populations 3,8,16	Construction	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)
Antennaria virginica	PADCNR	Blair/AOC W14	Populations 7 and 9	Monitoring	11/15/15	Conservation Plan for Identified Species [Plants] of Special Concern (November 2015)



NOTES:

1. TEST WIRES SHALL BE STRANDED COPPER WITH THW OR MTW INSULATION.
2. TEST WIRES SHALL BE OF THE GAUGE INDICATED AND PROVIDED WITH WIRE LABELS (WITHIN TEST STATION) TO IDENTIFY THE PIPELINE ATTACHMENT LOCATION. THE NO. 1 TEST WIRE SHALL BE ATTACHED TO THE PIPELINE AT THE LOWER STATION NO. WITH THE ADDITIONAL TEST WIRE ATTACHED AT THE SPACING INDICATED AND IN ORDER OF ADVANCING STATION NOS.
3. TEST WIRES ARE TO BE CONNECTED USING THE THERMITE WELD PROCESS.
4. COAT THERMITE WELD CONNECTION & ALL BELOW GRADE EXPOSED COPPER AS SPECIFIED FOR EXISTING PIPELINE COATING OR AS SPECIFIED FOR BARE PIPE.
5. INSTALL TEST WIRES WITHIN PIPE TRENCH AT THE FIVE OR SEVEN O'CLOCK POSITION OF THE PIPE. TEST WIRES SHALL NOT BE IN IMMEDIATE CONTACT WITH THE PIPE.
6. BACK–FILL AROUND WIRES MUST BE FREE OF SHARP MATERIALS WHICH COULD DAMAGE THE TEST WIRE INSULATION.

TYPICAL CATHODIC PROTECTION TEST STATION

NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1–20" & 1–16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES–0.03

SHEET 0.03 OF 102

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TEMPORARY EROSION AND SEDIMENT CONTROLS INSPECTION AND MAINTENANCE SCHEDULE

BMP	INSPECTION FREQUENCY	MAINTENANCE TO BE PERFORMED
COMPOST FILTER SOCK	WEEKLY AND AFTER RUNOFF EVENTS	MAINTENANCE SHALL BE PERFORMED AS NEEDED, SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BARRIER. COMPOST FILTER SOCK SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF COMPOST FILTER SOCK IS REDUCED. COMPOST FILTER SOCKS SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATION AT THE COMPOST FILTER SOCK SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE COMPOST FILTER SOCK IS REMOVED.
ROCK CONSTRUCTION ENTRANCE	DAILY	CONTRACTOR SHALL MAINTAIN/REPLACE MATERIAL AS NEEDED THROUGHOUT CONSTRUCTION TO MAINTAIN EFFECTIVENESS AND SPECIFIED MINIMUM THICKNESS DURING USE OF ACCESS ROAD. A STOCKPILE OF ROCK WILL BE MAINTAINED ON SITE FOR THIS PURPOSE
MULCH STABILIZATION	WEEKLY AND AFTER RUNOFF EVENTS	REPLACE MULCH AS REQUIRED. RESTORE SEEDING IN AFFECTED AREA IF NECESSARY.
TIMBER MAT	WEEKLY AND AFTER RUNOFF EVENTS	INSPECT THE TIMBER MAT FOR EROSION AND MAKE ANY NECESSARY REPAIRS.
WATERBARS	WEEKLY AND AFTER RUNOFF EVENTS	WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
PUMPED WATER FILTER BAGS	DAILY	FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES:

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING, CUTS, FILLS, TRENCHING, AND TEMPORARY ROAD CONSTRUCTION OR IMPROVEMENT, SHALL BE DONE IN ACCORDANCE WITH AN APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. ~~AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.~~ FOR EARTH DISTURBANCE ACTIVITIES AUTHORIZED BY THIS PERMIT, AT LEAST ONE PRE-CONSTRUCTION MEETING IS REQUIRED. THE PERMITTEE SHALL CONTACT DEP TO SCHEDULE THE PRE-CONSTRUCTION MEETING AND PROVIDE AT LEAST SEVEN (7) DAYS' NOTICE OF THE PRE-CONSTRUCTION MEETING TO ALL INVITED ATTENDEES, UNLESS OTHERWISE APPROVED BY DEP IN WRITING. PERMITTEES, CO-PERMITTEES, OPERATORS, AND LICENSED PROFESSIONALS, OR DESIGNEES RESPONSIBLE FOR EARTH DISTURBANCE ACTIVITY, INCLUDING IMPLEMENTATION OF E&S, PCSM AND PPC PLANS AND CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN, SHALL ATTEND THE PRE-CONSTRUCTION MEETING(S). PERMITTEES, CO-PERMITTEES, OPERATORS AND LICENSED PROFESSIONALS ARE RESPONSIBLE FOR ENSURING THAT ALL ACTIVITIES ON THE SITE COMPLY WITH THE REQUIREMENTS OF THE PERMIT. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION VI OF THE APPROVED CHAPTER 102 PERMIT).
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

4A. THE STAGING OF EARTH DISTURBANCE ACTIVITIES AND MAINTENANCE REQUIREMENTS CONTAINED IN THE APPROVED E&S PLAN MUST BE FOLLOWED. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION C OF THE APPROVED CHAPTER 102 PERMIT).

5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. ~~GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.~~ GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE E&S PLAN FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THE E&S PLAN. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION F OF THE APPROVED CHAPTER 102 PERMIT).
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND/OR FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER. SEGREGATION OF TOPSOIL SHALL OCCUR WHERE TOPSOIL EXISTS WITHIN THE WORK AREA.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ~~ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.~~ ALL BUILDING MATERIALS AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED IN ACCORDANCE WITH DEP'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE CHAPTER 260A (RELATING TO HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL), CHAPTER 271 (RELATED TO MUNICIPAL WASTE MANAGEMENT SYSTEM -- GENERAL PROVISIONS), AND CHAPTER 287 (RELATING TO RESIDUAL WASTE MANAGEMENT SYSTEM -- GENERAL PROVISIONS). NO BUILDING MATERIAL OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT OR FROM THE SITE. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION V OF THE APPROVED CHAPTER 102 PERMIT).
11. ~~ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.~~ AN E&S PLAN OR OTHER AUTHORIZATION MEETING THE REGULATORY REQUIREMENTS DETAILED IN 25 PA. CODE § 102.4(B) SHALL BE RECEIVED AND APPROVED BY DEP OR AN AUTHORIZED CONSERVATION DISTRICT AND IMPLEMENTED FOR ALL SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.(IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION VII, CONDITION A OF THE APPROVED CHAPTER 102 PERMIT).
12. ~~THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.~~ CLEAN FILL REQUIREMENTS -- ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE DEP FORM FP-001 (CERTIFICATION OF CLEAN FILL) TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIALS AS CLEAN FILL. THE FORM MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. FILL MATERIAL NOT QUALIFYING AS CLEAN FILL IS REGULATED FILL AND MUST BE MANAGED IN ACCORDANCE WITH DEP'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 271 OR 287, WHICHEVER IS APPLICABLE. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION VII, CONDITION B OF THE APPROVED CHAPTER 102 PERMIT).
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.

13A. UPON THE INSTALLATION OR STABILIZATION OF ALL PERIMETER SEDIMENT CONTROL BMPS AND AT LEAST THREE (3) DAYS PRIOR TO PROCEEDING WITH THE BULK EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE OR THE CO-PERMITTEE SHALL PROVIDE NOTIFICATION TO DEP OR AN AUTHORIZED CONSERVATION DISTRICT. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION D OF THE APPROVED CHAPTER 102 PERMIT).

STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES (CONTINUED):

14. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, RE-MULCH AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
15. NO SOIL AMENDMENTS SUCH AS AGRICULTURAL LIME, FERTILIZER, ETC. WILL BE USED WITHIN WETLAND AREAS.
16. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE AT THE END OF EACH DAY, OR AS NEEDED, OR AS DIRECTED BY THE CONSERVATION DISTRICT OR LOCAL MUNICIPALITY, AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
18. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
19. IN AREAS OF TOPSOIL SEGREGATION THE TOPSOIL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO THE RESTORATION OF THE TOPSOIL. AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILLOUT SLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
20. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS.
22. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
23. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
26. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 100 FEET OF A SPECIAL PROTECTION SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
27. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE CESSATION OF EARTH DISTURBANCE ACTIVITIES IN NON-SPECIAL PROTECTION WATERSHEDS WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES IN A SPECIAL PROTECTION WATERSHEDS TEMPORARY STABILIZATION SHALL BE IMMEDIATE.
28. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
29. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORM WATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON. ~~THE THREE PERIOD BETWEEN THE TRENCH EXCAVATION TO THE BEGINNING OF DISTURBED AREA STABILIZATION FOR THE MAIN LINE PIPELINE INSTALLATION SHALL NOT EXCEED THIRTY (30) CALENDAR DAYS, UNLESS SUFFICIENT JUSTIFICATION FOR AN EXTENSION OF TIME IS PROVIDED TO AND APPROVED BY DEP IN WRITING.~~

31A. THE TIME PERIOD BETWEEN THE TRENCH EXCAVATION TO THE BEGINNING OF DISTURBED AREA STABILIZATION FOR THE MAIN LINE PIPELINE INSTALLATION SHALL NOT EXCEED THIRTY (30) CALENDAR DAYS, UNLESS SUFFICIENT JUSTIFICATION FOR AN EXTENSION OF TIME IS PROVIDED TO AND APPROVED BY DEP IN WRITING. UPON TEMPORARY CESSATION OF ANY EARTH DISTURBANCE ACTIVITY, INCLUDING TOPSOIL AND SOIL STOCKPILES, FOR WHICH THE CESSATION OF THE EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR (4) CALENDAR DAYS, THE DISTURBED AREA SHALL BE TEMPORARILY STABILIZED IN ACCORDANCE WITH THE E&S PLAN AND WITH 25 PA. CODE § 102.22(B). PROPER E&S BMPS SHALL BE IMPLEMENTED AND MAINTAINED THROUGHOUT THE ENTIRE PROJECT UNTIL PERMANENT STABILIZATION AND NOTICE OF TERMINATION APPROVAL. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION XI OF THE APPROVED CHAPTER 102 PERMIT).

32. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
33. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO$10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
34. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.
35. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE CHANNEL SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.
36. ~~EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR GREATER AND ALL AREAS, REGARDLESS OF SLOPE WITHIN 50 FEET OF NON-SPECIAL PROTECTION AND 100 FEET OF A SPECIAL PROTECTION SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.~~ REGARDLESS OF SLOPE, EROSION CONTROL BLANKETS SHALL BE USED FOR ALL SEEDED AREAS WITHIN 100 FEET OF A HIGH QUALITY OR EXCEPTIONAL VALUE SURFACE WATER. FOR ALL SLOPES THAT ARE 3H:1V OR STEEPER OR WHERE POTENTIAL EXISTS FOR SEDIMENT POLLUTION TO RECEIVING WATERS, EROSION CONTROL BLANKETS SHALL BE USED FOR ALL SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION G OF THE APPROVED CHAPTER 102 PERMIT).
37. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY IN A SPECIAL PROTECTION WATERSHED, THAT PORTION OF THE PROJECT SITE TRIBUTARY TO THE SPECIAL PROTECTION WATERS MUST BE IMMEDIATELY STABILIZED.
38. IF COAL OR OTHER ACID-PRODUCING ROCK IS ENCOUNTERED AT THE PROJECT SITE, THE ACID PRODUCING ROCK WILL EITHER BE REMOVED FROM THE SITE OR HANDLED ONSITE. IF COAL OR OTHER ACID-PRODUCING ROCK MUST BE HANDLED ON SITE IS SHOULD BE SAMPLED AND ANALYZED FOR TOTAL PERCENT SULFUR IN ACCORDANCE WITH PADEPS GUIDANCE. ON-SITE HANDLING METHODS SHOULD BE BASED ON TESTING AND PADEP GUIDANCE.
39. IF A SINKHOLE IS ENCOUNTERED, REPAIR SHOULD BE DONE UNDER THE DIRECT OBSERVATION AND SUPERVISION OF A PROFESSIONAL GEOLOGIST OR LICENSED GEOTECHNICAL ENGINEER. SITE SPECIFIC SINKHOLE REPAIRS SHOULD BE DEVELOPED ON A CASE BY CASE BASIS.
40. IN-STREAM WORK TO OCCUR IN MINOR WATER BODIES (>10 FEET WIDE) WITHIN 24 HOURS, AND IN MAJOR WATER BODIES (10 TO 100 FEET WIDE) WITHIN 48 HOURS UNLESS APPROVED IN WRITING BY THE DEPARTMENT.

CONSTRUCTION SEQUENCE:

REFER TO THE E&SC PLAN DRAWINGS FOR THE LOCATION OF THE PROPOSED WORK AND THE ASSOCIATED BMPS. A GENERALIZED CONSTRUCTION SEQUENCE IS PROVIDED BELOW. THE CONSTRUCTION SEQUENCE IS INTENDED TO PROVIDE A GENERAL COURSE OF ACTION IN ORDER TO CONFORM TO THE APPLICABLE REGULATORY AGENCY REQUIREMENTS FOR TEMPORARY AND PERMANENT SOIL EROSION AND SEDIMENTATION CONTROLS. NECESSARY PARTS FOR PROPER AND COMPLETE EXECUTION OF WORK PERTAINING TO THIS PLAN, WHETHER SPECIFICALLY MENTIONED OR NOT, ARE TO BE PERFORMED BY THE CONTRACTOR. IT IS NOT INTENDED THAT THE DRAWINGS AND THIS REPORT SHOW DETAILED INFORMATION ON METHODS AND MATERIALS. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS LISTED IN THIS SECTION. THE CONTRACTOR MAY BE REQUIRED TO ALTER CONTROLS BASED ON EFFECTIVENESS OF CONTROLS OR DIFFERING CONDITIONS ENCOUNTERED IN THE FIELD.

1. MAKE ALL APPROPRIATE NOTIFICATIONS AS INDICATED IN GENERAL NOTES ON PLAN SHEET ES-0.01.
2. FLAG OR FENCE PROJECT LIMITS OF DISTURBANCE AND APPROVED ACCESS. SIGN AND FLAG WETLAND BOUNDARIES AND STREAMS.
3. ORANGE CONSTRUCTION FENCE WILL BE PROVIDED AND INSTALLED AT WETLAND AREAS ADJACENT TO THE LOD AND NOT PLANNED TO BE IMPACTED TO IDENTIFY AND DETER CONSTRUCTION EQUIPMENT, VEHICLES AND PERSONNEL FROM ENTERING WETLAND.
4. LOCATE STAGING AREAS AND ACCESS POINTS INCLUDING CONSTRUCTION ENTRANCES. INSTALL COMPOST FILTER SOCKS DOWN SLOPE OF THESE AREAS.
5. INSTALL ROCK CONSTRUCTION ENTRANCES AS NEEDED. REFER TO THE ROCK CONSTRUCTION ENTRANCE DETAIL ON PLAN SHEET ES-0.06.
6. CONSTRUCT THE PROPOSED ACCESS ROADS AND IMPLEMENT TEMPORARY IMPROVEMENTS AS IDENTIFIED IN ACCESS ROAD SUMMARY TABLE AND DETAILED ON THE PLAN SHEETS.
7. INSTALL COMPOST FILTER SOCKS AS SHOWN ON THE CONSTRUCTION DRAWINGS. INSTALLATIONS SIZING, AND SPACING MUST CONFORM TO THE CHART AND DETAILS PROVIDED ON PLAN SHEET ES-0.06. INSTALL TEMPORARY UPSLOPE DIVERSIONS AND TEMPORARY SLOPE PIPES AS SHOWN ON PLAN SHEETS AND DETAILS.
8. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL COMMENCE ALONG THE PIPELINE ROUTE AND BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE.~~GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.~~ FOR CLEARING, GRUBBING, AND TOPSOIL REMOVAL IN ALL STREAM, RIVER, WETLAND OR OTHER WATER BODY CROSSINGS, REFER TO CONSTRUCTION SEQUENCE NOTES BELOW. TOPSOIL WILL BE SEGREGATED AT LOCATIONS THROUGHOUT THE PROJECT WHERE TOPSOIL EXISTS.

8A. RIGHT OF WAY CLEARING CONSISTING OF FELLING OF TREES AND GRUBBING MAY BE COMPLETED BEFORE THE E&S BMPS ARE INSTALLED ON AREAS WHERE SLOPES OF 3H:1V OR GREATER ARE NOT PRESENT. ONCE THE GRUBBING STARTS PERIMETER E&S BMPS SHALL BE INSTALLED IN ACCORDANCE WITH THE PLAN DRAWINGS BY THE END OF THE DAY. IF HEAVY RAIN OCCURS DURING THE FELLING OF TREES AND GRUBBING PROCESS AND RUNOFF IS OBSERVED LEAVING THE RIGHT-OF-WAY, PERIMETER BMP'S MUST BE INSTALLED IMMEDIATELY AS OPPOSED TO THE END OF THE DAY. REGARDLESS OF SLOPE, EROSION CONTROL BLANKETS SHALL BE USED FOR ALL SEEDED AREAS WITHIN 100 FEET OF A HIGH QUALITY OR EXCEPTIONAL VALUE SURFACE WATER. FOR ALL SLOPES THAT ARE 3H:1V OR STEEPER OR WHERE POTENTIAL EXISTS FOR SEDIMENT POLLUTION TO RECEIVING WATERS, EROSION CONTROL BLANKETS SHALL BE USED FOR ALL SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER. IF SOCK IS DAMAGED DURING GRUBBING OR MULCHING SOCK WILL BE REPLACED. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION G OF THE APPROVED CHAPTER 102 PERMIT).

8B. GENERAL SITE CLEARING, AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OF PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLANS. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION F OF THE APPROVED CHAPTER 102 PERMIT).

9. TEMPORARY WATERBARS OR APPROVED INTERCEPTOR DYKES WILL BE INSTALLED ALONG THE ALIGNMENT PRIOR TO PIPE INSTALLATION AT THE END OF EACH WORK DAY. DURING THE PERIODS OF TIME WHERE PIPE TRENCH IS OPEN CONTRACTORS WILL PROVIDE POSITIVE CONTROL OF ALL STORM WATER ON SITE, TEMPORARY WATERBARS WILL BE CONSTRUCTED BY THE END THE WORK DAY, OR DURING EACH WORK DAY IF REQUIRED CONTRACTOR WILL INSTALL SILT FENCE TO CONTROL EROSION UNTIL 70% VEGETATION GROWTH HAS BEEN ACHIEVED.
10. MINIMIZE TOTAL AREA OF DISTURBANCE. MAINTAIN TEMPORARY SOIL STOCKPILES WITHIN EXISTING SOIL EROSION AND SEDIMENT CONTROLS. SHOULD EXCAVATION ENTER STREAMS, FOLLOW SPECIFIC DETAILS FOR THESE AREAS SHOWN ON THE DRAWINGS AND INCLUDE THE STEPS DETAILED IN THE SPECIFIC SECTIONS BELOW. PULLBACK AREAS FOR HDDS WILL BE CLEARED AND PREPARED AS NEEDED TO SUPPORT STAGING, WELDING AND TESTING OF THE HDD PIPE SECTIONS. AREAS NOT UTILIZED FOR CONSTRUCTION ACTIVITIES SHOULD BE AVOIDED TO MINIMIZE IMPACTS.
11. INSTALL PIPE AND TRENCH PLUGS IN ACCORDANCE WITH DETAILS ON PLAN SHEET ES-0.08. WHEN OPEN CUTTING DRIVEWAYS AND ACCESS ROADS, CONTRACTOR SHALL HAVE ROAD PLATES AVAILABLE TO MAINTAIN ACCESS FOR LANDOWNERS. THE 20-INCH PIPELINE WILL BE INSTALLED FIRST, FOLLOWED BY THE 16-INCH LINE. ANY TEMPORARY STABILIZATION REQUIRED BETWEEN THE TWO INSTALLATIONS WILL BE IMPLEMENTED IN ACCORDANCE WITH THIS E&S PLAN. BOTH PIPELINES WILL BE INSTALLED WITHIN THE SAME LIMIT OF DISTURBANCE AND IN THE SAME CONSTRUCTION PERIOD.
12. FOR OPEN-CUT AREAS, THE LENGTH OF TIME REQUIRED TO CLEAR AND GRADE THE AREA, EXCAVATE THE TRENCH, INSTALL THE PIPELINES, BACKFILL THE TRENCH AND BEGIN STABILIZATION OF DISTURBED AREAS WILL NOT EXCEED 30 CALENDAR DAYS FOR MOST INSTALLATIONS. LONGER TIME PERIODS MAY BE APPROVED ON A CASE-BY-CASE BASIS.
13. BACKFILL EXCAVATED AREA AND COVER WITH TOPSOIL (WHERE TOPSOIL WAS SEGREGATED).
14. BEFORE RESTORATION OF GRADE, THE SECOND 16-INC

ALL PERMIT CONDTIONS SET FORTH IN THE E&S PERMIT NO. ESG 03000 15002 AND WATER OBSTRUCTION AND ENCROACHMENT PERMIT E07-459 MUST BE FOLLOWED

E&S PERMIT PART C, OTHER REQUIREMENTS

I. PROHIBITED DISCHARGES

A. ALL DISCHARGES COVERED BY THIS PERMIT SHALL BE COMPOSED ENTIRELY OF STORMWATER. DISCHARGES OF SUBSTANCES OTHER THAN STORMWATER MUST BE IN COMPLIANCE, WHEN REQUIRED, WITH AN NPDES PERMIT (OTHER THAN THIS PERMIT) ISSUED FOR THE DISCHARGE. DISCHARGES OF SEWAGE OR INDUSTRIAL WASTE TO WATERS OF THE COMMONWEALTH OR A BMP IS NOT PERMITTED.

B. THE PERMITTEE OR CO-PERMITTEE(S) MAY NOT DISCHARGE FLOATING MATERIALS, OIL, GREASE, SCUM, FOAM, SHEEN, AND SUBSTANCES WHICH: PRODUCE ODOR, TASTE, OR TURBIDITY OR SETTLE TO FORM DEPOSITS IN CONCENTRATIONS OR AMOUNTS SUFFICIENT TO BE, OR CREATE A DANGER OF BEING, INIMICAL TO THE WATER USES TO BE PROTECTED OR HUMAN, ANIMAL, PLANT, OR AQUATIC LIFE.

II. EROSION AND SEDIMENT CONTROL (E&S) PLANS

A. THE PERMITTEE SHALL IMPLEMENT ITS APPROVED E&S PLAN, INCLUDING ALL BMPS CONTAINED THEREIN. THE E&S PLAN IS INCORPORATED INTO THIS PERMIT.

B. E&S PLANS REQUIRED UNDER THIS PERMIT ARE CONSIDERED REPORTS THAT SHALL BE AVAILABLE TO THE PUBLIC UNDER SECTION 607 OF THE CLEAN STREAMS LAW (35 P.S. § 691.607). THE OWNER OR OPERATOR OF A FACILITY WITH STORMWATER DISCHARGES COVERED BY THIS PERMIT SHALL MAKE E&S PLANS AVAILABLE TO THE PUBLIC UPON REQUEST. E&S PLANS MUST BE MADE AVAILABLE AT THE SITE OF THE CONSTRUCTION ACTIVITY AT ALL TIMES.

E. ALL MANUFACTURED BMPS, INCLUDING EROSION CONTROL MATTING AND WATER QUALITY DEVICES, SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

J. FOR ALL DISCHARGES FROM THE PROJECT SITE ASSOCIATED WITH EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE SHALL IMPLEMENT, MAINTAIN, REPAIR AND IF NECESSARY REPLACE BMPS TO MINIMIZE THE POTENTIAL FOR ACCELERATED EROSION AND SEDIMENTATION AND TO PROTECT, MAINTAIN, RECLAIM AND RESTORE WATER QUALITY AND EXISTING AND DESIGNATED USES.

III. POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) PLANS

A. THE PERMITTEE SHALL IMPLEMENT ITS APPROVED PCSM PLAN, INCLUDING ALL BMPS CONTAINED THEREIN. THE PCSM PLAN IS INCORPORATED INTO THIS PERMIT.

B. PCSM PLANS REQUIRED UNDER THIS PERMIT ARE CONSIDERED REPORTS THAT SHALL BE AVAILABLE TO THE PUBLIC UNDER SECTION 607 OF THE CLEAN STREAMS LAW (35 P.S. § 691.607). THE OWNER OR OPERATOR OF A FACILITY WITH STORMWATER DISCHARGES COVERED BY THIS PERMIT SHALL MAKE PCSM PLANS AVAILABLE TO THE PUBLIC UPON REQUEST. THE PCSM PLANS MUST BE MADE AVAILABLE AT THE SITE OF THE CONSTRUCTION ACTIVITY AT ALL TIMES.

D. THE PCSM PLAN MUST BE CONSISTENT WITH THE ASSUMPTIONS AND REQUIREMENTS OF ANY AVAILABLE WLAS FOR THE DISCHARGES AS SET FORTH IN ANY APPLICABLE TMDLS ESTABLISHED FOR THE RECEIVING WATERS.

E. THE PORTION OF A SITE RECLAMATION OR RESTORATION PLAN THAT IDENTIFIES PCSM BMPS TO MANAGE STORMWATER FROM PIPELINES OR OTHER SIMILAR UTILITY INFRASTRUCTURE MAY BE USED TO SATISFY THE PCSM REQUIREMENTS IF THE PCSM RECLAMATION, OR RESTORATION PLAN MEETS THE REQUIREMENTS OF 25 PA. CODE § 102.8(B), (C), (E), (F), (H), (I) AND (I), AND WHEN APPLICABLE, (M).

F. ALL MANUFACTURED BMPS, INCLUDING EROSION CONTROL MATTING AND WATER QUALITY DEVICES, SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

H. UPON REDUCTION, LOSS, OR FAILURE OF ANY PCSM BMP, THE PERMITTEE SHALL IMMEDIATELY TAKE MEASURES TO PREVENT POLLUTION TO WATERS OF THE COMMONWEALTH AND ADVERSE IMPACTS TO THE ENVIRONMENT. THE PERMITTEE SHALL IMMEDIATELY SUBMIT TO DEP FOR REVIEW AND APPROVAL A CORRECTIVE ACTION PLAN (CAP) AND, IF NECESSARY, A PERMIT MODIFICATION, WHICH SHALL INCLUDE A SCHEDULE FOR THE REPAIR AND/OR REPLACEMENT OF THE PCSM BMP. UPON DEP'S APPROVAL OF THE CAP, THE PERMITTEE SHALL IMPLEMENT THE CAP.

IV. PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLANS

A. IF TOXIC, HAZARDOUS, OR OTHER POLLUTING MATERIALS WILL BE ON SITE, THE PERMITTEE OR CO-PERMITTEE(S) MUST IMPLEMENT A PPC PLAN FOR USE WHILE THOSE MATERIALS ARE ON-SITE IN ACCORDANCE WITH 25 PA. CODE § 91.34 (RELATING TO ACTIVITIES UTILIZING POLLUTANTS). THE PPC PLAN SHALL IDENTIFY AREAS WHICH MAY INCLUDE, BUT ARE NOT LIMITED TO, WASTE MANAGEMENT AREAS, RAW MATERIAL STORAGE AREAS, FUEL STORAGE AREAS, TEMPORARY AND PERMANENT SPOILS STORAGE AREAS, MAINTENANCE AREAS, AND ANY OTHER AREAS THAT MAY HAVE THE POTENTIAL TO CAUSE NONCOMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT DUE TO THE STORAGE, HANDLING, OR DISPOSAL OF ANY TOXIC OR HAZARDOUS SUBSTANCES SUCH AS OIL, GASOLINE, PESTICIDES, HERBICIDES, SOLVENTS, CONCRETE WASHWATERS, ETC. BMPS SHALL BE DEVELOPED AND IMPLEMENTED FOR EACH IDENTIFIED AREA.

B. THE PPC PLAN SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR REVIEW AT THE REQUEST OF DEP OR AN AUTHORIZED CONSERVATION DISTRICT.

VIII. PHASED PROJECTS

PRIOR TO THE COMMENCEMENT OF EARTH DISTURBANCE ACTIVITIES FOR SUBSEQUENT PHASES OF THE PROJECT, THE PERMITTEE OR CO-PERMITTEE SHALL SUBMIT AN E&S PLAN AND PCSM PLAN AND SUPPORTING INFORMATION FOR EACH ADDITIONAL PHASE OR PORTION OF THE PROJECT TO DEP OR AN AUTHORIZED CONSERVATION DISTRICT FOR APPROVAL. COVERAGE UNDER THIS PERMIT IS ONLY GRANTED FOR THOSE PHASES OR PORTIONS OF A PROJECT FOR WHICH AN E&S PLAN AND PCSM PLAN HAS BEEN SUBMITTED AND APPROVED BY DEP OR AN AUTHORIZED CONSERVATION DISTRICT,

IX. WETLAND PROTECTION

IF HYDRIC SOILS OR OTHER WETLAND FEATURES ARE PRESENT, A WETLAND DETERMINATION MUST BE CONDUCTED IN ACCORDANCE WITH DEP PROCEDURES. A COPY OF THE WETLAND DETERMINATION SHALL BE PROVIDED TO DEP OR AN AUTHORIZED CONSERVATION DISTRICT AS PART OF THE APPLICATION. ALL WETLANDS IDENTIFIED MUST BE INCLUDED ON THE E&S PLAN AND PCSM PLAN. SPECIAL PRECAUTIONS MUST BE TAKEN TO PROTECT WETLANDS AND OTHER WATER RESOURCES IDENTIFIED IN THE APPLICATION, PLANS, AND OTHER SUPPORTING DOCUMENTS.

X. INFILTRATION BMPS

A. WHERE INFILTRATION AND/OR RESTORATION BMPS ARE BEING UTILIZED, THE PERMITTEE AND CO-PERMITTEE MUST ENSURE THAT SOIL COMPACTION IS AVOIDED OR MINIMIZED IN THOSE AREAS. IF THE AREAS PLANNED FOR INFILTRATION AND/OR RESTORATION BMPS ARE COMPROMISED THROUGH COMPACTION OR OTHER MEANS, MEASURES SHALL BE TAKEN TO ENSURE THAT PROPER SOIL DE-COMPACTION OCCURS. THE PERMITTEE SHALL IMPLEMENT SUCH MEASURES IN ACCORDANCE WITH THE GUIDANCE ON SOIL RESTORATION IN THE PA STORMWATER BMP MANUAL (BMP 6.7.3, CHAPTER 6, PAGE 221). ADDITIONAL SOIL TESTING MUST BE PERFORMED TO VERIFY THAT THE BMPS WILL PERFORM AS PLANNED.

B. TO PROTECT THE EFFECTIVE INFILTRATION AREA(S) AT PCSM BMPS DURING CONSTRUCTION ACTIVITIES (INCLUDING EARTH DISTURBANCE AND CONVERSION OR INSTALLATION), THE INFILTRATION AREA(S) FOR A PCSM BMP SHALL BE PROTECTED BY ENTIRELY SURROUNDING THE INFILTRATION AREA WITH AN 18-INCH COMPOST FILTER SOCK. THIS IS ONLY NECESSARY IN THOSE AREAS WHERE SPECIFIC INFILTRATION BMPS ARE BEING UTILIZED. THE COMPOST FILTER SOCK SHALL REMAIN IN PLACE AND BE PROPERLY MAINTAINED UNTIL THE CONTRIBUTING DRAINAGE AREA HAS REACHED PERMANENT STABILIZATION (A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION) AND DEP OR AN AUTHORIZED CONSERVATION DISTRICT APPROVES THE REMOVAL OF THE COMPOST FILTER SOCK

XII. LONG-TERM OPERATION AND MAINTENANCE

A. THE PERMITTEE OR CO-PERMITTEE SHALL BE RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS UNLESS A DIFFERENT PERSON IS IDENTIFIED IN THE NOT AND THAT PERSON HAS AGREED TO LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS.

B. FOR ANY PROPERTY CONTAINING A PCSM BMP, THE PERMITTEE OR CO-PERMITTEE SHALL RECORD AN INSTRUMENT WITH THE RECORDER OF DEEDS WHICH WILL ASSURE DISCLOSURE OF THE PCSM BMP AND THE RELATED OBLIGATIONS IN THE ORDINARY COURSE OF A TITLE SEARCH OF THE SUBJECT PROPERTY. THE RECORDED INSTRUMENT MUST IDENTIFY THE PCSM BMP, PROVIDE FOR NECESSARY ACCESS RELATED TO LONG-TERM OPERATION AND MAINTENANCE FOR PCSM BMPS, AND PROVIDE NOTICE THAT THE RESPONSIBILITY FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS IS A COVENANT THAT RUNS WITH THE LAND THAT IS BINDING UPON AND ENFORCEABLE BY SUBSEQUENT GRANTEES, AND PROVIDE PROOF OF FILING WITH THE NOT UNDER 25 PA. CODE § 102.8(M)(2).

C. FOR COMMONWEALTH OWNED PROPERTY, A COVENANT THAT RUNS WITH THE LAND IS NOT REQUIRED UNTIL THE TRANSFER OF THE LAND CONTAINING A PCSM BMP OCCURS. UPON TRANSFER OF THE COMMONWEALTH-OWNED PROPERTY CONTAINING THE PCSM BMP, THE DEED MUST COMPLY WITH 25 PA. CODE § 102.8(M)(3). AN AGENCY OF THE FEDERAL GOVERNMENT SHALL NOT BE REQUIRED TO MAKE OR RECORD A DECLARATION OF COVENANTS ON ITS PROPERTY UNTIL TRANSFER OF THE PROPERTY TO A NON-FEDERAL OR NON-COMMONWEALTH ENTITY OR INDIVIDUAL. UPON TRANSFER OF THE COMMONWEALTH OWNED OR FEDERALLY OWNED PROPERTY CONTAINING THE PCSM BMP, THE DEED MUST COMPLY WITH 25 PA. CODE § 102.8(M)(3).

D. THE PERSON RESPONSIBLE FOR PERFORMING LONG-TERM OPERATION AND MAINTENANCE MAY ENTER INTO AN AGREEMENT WITH ANOTHER PERSON, INCLUDING A CONSERVATION DISTRICT, NONPROFIT ORGANIZATION, MUNICIPALITY, AUTHORITY, PRIVATE CORPORATION, OR OTHER PERSON, TO TRANSFER THE RESPONSIBILITY FOR PCSM BMPS OR TO PERFORM LONG-TERM OPERATION AND MAINTENANCE AND PROVIDE NOTICE THEREOF TO DEP.

E. A PERMITTEE OR CO-PERMITTEE THAT FAILS TO TRANSFER LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS OR OTHERWISE FAILS TO COMPLY WITH THIS REQUIREMENT, SHALL REMAIN JOINTLY AND SEVERALLY RESPONSIBLE WITH THE LANDOWNER FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS LOCATED ON THE PROPERTY.

F. UNLESS A LATER DATE IS APPROVED BY DEP IN WRITING, THE PERMITTEE SHALL RECORD AN INSTRUMENT AS REQUIRED UNDER 25 PA. CODE SUBSECTION 102.8(M)(2) AND PARAGRAPH XII.B WITHIN 45 DAYS FROM THE DATE OF ISSUANCE OF THIS PERMIT OR AUTHORIZATION. UNLESS DEP AUTHORIZES A DIFFERENT PROCEDURE, THE LONG-TERM OPERATION AND MAINTENANCE PLAN SHALL BE RECORDED ALONG WITH THE INSTRUMENT. UNLESS A LATER DATE IS APPROVED BY DEP IN WRITING, THE PERMITTEE SHALL PROVIDE THE CONSERVATION DISTRICT AND DEP WITH THE DATE AND PLACE OF RECORDING ALONG WITH A REFERENCE TO THE DOCKET, DEED BOOK OR OTHER RECORD, WITHIN 90 DAYS FROM THE DATE OF ISSUANCE OF THIS PERMIT OR AUTHORIZATION

G. UNLESS AN ALTERNATIVE PROCESS IS APPROVED BY DEP IN WRITING, UPON THE SALE OR OTHER TRANSFER OF ANY PARCEL, LOT, ROAD OR OTHER REAL PROPERTY INCLUDED WITHIN THE PERMIT BOUNDARY, THE PERMITTEE SHALL NOTIFY THE PURCHASER, GRANTEE, OR TRANSFEREE OF THE LONG-TERM PCSM BMP OPERATION AND MAINTENANCE REQUIREMENTS. THE PERMITTEE SHALL EXPRESSLY IDENTIFY THE PCSM BMPS ON EACH PROPERTY, THE SCHEDULE FOR INSPECTION AND REPORTING, THE PERSON OR ENTITY RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS AND HOW ACCESS TO THE BMPS WILL BE ACHIEVED AND SHALL OBTAIN APPROVAL FROM THE PURCHASER, GRANTEE OR TRANSFEREE. UNLESS A LATER DATE IS APPROVED BY DEP IN WRITING, THE PERMITTEE SHALL PROVIDE THE CONSERVATION DISTRICT AND DEP WITH NOTICE OF COMPLIANCE WITH THIS SECTION WITHIN 45 DAYS FROM THE DATE OF TRANSFER OF THE PROPERTY AND AT THE TIME THE PERMITTEE FILES A NOTICE OF TERMINATION.

XIII. PRIOR CONTAMINATION

THE PERMITTEE SHALL IMPLEMENT THE FOLLOWING PROCEDURES AT ANY LOCATION OF THE PROJECT SITE WHERE IT KNOWS OR HAS REASON TO BELIEVE THAT SOILS ARE OR MAY BE CONTAMINATED DUE TO PAST LAND USES OR UPON RECEIPT OF WRITTEN NOTIFICATION FROM DEP:

A. MINIMIZE DISTURBANCE -- LIMIT THE EXTENT AND DURATION OF EARTH DISTURBANCE ACTIVITIES, INCLUDING THE USE OF LESS INTRUSIVE EARTH DISTURBANCE TECHNIQUES/EQUIPMENT, AND AVOIDING AND MINIMIZING THE IMPACT OF ANCILLARY AREAS THAT ARE NOT NECESSARY FOR THE PROJECT.

B. INCORPORATE A CONTINGENCY PLAN AND ADDITIONAL SAFETY PROTOCOLS IN THE EVENT UNEXPECTED CONTAMINATION IS UNCOVERED. THESE PROTOCOLS SHALL BE ESTABLISHED IN THE PERMITTEE'S PPC PLAN. INCORPORATE APPROPRIATE DUST CONTROL AND SUPPRESSION PRACTICES AND PROCEDURES DURING DRY AND WINDY PERIODS.

C. IMPLEMENT IMMEDIATE STABILIZATION ON ALL CONTAMINATED AREAS OF THE PROJECT SITE INVOLVING EARTH DISTURBANCE. THIS MAY BE ACHIEVED USING MATS/BLANKETS/LININGS/MULCHING (INCLUDING COMPOST); TEMPORARY AND/OR PERMANENT SEEDING/VEGETATION; TARPING OR OTHER IMPERMEABLE/IMPERVIOUS COVER; OR TEMPORARY DAILY COVER.

D. IMPLEMENT AND MAINTAIN PERIMETER E&S BMPS INCLUDING BUT NOT LIMITED TO COMPOST FILTER BERMS, COMPOST FILTER SOCKS OR WEIGHTED SEDIMENT FILTER TUBES, AND/OR NON-ACRYLAMIDE FLOCCULANTS.

XIV. WATER SUPPLY NOTIFICATION

PRIOR TO BEGINNING ANY CONSTRUCTION OR EARTH DISTURBANCE ACTIVITIES, ALL PUBLIC WATER SUPPLIES OR OTHER USERS OF SURFACE WATERS WITHIN ONE (1) MILE DOWNSTREAM THAT MAY BE AFFECTED BY TURBIDITY INCREASES OR OTHER WATER QUALITY CHANGES CAUSED BY CONSTRUCTION OR EARTH DISTURBANCE ACTIVITIES SHALL BE NOTIFIED AT LEAST 72 HOURS PRIOR TO COMMENCING THE ACTIVITIES.

XV. ARCHAEOLOGICAL SPECIMENS

THE PERMITTEE SHALL NOT BEGIN WORK IN AREAS SUBJECT TO PHASE I OR PHASE II ARCHEOLOGICAL INVESTIGATIONS RECOMMENDED BY THE PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION (PHMC) UNTIL THE PERMITTEE SECURES THE NECESSARY CLEARANCES FOR THESE AREAS FROM PHMC. IN ADDITION, THE PERMITTEE AND ITS AGENTS SHALL VISUALLY INSPECT FOR ARCHAEOLOGICAL SPECIMENS, AS THE TERM IS DEFINED IN THE PENNSYLVANIA STATE HISTORY CODE (37 PA. C.S.A., SECTION 101 ET SEQ.), DURING EARTH DISTURBANCE ACTIVITIES, AND SHALL IMMEDIATELY CEASE EARTH DISTURBANCE ACTIVITIES UPON DISCOVERY OF ARCHAEOLOGICAL SPECIMENS. UPON DISCOVERY THE PERMITTEE SHALL IMMEDIATELY NOTIFY DEP AND PHMC (PHONE: (717) 783-8947).

XVI. DISCHARGES TO NON-SURFACE WATERS

THIS PERMIT AUTHORIZES PROPOSED DISCHARGES OF STORMWATER TO NON-SURFACE WATERS. DISCHARGES TO AREAS THAT ARE NOT SURFACE WATERS SHALL NOT CAUSE ACCELERATED EROSION OR STORMWATER DAMAGE TO DOWN SLOPE OR ADJACENT PROPERTIES. THESE AREAS THAT ARE NOT SURFACE WATERS SHALL BE MAINTAINED TO PREVENT EROSION FROM STORMWATER FLOWS.

XVII. RIPARIAN AREA REPLANTING

PRIOR TO SUBMISSION OF THE NOTICE OF TERMINATION, THE PERMITTEE SHALL REPLANT FORESTED RIPARIAN AREAS IN TEMPORARY RIGHT OF WAYS ALONG SURFACE WATERS. REPLANTING SHALL BE CONDUCTED FOR A MINIMUM DISTANCE OF FIFTY (50) FEET LANDWARD FROM THE TOP OF BOTH BANKS OF WARM WATER FISHERIES AND TROUT STOCKED FISHERIES; 100 FEET FROM COLD WATER FISHERIES; AND 150 FEET FROM HQ/EV STREAMS. THE DENSITY OF REPLANTED TREES SHALL BE SIMILAR TO THE DENSITY THAT EXISTED PRIOR TO THE PERMITTEE CONDUCTING CONSTRUCTION ACTIVITIES BUT SHALL PROVIDE NO LESS THAN 60% UNIFORM CANOPYCOVER UPON MATURATION AND SHALL BE APPROPRIATE TO THE GEOGRAPHIC LOCATION. MAINTENANCE AND INSPECTIONS SHALL ENSURE SURVIVAL AND GROWTH OF PLANTINGS AND PROTECTION FROM COMPETING PLANTS AND ANIMALS INCLUDING NOXIOUS WEEDS AND INVASIVE SPECIES OVER A 5-YEAR ESTABLISHMENT PERIOD TO ENSURE AND PROPER FUNCTIONING OF RIPARIAN FOREST BUFFERS, AND SHALL INCLUDE MEASURES TO REPAIR DAMAGE TO THE BUFFER FROM STORM EVENTS GREATER THAN THE 2-YEAR/24-HOUR STORM.

XVIII. HABITAT CONSERVATION PLANS AND THREATENED AND ENDANGERED SPECIES PROTECTION

A. THE PERMITTEE SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE HABITAT CONSERVATION PLAN SUBMITTED AND APPROVED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS), PA GAME COMMISSION (PGC), PA FISH AND BOAT COMMISSION (PFBC) AND PA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR) TO PROTECT FEDERAL AND STATE LISTED SPECIES, THE PERMITTEE SHALL PROVIDE A COPY OF THE PLAN TO DEP PRIOR TO INITIATION OF ANY WORK UNDER THIS PERMIT.

B. THE PERMITTEE SHALL IMPLEMENT THE APPROVED HABITAT CONSERVATION PLAN IN ACCORDANCE WITH ALL PGC APPROVALS FOR THE ALLEGHENY WOODRAT (NEOTOMA MAGISTER). THIS INCLUDES NO BLASTING OR THE USE OF HERBICIDES ON THE PROJECT OR IN THE VICINITY OF THE PROJECT ON DCNR LANDS AS IDENTIFIED IN THE PGC CLEARANCE. THE PERMITTEE SHALL PROVIDE A COPY OF THE PLAN TO DEP PRIOR TO INITIATION OF ANY WORK UNDER THIS PERMIT.

C. THE PERMITTEE SHALL IMPLEMENT THE MIGRATORY BIRD CONSERVATION PLAN APPROVED BY THE USFWS. THE PERMITTEE SHALL PROVIDE A COPY OF THE PLAN TO DEP PRIOR TO INITIATION OF ANY WORK UNDER THIS PERMIT.

D. THE PERMITTEE SHALL IMPLEMENT ALL AVOIDANCE MEASURES IDENTIFIED BY THE JURISDICTIONAL RESOURCE AGENCIES FOR ANY THREATENED OR ENDANGERED SPECIES OR SPECIES OF SPECIAL CONCERN.

E. WHERE APPLICABLE, THE PERMITTEE SHALL IMPLEMENT THE AVOIDANCE MEASURES IDENTIFIED IN APPENDIX A OF THE DEPARTMENT'S PERMIT ISSUED UNDER CHAPTER 105 FOR ALL OPEN TRENCH WETLAND CROSSINGS IN BOG TURTLE (CLEMMYS MUHLENBERGII) COUNTIES IDENTIFIED BY THE USFWS AS OCCUPIED, POTENTIALLY OCCUPIED OR ADJACENT HABITATS, UNLESS OTHERWISE SPECIFIED BY THE USFWS.

F. THE PERMITTEE SHALL COMPLY WITH ALL PROTOCOLS SET FORTH BY THE USFWS FOR PROTECTION OF THE RUSTY PATCH BUMBLE BEE.

G. PRIOR TO CONDUCTING ANY FUTURE MAINTENANCE ACTIVITIES ON THE PIPELINE OR RIGHT OF WAY WHICH INVOLVES DISTURBANCE, THE PERMITTEE SHALL CONDUCT A THEN CURRENT PENNSYLVANIA NATURAL DIVERSITY INVENTORY SEARCH, SHALL OBTAIN CLEARANCE(S) FOR ANY SPECIES OR RESOURCE WHERE A POTENTIAL IMPACT IS IDENTIFIED, PROVIDE THE AVOIDANCE AND MITIGATION PLAN TO DEP PRIOR TO INITIATING SUCH MAINTENANCE WORK, AND SHALL IMPLEMENT AND ADHERE TO ALL AVOIDANCE MEASURES OUTLINED IN SUCH CLEARANCE(S).

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
CHAPTER 102 PERMIT SPECIAL CONDITIONS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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SHEET 0.04A OF 102

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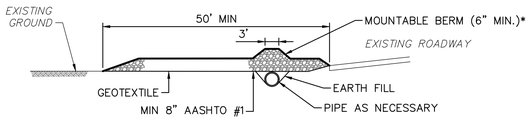
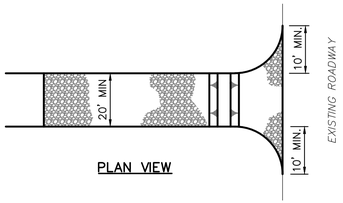


PROFILE



PLAN VIEW

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE IF NEEDED.

NOTES:

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTION CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THE PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

ROCK CONSTRUCTION ENTRANCE (1 / 0.06)
NOT TO SCALE

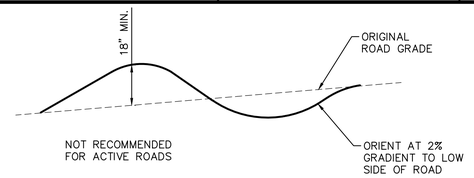
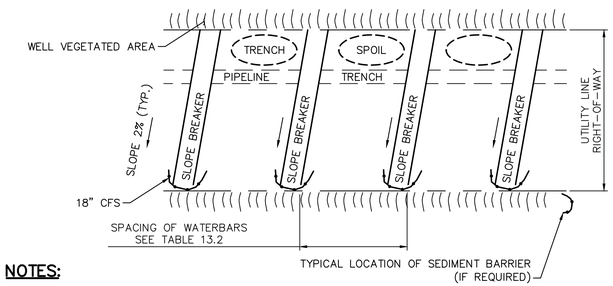


TABLE 13.2

MAXIMUM SPACING FOR PERMANENT WATERBARS ON A UTILITY LINE RIGHT-OF-WAY	
PERCENT SLOPE	SPACING (FT)
<5	250
5–15	150
15–30	100
>30	50



NOTES:

WATERBARS SHALL DISCHARGE TO A STABLE AREA.

WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.

MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.

WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

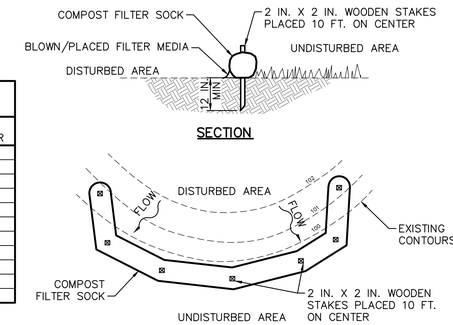
SEE TABLE 13.2 ABOVE FOR WATERBAR SPACING.

PERMANENT WATERBARS ARE REQUIRED AT ALL STREAM, RIVER, AND OTHER WATER-BODY CROSSINGS AS WELL AS UPSLOPE FROM ROADWAY AND RAILROAD CUT SLOPES.

SUMPS MAY BE ADDED AS NEEDED AT THE ENDS OF WATERBARS TO PROVIDE ADDITIONAL SEDIMENT REMOVAL PRIOR TO DISCHARGE THROUGH THE 18" COMPOST FILTER SOCK.

WATERBAR (2 / 0.06)
NOT TO SCALE

MAXIMUM SLOPE LENGTHS FOR COMPOST FILTER SOCK			
% SLOPE	12" DIAMETER	18" DIAMETER	24" DIAMETER
2 (OR LESS)	520	700	1000
5	250	340	500
10	150	250	300
15	100	200	250
20	70	140	200
25	50	100	140
30	45	70	100
35	40	60	90
40	35	45	60
45	30	40	50
50	20	30	40



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE EPA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXITING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ½ THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCK SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

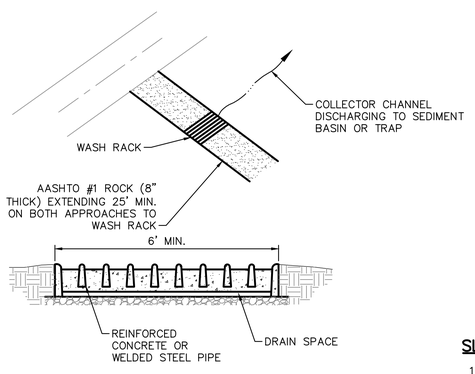
UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

TABLE 4.1

COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS					
MATERIAL TYPE	3 MIL HDPE	5 MIL HDPE	5 MIL HDPE	MULTI-FILAMENT POLYPROPYLENE (MFPP)	HEAVY DUTY MULTI-FILAMENT POLYPROPYLENE (HDMFPP)
MATERIAL CHARACTERISTICS	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE	BIO-DEGRADABLE	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE
SOCK DIAMETERS	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
MESH OPENING	3/8"	3/8"	3/8"	3/8"	1/8"
TENSILE STRENGTH		26 PSI	26 PSI	44 PSI	202 PSI
ULTAVIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% AT 1000 HR.	23% AT 1000 HR.		100% AT 1000 HR.	100% AT 1000 HR.
MINIMUM FUNCTIONAL LONGEVITY	6 MONTHS	9 MONTHS	6 MONTHS	1 YEAR	2 YEARS
TWO-PLY SYSTEMS					
INNER CONTAINMENT NETTING	HDPE BIAXIAL NET				
	CONTINUOUSLY WOUND				
	FUSION-WELDED JUNCTURES				
	3/4" X 3/4" MAX. APERTURE SIZE				
OUTER FILTRATION MESH	COMPOSITE POLYPROPYLENE FABRIC (WOVEN LAYER AND NON-WOVEN FLEECE MECHANICALLY FUSED VIA NEEDLE PUNCH)				
	3/16" MAX. APERTURE SIZE				
SOCK FABRICS COMPOSED OF BURLAP MAY BE USED ON PROJECTS LASTING 6 MONTHS OR LESS.					

TABLE 4.2

COMPOST STANDARDS	
ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
PH	5.5-8.5
MOISTURE CONTENT	30%-60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/XM) MAXIMUM



NOTES:

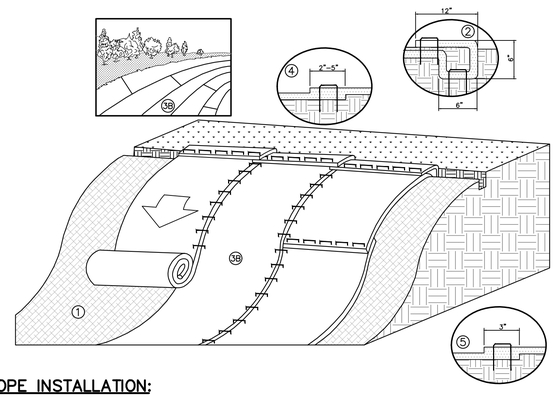
WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.

WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.

A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

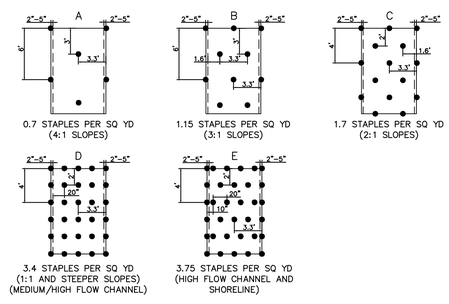
ROCK CONSTRUCTION ENTRANCE WITH WASH RACK (3 / 0.06)
NOT TO SCALE



SLOPE INSTALLATION:

1. PREPARE SOIL BEFORE INSTALLING RECPs, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6 IN. DEEP X 6 IN. WIDE TRENCH WITH APPROXIMATELY 12 IN. OF RECPs EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12 IN. APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12 IN. PORTION OF RECPs BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12 IN. APART ACROSS THE WIDTH OF THE RECPs.
3. ROLL THE RECPs (3A) DOWN OR (3B) HORIZONTALLY ACROSS THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY REPLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH AN APPROXIMATELY 2 IN. – 5 IN. OVERLAP DEPENDING ON THE RECP TYPE.
5. CONSECUTIVE RECP SPLICED DOWN THE SLOPE MUST BE END-OVER-END (SHINGLE STYLE) WITH AN APPROXIMATE 3 IN. OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12 IN. APART ACROSS ENTIRE RECPs WIDTH.

STAPLE PATTERN GUIDE



NOTES:

1. FOR SLOPES BETWEEN 3:1 AND 1:1, USE NORTH AMERICAN GREEN ERONET SC 150 OR OWNER APPROVED EQUAL MATERIAL/METHOD.
2. IN AREAS WHERE LIVESTOCK ARE KEPT, USE NORTH AMERICAN GREEN BIONET SC 150 BN OR OWNER APPROVED EQUAL MATERIAL/METHOD.
3. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
4. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE
5. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
6. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE PROJECT LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
7. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS,
8. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

EROSION CONTROL BLANKET – SLOPE INSTALLATION (4 / 0.06)
NOT TO SCALE

COMPOST FILTER SOCK (5 / 0.06)
NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — ROBERT F. SIMCIK — 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

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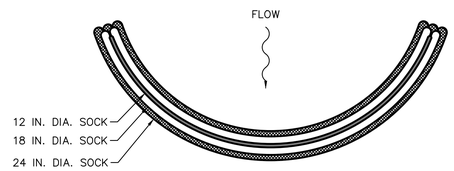
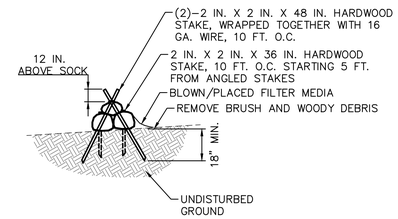


PLAN VIEW



STAKING VIEW

DESIGN NOTES:

1. COMPOST SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2000 CUBIC FEET OF STORAGE CAPACITY FOR EACH ACRE TRIBUTARY TO THE TRAP.
2. MINIMUM BASE WIDTH IS EQUAL TO THE HEIGHT.
3. SEDIMENT ACCUMULATION SHALL NOT EXCEED ⅓ THE TOTAL HEIGHT OF THE TRAP.
4. SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS SHOWN ON THE PLAN VIEW.
5. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID–SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

NOTES:

SOCK MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.

COMPOST SOCK SEDIMENT TRAPS SHALL PROVIDE 2,000 CUBIC FEET STORAGE CAPACITY WITH 12" FREEBOARD FOR EACH TRIBUTARY DRAINAGE ACRE. (SEE MANUFACTURER FOR ANTICIPATED SETTLEMENT.)

THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW–THROUGH," NO SPILLWAY IS REQUIRED.

COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES ⅓ THE HEIGHT OF THE SOCKS.

PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 EYAR.

COMPOST SOCK SEDIMENT TRAP (6 / 0.07)
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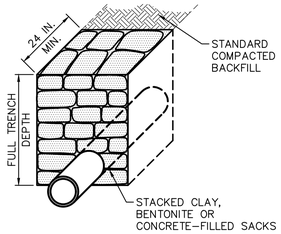
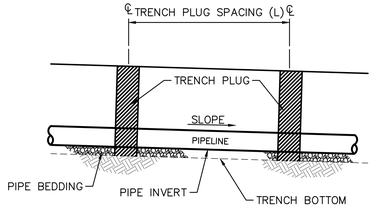


SECTION VIEW



ELEVATION

REQUIRED SPACING & MATERIALS FOR TRENCH PLUGS		
TRENCH SLOPE (%)	SPACING L (FT)	PLUG MATERIAL
<5	1,000	* CLAY, BENTONITE OR CONCRETE–FILLED SACKS
5–15	500	* CLAY, BENTONITE OR CONCRETE–FILLED SACKS
15–25	300	* CLAY, BENTONITE OR CONCRETE–FILLED SACKS
25–35	200	* CLAY, BENTONITE OR CONCRETE–FILLED SACKS
35–100	100	* CLAY, BENTONITE OR CONCRETE–FILLED SACKS
>100	50	CEMENT BAGS (WETTED) OR MORTARED STONE

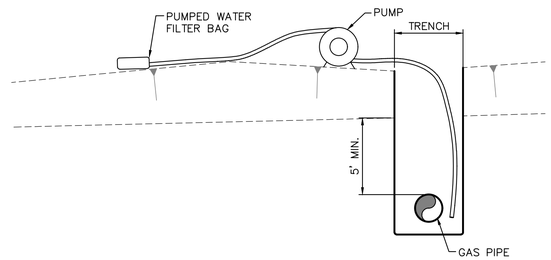
* TOP SOIL MAY NOT BE USED TO FILL SACKS

NOTES:

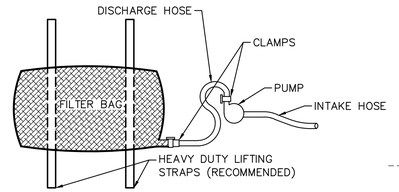
IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATERBODY CROSSINGS.

PLACE A MINIMUM OF ONE (1) TRENCH PLUG AT A MAXIMUM SPACING OF 100 FEET BETWEEN TRENCH PLUGS WITHIN A WETLAND. WETLAND CROSSINGS LESS THAN FIFTY (50) FEET DO NOT REQUIRE AN INTERNAL TRENCH PLUG. (IN ACCORDANCE WITH SPECIAL CONDITIONS PART, SECTION 20, CONDITION ggg OF THE APPROVED CHAPTER 105 PERMIT)

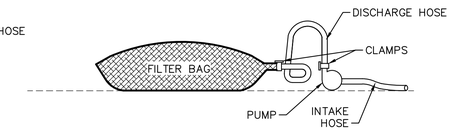
TRENCH PLUG INSTALLATION (10 / 0.08)
NOT TO SCALE



TRENCH DEWATERING DETAIL
NOT TO SCALE



PLAN VIEW



ELEVATION VIEW

NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON–WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D–4884	60 LB/IN
GRAB TENSILE	ASTM D–4632	205 LB
PUNCTURE	ASTM D–4833	110 LB
MULLEN BURST	ASTM D–3786	350 PSI
UV RESISTANCE	ASTM D–4355	70%
AOS % RETAINED	ASTM D–3751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL–VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NO POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACE DON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5% FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON–ERODIBLE AND NON–POLLUTING MATERIAL MAY BE PLACE UNDER THE GAB TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

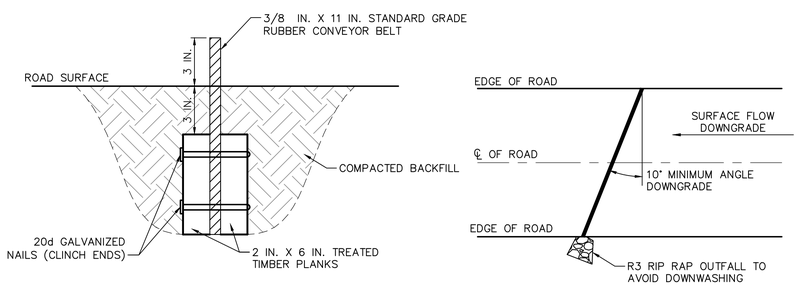
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

WHERE COMPOST FILTER SOCK IS NECESSARY TO ELEVATE THE PUMPED WATER FILTER BAG TO AN ABACT E&S BMP, THE COMPOST FILTER SOCK SHALL BE PLACED TO SUFFICIENT LENGTH TO MANAGE ALL FLOW FROM THE PUMPED WATER FILTER BAG (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION I OF THE APPROVED CHAPTER 102 PERMIT).

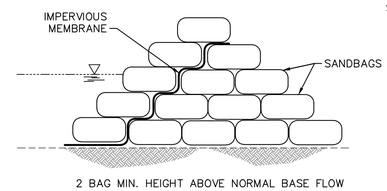
PUMPED WATER FILTER BAG (11 / 0.08)
NOT TO SCALE



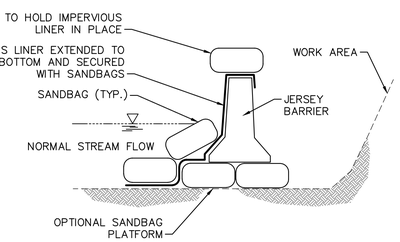
NOTE:
1. DEFLECTOR SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM DEFLECTOR WITHIN 24 HOURS OF INSPECTION.
3. BELT SHALL BE REPLACED WHEN WORN AND NO LONGER EFFECTIVE.
4. MAXIMUM SPACING OF DEFLECTORS SHALL BE AS SHOWN IN TABLE.

ROAD GRADE (PERCENT)	SPACING BETWEEN DIPS, CULVERTS,OR DEFLECTORS (FEET)
<2	300
3	235
4	200
5	180
6	165
7	155
8	150
9	145
10	140

WATER DEFLECTOR (12 / 0.08)
NOT TO SCALE



STACKED SANDBAGS OPTION



JERSEY BARRIER OPTION

NOTES:

CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS MAINTAINING AMBIENT DOWNSTREAM FLOW RATES.

SANDBAG OR DIVERSION DAM (13 / 0.08)
NOT TO SCALE

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1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — ROBERT F. SIMCIK — 075304426-E — 4/1/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1–20" & 1–16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
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NOTES & DETAILS

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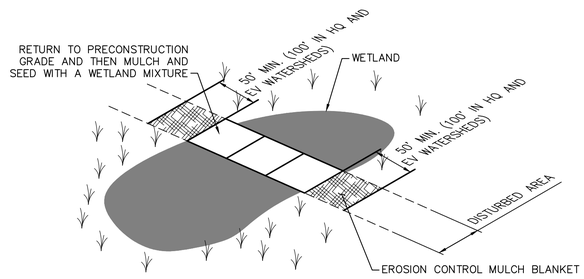
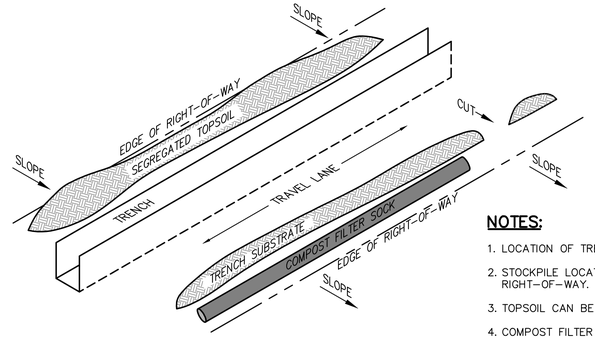


NOTES:

1. BACKFILL TRENCH; WERE SOILS WHERE SEGREGATED, REPLACE IN ORDER OF REMOVAL (CONSULT SPREAD HYDROGEOLOGIST PRIOR TO AND DURING BACKFILLING)
2. ONCE BACKFILLING IS COMPLETE, REMOVE TEMPORARY TIMBER MATTING AND ALL CONSTRUCTION DEBRIS AND RESTORE ORIGINAL GRADES AND HYDROLOGY.
3. RESTORATION ACTIVITIES SHALL BEGIN IMMEDIATELY AFTER BACKFILLING. TEMPORARILY REVEGETATE ALL IMPACTED WETLANDS IN ACCORDANCE WITH PLAN SHEET ES-0.05 TO ALLOW RAPID STABILIZATION AND DETER INVASIVE SPECIES.
4. PERMANENTLY REVEGETATE IMPACTED PEM WETLANDS IN ACCORDANCE WITH PLAN SHEET ES-0.05 THAT CALLS FOR ERNST CONSERVATION SEED MIX NO. ERNMX-122 FACW MEADOW MIX. PLANT DURING THE RECOMMENDED PLANTING SEASON.
5. TEMPORARY OR PERMANENT REVEGETATION IS NOT NECESSARY IN AREAS OF STANDING WATER.
6. NO SOIL AMENDMENTS, LIME, FERTILIZER, OR BINDING AGENTS ARE TO BE USED IN WETLAND AREAS.
7. PSS IMPACTED WETLAND AREAS WHERE NOTED ON PLAN SHEETS WILL BE PLANTED WITH SHRUB SPECIES IN ACCORDANCE WITH ES-0.05. PLANT DURING THE RECOMMENDED PLANTING SEASON.
8. PSS IMPACTED WETLAND AREAS WHERE THE ROOT SYSTEM WAS NOT REMOVED (E.G., MATTED OVER) DO NOT REQUIRE REPLANTING. PLANT DURING THE RECOMMENDED PLANTING SEASON.
9. PFO IMPACTED WETLANDS AREAS WHERE NOTED ON PLAN SHEETS FOR RESTORATION WILL BE PLANTED WITH THE TREE SPECIES IN ACCORDANCE WITH ES-0.05.
10. PSS AND PFO RESTORATION AREAS WILL BE PROTECTED WITH "NO-MOW" SIGNS.
11. REFER TO THE PROJECT'S IMPACT AVOIDANCE, MINIMIZATION, AND MITIGATION PROCEDURES FOR MORE SPECIFICS ON WETLAND RESTORATION IN GENERAL AND SPECIFICS REGARDING PSS AND PFO RESTORATION EFFORTS.

TYPICAL WETLAND RESTORATION

SCALE: NOT TO SCALE

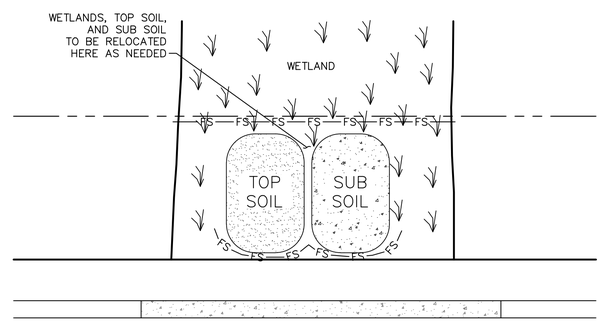


NOTES:

1. LOCATION OF TRENCH AND TRAVEL LANE WILL VARY BASED ON PROPOSED PIPE LOCATIONS.
2. STOCKPILE LOCATION PLACED UPSLOPE OF TRENCH TO DIVERT OFF-SITE DRAINAGE AWAY FROM RIGHT-OF-WAY.
3. TOPSOIL CAN BE PLACED WITH DITCH SPOIL IF PROPERLY SEGREGATED.
4. COMPOST FILTER SOCK TO BE INSTALLED PARALLEL TO EXISTING CONTOURS.
5. TOPSOIL TO BE REPLACED TO PRECONSTRUCTION DEPTH (TO BE FIELD VERIFIED).

RIGHT-OF-WAY DETAIL

NOT TO SCALE

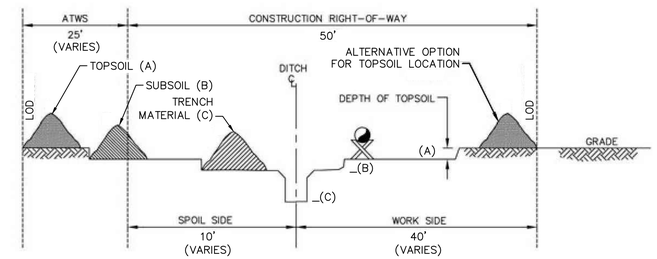


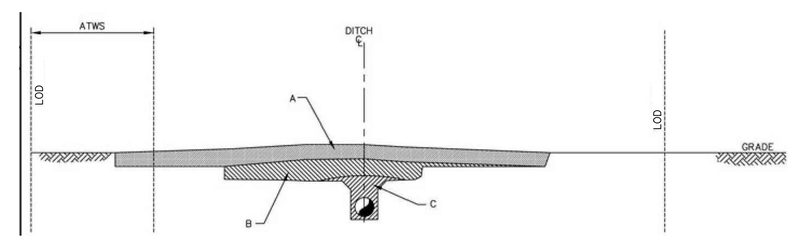
NOTE:

1. PROVIDE PHYSICAL SEPARATION BENEATH SPOIL PILES AND WETLAND SOIL TO ENSURE FULL REMOVAL AND MINIMIZE IMPACTS.

SPOIL STOCKPILE CONTAINMENT – WETLANDS

NOT TO SCALE



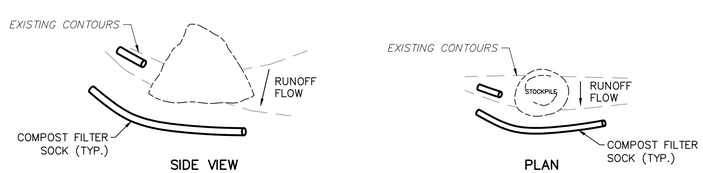


SPOIL STOCKPILE CONTAINMENT – TRIPLE DITCH

NOT TO SCALE

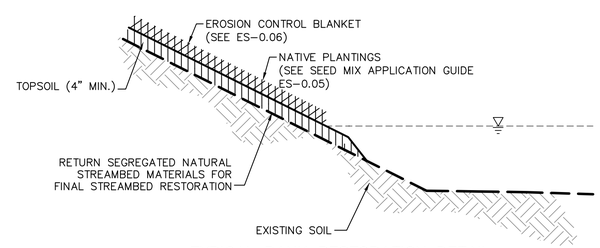
NOTES:

1. TRIPLE DITCH METHOD WILL BE USED TO SEGREGATE PROBLEM SOILS SUCH AS SALINE OR SODIC SOILS, IDENTIFIED STREAM CROSSINGS, AND/OR AS OTHERWISE DIRECTED.
2. ENSURE THE EXCAVATED SOILS ARE IN SEPARATE STOCKPILES WITH VISUAL SEPARATION OF AT LEAST 2' BETWEEN PILES.
3. EXCAVATED SOILS ARE TO BE PLACED BACK IN THE SEQUENCE IN WHICH WERE REMOVED.



SPOIL STOCKPILE CONTAINMENT – UPLANDS

NOT TO SCALE



TYPICAL BANK RESTORATION DETAIL

NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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SHEET 0.09 OF 102

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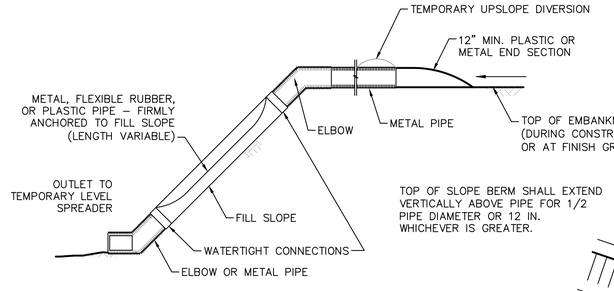
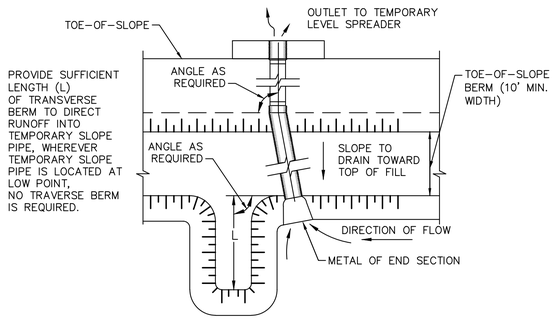




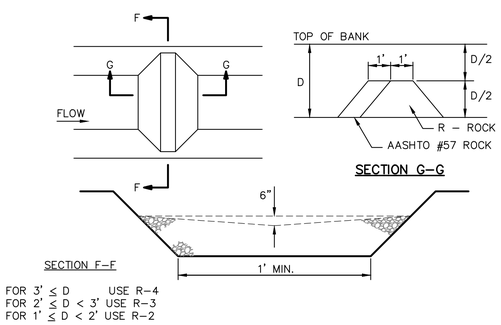
MINIMUM DIMENSIONS FOR TEMPORARY SLOPE PIPES		
DRAINAGE AREA (ACRES)	MINIMUM PIPE DIAMETER (IN.)	MINIMUM BERM HEIGHT (IN.)
<2	12	24
2–4	15	27
4–5	18	30

* TEMPORARY SLOPE PIPES SHOULD BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. ANY ACCUMULATED SEDIMENT SHOULD BE REMOVED FROM THE ENTRANCE. DAMAGED PIPE SHOULD BE REPAIRED OR REPLACED. NEEDED REPAIRS SHOULD BE INITIATED IMMEDIATELY AFTER THE INSPECTION.

NOTES:

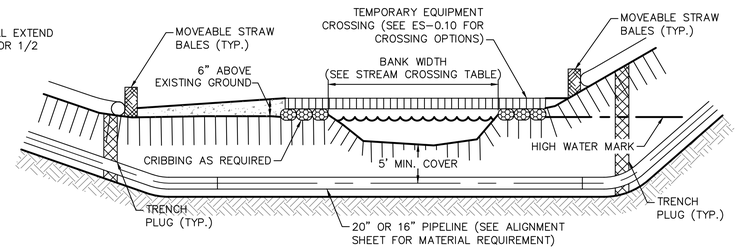
1. THE MAXIMUM DISTANCE BETWEEN ANCHOR STAKES SHALL BE 10 FEET.
2. TRANSVERSE BERM SHALL BE USED WHENEVER TEMPORARY SLOPE PIPE IS NOT LOCATED AT LOW POINT.
3. SLOPE PIPES SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE INLET IMMEDIATELY.
4. DAMAGED PIPE SECTIONS SHALL BE REPLACED WITHIN 24 HOURS. LEAKING CONNECTIONS SHALL BE REPAIRED IMMEDIATELY.

TEMPORARY SLOPE PIPE DETAIL
NOT TO SCALE

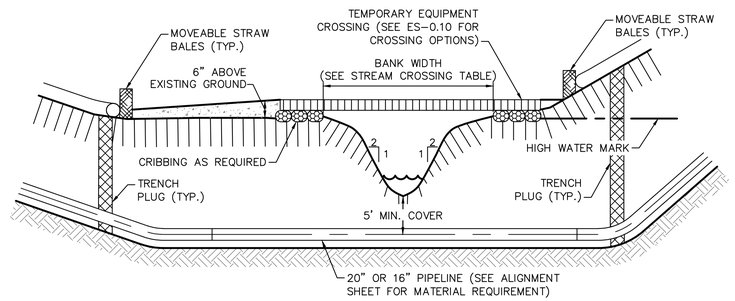


FOR 3' ≤ D USE R–4
FOR 2' ≤ D < 3' USE R–3
FOR 1' ≤ D < 2' USE R–2

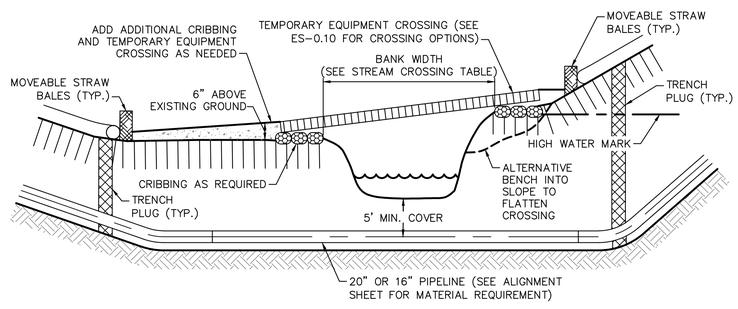
CHANNEL ROCK FILTER DETAIL
NOT TO SCALE



TYPICAL FLAT STREAM CROSSING



TYPICAL STEEP BANK STREAM CROSSING

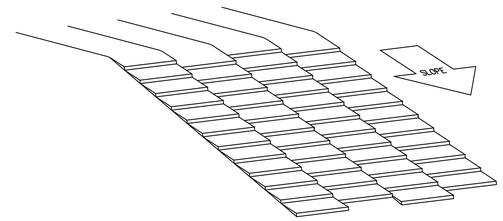


TYPICAL SLOPED STREAM CROSSING

NOTES:

1. SEE SITE SPECIFIC PLAN DRAWINGS FOR SITE SPECIFIC STREAM CROSSING DETAILS WHERE INDICATED.
2. STREAM CROSSING TECHNIQUE TO BE DETERMINED IN THE FIELD BY THE ENVIRONMENTAL INSPECTOR IN CONSULTATION WITH THE CONTRACTOR BASED UPON FIELD CONDITIONS.
3. SEE STREAM CROSSING TABLE FOR BANK WIDTHS.
4. SEE STEEP BANK STABILIZATION DETAIL WHEN BANK SLOPES ARE GREATER THAN 2H:1V.
5. SEE RIP–RAP BANK STABILIZATION DETAIL WHEN BANK SLOPE IS 2H:1V OR FLATTER.
6. SEE PLAN DRAWING FOR TRENCH PLUG LOCATIONS.

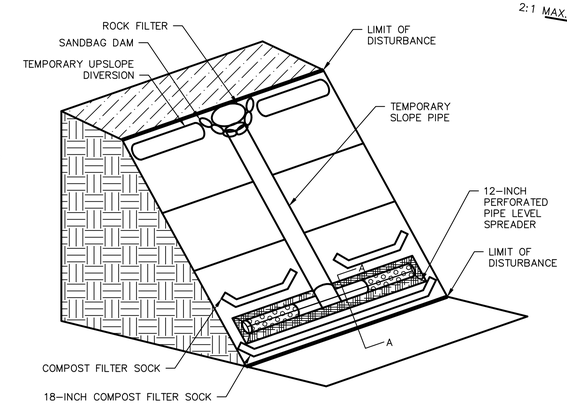
TYPICAL STREAM CROSSING DETAILS
NOT TO SCALE

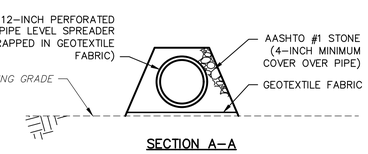


NOTES:

1. DOZER TREADS CREATE GROOVES PERPENDICULAR TO SLOPE.

SURFACE ROUGHENING DETAIL
NOT TO SCALE



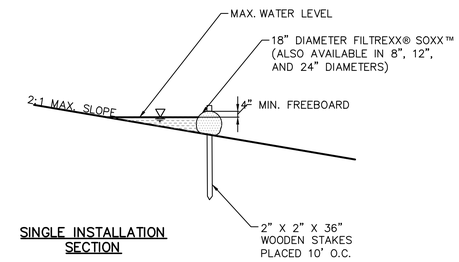


SECTION A–A

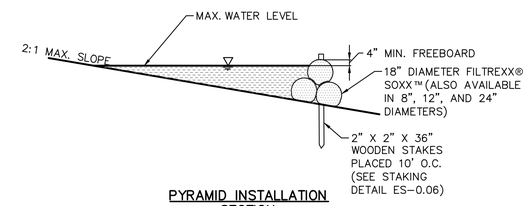
NOTES:

1. LEVEL SPREADER PIPES TO BE 12–INCH JM EAGLE EAGLE CORR PE PERFORATED PIPE (OR APPROVED EQUAL) AND SHALL BE CAPPED AT BOTH ENDS.
2. LEVEL SPREADER TO BE INSTALLED PARALLEL TO CONTOURS AT LEVEL ELEVATION.
3. PERFORATED PIPE TO BE UNDERLAIN AND WRAPPED WITH GEOTEXTILE FABRIC AND COVERED WITH AASHTO NO. 1 STONE. MINIMUM STONE COVER SHALL BE 4–INCHES OVER PERFORATED PIPE.
4. ALL LEVEL SPREADER STONE WILL BE REMOVED AND DISBTURBED AREA TO BE RESTORED IN ACCORDANCE WITH E&S PLAN.
5. LEVEL SPREADERS TO BE INSTALLED AT ALL TEMPORARY SLOPE PIPE DISCHARGES AT LOW POINTS OF DIVERSION BERM.
6. LEVEL SPREADERS TO BE INSPECTED WEEKLY OR AFTER MEASURABLE RAINFALL EVENT AND SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.

TEMPORARY LEVEL SPREADER DETAIL
NOT TO SCALE

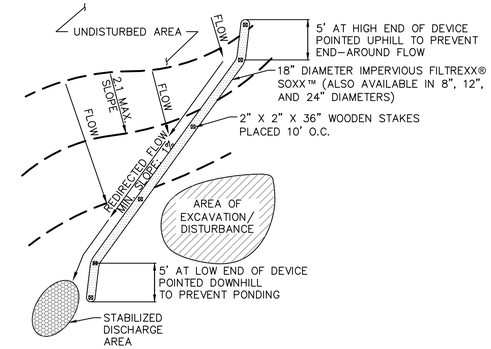


SINGLE INSTALLATION SECTION



PYRAMID INSTALLATION SECTION

FILTREXX® RUNOFF DIVERSION SECTIONS
NO SCALE



NOTES:

1. REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE SOXX™ WHEN ACCUMULATION HAS REACHED ½ OF EFFECTIVE HEIGHT OF SOXX™.
2. SLOPES GREATER THAN 5% MAY REQUIRE ADDITIONAL STABILIZATION PRACTICES.
3. SOXX™ MAY BE SEEDED AT THE TIME OF INSTALLATION.
4. ALTERNATE COMPOST FILTER SOCK MAY BE SUBSTITUTED FOR FILTREXX® SOXX™ WITH PRIOR APPROVAL FROM THE ENGINEER.

TEMPORARY UPSLOPE DIVERSION BERM FOR FILTREXX® RUNOFF DIVERSION
NOT TO SCALE

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DRAWN BY:	BH
CHECKED BY:	RS

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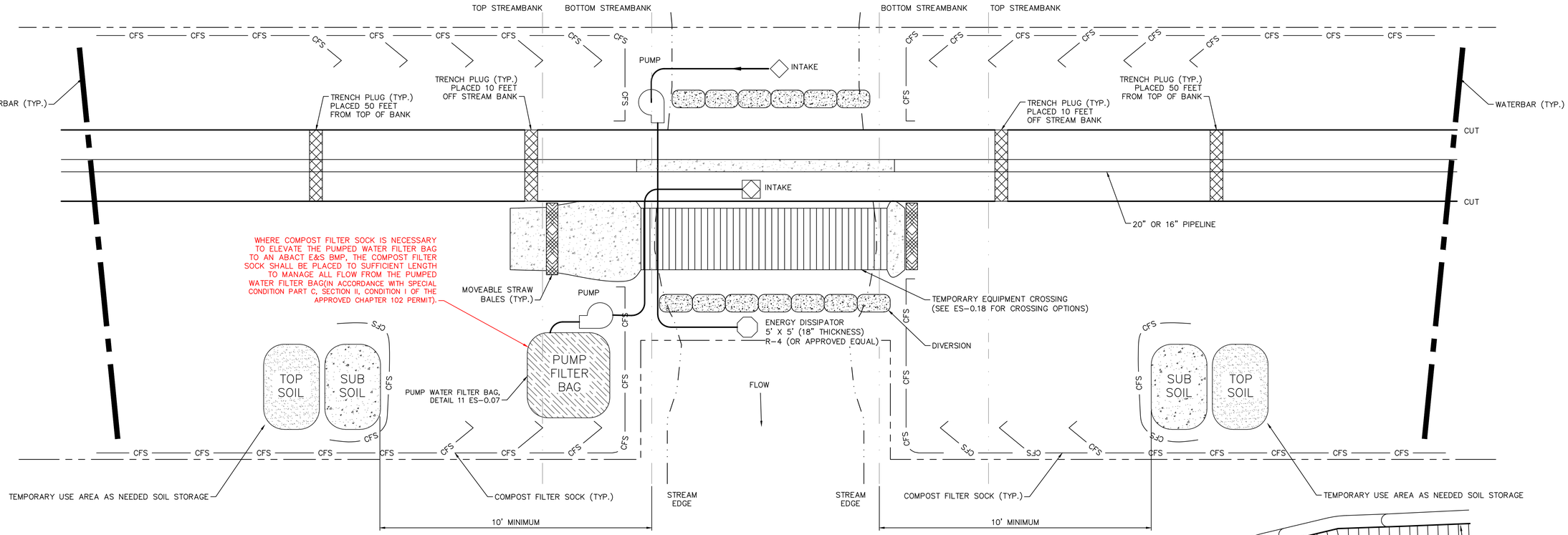
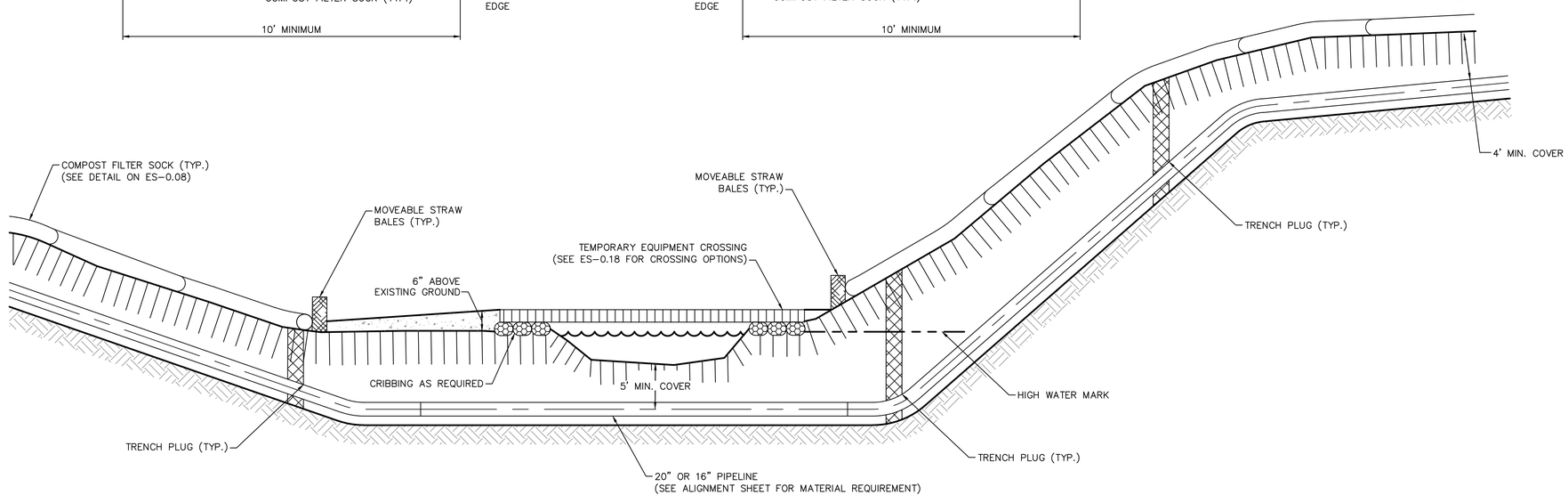


NOTES:

1. SEE PLAN SHEETS FOR FLOODWAY AND FLOODPLAIN LOCATIONS AND FOR REFERENCE TO SITE-SPECIRIC STREAM CROSSING DRAWINGS.
2. CONSTRUCT WATERBODY CROSSINGS AS PERPENDICULAR TO THE AXIS OF THE WATERBODY CHANNEL AS ENGINEERING AND ROUTING CONDITIONS ALLOW.
3. SETUP PUMP AND HOSE AS SHOWN, OR USE OTHER PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW.
4. CONTRACTOR TO ENSURE A SUFFICIENT NUMBER OF ACTIVE AND BACKUP PUMPS TO MAINTAIN TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW ARE AVAILABLE AT THE SITE DURING THE INSTALLATION.
5. INSTALL UPSTREAM DAM, THEN DOWNSTREAM DAM. KEEP PUMP RUNNING TO MAINTAIN STREAM FLOW, DETAIL 13 ES-0.08.
6. BYPASS PUMP INTAKES SHALL BE SCREENED AND MAINTAINED A SUFFICIENT DISTANCE FROM THE STREAM BOTTOM TO PREVENT PUMPING OF CHANNEL BOTTOM MATERIALS AND AQUATIC LIFE.
7. AN ENERGY DISSIPATOR IS REQUIRED AT THE DISCHARGE OF THE BYPASS PUMPS.
8. WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
9. MARK THE TOP OF STREAMBANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAMBANK;
10. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM TOP OF STREAMBANK;
11. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP OF BANK PRIOR TO STREAM INSTALLATION WITH THE EXCEPTION OF THE TRAVEL LANE UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION;
12. CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS (SEE ES-0.08) MAINTAINING AMBIENT DOWNSTREAM FLOW RATES;
13. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION. EXCAVATION PORTION OF NATIVE STREAM BEDS COMPRISED OF ROCK, COBBLE, OR GRAVEL ARE TO BE STRIPPED AND SEGREGATED AND USED DURING STREAM RESTORATION.
14. REMOVE ALL CONSTRUCTION MATERIAL AND STRUCTURES FROM THE WATERBODY AFTER CONSTRUCTION;
15. RESTORE STREAM CHANNELS AND BOTTOMS TO THEIR PRECONSTRUCTION CONTOURS OR BETTER, AND STABILIZING THE STREAM CHANNEL PRIOR TO REESTABLISHING FLOW.
16. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE STREAM FLOODWAY PRIOR TO PERMANENTLY STABILIZING STREAM BANKS; AND,
17. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK AND 100 FEET IN SPECIAL PROTECTION WATERSHEDS SHOULD BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
18. KEEP LIME AND FERTILIZERS OUT OF STREAM.
19. TEMPORARY CROSSINGS WILL STAY IN PLACE FOR NO GREATER THAN ONE YEAR.



TYPICAL PIPELINE INSTALLATION STREAM CROSSING – PUMP BYPASS DETAIL

NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 2/6/17

SUNOCO PIPELINE L.P.
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CHECKED BY:	RS

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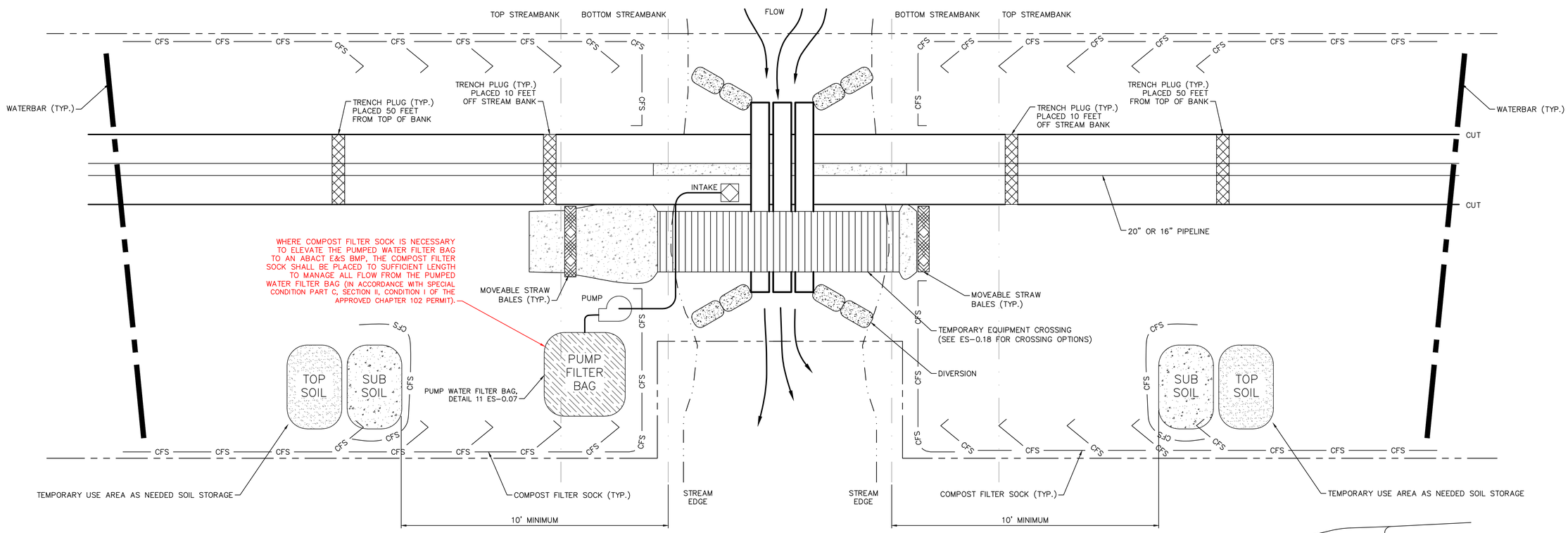

NOTES:

1. SEE PLAN SHEETS FOR FLOODWAY AND FLOODPLAIN LOCATIONS AND FOR REFERENCE TO SITE-SPECIFIC STREAM CORRING DRAWINGS.
2. THE FLUME SHOULD BE OF SUFFICIENT SIZE TO CONVEY NORMAL STREAM FLOW OVER THE OPEN TRENCH (MINIMUM SIZE OF 12 INCHES);
3. FLUME PIPE MUST BE ONE CONTINUOUS PIPE LONG ENOUGH TO ACCOUNT FOR THE POSSIBILITY OF THE TRENCH WIDENING UNEXPECTEDLY DURING THE EXCAVATION (DUE TO SLOUGHING);
4. FLUME SHALL BE INSTALLED PRIOR TO TRENCH EXCAVATION AT THAT LOCATION; AND,
5. AN EFFECTIVE SEAL MUST BE CREATED AROUND THE FLUME(S). ONCE IN PLACE, THE FLUMES ARE NOT REMOVED UNTIL THE PIPELINE HAS BEEN INSTALLED AND THE STREAMBED AND BANKS HAVE BEEN RESTORED.
6. WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
7. MARK THE TOP OF STREAMBANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAMBANK;
8. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM TOP OF STREAMBANK;
9. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP OF BANK PRIOR TO STREAM INSTALLATION WITH THE EXCEPTION OF THE TRAVEL LANE UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION;
10. CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS (SEE ES-0.08) MAINTAINING AMBIENT DOWNSTREAM FLOW RATES;
11. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION. EXCAVATION PORTION OF NATIVE STREAM BEDS COMPRISED OF ROCK, COBBLE, OR GRAVEL ARE TO BE STRIPPED AND SEGREGATED AND USED DURING STREAM RESTORATION.
12. REMOVE ALL CONSTRUCTION MATERIAL AND STRUCTURES FROM THE WATERBODY AFTER CONSTRUCTION;
13. RESTORE STREAM CHANNELS AND BOTTOMS TO THEIR PRECONSTRUCTION CONTOURS OR BETTER, AND STABILIZING THE STREAM CHANNEL PRIOR TO REESTABLISHING FLOW.
14. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE STREAM FLOODWAY PRIOR TO PERMANENTLY STABILIZING STREAM BANKS; AND,
15. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK AND 100 FEET IN SPECIAL PROTECTION WATERSHEDS SHOULD BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
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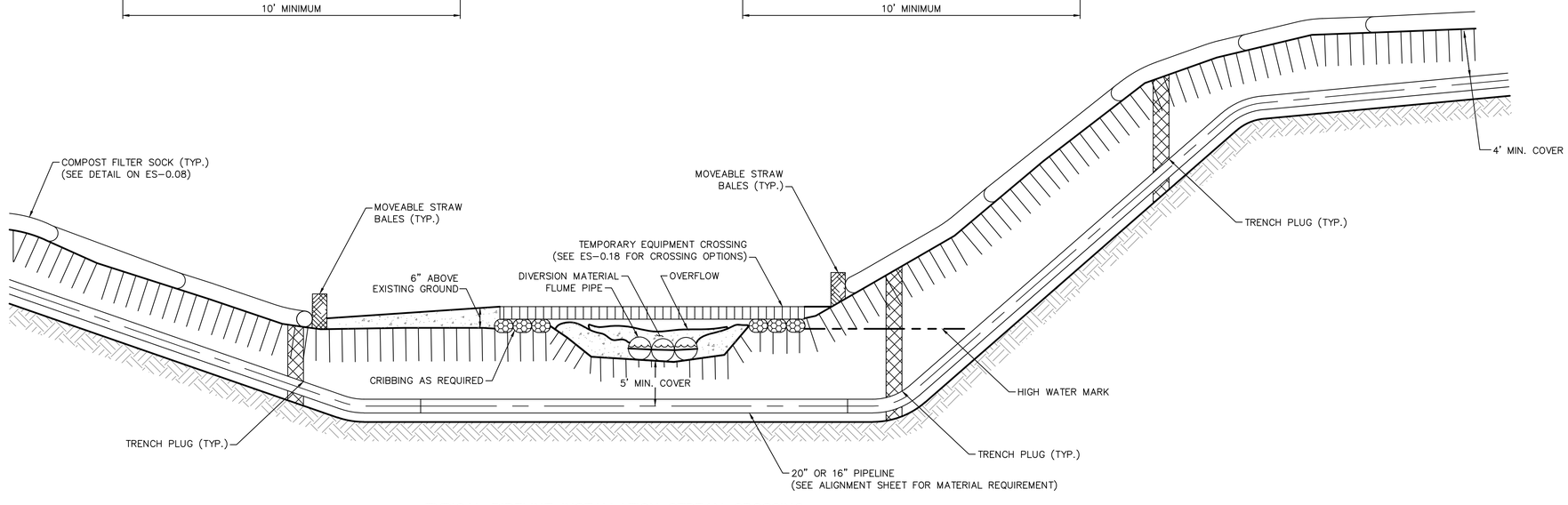

TYPICAL PIPELINE INSTALLATION STREAM CROSSING – DRY FLUME DETAIL

NOT TO SCALE

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CHECKED BY:	RS

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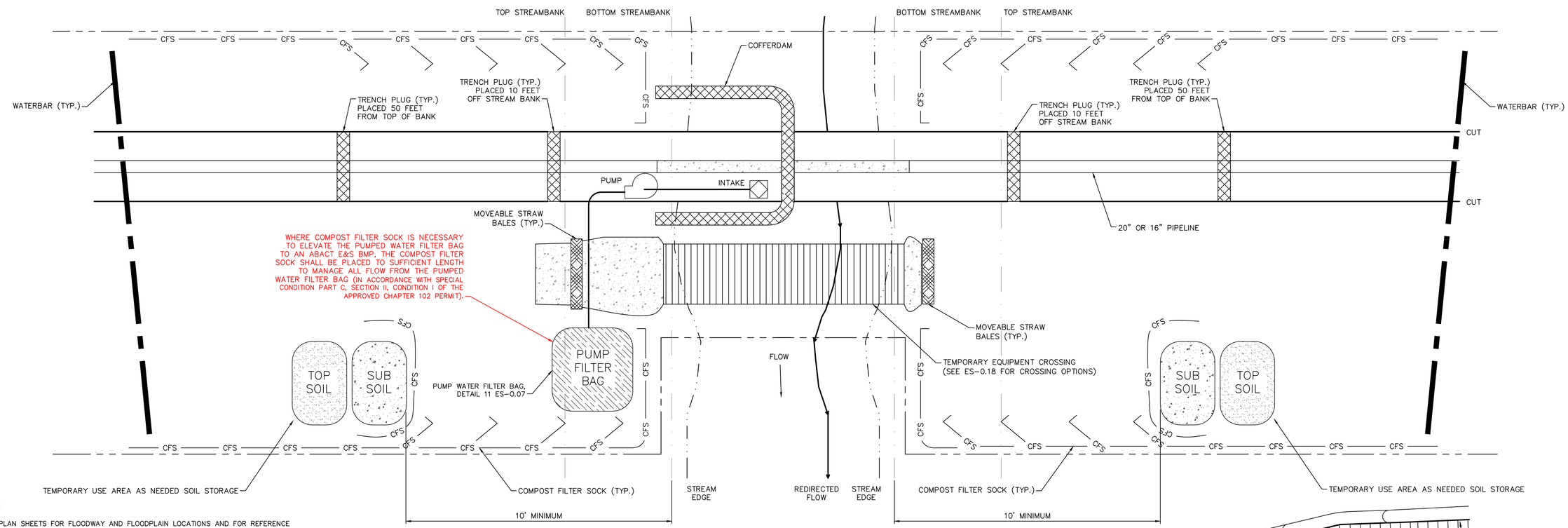
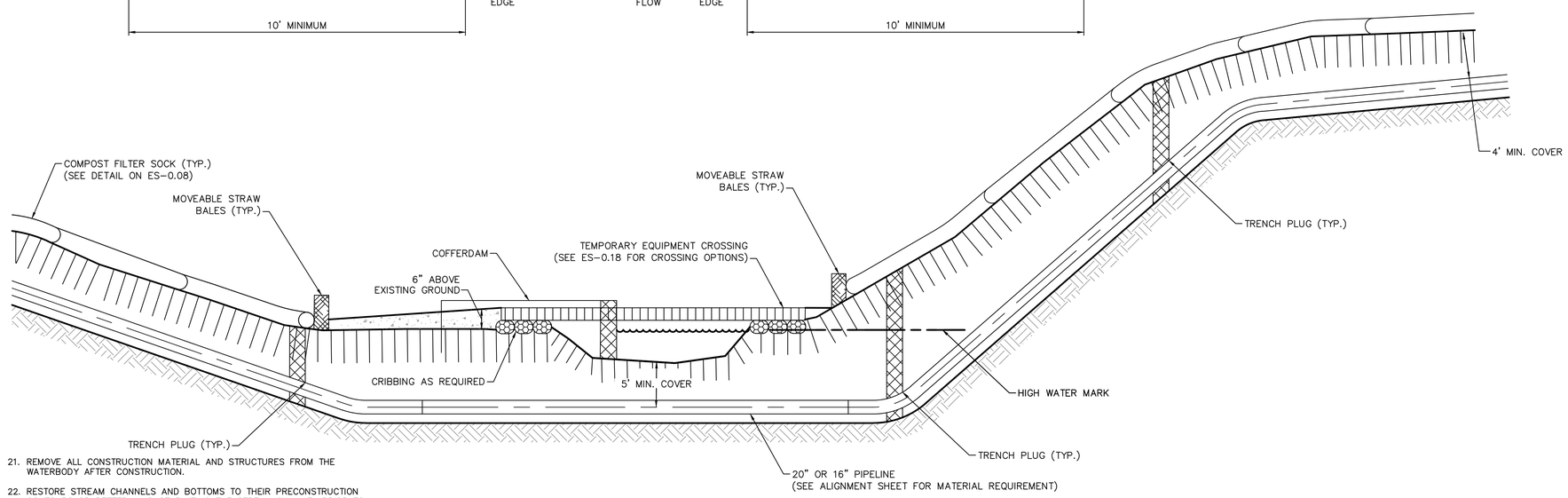


NOTES:

1. SEE PLAN SHEETS FOR FLOODWAY AND FLOODPLAIN LOCATIONS AND FOR REFERENCE TO SITE-SPECIFIC STREAM CROSSING DRAWINGS.
2. MAINTAIN ADEQUATE IN-STREAM PASSAGE OF WATER (MIN 1/3 THE DISTANCE OF THE CROSSING) AT ALL TIMES TO CONVEY NORMAL STREAM FLOW WITHOUT CREATING ACCELERATED BANK EROSION;
3. PREPARE STREAM BED FOR CONSTRUCTION OF COFFERDAM BY REMOVING LARGE BOULDERS AND OTHER OBJECTS THAT MAY PREVENT AN ADEQUATE DAM SEAL;
4. DRAW DOWN WATER WITHIN COFFERDAM STRUCTURE AND PUMP INTO WATERBODY;
5. PREPARE SMALL TRENCH OR BERM AROUND INTERIOR OF COFFERDAM AND LOCATE SUMP AS DEPICTED FOR CONTINUOUS PUMPING OF ANY ADDITIONAL WATER INFILTRATION INTO COFFERDAM STRUCTURE SPACE AND TRENCH. CONTINUED PUMPING DURING CONSTRUCTION ACTIVITIES SHALL BE DIRECTED TO A DEWATERING STRUCTURE.
6. INSTALL TIMBER MATS ALONG CONSTRUCTION TRAVEL LANE, IF REQUIRED.
7. EXCAVATE THE PIPELINE TRENCH AS NECESSARY,
8. DEWATER TRENCH TO ENSURE THAT IT IS SUITABLE FOR WORKER ENTRANCE TO COMPLETE A TIE-IN WELD. SHOULD THE TRENCH FAIL AND PROVE TO BE UNSAFE FOR WORKERS, DISCUSS OPTIONS WITH AGENCIES.
9. INSTALL CROSSING PIPE AND SANDBAGS OR PREFABRICATED CONCRETE WALL ADJACENT TO THE WELD CAP WHICH WILL FORM A BARRIER TO PREVENT MOVEMENT OF RE-INSTALLED TRENCH SPOIL WHILE THE EAST SIDE OF THE CROSSING IS CONSTRUCTED.
10. RETURN TRENCH SPOIL TO TRENCH AND COVER PIPELINE. RESTORE RIVER BED WITH SEGREGATED RIVER BED SEDIMENT AND ROCK MATERIAL.
11. PUMP RIVER WATER INTO COFFERDAM STRUCTURE AND ALLOW ALL SEDIMENTATION TO SETTLE.
12. DISASSEMBLE COFFERDAM STRUCTURE;
13. RESTORE RIVER BANK PRECONSTRUCTION CONTOURS TO A STABLE ANGLE OF REPOSE.
14. REPEAT STEPS ON OPPOSITE SIDE OF WATERBODY.
15. WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
16. MARK THE TOP OF STREAMBANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAMBANK;
17. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM TOP OF STREAMBANK;
18. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP OF BANK PRIOR TO STREAM INSTALLATION WITH THE EXCEPTION OF THE TRAVEL LANE UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION;
19. CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS (SEE ES-0.08) MAINTAINING AMBIENT DOWNSTREAM FLOW RATES;
20. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION. EXCAVATION PORTION OF NATIVE STREAM BEDS COMPRISED OF ROCK, COBBLE, OR GRAVEL ARE TO BE STRIPPED AND SEGREGATED AND USED DURING STREAM RESTORATION.
21. REMOVE ALL CONSTRUCTION MATERIAL AND STRUCTURES FROM THE WATERBODY AFTER CONSTRUCTION.
22. RESTORE STREAM CHANNELS AND BOTTOMS TO THEIR PRECONSTRUCTION CONTOURS OR BETTER, AND STABILIZING THE STREAM CHANNEL PRIOR TO REESTABLISHING FLOW.
23. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE STREAM FLOODWAY PRIOR TO PERMANENTLY STABILIZING STREAM BANKS; AND,
24. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK AND 100 FEET IN SPECIAL PROTECTION WATERSHEDS SHOULD BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
25. KEEP LIME AND FERTILIZER OUT OF STREAM.
26. TEMPORARY CROSSINGS WILL STAY IN PLACE FOR NO GREATER THAN ONE YEAR.



TYPICAL PIPELINE INSTALLATION STREAM CROSSING – COFFERDAM DETAIL

NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
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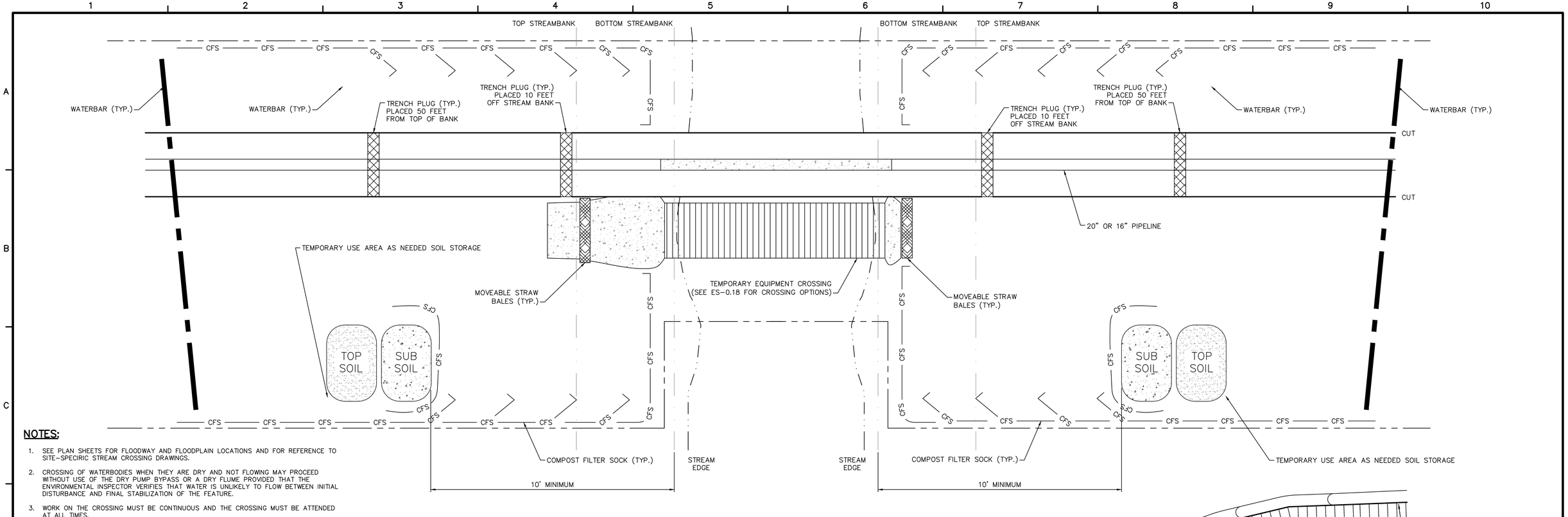
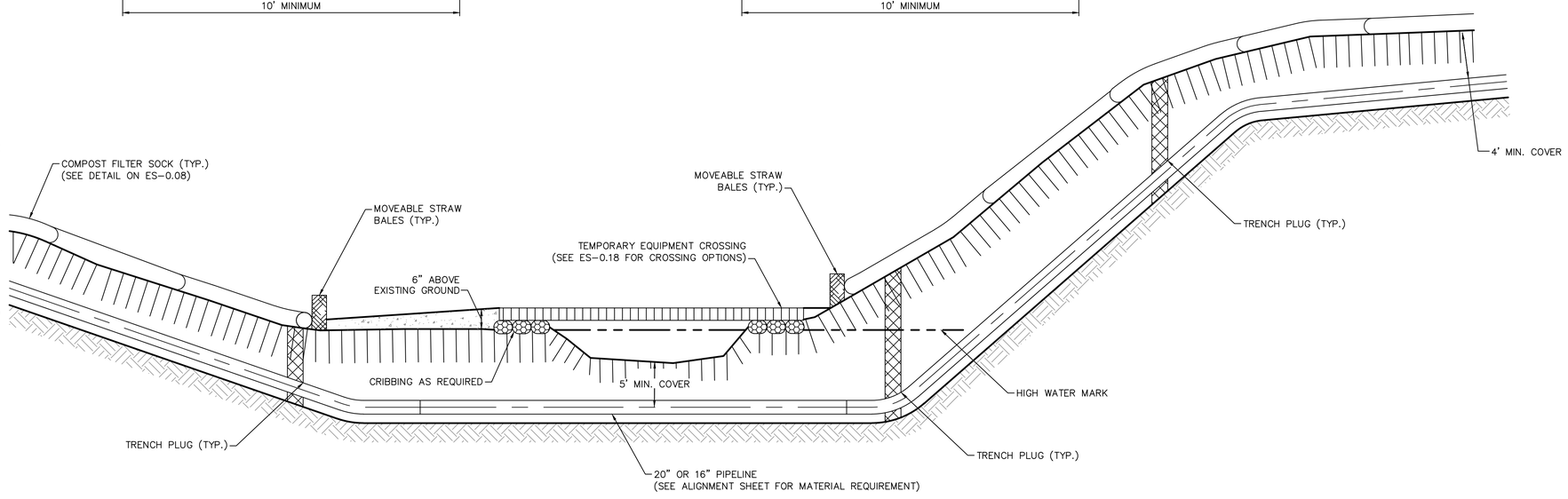


NOTES:

1. SEE PLAN SHEETS FOR FLOODWAY AND FLOODPLAIN LOCATIONS AND FOR REFERENCE TO SITE-SPECIRIC STREAM CROSSING DRAWINGS.
2. CROSSING OF WATERBODIES WHEN THEY ARE DRY AND NOT FLOWING MAY PROCEED WITHOUT USE OF THE DRY PUMP BYPASS OR A DRY FLUME PROVIDED THAT THE ENVIRONMENTAL INSPECTOR VERIFIES THAT WATER IS UNLIKELY TO FLOW BETWEEN INITIAL DISTURBANCE AND FINAL STABILIZATION OF THE FEATURE.
3. WORK ON THE CROSSING MUST BE CONTINUOUS AND THE CROSSING MUST BE ATTENDED AT ALL TIMES.
4. IN THE EVENT PERCEPTIBLE FLOW IS ANTICIPATED OR IF THE CREW IS NOT IN ATTENDANCE AT THE CROSSING ALL OF THE REQUIREMENTS FOR A PUMP BYPASS OR DRY FLUME MUST BE MET.
5. EQUIPMENT AND SUPPLIES TO IMPLEMENT DRY PUMP BYPASS OR DRY FLUME CROSSING WILL BE ON-SITE IF STREAM-FLOW OCCURS DURING IMPLEMENTATION.
6. OPEN CUT CROSSING METHOD IS ONLY PERMITTED DURING TIMES OF NO STREAM FLOW OR RUNOFF EXISTS. DO NOT EXCAVATE TRENCH IN STREAM UNTIL THE PIPE SEGMENT IS ASSEMBLED AND READY FOR LOWERING IN. TRENCH DEWATERING SHALL USE A FILTER BAG WHEREVER FEASIBLE, TO AVOID UNCONTROLLED DOWNSTREAM SEDIMENTATION. LIMIT LENGTH OF TIME TO COMPLETE AND RESTORE STREAM CROSSING TO THE MINIMUM PRACTICABLE, E.G., LESS THAN 24 HOURS. IF FLOW AND SUBSTRATE CONDITIONS ARE SUCH THAT USE OF THIS CROSSING METHOD WOULD RESULT IN SIGNIFICANT UNCONTROLLED SEDIMENT TRANSPORT TO DOWNSTREAM AREAS, CONSIDER USING A DRY PUMP BYPASS OR DRY FLUME METHOD INSTEAD OF OPEN CUT.
7. WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
8. MARK THE TOP OF STREAMBANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAMBANK;
9. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM TOP OF STREAMBANK;
10. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP OF BANK PRIOR TO STREAM INSTALLATION WITH THE EXCEPTION OF THE TRAVEL LANE UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION;
11. CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS (SEE ES-0.08) MAINTAINING AMBIENT DOWNSTREAM FLOW RATES;
12. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION. EXCAVATION PORTION OF NATIVE STREAM BEDS COMPRISED OF ROCK, COBBLE, OR GRAVEL ARE TO BE STRIPPED AND SEGREGATED AND USED DURING STREAM RESTORATION.
13. REMOVE ALL CONSTRUCTION MATERIAL AND STRUCTURES FROM THE WATERBODY AFTER CONSTRUCTION;
14. RESTORE STREAM CHANNELS AND BOTTOMS TO THEIR PRECONSTRUCTION CONTOURS OR BETTER, AND STABILIZING THE STREAM CHANNEL PRIOR TO REESTABLISHING FLOW.
15. ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE STREAM FLOODWAY PRIOR TO PERMANENTLY STABILIZING STREAM BANKS; AND,
16. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK AND 100 FEET IN SPECIAL PROTECTION WATERSHEDS SHOULD BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
17. KEEP LIME AND FERTILIZER OUT OF STREAM.
18. TEMPORARY CROSSINGS WILL STAY IN PLACE FOR NO GREATER THAN ONE YEAR.



TYPICAL PIPELINE INSTALLATION STREAM CROSSING – DRY OPEN CUT DETAIL

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
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1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

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EROSION & SEDIMENT CONTROL &
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NOTES & DETAILS

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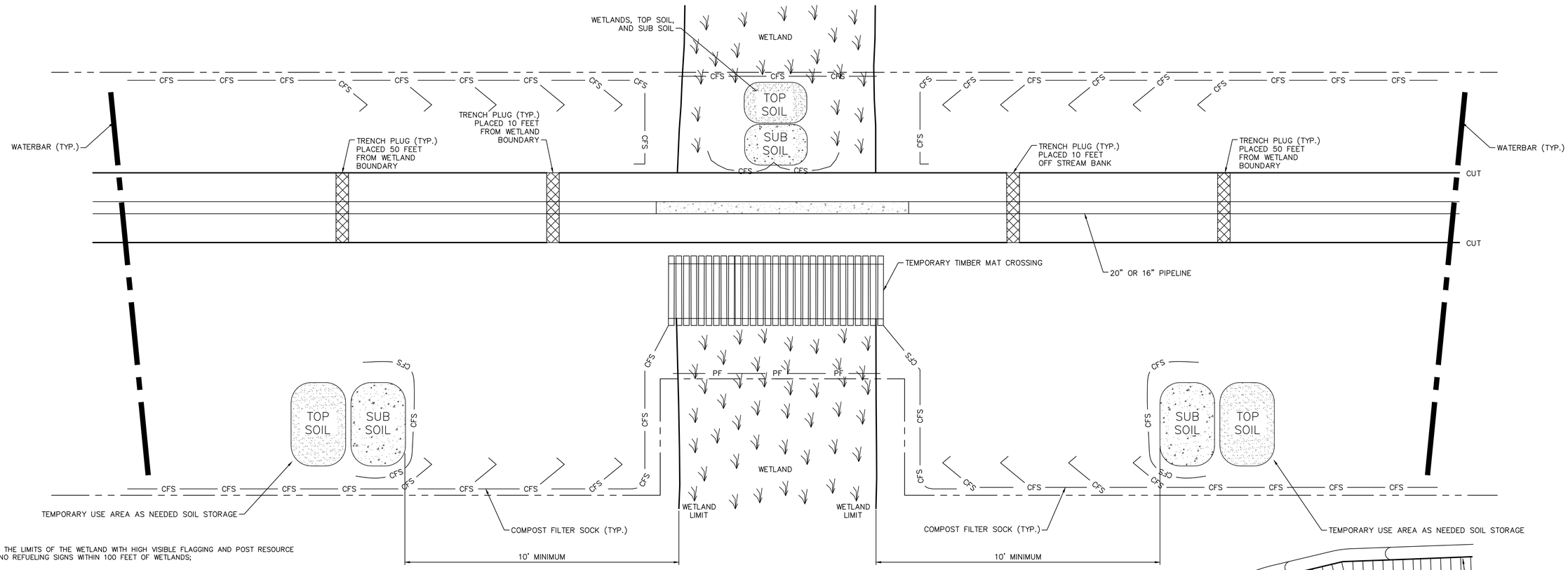
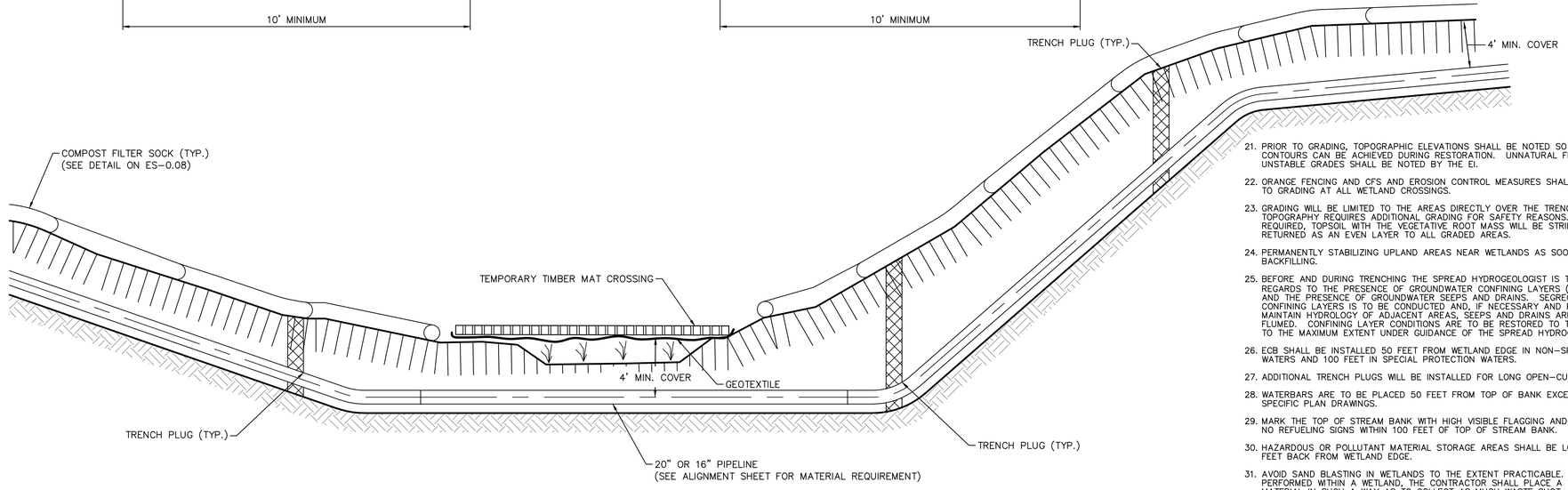


NOTES:

1. MARK THE LIMITS OF THE WETLAND WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF WETLANDS;
2. ORANGE SAFETY FENCE BETWEEN LOD AND ADJACENT WETLANDS.
3. STABILIZE WETLAND TRAVEL LANE APPROACH.
4. SEE SITE-SPECIFIC DETAILS WHEN NOTED ON E&S PLAN SHEETS.
5. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE WETLAND;
6. USE NO MORE THAN TWO LAYERS OF TIMBER RIPRAP TO STABILIZE THE CONSTRUCTION RIGHT-OF-WAY;
7. CUT VEGETATION OFF AT GROUND LEVEL LEAVING EXISTING ROOT SYSTEMS IN PLACE AND REMOVE IT FROM THE WETLAND FOR DISPOSAL;
8. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCH LINE UNLESS SAFETY CONCERNS REQUIRE THE REMOVAL OF STUMPS FROM THE WORKING-SIDE OF THE CONSTRUCTION ROW;
9. SEGREGATE A MAXIMUM OF 12 INCHES OF TOPSOIL FROM THE AREA DISTURBED BY TRENCHING IN UNSATURATED WETLANDS.
10. INSTALL TEMPORARY TIMBER MATS ALONG TRAVEL LANE. EQUIPMENT WILL WORK FROM MATS;
11. ASSEMBLE PIPE IN UPLAND AREAS UNLESS WETLAND IS DRY ENOUGH TO ADEQUATELY SUPPORT SKIDS AND PIPE;
12. IF STREAMS ARE PRESENT IMPLEMENT DRY CROSSING METHODS.
13. RESTORATION ACTIVITIES WITHIN WETLANDS (SEE TYP WETLAND RESTORATION) SHALL BEGIN IMMEDIATELY AFTER BACKFILLING, WEATHER PERMITTING;
14. NO SOIL AMENDMENTS SUCH AS AGRICULTURAL LIME OR FERTILIZER WILL BE USED WITHIN THE WETLAND AREAS.
15. RESTORE WETLANDS TO THE ORIGINAL CONTOURS AND SURFACE FLOW.
16. BULLDOZERS WILL NOT BE USED FOR CLEARING. TREES AND BRUSH WILL BE CUT BY HAND AT GROUND LEVEL BY CHAIN SAWS OR LOW GROUND PRESSURE EQUIPMENT, OR WITH EQUIPMENT THAT DOES NOT CAUSE EXCESSIVE RUTTING OF TOPSOIL OR WITH EQUIPMENT SUPPORTED BY MATS (TIMBER MATS, HDPE COMPOSITE OR SIMILAR).
17. THE MINIMUM CLEARING NECESSARY TO SAFELY CONSTRUCT THE PIPELINE WILL BE DONE. MATS OR PADS MAY BE PLACED OVER TOP OF EXISTING VEGETATION, INCLUDING SHRUBS, WHERE POSSIBLE.
18. STUMPS WILL BE LEFT IN PLACE, EXCEPT ON THE TRENCH LINE OR UNLESS THE REMOVAL IS NECESSARY TO ENSURE WORKER SAFETY. STUMPS MAY BE GROUND TO A SUITABLE HEIGHT FOR SAFETY REASONS.
19. ALL CUT TIMBER AND BRUSH WILL BE REMOVED FROM WETLANDS. GRINDINGS WILL BE REMOVED AS MUCH AS PRACTICAL. DEBRIS AND STUMPS WILL NOT BE BURIED.
20. CONTRACTOR SHALL BE REQUIRED TO INSTALL COMPLETED MAT TRAVEL LANE FOR PIPELINE CONSTRUCTION DURING THE TIME CONTRACTOR'S CLEARING CREW 9DOES NOT MEAN TREE FELLING) IS PERFORMING ITS WORK.



TYPICAL PIPELINE INSTALLATION WETLAND CROSSING DETAIL

NOT TO SCALE

21. PRIOR TO GRADING, TOPOGRAPHIC ELEVATIONS SHALL BE NOTED SO THAT ORIGINAL CONTOURS CAN BE ACHIEVED DURING RESTORATION. UNNATURAL FEATURES AND UNSTABLE GRADES SHALL BE NOTED BY THE EI.
22. ORANGE FENCING AND CFS AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING AT ALL WETLAND CROSSINGS.
23. GRADING WILL BE LIMITED TO THE AREAS DIRECTLY OVER THE TRENCHLINE, EXCEPT WHERE TOPOGRAPHY REQUIRES ADDITIONAL GRADING FOR SAFETY REASONS. WHEN GRADING IS REQUIRED, TOPSOIL WITH THE VEGETATIVE ROOT MASS WILL BE STRIPPED, SEGREGATED AND RETURNED AS AN EVEN LAYER TO ALL GRADED AREAS.
24. PERMANENTLY STABILIZING UPLAND AREAS NEAR WETLANDS AS SOON AS POSSIBLE AFTER BACKFILLING.
25. BEFORE AND DURING TRENCHING THE SPREAD HYDROGEOLOGIST IS TO BE CONSULTED IN REGARDS TO THE PRESENCE OF GROUNDWATER CONFINING LAYERS (I.E., CLAY, FRAGIPAN) AND THE PRESENCE OF GROUNDWATER SEEPS AND DRAINS. SEGREGATION OF THE CONFINING LAYERS IS TO BE CONDUCTED AND, IF NECESSARY AND PRACTICABLE TO MAINTAIN HYDROLOGY OF ADJACENT AREAS, SEEPS AND DRAINS ARE TO BE TEMPORARILY FLUMED. CONFINING LAYER CONDITIONS ARE TO BE RESTORED TO THE ORIGINAL CONDITION TO THE MAXIMUM EXTENT UNDER GUIDANCE OF THE SPREAD HYDROGEOLOGIST.
26. ECB SHALL BE INSTALLED 50 FEET FROM WETLAND EDGE IN NON-SPECIAL PROTECTION WATERS AND 100 FEET IN SPECIAL PROTECTION WATERS.
27. ADDITIONAL TRENCH PLUGS WILL BE INSTALLED FOR LONG OPEN-CUT WETLAND CROSSINGS.
28. WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
29. MARK THE TOP OF STREAM BANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAM BANK.
30. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM WETLAND EDGE.
31. AVOID SAND BLASTING IN WETLANDS TO THE EXTENT PRACTICABLE. IF SANDBLASTING IS PERFORMED WITHIN A WETLAND, THE CONTRACTOR SHALL PLACE A TARP OR SUITABLE MATERIAL IN SUCH A WAY AS TO COLLECT AS MUCH WASTE SHOT AS POSSIBLE AND DISPOSE OF THE COLLECTED WASTE. THE CONTRACTOR SHALL CLEAN UP ALL VISIBLE DEPOSITS OF WASTES AND DISPOSE OF THE WASTE AT AN APPROVED DISPOSAL FACILITY.
32. ANY EXCESS FILL MATERIAL MUST BE REMOVED AND NOT SPREAD WITHIN THE WETLAND.
33. PLACE A MINIMUM OF ONE (1) TRENCH PLUG AT A MAXIMUM SPACING OF 100 FEET BETWEEN TRENCH PLUGS WITHIN A WETLAND. WETLAND CROSSINGS LESS THAN FIFTY (50) FEET DO NOT REQUIRE AN INTERNAL TRENCH PLUG (IN ACCORDANCE WITH SPECIAL CONDITIONS UNDER SECTION "MISCELLANEOUS", CONDITION fff OF THE APPROVED CHAPTER 105 PERMIT).

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — ROBERT F. SIMCIK — 3/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

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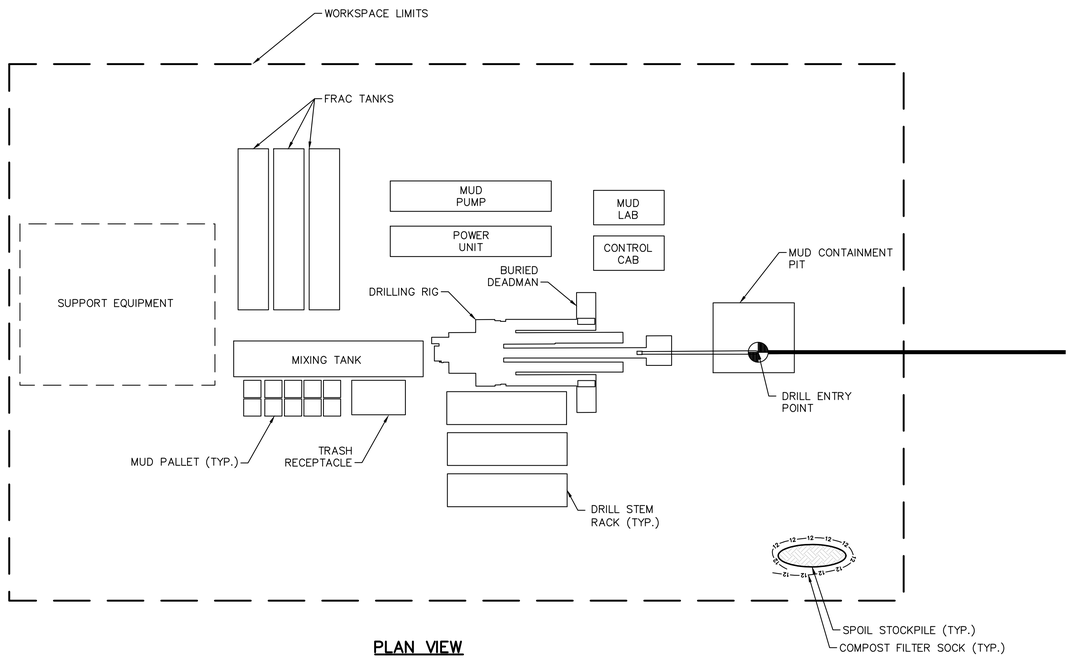
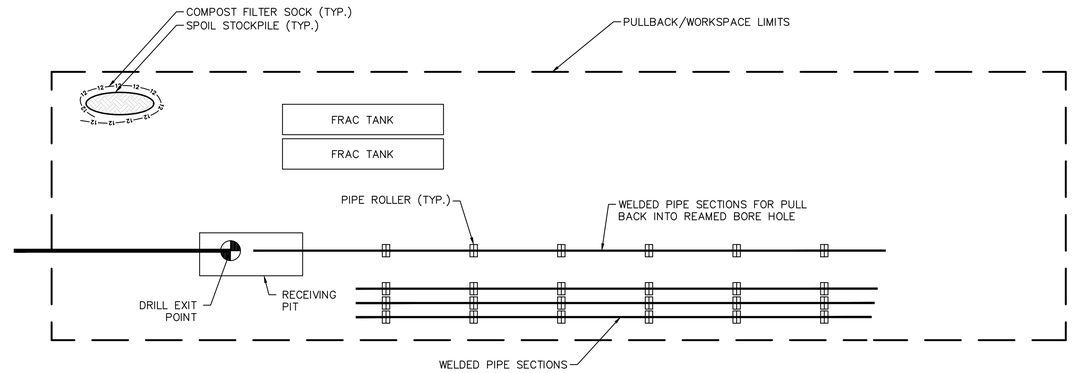


PLAN VIEW

ENTRY SIDE LAYOUT
NOT TO SCALE



PLAN VIEW

EXIT SIDE LAYOUT
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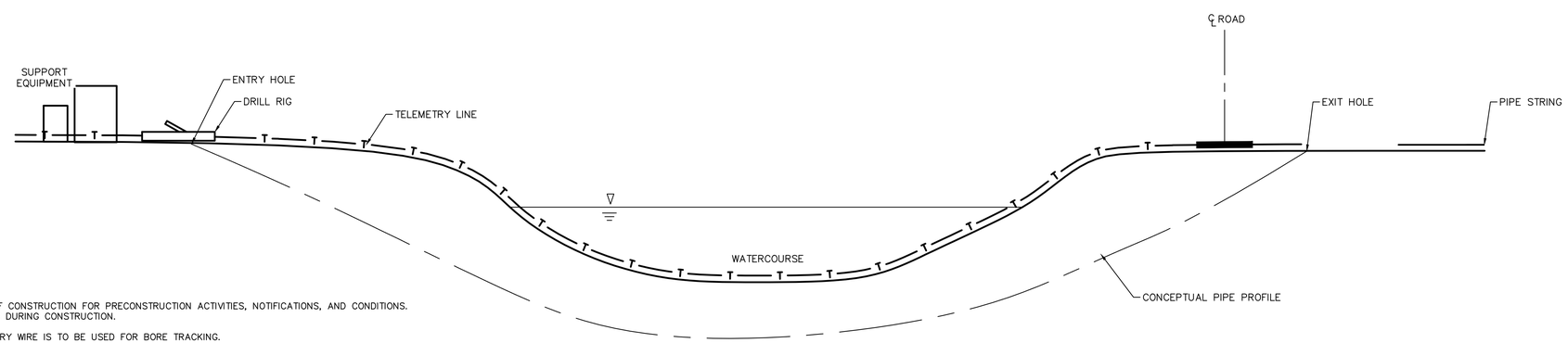

PROFILE VIEW

TYPICAL HDD BORE LAYOUT
NOT TO SCALE

NOTES:

1. REVIEW INADVERTENT RETURN AND PROJECT PPC PLANS AHEAD OF CONSTRUCTION FOR PRECONSTRUCTION ACTIVITIES, NOTIFICATIONS, AND CONDITIONS. MAKE ALL APPROPRIATE NOTIFICATIONS. IMPLEMENT THESE PLANS DURING CONSTRUCTION.
2. REVIEW HDD FOR WRITTEN ATON PLAN AND IMPLEMENT IF TELEMETRY WIRE IS TO BE USED FOR BORE TRACKING.
3. SEE SITE PLANS FOR E&S CONTROLS.
4. LAYOUT WILL VARY ACCORDING TO AVAILABLE WORK SPACE AND FIELD CONDITIONS.
5. GRADE AND TOPSOIL WORKSPACES WHERE NECESSARY TO MAKE WORKSPACE AVAILABLE FOR PARKING, STAGING, AND OTHER USES WHEN NOT BEING USED FOR BORING.
6. HDD BENEATH WETLAND AND WATERBODIES WHERE INDICATED ON E&S PLAN SHEETS. SEE SITE-SPECIFIC DRAWINGS IF NOTED TO BE AVAILABLE.
7. INSTALL TEMPORARY TIMBER WETLAND MATS IF WORKSPACES ARE IN WETLANDS.
8. TEMPORARY WATERBAR TO BE INSTALLED AFTER CLEARING AND PRIOR TO TEMPORARY GRADING IF NEEDED FOR HDD INSTALLATION.
9. PERMANENT WATERBAR TO BE INSTALLED AFTER CLEARING AND PRIOR TO TEMPORARY GRADING IF NEEDED FOR HDD INSTALLATION AND REINSTALLED ONCE FINAL GRADING ESTABLISHED.
10. TELEMETRY WIRE WILL BE STRUNG FROM ENTRY TO EXIT POINTS.
11. INSTALL COMPOST FILTER SOCKS/SILT FENCE ALONG THE DOWN GRADIENT PERIMETERS OF THE HDD BORE PIT.
12. EXCAVATION OF THE DRILL ENTRY AND EXIT LOCATIONS WILL BE NECESSARY TO CONTAIN DRILLING FLUIDS DURING ALL PHASES OF INSTALLATION. THESE FLUIDS AND CUTTINGS MUST BE DISPOSED OF IN AN APPROVED MANNER PERIODICALLY OR AT THE COMPLETE CROSSING INSTALLATION.
13. THE CROSSING LENGTH AND CROSS SECTIONAL GEOMETRY IS DEPENDENT UPON THE PIPELINE DESIGN PARAMETERS, THE OBSTACLE CROSSED, AND THE SUBSURFACE CONDITIONS.

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REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE084435-E
2/6/17

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SINKING SPRING, PENNSYLVANIA

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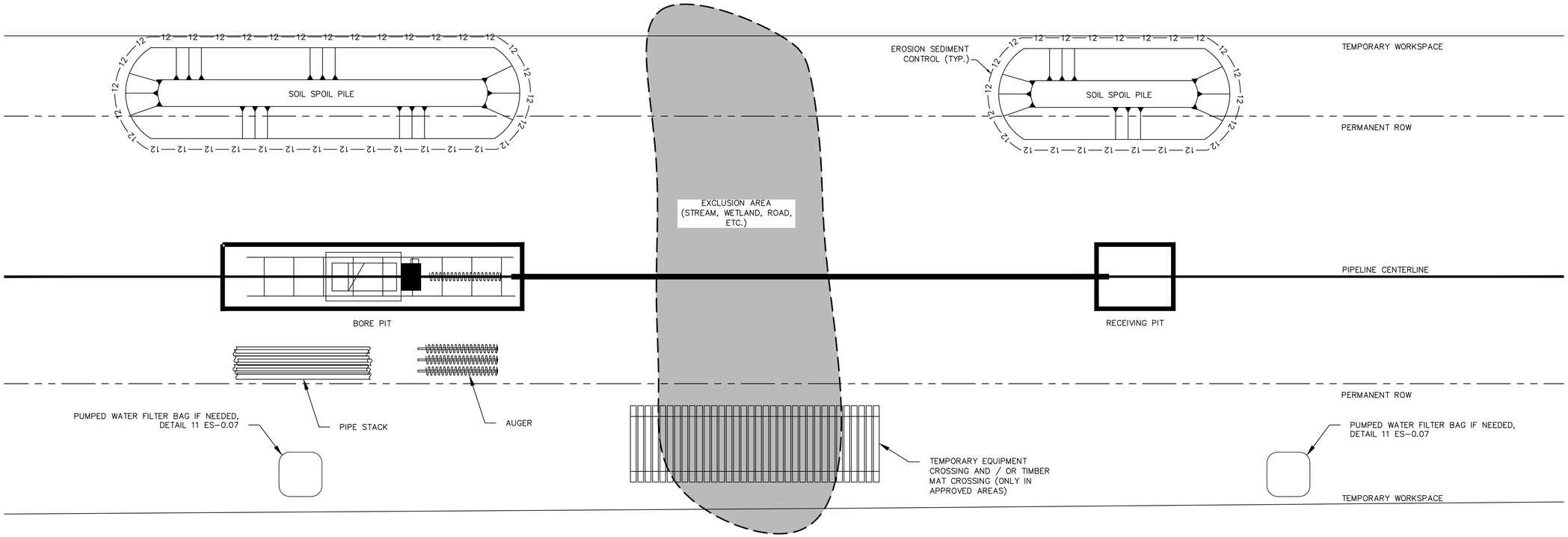
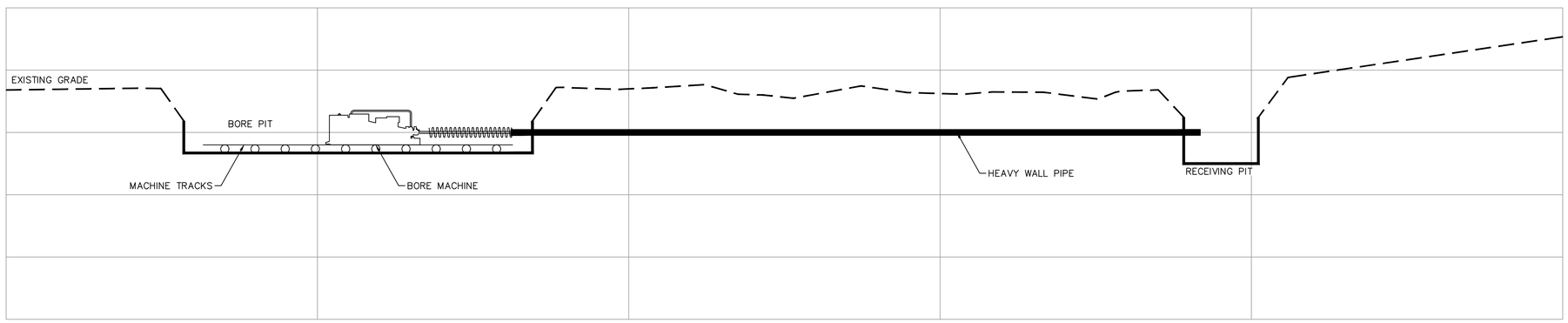


PLAN VIEW



PROFILE VIEW

TYPICAL CONVENTIONAL BORE CROSSING LAYOUT

NOT TO SCALE

NOTES:

1. LAYOUT WILL VARY ACCORDING TO AVAILABLE WORK SPACE AND FIELD CONDITIONS.
2. WORKSPACE AVAILABLE FOR PARKING, STAGING, AND OTHER USES WHEN NOT BEING USED FOR BORING.
2. INSTALL COMPOST FILTER SOCKS/SILT FENCE ALONG THE DOWN GRADIENT PERIMETERS OF THE BORE PITS. SEE SITE PLANS FOR E&S CONTROLS.
3. EXCAVATE BORE PITS IN ACCORDANCE WITH SITE-SPECIFIC PLANS AND SEGREGATE TOP SOIL IN ACCORDANCE WITH STANDARD E&SC PLAN NOTES. POSITION BORE PITS A MINIMUM OF 50 FEET FROM THE NEAREST TOP OF BANK, WHERE TECHNICALLY FEASIBLE.
4. THE CROSSING LENGTH IS DEPENDENT UPON THE OBSTACLE TO BE CROSSED, AND THE SURFACE AND SUBSURFACE CONDITIONS.

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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SHEET 0.17 OF 102

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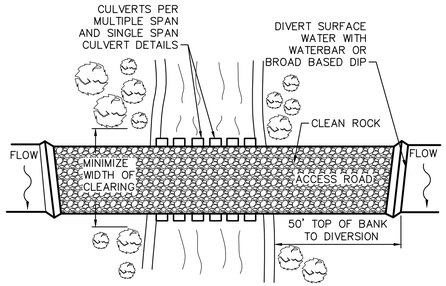


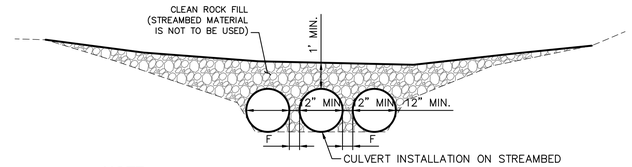
PLAN VIEW

NOTES:

1. WATERBARS AND BROAD-BASED DIPS SHALL DISCHARGE TO 18" CFS OR APPROVED SEDIMENT REMOVAL FACILITY.
2. CLEAN ROCK SHALL CONFORM TO CHAPTER 105 PERMITTING REQUIREMENTS.
3. FOLLOW PERMIT CONDITIONS REGARDING REMOVAL OF CROSSING.
4. ALTERNATIVELY, TIMBER MATS MAY BE USED TO FORM THE TRAVEL SURFACE.
5. PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE PLAN VIEW). THE STABILIZED APPROACH MAY CONSIST OF GRAVEL (AASHTO #1 OR EQUAL) OR TIMBER MATS.
6. PIPES SHALL EXTEND BEYOND THE TOE OF THE CROSSING SUPPORT.
7. RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.
8. FOLLOW TROUT STREAM RESTRICTIONS SHOWN ON PLAN SHEETS.

TEMPORARY CULVERT STREAM CROSSING

NOT TO SCALE

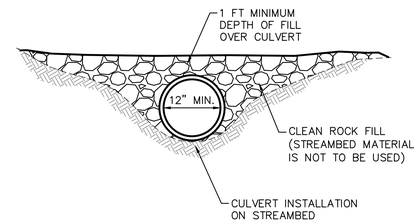


NOTE:

1. MULTIPLE PIPES AND MULTIPLE SPAN BRIDGES AND CULVERTS WHICH MAY TEND TO COLLECT DEBRIS, CONTRIBUTE TO THE FORMATION OF ICE JAMS AND INCREASE HEAD LOSSES SHALL BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE. CROSSINGS OF LESS THAN 15 FEET SHALL BE BY ONE SPAN, EXCEPT WHERE CONDITIONS MAKE IT IMPRACTICAL TO AFFECT THE CROSSING WITHOUT MULTIPLE SPANS (SECTION 105.162).
2. REFER TO PADEP E&S MANUAL PAGES 39 AND 40 FOR DETAILS #3-13 (SINGLE SPAN CULVERT) AND #3-14 (MULTIPLE SPAN OUTLET) FOR ADDITIONAL INFORMATION.

MULTIPLE SPAN CULVERT

NOT TO SCALE



CROSS-SECTION VIEW

SINGLE SPAN CULVERT

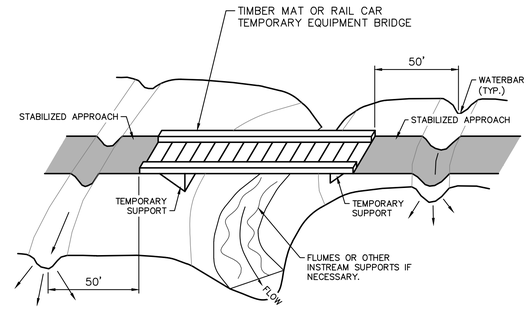
NOT TO SCALE

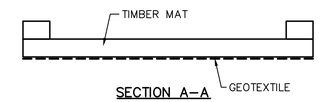
MAINTENANCE OF TEMPORARY EQUIPMENT CROSSING:

1. TEMPORARY STREAM CROSSING SHALL BE INSPECTED ON A DAILY BASIS.
2. DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION AND BEFORE ANY SUBSEQUENT USE.
3. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED REGULARLY AND PLACED IN SOIL STOCKPILES.
4. FLOW THROUGH SHALL BE INSPECTED DAILY AND IMPEDANCES REMOVED WITHIN 24 HOURS.
5. AS SOON AS TEMPORARY CROSSING IS NO LONGER NEEDED, IT SHALL BE REMOVED. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND AREAS STABILIZED. TEMPORARY EQUIPMENT CROSSINGS SHALL BE IN PLACE NO LONGER THAN 1 YEAR.

TEMPORARY EQUIPMENT CROSSING DETAILS (15 / 0.10)

NOT TO SCALE





SECTION A-A

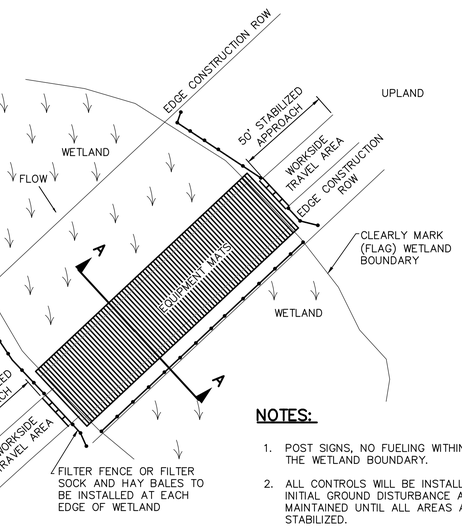
NOT TO SCALE

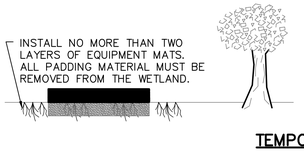
NOTES:

1. POST SIGNS; NO REFUELING WITHIN 100 FEET OF A STREAM.
2. APPROACHES TO CROSSINGS ARE NOT TO EXCEED 6" ABOVE ORIGINAL GRADE.
3. TIMBER MAT SPANS WITHOUT CENTER SUPPORT ARE LIMITED TO 15 FEET.
4. RAIL CAR SPANS WITHOUT CENTER SUPPORT ARE LIMITED TO 40 FEET.
5. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.
6. COMPOSITE MAT CAN BE SUBSTITUTED FOR TIMBER MATS.
7. CONSTRUCT AND MAINTAIN EQUIPMENT BRIDGES TO ALLOW UNRESTRICTED FLOW AND TO PREVENT SOIL FROM ENTERING THE WATERBODY.
8. WATERBARS AND BROAD-BASED DIPS SHALL DISCHARGE TO 18" CFS OR APPROVED SEDIMENT REMOVAL FACILITY.
9. FOLLOW PERMIT CONDITIONS REGARDING REMOVAL OF CROSSING.
10. PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE PLAN VIEW). THE STABILIZED APPROACH MAY CONSIST OF GRAVEL (AASHTO #1 OR EQUAL) OR TIMBER MATS.
11. RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.
12. FOLLOW TROUT STREAM RESTRICTIONS SHOWN ON PLAN SHEETS.
13. ACCUMULATED SEDIMENT ON TIMBER MAT OR EQUIPMENT BRIDGE WILL BE REMOVED BY HAND AND PLACED IN SOIL STOCKPILES.

TEMPORARY EQUIPMENT BRIDGE STREAM CROSSING DETAIL

NOT TO SCALE



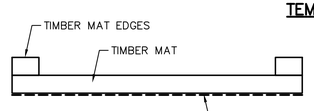


NOTES:

1. POST SIGNS, NO FUELING WITHIN 100' OF THE WETLAND BOUNDARY.
2. ALL CONTROLS WILL BE INSTALLED AFTER INITIAL GROUND DISTURBANCE AND MAINTAINED UNTIL ALL AREAS ARE STABILIZED.
3. LIMIT STUMP REMOVAL TO TRENCH LINE, UNLESS OTHER STUMPS CAUSE AN UNSAFE CONDITION.
4. RESTORE TO ORIGINAL CONTOUR AND DRAINAGE; RESTORE WETLAND MATERIAL.
5. RESTORE WETLAND IN ACCORDANCE WITH SHEET PLAN ES-0.09.

TEMPORARY TIMBER MAT WETLAND CROSSING (16 / 0.10)

NOT TO SCALE

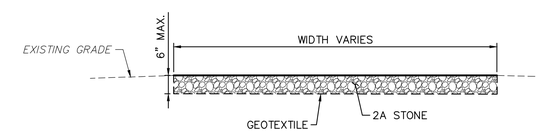


SECTION A-A

NOT TO SCALE

NOTE:

1. IF TIMBER MAT OR EQUIPMENT BRIDGE EDGES ARE NOT PROVIDED ON MAT TO CONTAIN SEDIMENT, INSTALL CFS IN SPECIAL PROTECTION WATERSHEDS OR SILT FENCE IN NON-SPECIAL PROTECTION WATERSHEDS TO PREVENT ANY SEDIMENT FROM THE EQUIPMENT CROSSING FROM ENTERING THE WETLAND.
2. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.
3. COMPOSITE MAT CAN BE SUBSTITUTED FOR TIMBER MATS.
4. ACCUMULATED SEDIMENT ON TIMBER MAT OR EQUIPMENT BRIDGE WILL BE REMOVED BY HAND AND PLACED IN SOIL STOCKPILES.



TYPICAL AGGREGATE ACCESS ROAD DETAIL

NOT TO SCALE

NOTES:

1. ENSURE RUNOFF FROM THE TRAVEL LANE SHALL BE DIVERTED OFF THE TRAVEL LANE INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE STABILIZED APPROACH.
2. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — ROBERT F. SIMCIK — CERTIFICATE NO. PE036435-E — 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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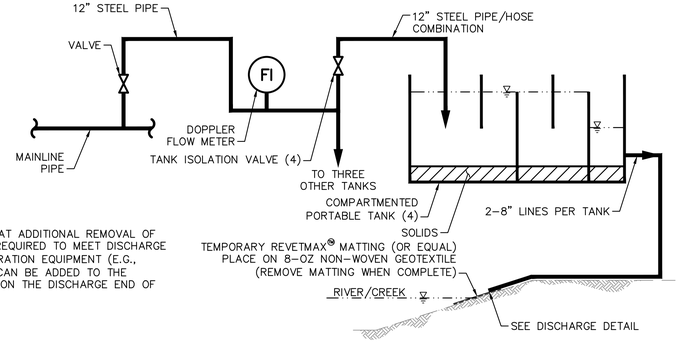
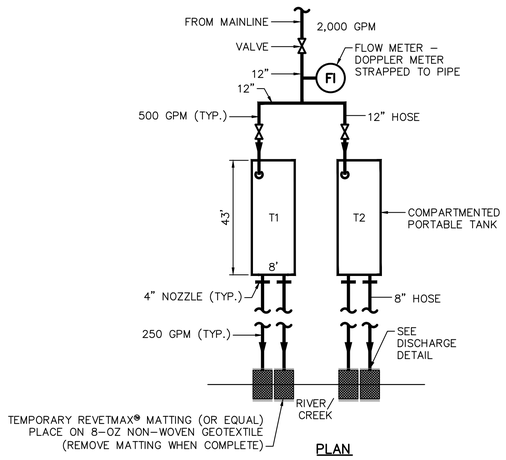
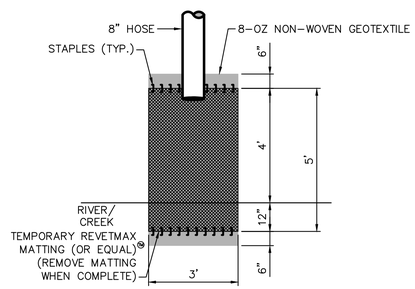


NOTE:

IF IT IS DETERMINED THAT ADDITIONAL REMOVAL OF SUSPENDED SOLIDS IS REQUIRED TO MEET DISCHARGE LIMITS, ADDITIONAL FILTRATION EQUIPMENT (E.G., SAND OR BAG FILTER) CAN BE ADDED TO THE DISCHARGE STRUCTURE ON THE DISCHARGE END OF THE PORTABLE TANKS.



PLAN

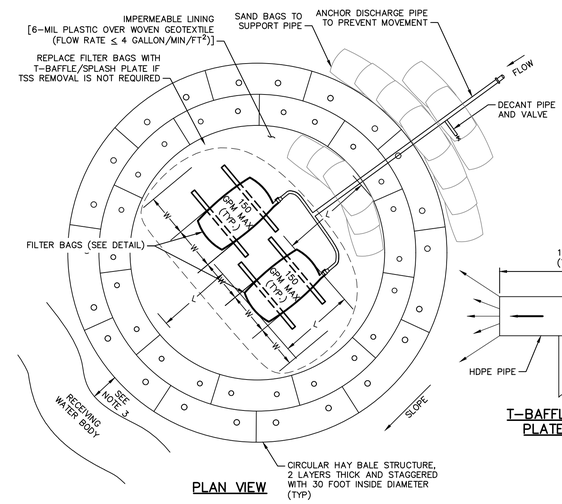


DISCHARGE DETAIL

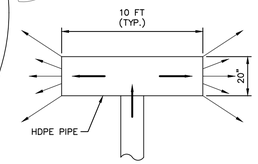
HYDROSTATIC TESTING WATER DIRECT DISCHARGE DETAIL

NOT TO SCALE

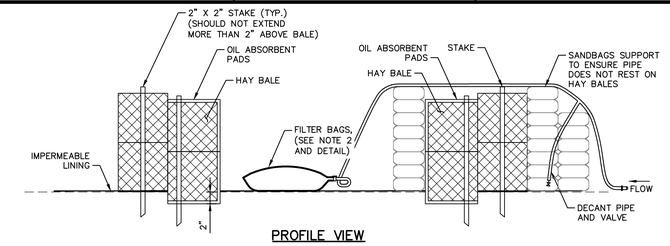
17 / 0.19



PLAN VIEW



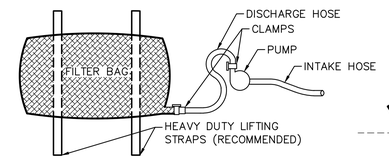
T-BAFFLE/SPLASH PLATE DETAIL



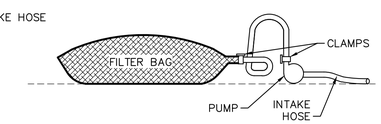
PROFILE VIEW

NOTES:

1. NOTICE OF INTENT MUST BE SUBMITTED AND NOTIFICATION OF PERMIT COVERAGE RECEIVED PRIOR TO DISCHARGING HYDROSTATIC TEST WATER.
2. HYDROSTATIC TEST WATER DISCHARGE STRUCTURE WILL BE LOCATED WITHIN THE PROJECT RIGHT-OF-WAY OR OTHER ESTABLISHED RIGHT-OF-WAY APPROVED BY SUNOCO AND LANDOWNER. INCREASE SIZE OF DISCHARGE STRUCTURE AND NUMBER OF FILTER BAGS TO MATCH REQUIRED DISCHARGE RATE AND TSS REMOVAL AS LONG AS REQUIRED LAND IS AVAILABLE. ADD ADDITIONAL SMALLER DISCHARGE STRUCTURES IF SPACE IS LIMITED. ELIMINATE FILTER BAG(S) IF TSS REMOVAL NOT REQUIRED AND REPLACE WITH T-BAFFLE/ SPLASH PLATE.
3. HYDROSTATIC WATER DISCHARGE STRUCTURE WILL BE LOCATED AT LEAST 100 FEET FROM THE EDGE OF A DELINEATED WETLAND, AND 50 FEET OR THE CHANNEL WIDTH, WHICHEVER IS GREATER, FROM THE TOP OF BANK OF A RECEIVING STREAM.
4. HYDROSTATIC WATER DISCHARGE STRUCTURE WILL BE LOCATED SUCH THAT IT DRAINS TO A WELL-VEGETATED AREA WITH SLOPES BETWEEN 1% AND 5% TOWARD THE RECEIVING WATERBODY.
5. HYDROSTATIC TEST WATER MUST BE SAMPLED AND ANALYZED TO CONFIRM COMPLIANCE WITH PARAMETERS IDENTIFIED IN PADEP PAG-10 GENERAL PERMIT FOR DISCHARGE FROM HYDROSTATIC TESTING OF TANKS AND PIPELINES AND THE APPROVED SAMPLING AND ANALYSIS PROGRAM FOR HYDROSTATIC TEST WATERS FOR PPP IN PENNSYLVANIA.
6. THE DISCHARGE RATE TO THE STRUCTURE SHOULD BE LIMITED TO THE LOWEST POSSIBLE RATE TO MINIMIZE ANY POTENTIAL IMPACT ON AQUATIC LIFE AND TO REDUCE THE POTENTIAL FOR EROSION (E.G., 150 GPM).
7. IF MUNICIPAL WATER IS USED FOR TESTING, HOLD THE WATER IN THE PIPE FOR AT LEAST 24 HOURS PRIOR TO DISCHARGE TO MEET TOTAL RESIDUAL CHLORINE LIMITS.
8. IMPLEMENT ADDITIONAL EROSION AND SEDIMENT CONTROLS AS REQUIRED IN PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, TECHNICAL GUIDANCE NUMBER 363-2134-008, MARCH 2012.
9. DO NOT DISCHARGE HYDROSTATIC TEST WATER TO EV OR HQ WATERS.
10. DO NOT DISCHARGE HYDROSTATIC TEST WATER TO TROUT STOCKED STREAMS FROM MARCH 1 TO JUNE 15. THE LISTING OF TROUT STOCKED STREAMS CAN BE FOUND ON THE PENNSYLVANIA FISH AND BOAT COMMISSION'S WEBSITE: WWW.FISH.STATE.PA.US.
11. A PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN MUST BE DEVELOPED IN ACCORDANCE WITH PA DEP'S "GUIDELINES FOR THE DEVELOPMENT AND IMPLEMENTATION OF ENVIRONMENTAL EMERGENCY RESPONSE PLANS" (DEP ID 400-2200-001) AND ITS NPDES-SPECIFIC ADDENDUM. THE PPC PLAN MUST BE MAINTAINED ON-SITE AND BE MADE AVAILABLE UPON REQUEST.
12. WHERE COMPOST FILTER SOCK IS NECESSARY TO ELEVATE THE PUMPED WATER FILTER BAG TO AN ABACT E&S BMP, THE COMPOST FILTER SOCK SHALL BE PLACED TO SUFFICIENT LENGTH TO MANAGE ALL FLOW FROM THE PUMPED WATER FILTER BAG (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION 1 OF THE APPROVED CHAPTER 102 PERMIT).



PLAN VIEW



ELEVATION VIEW

NOTE:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-3751	80 SIEVE

FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

FILTER BAG DETAIL USE IN HAY BALE DISCHARGE STRCTURE

NOT TO SCALE

DISCHARGE STRUCTURES TO BE USED FOR HYDROSTATIC TEST WATER

NOT TO SCALE

18 / 0.19

BLAIR COUNTY HDD TESTING DISCHARGE LOCATION INFORMATION

OUTFALL NO.	LATITUDE			LONGITUDE			HDD	ANTICIPATED DISCHARGE EVENTS				DISCHARGE TYPE	RECEIVING WATER NAME	CH. 93	PAFBC	DRAINS TO
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS	NUMBER	MAXIMUM FLOW (GPM)	DURATION (HRS)	VOLUME (GAL)*	NO./YEAR			EXISTING USE	DESIGNATION	EV WETLANDS?
001	40	24	26.89	-78	27	55.51	S2-0108	2,000	0.926	111,169	1	HAY BALE STRUCTURE	UNT TO BLAIR GAP RUN	TSF	STS, TNR	NO
002	40	24	32.83	-78	26	35.00	S2-0109	2,000	1.51	181,199	1	HAY BALE STRUCTURE	DRY RUN	WWF	DRAINS TO STS	NO
003	40	24	35.50	-78	26	11.58		2,000	1.51	181,199	1	HAY BALE STRUCTURE	DRY RUN	WWF	DRAINS TO STS	NO
004	40	24	31.48	-78	25	44.54	S2-0110	2,000	1.54	184,643	1	HAY BALE STRUCTURE	UNT TO DRY RUN	WWF	DRAINS TO STS	NO
005	40	24	51.56	-78	22	38.17	S2-0121	2,000	1.59	190,862	1	HAY BALE STRUCTURE	FRANKSTOWN BRANCH JUNIATA RIVER	WWF	DRAINS TO TNR	NO
006	40	26	3.77	-78	17	49.69	S2-0140	2,000	2.30	275,530	1	DIRECT DISCHARGE	FRANKSTOWN BRANCH JUNIATA RIVER	WWF	TNR	NO

* VOLUME DISPLAYS MAXIMUM POSSIBLE DISCHARGE VOLUME FOR EACH DISCHARGE LOCATION. NOT ALL DISCHARGE LOCATIONS WILL BE USED.

BLAIR COUNTY HDD TESTING DISCHARGE LOCATION INFORMATION

NOT TO SCALE

19 / 0.19

BLAIR COUNTY MAINLINE TESTING DISCHARGE LOCATION INFORMATION

OUTFALL NO.	LATITUDE			LONGITUDE			ANTICIPATED DISCHARGE EVENTS				DISCHARGE TYPE	RECEIVING WATER NAME	CH. 93	PAFBC	DRAINS TO
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS	MAXIMUM FLOW (GPM)	DURATION (HRS)	VOLUME (GAL)*	NO./YEAR			EXISTING USE	DESIGNATION	EV WETLANDS?
056	40	24	22.91	-78	33	6.53	2,000	2.95	354,121	1	HAY BALE STRUCTURE	UNT TO BLAIR RUN	CWF	TNR	NO
057	40	24	12.35	-78	30	9.29	2,000	17.4	2,087,937	1	HAY BALE STRUCTURE	DRY RUN	WWF	DRAINS TO STS	NO
058	40	26	3.75	-78	17	49.71	2,000	50.1	6,011,647	1	DIRECT DISCHARGE	FRANKSTOWN BRANCH JUNIATA RIVER	WWF	TNR	NO

* VOLUME DISPLAYS MAXIMUM POSSIBLE DISCHARGE VOLUME FOR EACH DISCHARGE LOCATION. NOT ALL DISCHARGE LOCATIONS WILL BE USED.

BLAIR COUNTY MAINLINE TESTING DISCHARGE LOCATION INFORMATION

NOT TO SCALE

20 / 0.19

HYDROSTATIC DISCHARGE DETAILS

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-0.19

SHEET 0.19 OF 102

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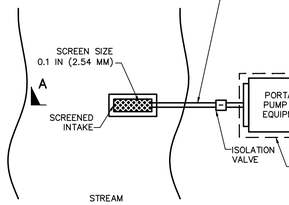
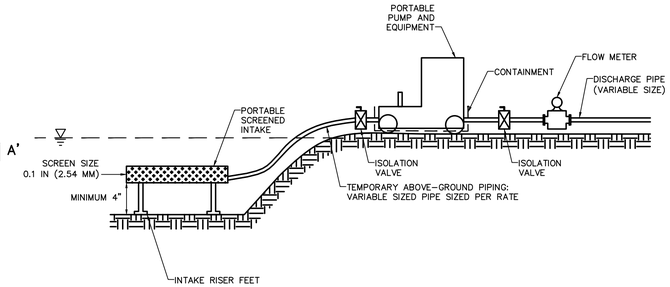


SCHEMATIC PLAN VIEW

NOT TO SCALE



INTAKE ARRANGEMENT SECTION A–A'

NOT TO SCALE

NOTES:

1. PUMP PAD WILL MATCH EXISTING GRADE.
2. SURFACE WATER SOURCE TO BE USED FOR TEMPORARY WATER WITHDRAWALS. ALL TEMPORARY EQUIPMENT WILL BE REMOVED FROM THE FLOODWAY WHEN NOT IN USE. NO DREDGING OR FILLING ACTIVITIES CAN BE COMPLETED WITHIN THE 100–YEAR FLOODWAY WITHOUT ADDITIONAL PERMITS.

TYPICAL HYDROSTATIC TEST SUBMERGED INTAKE WITH MOBILE PUMP

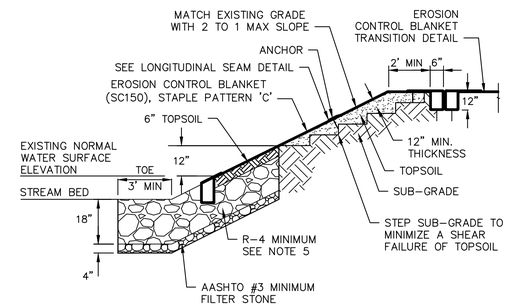
NOT TO SCALE

21 / 0.20

STREAMBANK STABILIZATION TABLE

SOUTHCENTRAL REGION												
COUNTY	STREAM	SPECIAL PROTECTION WATER	NORMAL DEPTH (ft)	SLOPE (ft/ft)	VELOCITY (ft/sec)	SHEAR STRESS (lb/sf)	SHEAR STRESS LESS THAN 0.25?	SHEAR STRESS OF NATIVE SOIL (lb/sf)	RIP RAP REQUIRED	IF "RIP RAP" REQ'D, SIZE (Table 6.6)	THICKNESS (IN) OF RIP RAP (Table 6.6)	FILTER STONE TYPE
Blair	S-L96/S-L97		1.29	0.039	7.74	3.14	no		yes	R-4	18	AASHTO #3
Blair	S-KP1		1.96	0.037	7.44	4.53	no		yes	R-4	18	AASHTO #3
Blair	S-BB49		1.02	0.047	5.12	2.96	no		yes	R-3(1)	9	AASHTO #57
Blair	S-BB44		2.58	0.004	4.29	0.64	no		yes	R-3(1)	9	AASHTO #57
Blair	S-L83		2.58	0.004	4.29	0.64	no		yes	R-3(1)	9	AASHTO #57
Blair	S-M35	yes	1.31	0.034	5.71	2.78	no		yes	R-3(1)	9	AASHTO #57
Blair	S-L58	yes	1.21	0.006	1.21	0.45	no		yes	R-3(1)	9	AASHTO #57
Blair	S-BB96	?	0.69	0.11	6.95	4.74	no		yes	R-4	18	AASHTO #3

(1) R–4 IS MINIMUM RIPRAP SIZE TO BE USED. IF CALCULATIONS IDENTIFIED SMALLER STONE SIZE WILL BE INCREASED TO R–4

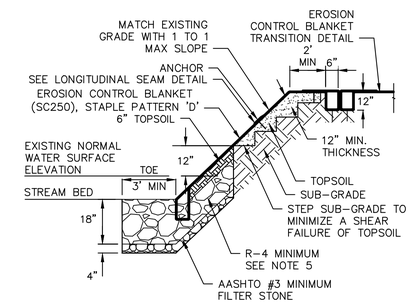


NOTES:

1. A SUITABLE WOVEN OR NON–WOVEN GEOTEXTILE UNDERLAYMENT MUST BE USED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.
2. REFER TO NORTH AMERICAN GREEN DETAILS.
3. MATTING WILL EXTEND FROM TOP OF BANK 50' PERPENDICULARLY AWAY FROM TOP OF BANK OR 100' IN HQ/EV WATERSHEDS.
4. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION.
5. WHERE NATURAL STONE IS REMOVED FROM THE STREAM CROSSING, NATURAL STONE SHALL BE INSTALLED AS TOP 6 INCHES OF RIPRAP.

RIP–RAP BANK STABILIZATION DETAIL

NOT TO SCALE

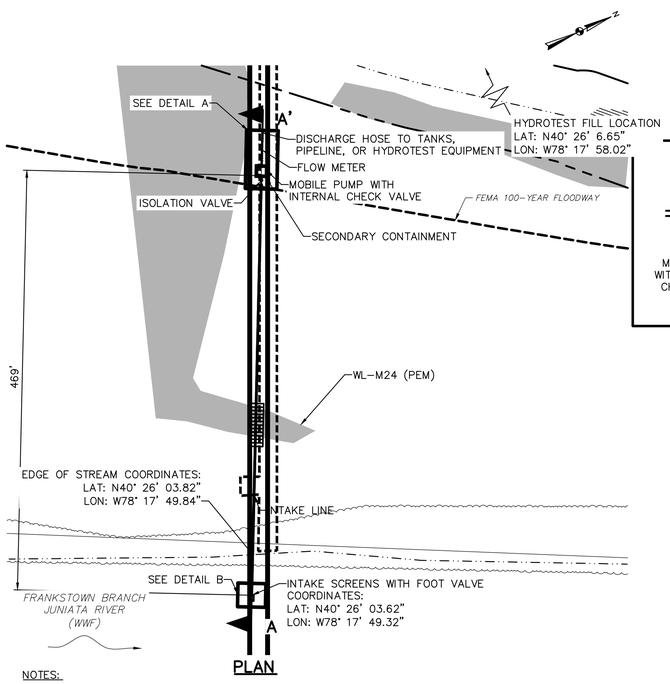


NOTES:

1. A SUITABLE WOVEN OR NON–WOVEN GEOTEXTILE UNDERLAYMENT MUST BE USED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.
2. REFER TO NORTH AMERICAN GREEN DETAILS.
3. MATTING WILL EXTEND FROM TOP OF BANK 50' PERPENDICULARLY AWAY FROM TOP OF BANK OR 100' IN HQ/EV WATERSHEDS.
4. NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION.
5. WHERE NATURAL STONE IS REMOVED FROM THE STREAM CROSSING, NATURAL STONE SHALL BE INSTALLED AS TOP 6 INCHES OF RIPRAP.
6. FOR SLOPES GREATER THAN 1:1 REFER TO SITE SPECIFIC PLANS FOR APPROPRIATE CONTROLS.

STEEP BANK STABILIZATION DETAIL

NOT TO SCALE



NOTES:

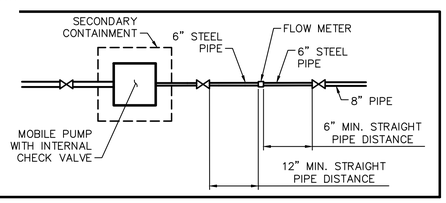
SURVEY DATUM:
HORIZONTAL: PA STATE PLANE NAD83
VERTICAL: NAVD88

0 80 160
SCALE IN FEET

FRANKSTOWN BRANCH JUNIATA RIVER SITE–SPECIFIC INTAKE PLAN AND PROFILE

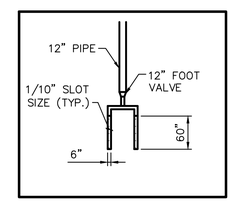
NOT TO SCALE

22 / 0.20



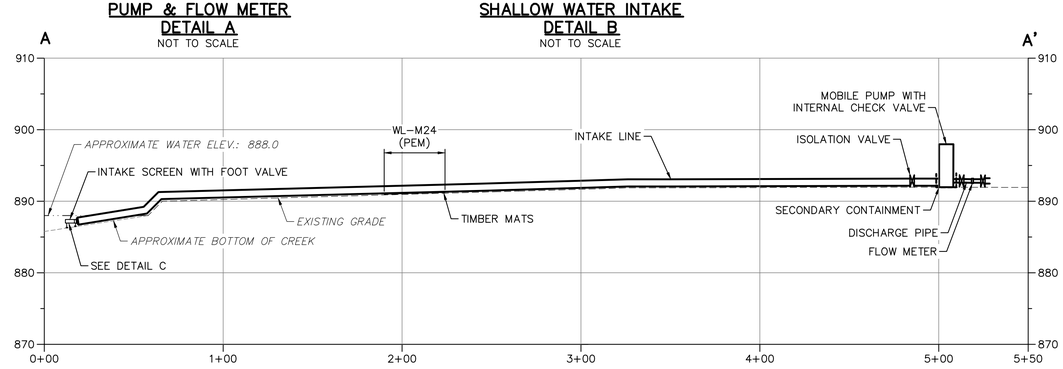
PUMP & FLOW METER DETAIL A

NOT TO SCALE



SHALLOW WATER INTAKE DETAIL B

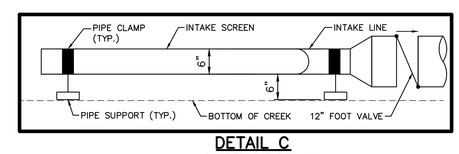
NOT TO SCALE



CROSS SECTION A–A'

0 40 80
HORIZONTAL SCALE IN FEET

0 10 20
VERTICAL SCALE IN FEET



DETAIL C INTAKE PROFILE

NOT TO SCALE

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
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1–20" & 1–16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

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PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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SHEET 0.20 OF 102

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SITE RESTORATION GENERAL NOTES:

1. TOPOGRAPHIC MAPPING AND FEATURES COMPILED FROM WWW.PASDA.PSU.EDU.
2. THE PROJECT TAKES PLACE WITHIN BLAIR COUNTY, PENNSYLVANIA.
3. TOWNSHIP BOUNDARIES TAKEN FROM WWW.PASDA.PSU.EDU.
4. 100-YEAR FEMA FLOODPLAINS TAKEN FROM WWW.PASDA.PSU.EDU.
5. SEE SHEET ES-0.02 FOR STREAM AND WETLAND CROSSING TABLE.
6. PIPELINE LOCATION AND RIGHT-OF-WAY FROM SUNOCO PIPELINE L.P.
7. USE COMPOST FILTER SOCK AS REQUIRED TO PREVENT RUNOFF FROM SPOIL AREA.
8. AT ALL STREAM CROSSINGS, RUNOFF MUST BE DIRECTED TO A SEDIMENT REMOVAL AREA (I.E. COMPOST FILTER SOCKS).
9. THE RIGHTS-OF-WAYS AND EASEMENTS SHOWN ON THIS PLAN ARE THE RESPONSIBILITY OF SUNOCO PIPELINE L.P. TO SECURE WITH THE INDIVIDUAL PROPERTY OWNER. THE RIGHTS-OF-WAY AND EASEMENTS SHOWN ON THIS PERMIT DRAWING REPRESENT THE BEST AVAILABLE PROPERTY INFORMATION AS PROVIDED TO TETRA TECH, INC. BY SUNOCO PIPELINE L.P. THE RIGHTS-OF-WAY AND EASEMENTS SHALL BE VERIFIED AND LOCATED IN THE FIELD BY SUNOCO PIPELINE L.P.
10. PAST AND PRESENT LAND USE CONSISTS OF AGRICULTURAL, FORESTED AND RESIDENTIAL AREAS. POST CONSTRUCTION LAND USE WILL BE A MAINTAINED, VEGETATED RIGHT-OF-WAY.
11. DRAWINGS REPRESENT THE FINAL PLAN FOR CONSTRUCTION.
12. THE EROSION & SEDIMENT CONTROL PLAN AND SITE RESTORATION PLAN, INSPECTION REPORTS, AND MONITORING REPORTS MUST BE AVAILABLE AT THE PROJECT SITE FOR REVIEW AND INSPECTION BY THE DEPARTMENT OR CONSERVATION DISTRICT.

SITE RESTORATION SCHEDULE:

1. AGRICULTURAL LIME APPLICATION RATES WILL BE DETERMINED BY FIELD PH TESTING. TESTING WILL BE PERFORMED AT A RATE OF 1 TEST/ACRE (MIN). IN ABSENCE OF FIELD TESTING, APPLY AT 6 TONS/ACRE.
2. APPLY 10-20-20 FERTILIZER AT THE RATE OF 1,000 LB/ACRE, OR AT A RATE DETERMINED BY FIELD TESTING.
3. WORK IN LIME AND FERTILIZER TO A DEPTH OF 4 IN. USING SUITABLE EQUIPMENT.
4. SEED PER PERMANENT SEED MIXTURE.
5. STRAW MULCH SHALL BE APPLIED AT THE RATE OF THREE TONS PER ACRE. CHEMICALLY TREATED OR SALTED STRAW IS NOT ACCEPTABLE AS MULCH.

SITE RESTORATION:

FOLLOWING COMPLETION OF PIPELINE INSTALLATION AND TRENCH BACKFILLING, THE AREA SHALL BE RETURNED TO GENERAL PRECONSTRUCTION GRADES PRESENT PRIOR TO PIPELINE INSTALLATION IN ORDER TO MAINTAIN PRECONSTRUCTION DRAINAGE PATTERNS. GROUNDS DISTURBED BY ANY OF THE OPERATIONS NECESSARY TO COMPLETE THE WORK FOR THIS PROJECT ARE TO BE PERMANENTLY SEEDED, OR IF SPECIFIED, SODDED, UNLESS OCCUPIED BY STRUCTURES, PAVED, OR DESIGNATED AS A PERMANENT ACCESS ROAD. THE ENTIRE RIGHT-OF-WAY WILL BE RESTORED BACK TO A MEADOW CONDITION OR LAWN IN ACCORDANCE WITH THE PERMANENT REVEGETATION PLAN ON ES-0.04. A TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES THAT LASTS FOUR DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. DISTURBED AREAS, WHICH ARE AT FINAL GRADE, SHALL BE SEEDED AND MULCHED IMMEDIATELY, WITH THE EXCEPTION OF THE PERMANENT ACCESS ROADS. IF SEEDING CANNOT BE COMPLETED IMMEDIATELY AFTER THE AREA REACHES FINAL GRADE DUE TO WEATHER CONDITIONS, THE DISTURBED AREA SHALL BE STABILIZED AND MULCHED WITH STRAW AT THE RATE OF THREE TONS PER ACRE. THIS STRAW SHALL BE ANCHORED USING A METHOD DESCRIBED UNDER MULCHING OF THIS NARRATIVE. TEMPORARY ACCESS ROADS WILL BE RESTORED TO A VEGETATED CONDITION FOLLOWING CONSTRUCTION. THE PROPOSED PERMANENT ACCESS ROADS WILL REMAIN IN PLACE FOLLOWING CONSTRUCTION.

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER 075304425-E 2/6/17

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

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EROSION & SEDIMENT CONTROL &
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DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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NOTES:

1. TOPOGRAPHIC MAPPING AND FEATURES COMPILED FROM WWW.PASDA.PSU.EDU.
2. THE PROJECT TAKES PLACE WITHIN BLAIR COUNTY, PENNSYLVANIA.
3. TOWNSHIP BOUNDARIES TAKEN FROM WWW.PASDA.PSU.EDU.
4. 100-YEAR FEMA FLOODPLAINS FROM WWW.PASDA.PSU.EDU.
5. PIPELINE LOCATION AND RIGHT-OF-WAY FROM SUNOCO PIPELINE L.P.
6. USE COMPOST FILTER SOCK AS REQUIRED TO PREVENT RUNOFF FROM SPOIL AREA.
7. AT ALL STREAM CROSSINGS, RUNOFF MUST BE DIRECTED TO A SEDIMENT REMOVAL AREA (i.e. COMPOST FILTER SOCKS).
8. THE RIGHTS-OF-WAYS AND EASEMENTS SHOWN ON THIS PLAN ARE THE RESPONSIBILITY OF SUNOCO PIPELINE L.P. TO SECURE WITH THE INDIVIDUAL PROPERTY OWNER. THE RIGHTS-OF-WAY AND EASEMENTS SHOWN ON THIS PERMIT DRAWING REPRESENT THE BEST AVAILABLE PROPERTY INFORMATION AS PROVIDED TO TETRA TECH, INC. BY SUNOCO PIPELINE L.P. THE RIGHTS-OF-WAY AND EASEMENTS SHALL BE VERIFIED AND LOCATED IN THE FIELD BY SUNOCO PIPELINE L.P.
9. PAST AND PRESENT LAND USE CONSISTS OF AGRICULTURAL, FORESTED AND RESIDENTIAL AREAS. POST CONSTRUCTION LAND USE WILL BE A MAINTAINED, VEGETATED RIGHT-OF-WAY.
10. DRAWINGS REPRESENT THE FINAL PLAN FOR CONSTRUCTION.
11. ~~THE EROSION & SEDIMENT CONTROL PLAN AND SITE RESTORATION PLAN, INSPECTION REPORTS, AND MONITORING REPORTS MUST BE AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT OR CONSERVATION DISTRICT.~~ THE PCSM PLAN, INSPECTION REPORTS, AND MONITORING RECORDS SHALL BE MADE AVAILABLE AT THE PROJECT SITE FOR REVIEW AND INSPECTION BY DEP AND THE AUTHORIZED CONSERVATION DISTRICT. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION III, CONDITION J OF THE APPROVED CHAPTER 102 PERMIT).
12. ~~THE LICENSED PROFESSIONAL OR DESIGNEE SHALL BE PRESENT ON SITE FOR THE CONSTRUCTION OF THE INFILTRATION BERMS AND TRENCHES.~~ A LICENSED PROFESSIONAL OR THEIR DESIGNEE SHALL BE PRESENT ON-SITE AND BE RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN. THE LICENSED PROFESSIONAL WILL BE RESPONSIBLE TO PROVIDE A FINAL CERTIFICATION, PURSUANT TO 25 PA. CODE § 102.8(1) ALONG WITH THE REQUIRED NOT AND RECORD DRAWINGS, INDICATING THAT THE PROJECT SITE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED OR MODIFIED PCSM PLAN. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION III, CONDITION C OF THE APPROVED CHAPTER 102 PERMIT).
13. A RECORDED INSTRUMENT WILL BE RECORDED AT THE RECORDER OF DEEDS TO PROVIDE FOR NECESSARY ACCESS FOR LONG TERM OPERATION AND MAINTENANCE FOR PCSM BMP'S. THE DEED WILL PROVIDE NOTICE THAT THE RESPONSIBILITY FOR THE LONG TERM OPERATION AND MAINTENANCE OF THE PCSM BMP'S IS A COVENANT THAT RUNS WITH THE LAND AND IS BINDING AND ENFORCEABLE BY SUBSEQUENT GRANTEES.

SITE RESTORATION

FOLLOWING COMPLETION OF PIPELINE INSTALLATION AND TRENCH BACKFILLING, THE PIPELINE RIGHT OF WAY, ASSOCIATED WORKSPACES, AND TEMPORARY ACCESS ROADS SHALL BE RETURNED TO THE GENERAL GRADE PRESENT PRIOR TO PIPELINE INSTALLATION IN ORDER TO MAINTAIN PRECONSTRUCTION DRAINAGE PATTERNS. AFTER COMPLETION OF MAJOR CONSTRUCTION WORK, TOPSOIL THAT WAS STOCKPILED DURING CONSTRUCTION WILL BE PLACED ALONG THE ROW. GROUNDS DISTURBED BY ANY OF THE OPERATIONS NECESSARY TO COMPLETE THE WORK FOR THIS PROJECT ARE TO BE PERMANENTLY SEEDED, OR IF SPECIFIED, SODDED, UNLESS OCCUPIED BY STRUCTURES, PAVED OR DESIGNATED AS A PERMANENT ACCESS ROAD. DISTURBED AREAS, WHICH ARE AT FINAL GRADE, SHALL BE SEEDED AND MULCHED ONCE FINAL GRADES ARE ACHIEVED. THE PERMANENT SEED MIXTURE WILL RESTORE DISTURBED AREAS TO A MEADOW IN GOOD CONDITION OR BETTER. IF SEEDING CANNOT BE COMPLETED WITHIN A FOUR (4) DAY PERIOD DUE TO WEATHER CONDITIONS, THE DISTURBED AREA WILL BE MULCHED WITH STRAW AT THE RATE OF THREE (3) TONS PER ACRE. THIS STRAW WILL BE ANCHORED USING A METHOD OUTLINED ON DRAWING PCS-0.03.

SITE RESTORATION CONSTRUCTION SEQUENCE

A GENERALIZED CONSTRUCTION SEQUENCE IS PROVIDED BELOW. THE CONSTRUCTION SEQUENCE IS INTENDED TO PROVIDE A GENERAL COURSE OF ACTION TO CONFORM TO THE APPLICABLE REGULATORY AGENCY REQUIREMENTS FOR SITE RESTORATION AND POST-CONSTRUCTION STORMWATER MANAGEMENT OF THE SITE. NECESSARY STEPS FOR PROPER AND COMPLETE EXECUTION OF WORK PERTAINING TO THIS PLAN, WHETHER SPECIFICALLY MENTIONED OR NOT, ARE TO BE PERFORMED BY THE CONTRACTOR. ~~THE CONTRACTOR WILL COMPLY WITH ALL REQUIREMENTS LISTED IN THIS SECTION. THE CONTRACTOR MAY BE REQUIRED TO ALTER CONTROLS BASED ON THE EFFECTIVENESS OF CONTROLS OR DIFFERING CONDITIONS ENCOUNTERED IN THE FIELD. THE APPROPRIATE COUNTY CONSERVATION DISTRICT AND DEP SHALL BE CONTACTED AND MUST APPROVE ANY DEVIATION TO THE AUTHORIZED PLANS.~~ THE PERMITTEE SHALL IMPLEMENT PCSM BMPS AS DETAILED IN THE APPROVED PCSM PLAN. ANY CHANGES TO THE PCSM PLAN, INCLUDING THE INTRODUCTION OF ALTERNATE PCSM BMPS OR THE ELIMINATION OF ANY APPROVED PCSM BMPS, MUST BE APPROVED BY DEP PRIOR TO THE IMPLEMENTATION OF THESE CHANGES. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION III, CONDITION I OF THE APPROVED CHAPTER 102 PERMIT)
~~A PRE-CONSTRUCTION MEETING IS REQUIRED PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) OR APPLICABLE COUNTY CONSERVATION DISTRICT, CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, AND THE PLAN PREPARER MUST BE INVITED TO THIS MEETING AT LEAST 7 DAYS IN ADVANCE.~~FOR EARTH DISTURBANCE ACTIVITIES AUTHORIZED BY THIS PERMIT, AT LEAST ONE PRE-CONSTRUCTION MEETING IS REQUIRED. THE PERMITTEE SHALL CONTACT DEP TO SCHEDULE THE PRE-CONSTRUCTION MEETING AND PROVIDE AT LEAST SEVEN (7) DAYS' NOTICE OF THE PRE-CONSTRUCTION MEETING TO ALL INVITED ATTENDEES, UNLESS OTHERWISE APPROVED BY DEP IN WRITING. PERMITTEES, CO-PERMITTEES, OPERATORS, AND LICENSED PROFESSIONALS, OR DESIGNEES RESPONSIBLE FOR EARTH DISTURBANCE ACTIVITY, INCLUDING IMPLEMENTATION OF E&S, PCSM AND PPC PLANS AND CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN, SHALL ATTEND THE PRE-CONSTRUCTION MEETING(S). PERMITTEES, CO-PERMITTEES, OPERATORS AND LICENSED PROFESSIONALS ARE RESPONSIBLE FOR ENSURING THAT ALL ACTIVITIES ON THE SITE COMPLY WITH THE REQUIREMENTS OF THE PERMIT. (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION VI OF THE APPROVED CHAPTER 102 PERMIT).

1. GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION.
2. SURFACE ROUGHENING WILL BE UTILIZED TO ROUGH THE SOIL SURFACE WITH HORIZONTAL DEPRESSIONS FOR THE PURPOSE OF REDUCING RUNOFF VELOCITY, INCREASING INFILTRATION, AIDING THE ESTABLISHMENT OF VEGETATION, AND REDUCING EROSION. SURFACE ROUGHENING SHOULD BE APPLIED TO SLOPES 3H:1V OR STEEPER UNLESS A STABLE ROCK FACE IS PROVIDED OR IT CAN BE SHOWN THAT THERE IS NOT A POTENTIAL FOR SEDIMENT POLLUTION TO SURFACE WATERS. FOR ROUGHENED SURFACES WITHIN 50 FEET OF A SURFACE WATER, AND WHERE BLANKETING OF SEEDED AREAS IS PROPOSED AS THE MEANS TO ACHIEVING PERMANENT STABILIZATION, SPRAY-ON TYPE BLANKETS ARE RECOMMENDED. SURFACE ROUGHENING SHALL BE ACCOMPLISHED USING DOZERS AFFIXED WITH GROUSER TRACKED EQUIPMENT. DOZERS SHALL RUN UP AND DOWN THE SLOPES LEAVING HORIZONTAL GROOVES PERPENDICULAR TO THE SLOPE. DOZER BLADES SHALL BE RAISED AND NOT USED DURING SURFACE ROUGHENING. ~~WHERE COMPACTION DOES OCCUR, CONTRACTOR SHALL SCARIFIY THE SOIL OR PROVIDE ADDITIONAL ROUGHENING SUCH AS DEEP RIPPING OR CHISEL RIPPING TO RESTORE THE AREA TO A MINIMAL COMPACTED STATE. IN AREAS OF PROPOSED INFILTRATION, SOILS SHALL BE AMENDED TO 2' BELOW GRADE. SEE SOIL AMENDMENT AND RESTORATION CONSTRUCTION SEQUENCE BELOW.~~ IN ACCORDANCE WITH THE E&S AND SITE RESTORATION PLANS, MEASURES SHALL BE TAKEN TO ENSURE THAT PROPER SOIL DE-COMPACTION OCCURS FOR ALL AREAS OF SITE RESTORATION FOR THE PROJECT. THE PERMITTEE SHALL IMPLEMENT SUCH MEASURES IN ACCORDANCE WITH THE GUIDANCE ON SOIL RESTORATION IN THE PA STORMWATER BMP MANUAL (BMP 6.7.3, CHAPTER 6, PAGE 221). (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION III, CONDITION G OF THE APPROVED CHAPTER 102 PERMIT)
3. PLACE TOPSOIL FROM TOPSOIL STOCKPILES AS THE UPPER LAYER OF BACKFILL. TOPSOIL SHALL NOT BE PLACED WHEN THE SUBGRADE IS FROZEN OR WHEN IT IS EXCESSIVELY WET OR DRY AND SHALL NOT BE HANDLED WHEN IN A FROZEN OR MUDDY CONDITION.
4. REMOVE GRAVEL AND GEOTEXTILE FROM THE TEMPORARY ACCESS ROADS AND SCARIFY THE SOIL. REFER TO STEP 2 OF THIS SEQUENCE TO ADDRESS COMPACTION AT ACCESS ROADS. AFTER ADDRESSING COMPACTION CONCERNS, PLACE TOPSOIL THAT WAS STRIPPED PRIOR TO INSTALLATION OF THE ACCESS ROADS.
5. IMMEDIATELY SEED AND MULCH DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING SCHEDULE ONCE FINAL GRADE IS ESTABLISHED AND TOPSOIL IS PLACED.
6. MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70-PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED. REGRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE EROSION AND SEDIMENT CONTROLS.

GEOWEB CONSTRUCTION SEQUENCE

1. GRADE SURFACE TO SUBGRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION. DO NOT COMPACT.
2. IF NEEDED, SCARIFY THE SOIL OR PROVIDE ADDITIONAL ROUGHENING SUCH AS DEEP RIPPING OR CHISEL RIPPING TO RESTORE THE AREA TO A MINIMAL COMPACTED STATE.
3. INSTALL GEOTEXTILE SEPARATION LAYER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. EXPAND GEOWEB TO REQUIRED DIMENSIONS AND ANCHOR EDGES WITH ATRA ANCHORS, IF NEEDED. JOIN ADJACENT SECTIONS WITH ATRA KEYS.
5. ANCHOR GEOWEB ON SLOPES GREATER THAT 5% WITH 24" ATRA ANCHORS PLACED ON A 3X8 CELL PATTERN.
6. MIX AND PLACE ENGINEERED INFILL MATERIAL (2/3 AASHTO #57 STONE AND 1/3 SCREENED TOPSOIL) INTO THE GEOWEB CELLS. INFILL MATERIAL SHALL BE FREE-FLOWING AND NOT FROZEN WHEN PLACED IN THE GEOWEB SECTIONS. LIMIT DROP HEIGHT TO 3 FEET TO AVOID DAMAGING OR DISPLACEMENT OF THE CELL WALL. SLIGHTLY OVERFILL THE CELLS AND LEVEL OFF MATERIAL ONCE SETTLEMENT IS NEGLIGIBLE. DO NOT COMPACT.
7. SEED AND MULCH FILLED SECTIONS IN ACCORDANCE WITH THE PERMANENT SEEDING SCHEDULE ONCE INFILL IS PLACED.
8. MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70-PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

SOIL AMENDMENT AND RESTORATION CONSTRUCTION SEQUENCE

1. GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION.
2. IN THE DESIGNATED SOIL AMENDMENT AREA, TILL THE GROUND AND MIX IN THE COMPOST AT A RATIO OF 2:1 (SOIL:COMPOST) TO A DEPTH OF 24 INCHES.
3. IMMEDIATELY SEED AND MULCH DISTURBED AREAS ONCE FINAL GRADE IS ESTABLISHED IN ACCORDANCE WITH THE PERMANENT SEEDING SCHEDULE.
4. MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

POST CONSTRUCTION STORMWATER MANAGEMENT CONSTRUCTION SEQUENCE

1. GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION.
2. INSTALL POST CONSTRUCTION BMPS AFTER COMPLETION OF PIPELINE CONSTRUCTION:

INFILTRATION BERM

1. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL BMPS AS PER THE PENNSYLVANIA EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL.
2. INSTALL ORANGE CONSTRUCTION FENCING AROUND THE PONDING AREA OF THE INFILTRATION BERM AS SHOWN ON THE PCSM PLAN DRAWINGS. COMPLETE SITE GRADING AND STABILIZE WITHIN THE LIMIT OF DISTURBANCE EXCEPT WHERE THE INFILTRATION BERM WILL BE CONSTRUCTED AND THE EXTENT OF THE PONDING AREA; MAKE EVERY EFFORT TO MINIMIZE BERM FOOTPRINT AND NECESSARY ZONE OF DISTURBANCE (INCLUDING BOTH REMOVAL OF EXISTING VEGETATION AND DISTURBANCE OF EMPTY SOIL) IN ORDER TO MAXIMIZE INFILTRATION. IF EQUIPMENT MUST TRAVEL THROUGH THE PONDING AREA, TIMBER MATTING SHALL BE PLACED TO MINIMIZE COMPACTION, AND EQUIPMENT TRAFFIC SHALL BE MINIMIZED.
3. LIGHTLY SCARIFY THE SOIL IN THE AREA OF THE PROPOSED BERM BEFORE DELIVERING SOIL TO SITE.
4. BRING IN FILL MATERIAL TO MAKE UP THE MAJOR PORTION OF THE BERM. SOIL SHOULD BE ADDED IN 8-INCH LIFTS AND COMPACTED AFTER EACH ADDITION ACCORDING TO DESIGN SPECIFICATIONS. THE SLOPE AND SHAPE OF THE BERM SHOULD BE GRADED OUT AS SOIL IS ADDED.
5. PROTECT THE SURFACE PONDING AREA AT THE BASE OF THE BERM FROM COMPACTION.
6. COMPLETE FINAL GRADING OF THE BERM AFTER THE TOP LAYER OF SOIL IS ADDED. TAMP SOIL DOWN LIGHTLY AND SMOOTH SIDES OF THE BERM. THE CREST AND BASE OF THE BERM SHOULD BE AT LEVEL GRADE.
7. PLANT BERM WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED.
8. MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.

SOIL AMENDMENT AND RESTORATION

1. GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION.
2. IN THE DESIGNATED SOIL AMENDMENT AREA, TILL THE GROUND AND MIX IN THE COMPOST AT A RATIO OF 2:1 (SOIL:COMPOST) TO A DEPTH OF 24 INCHES.
3. IMMEDIATELY SEED AND MULCH DISTURBED AREAS ONCE FINAL GRADE IS ESTABLISHED IN ACCORDANCE WITH THE PERMANENT SEEDING SCHEDULE.
4. MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

SLOW RELEASE TRENCH

1. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
2. GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE.
3. IF POSSIBLE, INSTALL SLOW RELEASE TRENCH DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. AFTER INSTALLATION, PREVENT SEDIMENT LADEN WATER FROM ENTERING INLETS AND PIPES. IF IT IS NOT POSSIBLE TO INSTALL THE SLOW RELEASE TRENCH DURING THE LATER PHASES OF CONSTRUCTION, PLACE COMPOST FILTER SOCK UPSLOPE OF THE TRENCH TO PREVENT SEDIMENT FROM REACHING AND CLOGGING THE TRENCH.
4. EXCAVATE SLOW RELEASE TRENCH BOTTOM TO A UNIFORM, LEVEL SUBGRADE FREE FROM ROCKS AND DEBRIS.
5. INSTALL AN IMPERMEABLE LINER WITHIN THE SLOW RELEASE TRENCH. SECURE IMPERMEABLE LINER DURING STONE PLACEMENT WITH AN ANCHOR TRENCH.
6. INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, ETC.
7. PLACE UNIFORMLY GRADED, CLEAN-WASHED AGGREGATE IN 8-INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS. LIGHT COMPACTION SHALL ENSURE THE AGGREGATE WON'T SETTLE BELOW THE INTENDED TOP ELEVATION OF THE TRENCH.
8. INSTALL CONTINUOUSLY PERFORATED PIPE AND UNDERDRAIN OUTLET AS INDICATED ON PLANS. BACKFILL WITH UNIFORMLY GRADED, CLEAN-WASHED AGGREGATE IN 8-INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS. LIGHT COMPACTION SHALL ENSURE THE AGGREGATE WON'T SETTLE BELOW THE INTENDED TOP ELEVATION OF THE TRENCH.
9. PLACE 6-INCH LIFT OF APPROVED TOPSOIL OVER SLOW RELEASE TRENCH, AS INDICATED ON PLANS.
10. SEED AND STABILIZE TOPSOIL.
11. ANY SEDIMENT THAT ENTERS INLETS DURING CONSTRUCTION IS TO BE REMOVED WITHIN 24 HOURS.
12. IMMEDIATELY SEED AND MULCH DISTURBED AREAS ONCE FINAL GRADE IS ESTABLISHED IN ACCORDANCE WITH THE PERMANENT SEEDING SCHEDULE.
13. MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.
14. REMOVE EROSION SEDIMENT CONTROL MEASURES UPON ESTABLISHMENT OF A UNIFORM 70% VEGETATIVE COVER OVER THE DISTURBED AREA. RE-GRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE EROSION AND SEDIMENT CONTROLS.

LEVEL SPREADER

1. THE UPHILL DEVELOPMENT SHALL BE STABILIZED BEFORE DIVERTING RUNOFF TO ANY DISPERSING FLOW TECHNIQUES.
2. ALL CONTRIBUTING STORMWATER ELEMENTS (INFILTRATION BERMS, INLETS, OUTLET CONTROL STRUCTURES, PIPES, ETC.) SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE LEVEL SPREADER.
3. HDPE PIPE SHALL BE INSTALLED ALONG A CONTOUR UPHILL OF THE LEVEL SPREADER, WITH CARE TAKEN TO CONSTRUCT A SLIGHTLY SLOPED BOTTOM.
4. IF NECESSARY, INSTALL EROSION CONTROL MATTING ALONG THE LENGTH OF THE LEVEL SPREADER AND TO A DISTANCE DOWNHILL, AS SPECIFIED BY THE MANUFACTURER/SUPPLIER.
5. A BERM SHALL BE INSTALLED ALONG THE OUTLET OF THE HDPE PIPE TO ENSURE STORMWATER RUNOFF IS ROUTED TO THE LEVEL SPREADER.

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REVISIONS

NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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LONG TERM INSPECTIONS AND MAINTENANCE FOR SITE RESTORATION AND PCSM CONTROLS:

LONG-TERM MAINTENANCE OF THE PIPELINE ROW WILL INCLUDE PERIODIC VISUAL INSPECTIONS FOR SUFFICIENT VEGETATIVE GROWTH AND COVER. INSUFFICIENT VEGETATIVE COVER IS DEFINED AS ANY AREA NOT ACHIEVING A UNIFORM 70-PERCENT PERENNIAL VEGETATIVE COVER. BARE SPOTS AND AREAS WITH INSUFFICIENT VEGETATIVE COVER WILL BE RESEEDED AND MULCHED WITHIN 24 HOURS OF DISCOVERY. THE RIGHT OF WAY WILL BE INSPECTED FOR SIGNS OF EROSION, ESPECIALLY ON STEEP SLOPES. CORRECTIVE MEASURES WILL BE TAKEN, AS NEEDED. IF THERE IS EVIDENCE OF TRENCH SETTLING, THE AREA WILL BE REGRADED TO MAINTAIN PRE-CONSTRUCTION DRAINAGE PATTERNS, MULCHED, AND SEEDED. A WRITTEN REPORT IS REQUIRED FOR EACH INSPECTION AND FOR EACH REPAIR OR MAINTENANCE ACTIVITY, AND THE REPORT SHOULD SPECIFY HOW TO ACCESS THE SITE. SPLP IS RESPONSIBLE FOR MAINTAINING THE ROW UNDER THE PROVISIONS OF THIS PERMIT.

PERMANENT PROPOSED ACCESS ROADS AND VALVE PADS WILL BE CONSTRUCTED AS PART OF THE PROJECT. THESE ACCESS ROADS WILL REMAIN AS A PERMANENT GRAVEL DRIVE AFTER CONSTRUCTION IS COMPLETE. THE ACCESS ROADS WILL BE INSPECTED PERIODICALLY, AND AGGREGATE WILL BE APPLIED TO THE PERMANENT ACCESS ROADS AS NEEDED TO MAINTAIN AN ADEQUATE THICKNESS.

INSPECTION AND MAINTENANCE PROCEDURES FOR PERMANENT POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES AND STORMWATER CONVEYANCE BMPS ARE SUMMARIZED BELOW. IF ANY POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES ARE CONSTRUCTED PRIOR TO STABILIZATION OF UPSLOPE CONTRIBUTORY DRAINAGE AREAS, INSPECTIONS SHALL OCCUR WEEKLY AND AFTER RUNOFF EVENTS UNTIL THE SURROUNDING AREA ACHIEVES STABILIZATION. SPECIFY WHERE WE HAVE TO DO POST-CONSTRUCTION INFILTRATION TESTING.

INFILTRATION BERM

- THE INFILTRATION BERM SHALL BE INSPECTED AT LEAST 4 TIMES PER YEAR TO ENSURE IT IS INFILTRATING PROPERLY AND NOT CLOGGED WITH SEDIMENT.
- MONITOR DRAWDOWN TIME AFTER THE FIRST MAJOR STORM EVENT. THE BERM SHALL DEWATER WITHIN A MAXIMUM OF 72 HOURS. IF THE BERM IS NOT INFILTRATING WITHIN THE SPECIFIED TIMEFRAME, AMEND THE SOILS WITHIN THE PONDING AREA OF THE BERM (SEE SOIL AMENDMENT DETAIL IN PLANS).
- VEGETATION OVER THE BERM SHALL BE MAINTAINED AS NECESSARY, WHICH MAY REQUIRE ANNUAL MULCHING. ROUTINELY REMOVE ACCUMULATED DEBRIS AND INVASIVE PLANTS AS NEEDED.
- INSPECT FOR SIGNS OF FLOW CHANNELIZATION AND RESTORE LEVEL GRADIENT IMMEDIATELY AFTER ANY DEFICIENCIES ARE OBSERVED.

SOIL AMENDMENT AND RESTORATION

- THE SOIL RESTORATION PROCESS MAY NEED TO BE REPEATED OVER TIME, DUE TO COMPACTION BY USE AND/OR SETTLING.
- SOIL AMENDMENT AREAS SHALL BE INSPECTED AT LEAST 4 TIMES PER YEAR FOR SIGNS OF COMPACTION. TO REMEDY COMPACTION, TILL THE SOIL TO A DEPTH OF 24 INCHES AND MIX IN COMPOST AT A RATIO OF 2:1 (SOIL:COMPOST).

SLOW RELEASE TRENCH

- INLETS AND OUTLETS FOR THE SLOW RELEASE TRENCH SHOULD BE INSPECTED AND CLEANED, AS NECESSARY, AT LEAST 4 TIMES PER YEAR.
- THE VEGETATION ALONG THE SURFACE OF THE SLOW RELEASE TRENCH SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
- VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON A SLOW RELEASE TRENCH.

CHANNEL

- INSPECTIONS TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH).
  - O INSPECT AND CORRECT EROSIONS PROBLEMS, DAMAGE TO VEGETATION, AND SEDIMENT AND DEBRIS ACCUMULATION (ADDRESS WHEN > 3 INCHES AT ANY SPOT OR COVERING VEGETATION).
  - O FOR VEGETATED CHANNELS, INSPECT VEGETATION ON SIDE SLOPES FOR EROSION AND FORMATION OF RILLS OR GULLIES, CORRECT AS NEEDED.
  - O INSPECT FOR POOLS OF STANDING WATER, DEWATER AND DISCHARGE TO AN APPROVED LOCATION AND RESTORE TO DESIGN GRADE.
  - O FOR VEGETATED CHANNELS, MOW AND TRIM VEGETATION TO ENSURE SAFETY, AESTHETICS, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION; DISPOSE OF CUTTINGS IN A LOCAL COMPOSTING FACILITY; MOW ONLY WHEN CHANNEL IS DRY TO AVOID RUTTING.
  - O INSPECT FOR LITTER; REMOVE PRIOR TO MOWING.
  - O INSPECT FOR UNIFORMITY IS CROSS-SECTION AND LONGITUDINAL SLOPE, CORRECT AS NEEDED.
  - O INSPECT CHANNEL INLET (CURB CUTS, PIPES, ETC.) AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.
  - O REPLACE ANY DISPLACED RIPRAP FOR RIPRAP LINED CHANNELS.

WATER DEFLECTOR

- INSPECTIONS TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH).
- ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE WATER DEFLECTOR. THE RUBBER BELT SHALL BE REPLACED WHEN IT IS WORN AND NO LONGER EFFECTIVE.

LEVEL SPREADER

- INSPECTIONS TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH).
- THE RECEIVING LAND SHALL BE IMMEDIATELY RESTORED TO DESIGN CONDITIONS AFTER ANY DISTURBANCE. VEGETATED AREAS SHALL BE SEEDED AND BLANKETED.
- IT IS CRITICAL THAT EVEN SHEET FLOW CONDITIONS ARE SUSTAINED THROUGHOUT THE LIFE OF THE LEVEL SPREADER, AS THEIR EFFECTIVENESS CAN DETERIORATE DUE TO LACK OF MAINTENANCE, INADEQUATE DESIGN/LOCATION, AND POOR VEGETATION COVER.
  - O THE AREA BELOW THE LEVEL SPREADER SHALL BE INSPECTED FOR CLOGGING, DENSITY OF VEGETATION, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, EXCESSIVE ACCUMULATIONS, AND CHANNELIZATION. INSPECTIONS SHALL BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN ON A SEMIANNUAL BASIS THEREAFTER. INSPECTIONS SHALL ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1-INCH.
  - O SEDIMENT AND DEBRIS SHALL BE ROUTINELY REMOVED (BUT NEVER LESS THAN SEMIANNUALLY), OR UPON OBSERVATION, WHEN BUILDUP OCCURS IN THE CLEAN OUTS. REGRADING AND RESEEDING MAY BE NECESSARY IN THE AREAS BELOW THE LEVEL SPREADER. REGRADING MAY ALSO BE REQUIRED WHEN POOLS OF STANDING WATER ARE OBSERVED ALONG THE SLOPE. (IN NO CASE SHOULD STANDING WATER BE ALLOWED FOR LONGER THAN 72 HOURS).
  - O MAINTAINING A VIGOROUS VEGETATIVE COVER ON THE AREAS BELOW THE LEVEL SPREADER IS CRITICAL FOR MAXIMIZING POLLUTANT REMOVAL EFFICIENCY AND EROSION PREVENTION. IF VEGETATIVE COVER IS NOT FULLY ESTABLISHED WITHIN THE DESIGNATED TIME, IT MAY NEED TO BE REPLACED WITH AN ALTERNATIVE SPECIES. (IT IS STANDARD PRACTICE TO CONTRACTUALLY REQUIRE THE CONTRACTOR TO REPLACE DEAD VEGETATION.) UNWANTED OR INVASIVE GROWTH SHALL BE REMOVED ON AN ANNUAL BASIS. BIWEEKLY INSPECTIONS ARE RECOMMENDED FOR AT LEAST THE FIRST GROWING SEASON, OR UNTIL THE VEGETATION IS PERMANENTLY ESTABLISHED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY, AND DENSITY SHALL BE PERFORMED AT LEAST TWICE A YEAR, DURING BOTH THE GROWING AND NON-GROWING SEASON. VEGETATIVE COVER SHALL BE SUSTAINED AT 85% AND REPLACED IF DAMAGE GREATER THAN 50% IS OBSERVED.

DIVERSION BERM

- INSPECTIONS TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH).
- MAINTAIN TURF GRASS AND OTHER VEGETATION BY MOWING AND RE-MULCHING.
- ROUTINELY REMOVE ACCUMULATED TRASH AND DEBRIS.
- REMOVE INVASIVE PLANTS AS NEEDED.
- INSPECT FOR SIGNS OF FLOW CHANNELIZATION; RESTORE LEVEL GRADIENT IMMEDIATELY AFTER DEFICIENCIES ARE OBSERVED.

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REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — ROBERT F. SIMCIK — ENGINEER — 075304426-E

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
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NOTES & DETAILS

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CHECKED BY:	RS

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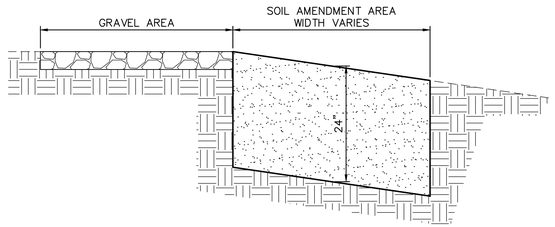
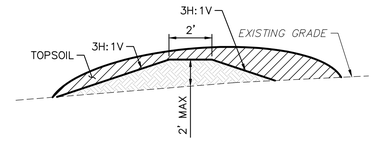


NOTES:

1. SOIL AMENDMENT MEDIA SHOULD CONSIST OF SOIL AND COMPOST AT A RATIO OF 2:1 (SOIL:COMPOST).
2. SOIL AMENDMENT SHOULD NOT BE USED ON SLOPES GREATER THAN 30%.
3. COMPOST CAN BE SUBSTITUTED WITH MULCH, MANURE, SAND.
4. NO VEHICULAR TRAFFIC WILL BE PERMITTED TO DRIVE IN UNPROTECTED SOIL AMENDMENT AREAS TO MINIMIZE THE POSSIBILITY OF COMPACTION
5. ALL CONSTRUCTION SHOULD BE COMPLETED AND STABILIZED BEFORE BEGINNING SOIL RESTORATION.
6. SOIL AMENDMENT TO BE INSTALLED BY TILLING.

SOIL AMENDMENT DETAIL

NOT TO SCALE

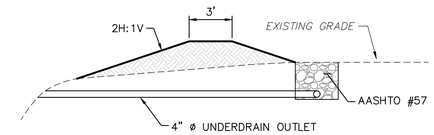


NOTES:

1. FILL WITH TOPSOIL TO ACHIEVE DESIRED SHAPE.

INFILTRATION BERM DETAIL

NOT TO SCALE



SLOW RELEASE TRENCH DETAIL

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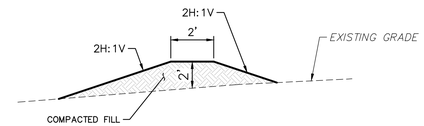
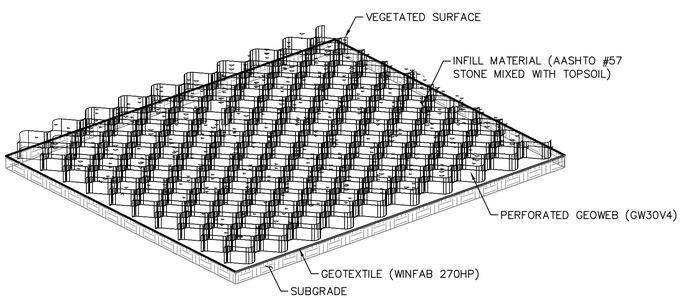


DIVERSION BERM DETAIL

NOT TO SCALE



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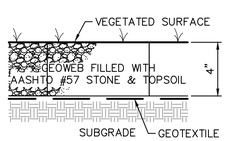


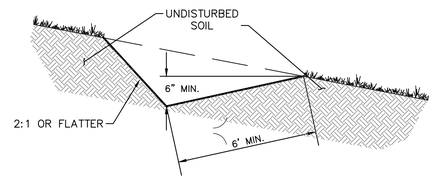
SECTION

NOTES:

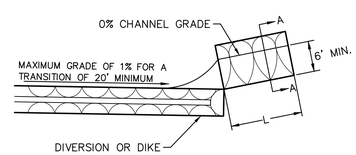
1. PREPARE THE SUBGRADE AS SHOWN ON THE CONSTRUCTION DRAWINGS.
2. DO NOT COMPACT SUBGRADE.
3. PROVIDE WOVEN HIGH STRENGTH STABILIZATION GEOTEXTILE (WINFAB 270HP).
4. EXPAND THE GEOWEB SECTIONS INTO POSITION AND CONNECT THE END TO END AND INTERLEAF CONNECTIONS WITH ATRA KEYS.
5. GEOWEB CELL INFILL MATERIAL SHALL BE A MIX OF AASHTO #57 STONE AND SCREENED TOPSOIL IN AN APPROXIMATE RATIO OF 2/3 #57 AND 1/3 TOPSOIL.
6. PLACE THE SPECIFIED INFILL MATERIAL INTO CELLS AND TRACK UNTIL CELL IS FILLED AND SETTLEMENT OF INFILL IS NEGLIBILE.
7. ROUGH GRADE CONTOURS DEPICT THE TOP OF SUBGRADE IN AREAS WHERE GEOWEB IS TO BE INSTALLED.
8. TOP OF GEOWEB IS AT ELEVATION 4 INCHES ABOVE ROUGH GRADE SHOWN ON GRADING PLAN.
9. ON SLOPES GREATER THAN 5%, ANCHOR GEOWEB WITH 24" ATRA ANCHORS IN A 3x8 CELL PATTERN.

BLOCK VALVE GEOWEB DETAIL

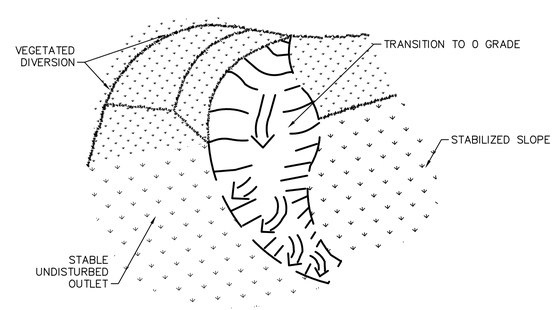
NOT TO SCALE



SECTION A–A



PLAN



ISOMETRIC VIEW – (NOT TO SCALE)

EARTHEN LEVEL SPREADER

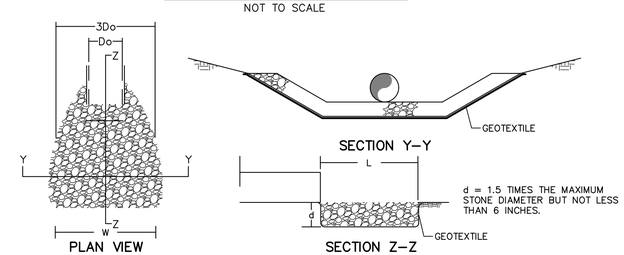
NOT TO SCALE

CHANNEL CROSS–SECTION

CHANNEL NO.	BOTTOM WIDTH B (FT)	DEPTH D (FT)	Z1 (FT)	Z2 (FT)	LINING*
A	4.0	2.0	2	2	NAG S150 ECB WITH CLASS C FINAL STABILIZATION
B	4.0	2.0	2	2	NAG P300 ECB WITH CLASS C FINAL STABILIZATION
C	4.0	2.0	2	2	NAG S150 ECB WITH CLASS C FINAL STABILIZATION
D	4.0	2.0	2	2	NAG S150 ECB WITH CLASS C FINAL STABILIZATION
E	6.0	2.0	2	2	NAG P300 ECB WITH CLASS C FINAL STABILIZATION
F	4.0	2.0	2	2	NAG S150 ECB WITH CLASS C FINAL STABILIZATION
G	2.0	2.0	2	2	NAG S150 ECB WITH CLASS C FINAL STABILIZATION

PERMANENT CHANNEL DETAIL

NOT TO SCALE



OUTLET NO.	PIPE DIA Do (FT)	Q (CFS)	MINIMUM RIPRAP SIZE	MINIMUM L (FT)	MINIMUM W (FT)
RA–01	4.0	6.66	R–3	12.0	16.0
RA–02	4.0	19.77	R–3	14.0	18.0
RA–03	2.0	7.76	R–3	10.0	13.0
RA–04	2.0	48.43	R–5	26.0	32.0
RA–05	1.5	9.99	R–3	10.0	13.0
RA–06	1.5	10.34	R–3	10.0	13.0

RIPRAP APRONS AT PIPE OUTLETS WITH FLARED END SECTIONS

NOT TO SCALE

PCSM DETAILS

TETRA TECH
www.tetratech.com
661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921–7090 | F: (412) 921–4040

REVISIONS

NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ROBERT F. SIMCIK
ENGINEER
PE084425-E

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1–20" & 1–16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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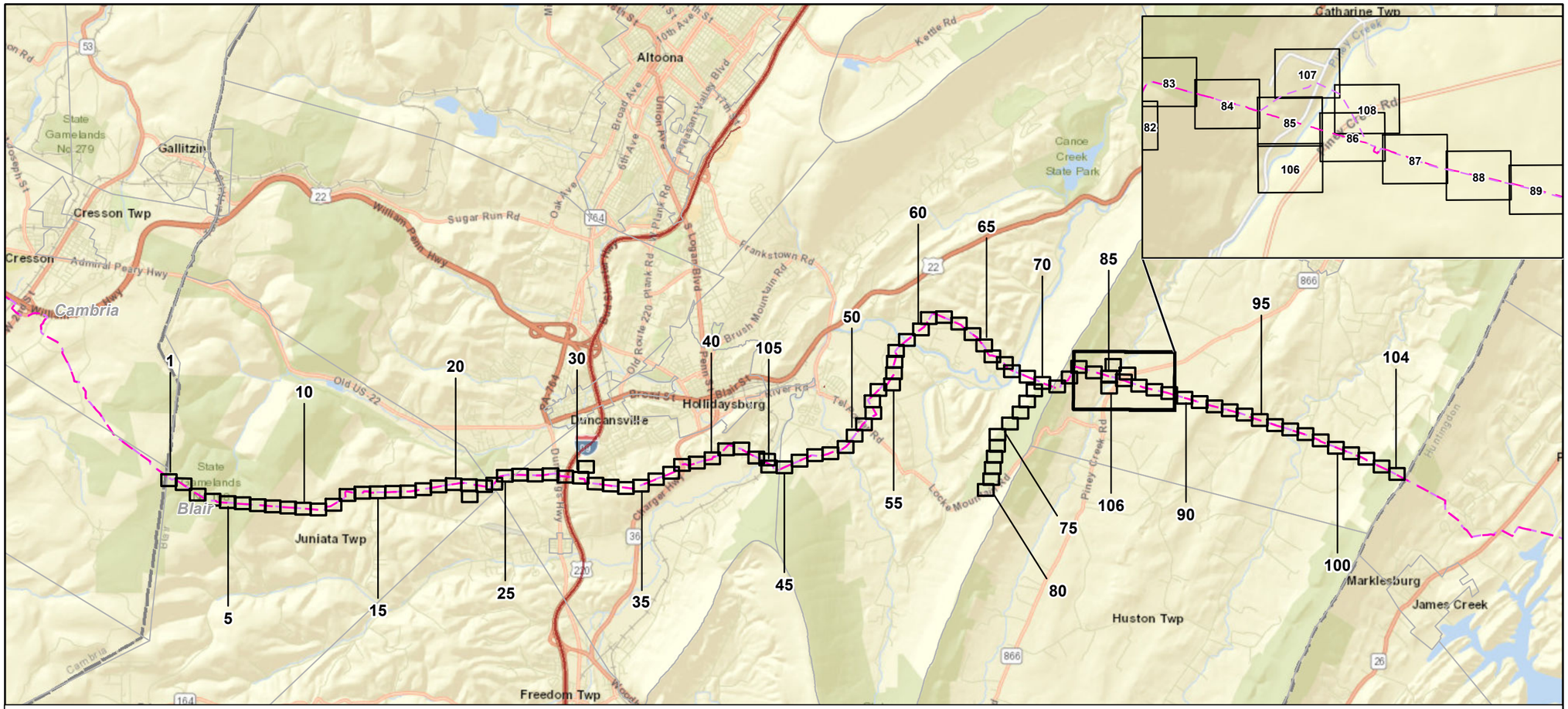
ES–0.24

SHEET 0.24 OF 102

ATTACHMENT E

Updated Site Plan
Aquatic Resource Impact Table

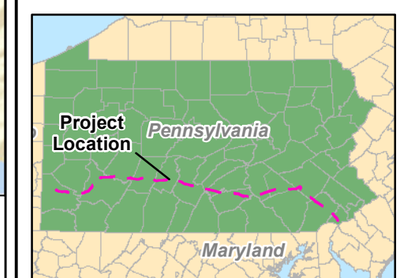


Mapset Legend

- Sheet Boundary
- Site Specific Drawing
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, HDD
- PPP 2, Bore
- PPP 2, HDD
- Pullback String
- Bore Pits
- Existing Block Valve
- New Block Valve
- Block Valve Setting LOD
- Permanent Easement (no surface disturbance)
- Permanent ROW
- Temporary ROW
- ATWS
- Permanent Access Road
- Temporary Access Road
- ROW - Travel LOD (Travel Lane)
- ROW - Travel and Clearing LOD (Clearing LOD)
- Station LOD
- Hay Bale Discharge (See E&S Plan, Att 12)
- Direct Discharge (See E&S Plan, Att 12)
- Water Source (See E&S Plan, Att 12)
- ME1 12" Pipeline
- 12" ME1 Permanent ROW
- 8" Centerline
- 8" Pipeline Maintenance Corridor
- Existing Buried Cable
- Existing Electric Line
- Existing Fiberoptic Cable
- Existing Gas Line
- Existing Phone Line
- Existing Sanitary Sewer
- Existing Septic System
- Existing Storm Sewer
- Existing TV Line
- Existing Utility (unknown)
- Existing Water Line
- Stream Photo
- PEM Photo
- PFO Photo
- PSS Photo
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Chapter 105 Floodway
- Waived Ch. 105 Floodway
- Ch. 106 Floodplain Fringe
- PEM Extension
- PFO Extension
- PSS Extension
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- Municipal Boundary
- Parcels
- Contours
- Roads

Legend

- Sheet Boundary
- Municipal Boundary
- PPP 1
- PPP 2
- Roads
- County Boundary



N

0 0.5 1 2 3 4 Miles

1 inch = 10,000 feet

Site Plan Sheet Key for the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 1 of 1

Prepared By: TETRA TECH

Date: 1/2019

Base Map; ESRI ArcGIS Online, Roads from NRCS Geospatial Data Giveaway, 100-Year Floodplain from FEMA National Flood Hazard Layer, downloaded 10/2015.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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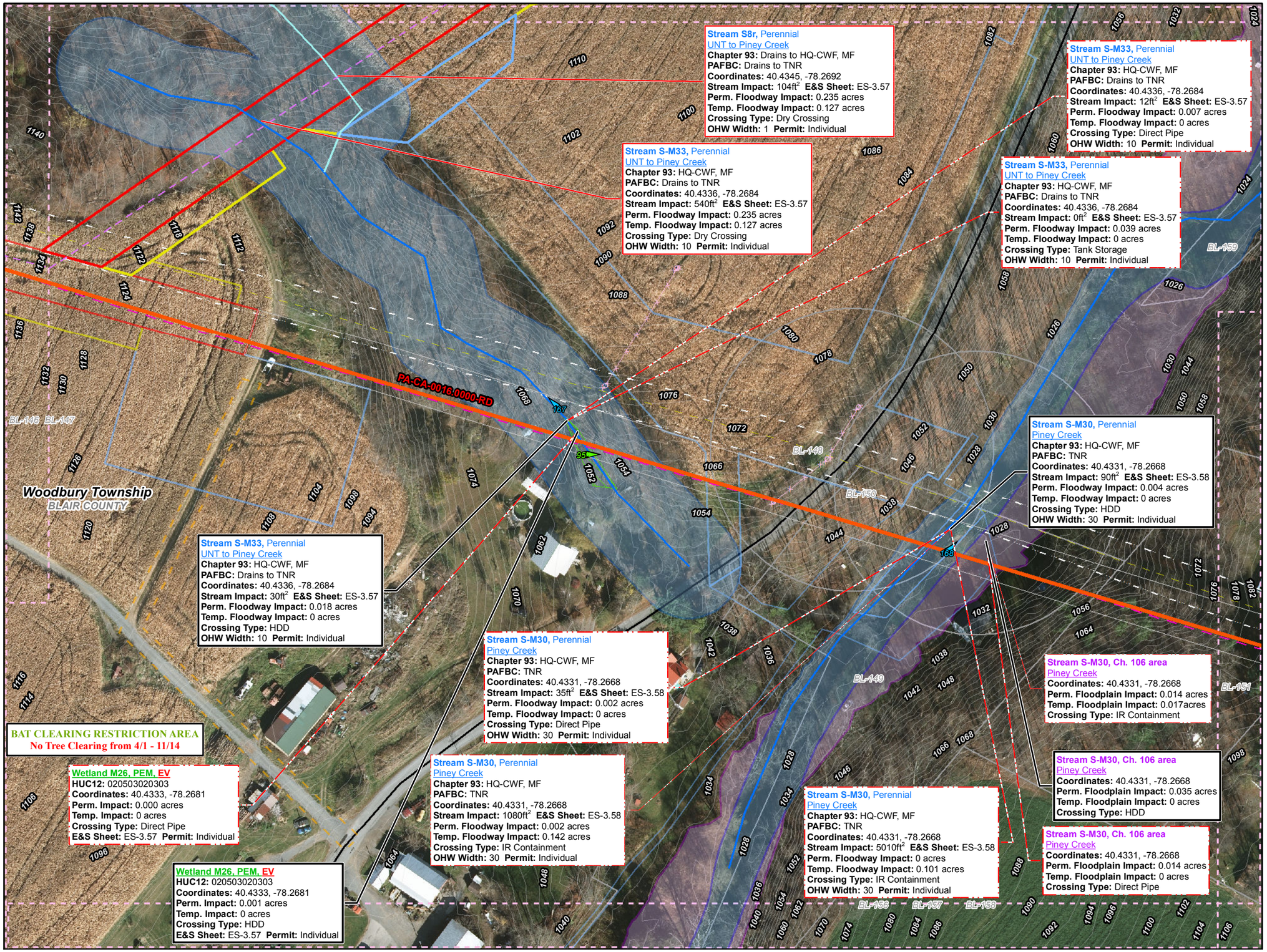
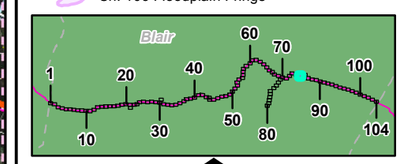


Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, Flexbor
- PPP 1, HDD
- PPP 2, Bore
- PPP 2, Flexbor
- PPP 2, HDD
- Pullback String
- Permanent Easement (no surface disturbance)
- Permanent ROW
- Temporary ROW
- ATWS
- Permanent Access Road
- Temporary Access Road
- ROW-Travel LOD
- ROW-Travel and Clearing LOD
- Existing Block Valve
- New Block Valve
- Block Valve Setting LOD
- Station LOD
- Bore Pits
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Chapter 105 Floodway
- Waived Floodway
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 85 of 108

Prepared By: TETRA TECH

Date: 1/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2018.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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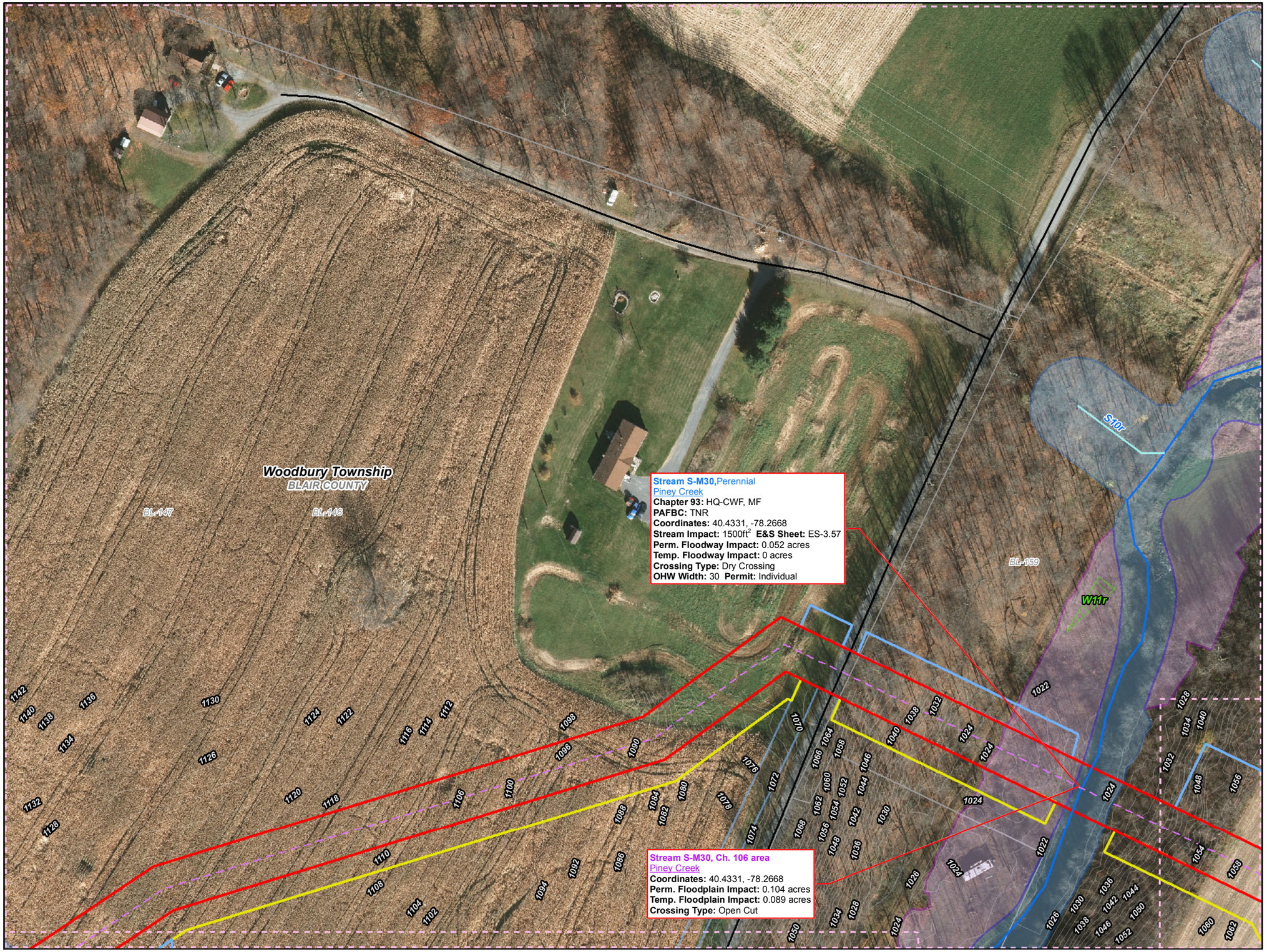

Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, Flexbor
- PPP 1, HDD
- PPP 2, Bore
- PPP 2, Flexbor
- PPP 2, HDD
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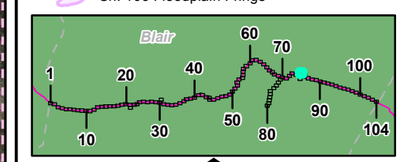
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 107 of 108

Prepared By: TETRA TECH

Date: 1/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2018.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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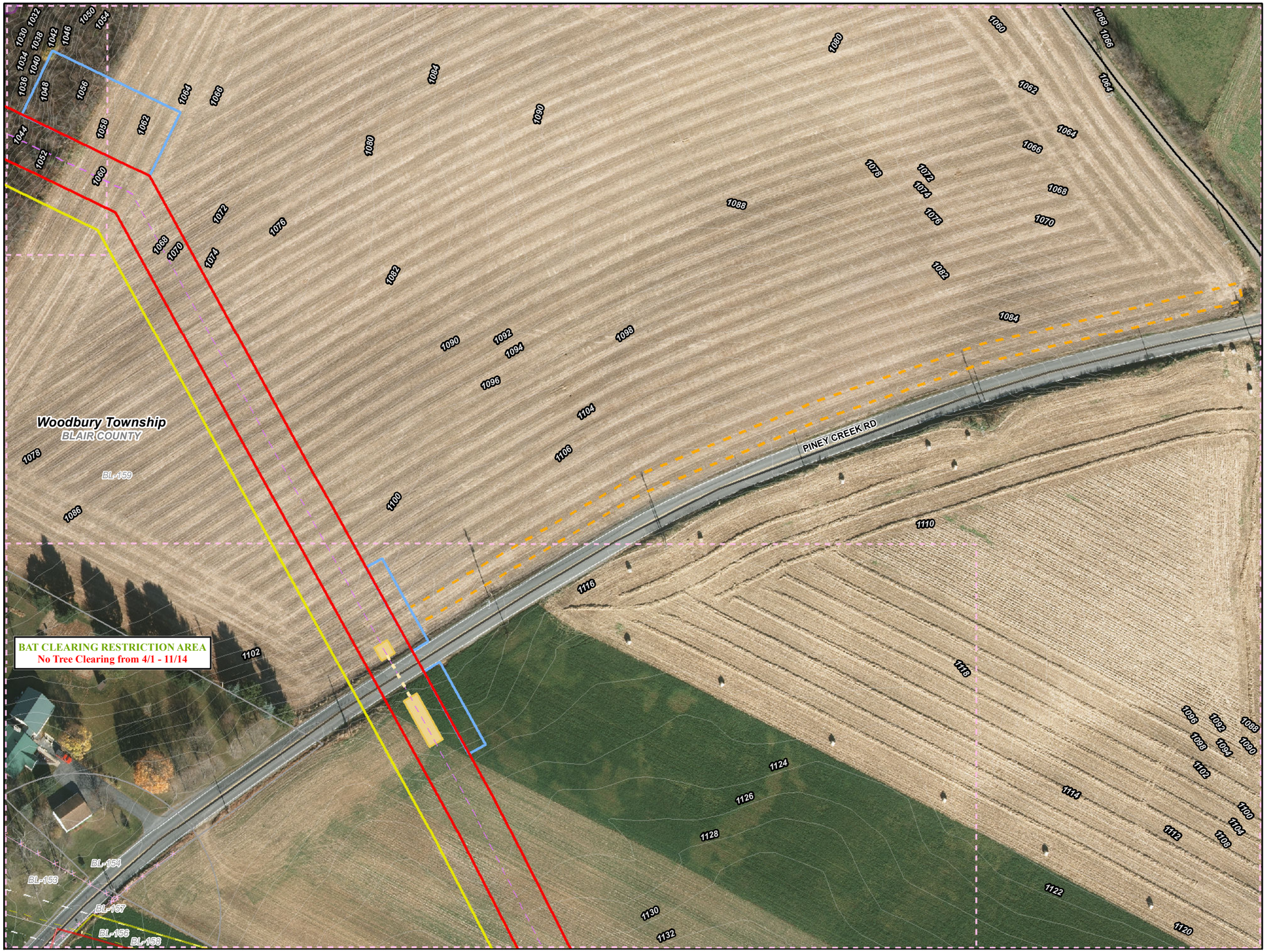

Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, Flexbor
- PPP 1, HDD
- PPP 2, Bore
- PPP 2, Flexbor
- PPP 2, HDD
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- Perennial Stream
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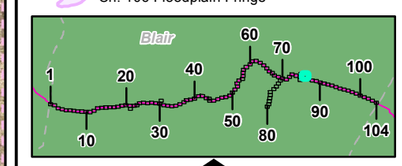
- Waived Floodway
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 108 of 108

Prepared By:	Date:
TETRA TECH	1/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2018.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, Flexbor
- PPP 1, HDD
- PPP 2, Bore
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- Chapter 105 Floodway
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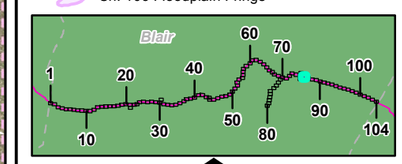
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 86 of 108

Prepared By: TETRA TECH

Date: 1/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2018.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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Aquatic Resource Impact Table

Applicant's Name / Client: Sunoco Pipeline LP

pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION

for Pennsylvania Chapter 105 Water Obstruction and Encroachment application/registration and US Army Corps of Engineers Section 404 application

INSTRUCTIONS:

Please begin to complete the Aquatic Resource Impact Table by including the Applicant's Name / Client (upper right of the page) for each page. Also, complete the Project / Site Name (upper left of the page) and the date of application/registration package submission (upper right, under Applicant's Name / Client). Then complete one row of data *for each* regulated (DEP Chapter 105 and Corps Section 404) structure or activity *and type of impact* for the proposed project based on the instructions for each column below; add additional worksheets if needed. Provide completed Aquatic Resource Impact Table with Chapter 105 Water Obsruction and Encroachment application/registration; **DO NOT submit instructions (page 1) for this table.**

Project / Permit Number	**DEP / Corps USE ONLY**
DEP Permit Number:	***leave blank***, it will be completed by DEP upon permit acknowledgement/issuance/verification.
Single and Complete Project Number:	***leave blank***, it will be completed by DEP/Corps upon permit acknowledgement/issuance/verification.
Crossing Number:	***leave blank***, it will be completed by DEP upon permit acknowledgement/issuance/verification.

Project Information	*provide the appropriate information based on the details on each impact for the project*
Structure / Activity Identifier:	provide a unique identifier for each regulated structure and/or activity being proposed, typically a name and number; this same unique identifier should be used in all aspect of the permit registration/application package.
Aquatic Resource:	indicate if the structure or activity is impacting a stream or wetland
Aquatic Resource Type:	select/provide the type of aquatic resource (based on wetland or stream) being impacted;
Stream:	select/provide the type of stream being impacted: perennial, intermittent, ephemeral stream or stream floodway
Wetland:	select/provide the type of wetland being impacted: PEM, PSS, PFO or POW wetland
Latitude (nad 83)**:**	provide the latitude of the aquatic resource impact in decimal degrees
Longitude (nad 83)**:**	provide the longitude of the aquatic resource impact in decimal degrees
Work proposed / impact type:	select/provide the type of work proposed to impact the resource; aerial, boring, excavation or fill
Waters Name:	provide the name of the stream or wetland (if available)
PA Code Chapter 93 Designation:	provide the Chapter 93 designation for the aquatic resource

Corps / 404 area	*provide the appropriate information based on the aquatic resource impact* ***within the Section 404 jurisdictional area****, list all impacts separately.*	
Corps Impact Type:		select/provide the type of aquatic resource impact; temporary, permanent or n/a; **indicate "n/a" if you are not proposing any work in, over, or under waters and/or wetlands**
Stream Impact:	**WIDTH**	provide the linear feet, measuring from top of bank to top of bank, of transverse and/or full channel fill stream impacts; *indicate "n/a" if impact is to a wetland OR if "n/a" to Corps Impact Type*
	LENGTH	provide the linear feet, measuring down the center line of stream, of transverse and/or full channel fill stream impacts; *indicate "n/a" if impact is to a wetland OR if "n/a" to Corps Impact Type*
	AREA	provide the square feet area of direct and indirect/secondary stream impact; dewatering or fill placed in stream channel such as rip rap or fish habitat; *indicate "n/a" if impact is to a wetland OR if "n/a" indicated above to Corps Impact Type*
Wetland Impact:	**AREA**	provide the square feet area of impacts to wetlands; *indicate "n/a" if impact is to a stream OR if "n/a" to Corps Impact Type*

PADEP / 105 area	*provide the appropriate information based on the aquatic resource impact* ***within Chapter 105 jurisdictional area****, list all impacts separately.*	
PADEP Impact Type:		select/provide the type of aquatic resource impact; temporary or permanent.
Floodway Impact:	**AREA**	provide the square feet area of direct and indirect/secondary 100-year floodway impact, inlcuding watercourse; indicate "n/a" if impact is to a wetland.
Wetland Impact:	**AREA**	provide the square feet area of impacts to wetlands; indicate "n/a" if impact is to a stream

Project / Site Name: Example Project

Date: July 1, 2016

DEP / Corps use only			Project Information								Corps / 404					PADEP / 105		
PADEP Permit Number	**Single and Complete Project**	**Crossing Number**	**Structure / Activity**	**Aquatic Resource**	**Aquatic Resource TYPE**	**Latitude**	**Longitude**	**Work Proposed / Impact Type**	**Waters Name**	**PA Code Chapter 93 Designation**	**Corps Impact TYPE**	**Stream Impact WIDTH**	**Stream Impact LENGTH**	**Stream Impact AREA**	**Wetland Impact AREA**	**DEP Impact TYPE**	**Floodway Impact AREA**	**Wetland Impact AREA**
leave blank	*leave blank*	*leave blank*	unique identifier	being impacted		*dd nad83*	*dd nad83*				*temp / perm*	linear feet	linear feet	sqare feet	square feet	*temp / perm*	square feet	square feet
			Stream 1	Stream	Perennial	41.7710519	-77.1526930	Excavation	UNT	CWF	Temp	6	110	713	N/A	Temp	2201	N/A
			Wetland 1	Wetland	Paulstine Emergent (	42.6895100	-76.1539500	Boring	WETLAND	OTHER	N/A	N/A	N/A	N/A	N/A	Perm	N/A	300
			Wetland 2	Wetland	Paulstine Emergent (	42.7026800	-76.1546200	Fill	WETLAND	OTHER	Perm	N/A	N/A	N/A	83	Perm	N/A	83

Aquatic Resource Impact Table

Applicant's Name / Client: Sunoco Pipeline LP

Project / Site Name: Pennsylvania Pipeline Project: Piney Creek Modification

Date: 1/22/2019

DEP / Corps use only			Project Information								Corps / 404					PADEP / 105		
PADEP Permit Number	**Single and Complete Project**	**Crossing Number**	**Structure / Activity**	**Aquatic Resource**	**Aquatic Resource TYPE**	**Latitude**	**Longitude**	**Work Proposed / Impact Type**	**Waters Name**	**PA Code Chapter 93 Designation**	**Corps Impact TYPE**	**Stream Impact WIDTH**	**Stream Impact LENGTH**	**Stream Impact AREA**	**Wetland Impact AREA**	**DEP Impact TYPE**	**Floodway Impact AREA**	**Wetland Impact AREA**
leave blank	*leave blank*	*leave blank*	unique identifier	being impacted		*dd nad83*	*dd nad83*				*temp / perm*	linear feet	linear feet	square feet	square feet	*temp / perm*	square feet	square feet
			S-M30	Stream	Perennial	40.4331	-78.2668	Excavation	Piney Creek	HQ-CWF, MF	Temp	30	50	1500	N/A	Perm	2256	N/A
			S-M33	Stream	Perennial	40.4336	-78.2684	Excavation	UNT to Piney Creek	HQ-CWF, MF	Temp	10	54	540	N/A	Perm	N/A	N/A
			S8r	Stream	Ephemeral	40.4345	-78.2692	Excavation	UNT to Piney Creek	Drains to HQ-CWF, MF	Temp	1	50	50	N/A	Perm	N/A	N/A
			S8r	Stream	Ephemeral	40.4345	-78.2692	Fill	UNT to Piney Creek	Drains to HQ-CWF, MF	Temp	1	54	54	N/A	Temp	N/A	N/A
			S-M33, S8r Ch. 105 Area	Stream	Floodway	40.4336	-78.2624	Excavation	UNT to Piney Creek; UNT to Piney Creek	HQ-CWF, MF; Drains to HQ-CWF, MF	N/A	N/A	N/A	N/A	N/A	Perm	10240	N/A
			S-M33, S8r Ch. 105 Area	Stream	Floodway	40.4336	-78.2624	Fill	UNT to Piney Creek; UNT to Piney Creek	HQ-CWF, MF; Drains to HQ-CWF, MF	N/A	N/A	N/A	N/A	N/A	Temp	5542	N/A

ATTACHMENT F

Proof of PHMC Coordination

Survey Detail

Main | Location | Administration | Links | WorkFlow Communication

WorkFlow Comments * Required Only For Return Action

Action By	Action	Action Date	Comment
Peltier, Robert	Submit	1/30/2019 10:28:42 AM	
Peltier, Robert	Submit	1/30/2019 10:29:05 AM	

Records: 1 - 2 of 2 - Pages: 1

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

Negative Survey Form

(This form may be used if the Phase I guidelines have been followed and no cultural resources have been identified.)

1. Project Identification:

ER Number 2013-1862-042

Project Name &/or Agency Tracking #: Pennsylvania Pipeline Project

Agency: PADEP **Applicant:** Tetra Tech

Preparers Name and affiliation: Scott Padamonsky/Tetra Tech, Inc.

Date Prepared: 01/23/19

Project Area County/Municipality (list all)

County	Municipality
Blair County	Woodbury Twp.

2. Project Setting: (check all that apply)

☐ urban/suburban; ☒ rural
☒ upland; ☒ floodplain/terrace (☐active; ☐stable terrace)

7.5" USGS Quadrangle(s) Name (list all):

Name	Date
Frankstown	1981

Physiographic Zone(s)(list All. Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.):

Physiographic Zone
Ridge and Valley. Appalachian Mountian Section

Project Area Drainage(s), (list all) (Sub-basin and Watershed can be obtained from CRGIS):

Sub-basin	Watershed	Major Stream	Minor Stream
11	A	Juniata River	Piney Creek

3. Basic Field Conditions:

(Text fields will expand as needed. Please be complete)

Area of APE / Project Area in hectares: 10.1 Hectares tested: 6.5

General Description of APE / Project Area: Survey area consists of two proposed pipeline routes, two access roads and two additonal temporary workspaces. Most of survey area is uplands with one unnamed stream crossing at the western end of the project and at Piney Creek.

Type of Proposed Project / Impact: Open Cut Pipeline Construction

Date of field investigation(s): December 13-16, 2018

Description of Field Conditions including percentage of surface visibility:
Cold and rainy field conditions with zero percent surface visibility.

4. Previously Recorded Archaeological Sites within APE / Project Area and not relocated by this project:

PASS Site Number	Reason not re-located

5. Survey Methodology: (check all that apply to the entire project; attach any supporting documents)

☐ PASS file Research ☐ Contacted Local Historical Association/Commission/Park/Etc.
☐ Informant Data ☐ Historic Records/Maps/Photos ☐ SCS Soil Maps
☐ Surface Survey ☐ Geomorphological Borings ☒ STPs
☐ Test Units ☐ Geomorphological Trenches ☐ Remote Sensing
Other: Pedestrian Walkover Survey

Professional Geomorphologist was ☐Present or ☒ Not Present During Field Investigations

Name: _____ Affiliation: _____

Formal Geomorphological Report Prepared: ☐ Yes ☒ No

6. Results: (Describe both the design and the results of every methodology checked in **5.** Include the size and condition of the area tested by each.)

No cultural resources identified. See details in paragraph below.

7. Statewide Pre-Contact Probability Model Analysis: (Use the model from CRGIS to determine portions of the project area that were located within each sensitivity tier and list all testing methods used within each tier. If more than one method was used, estimate the percentage of the tier tested by each method. In the Sites Located section, include Isolated Finds for which a number is assigned.)

Sensitivity Tier	Area within this Tier	Percent of Total Project Area	Method(s) Used to test this tier (Use list from 5 above. Include % if multiple.)	Number of Sites Located
High	33523 sq. m.	34 %	Shovel Testing, Pedestrian Walkover	0
Moderate	8670 sq. m.	8 %	Shovel Testing, Pedestrian Walkover	0
Low	31038 sq. m.	30 %	Shovel Testing, Pedestrian Walkover	0

*** NOTE* remaining percentage of project area was previously surveyed and not assessed for cultural sensitivity**

8. Required Attachments:

☒ 7.5' USGS Quadrangle Map delineating APE / Project Area
☒ Project map showing testing strategy(ies)
☒ Testing strategy justification / predictive model
☒ Supporting photographs with descriptions of view and view direction
☐ Engineering / Project Plans if prepared
☐ Geomorphological Report if prepared
☒ Representative excavation profiles and descriptions

List all other attachments to this Negative Survey Form:

Attachment Type
Attachment A – Project Location on USGS
Attachment B – Archaeological Investigations Map
Attachment C – Project Photographs
Attachment D – Typical Soil Profile
Attachment E – Engineer Map

ER 2013-1862-042
PINEY CREEK REROUTE - PROJECT DESCRIPTION AND SURVEY RESULTS
WOODBURY TOWNSHIP, BLAIR COUNTY

This modification is being requested by Sunoco Logistics LLC (Sunoco) for a change in construction method from a horizontal directional drill (HDD) to an open cut installation. Two open cut trenches are proposed. The first trench will consist of approximately 730 meters (m) (2,395 feet [ft]) of trenching and pipe installation for the 20" pipeline. The second trench will consist of approximately 890 m (2,920 ft) of trenching and pipe installation for the 16" pipeline. Both alignments will cross open upland fields as well as an unnamed stream and Piney Creek. Two access roads and two temporary workspaces are also proposed as part of the project. The project is in Woodbury Township, Blair County (Attachment A).

An archaeological survey was performed at the proposed modification area between December 13 and 16, 2018. Testing was conducted along two proposed pipeline alignments, two proposed access roads, and two temporary workspace areas. The survey area along the two proposed pipeline alignments together measured 1,620 m (5,315 ft) in length and 60 m (200 ft) wide, totaling 9.7 hectares (ha) (24.0 [ac] acres). Survey for the two proposed access roads measured 350 m (1,150 ft) long and 7.5 m (25 ft) wide, totaling 0.2 ha (0.5 ac). The two temporary workspaces combined comprise 0.18 ha (0.45 ac). The proposed reroute and associated facilities are in upland agricultural fields with some wooded slopes. The two proposed alignments cross an unnamed stream and Piney Creek. The Statewide Precontact Probability Model was applied to the survey area. Those area determined to have moderate to high potential for precontact sites were shovel tested at 15 m intervals while those with low probability were shovel tested at 30 m intervals. Shovel tested areas comprised approximately 54 percent of the total survey area. Areas of excessive slope, areas with standing water/wetlands and disturbed areas were subject to pedestrian walkover survey and comprised 18 percent of the survey area, the remaining 36 percent of the survey area was previously surveyed as a part of the original Phase I effort.

A total of 247 shovel tests were excavated along the two proposed pipeline alignments and associated facilities. Typical upland shovel tests soil profiles consisted of a 10YR 4/4 dark yellowish-brown silty loam Ap-horizon, 20 cm to 30 cm thick. Beneath, a sterile subsoil consisting of 10YR 5/6 yellowish-brown silty clay loam was encountered. Shovel tests excavated on the floodplain of Piney Creek encountered recent alluvial deposits overlying stream gravels. A typical profile along Piney Creek consisted of a layer of loose and recently deposited 10YR 3/3 dark brown sandy loam to a depth of 35 cm. Slag, coal and glass noted in this stratum. Below the recent alluvium, a deposit of 10YR 6/4 light yellowish-brown fine sand containing coal, slag, and glass was encountered to a depth of 57 cm below surface. Below, a 10YR 7/6 yellow coarse sand was encountered to a depth of 85 cm. At this depth, a mix of stream gravels, cobbles and sand were encountered, as well as the water table. All soils overlying the stream deposits were poorly developed and fairly loose indicating recent deposition. Areas subject to pedestrian walkover survey included an area of disturbance at the western terminus of the reroute, as well as the steep wooded slopes on either side of Piney Creek.

With the exception of two shovel tests along Piney Creek, no cultural material was identified. Artifacts recovered in the shovel tests adjacent to Piney Creek included a few glass fragments, slag, and coal. The artifacts were recovered from recent alluvial deposits, not in-situ, and cannot be attributed to a specific site or location.

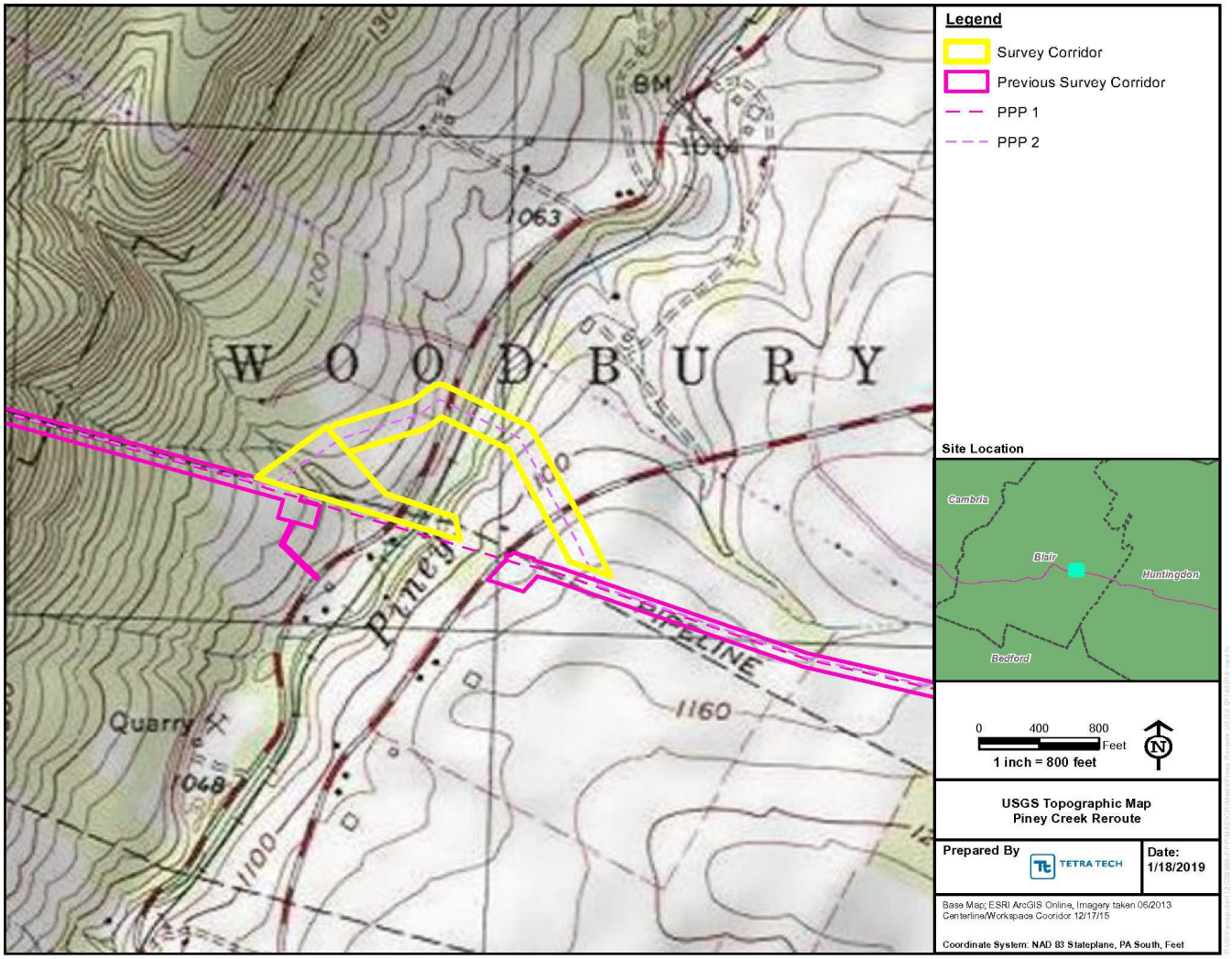
Site 36BL0122 is located south of the proposed 20" pipeline, approximately 24 m (80 ft) south of the LOD (Attachment B). It should be noted, the CRGIS shows 36BL0122 in the wrong location, the correct site location is shown in Attachment B. Located by Tetra Tech in 2015, the site is identified by a single positive shovel test containing historic artifacts, likely within a disturbed context. The site's NRHP status is undetermined and it is included in the Project's archaeological monitoring program. Tetra Tech will continue to staff an archaeological monitor on site during all ground disturbing construction activities as construction moves forward.

The proposed pipeline reroute will cross the former Springfield Branch of the Pennsylvania Railroad. Tracks are no longer present along the now defunct line, only some former railroad grade remains. No other historic resources associated with the railroad are present in the vicinity. Sunoco will restore the railroad bed to pre-construction conditions, including existing elevation, grades, and contours.

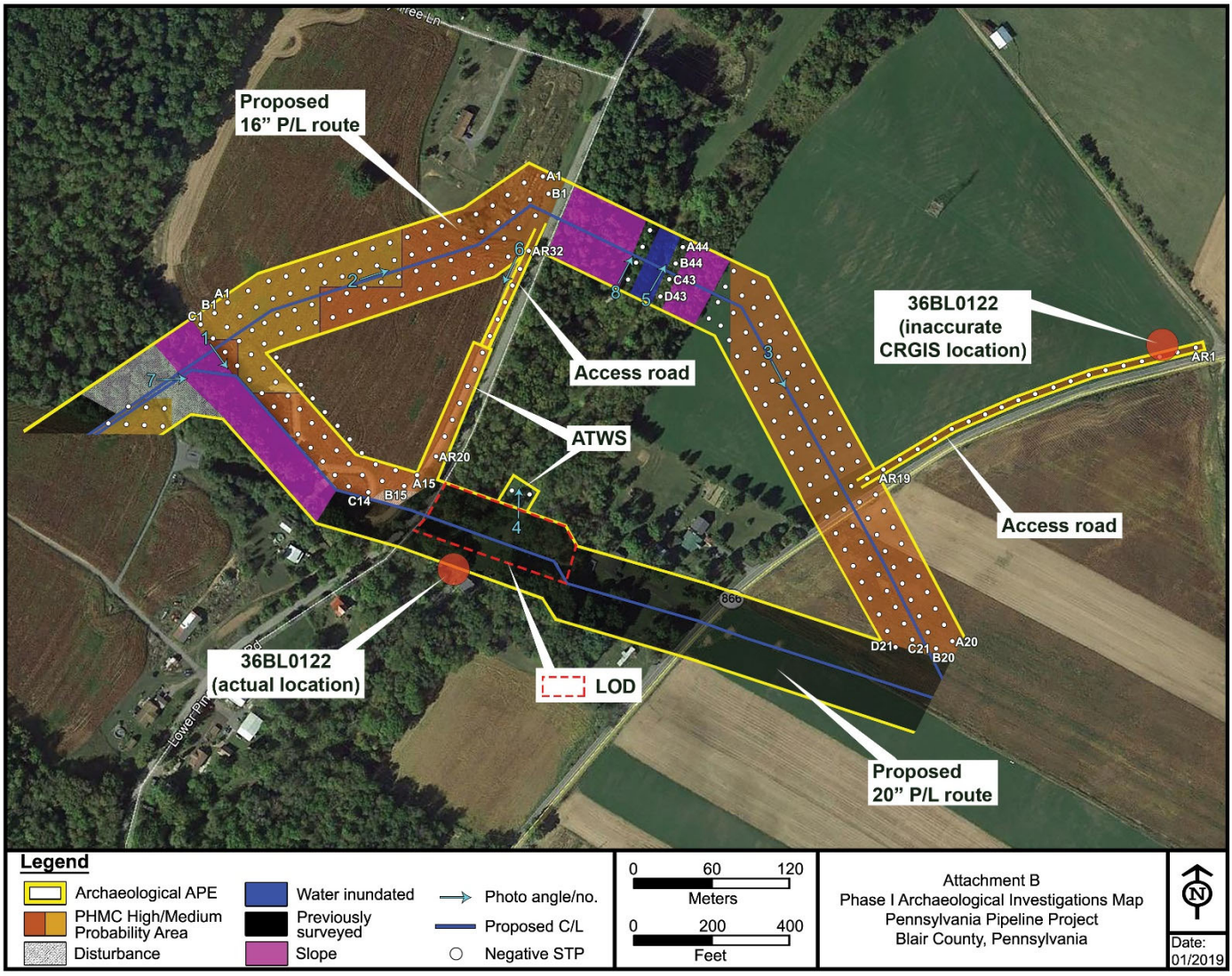
No additional cultural material or archaeological sites were identified during field investigations. The construction modification, as proposed, will have no adverse effect on cultural resources.

Attachment A includes the Project location on a USGS topographic map. Attachment B shows results of the archaeological survey depicted on a recent aerial. Attachment C offers representative photographs of the Project area, while photograph locations are depicted on Attachment B). Typical shovel test profiles are depicted in Attachment D. Attachment E includes engineer maps depicting the proposed open cut and the location of 36BL0122.

Attachment A: Project Location on USGS Topo Map.



Attachment B: Phase I Archaeological Investigations.



Attachment C: Project Photographs.

1. **View along proposed 20" reroute. Area shovel tested at 15 m intervals. Facing southeast**

2. **View along proposed 16" reroute. Area shovel tested at 15 m interval. Facing northeast.**

3. View along proposed 16" reroute. Area shovel tested at 15 m interval. Facing southeast

4. Shovel tested floodplain along Piney Creek. Facing North.

5. **Shovel tested floodplain along Piney Creek on the 16" alignment. Facing northeast.**

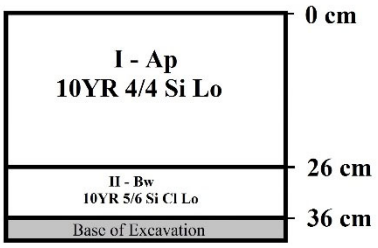
6. **View along proposed access road, shovel tested at 15 m intervals. Facing southwest.**

7. View of sloping stream crossing subject to pedestrian walkover survey. Facing east.

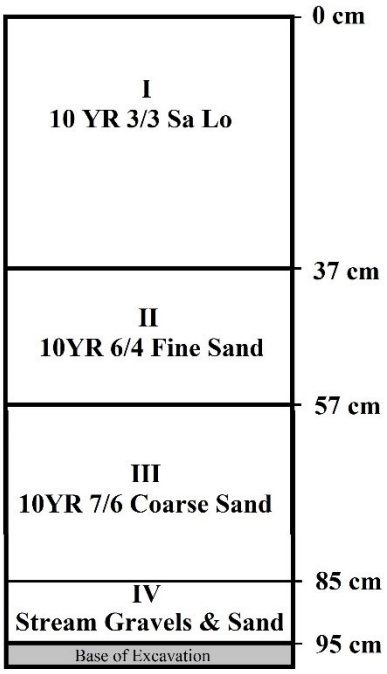
8. View along remnant grade of the Springfield Branch of the PRR on the west side of Piney Creek. Facing south

Attachment D: Typical Shovel Test Profiles

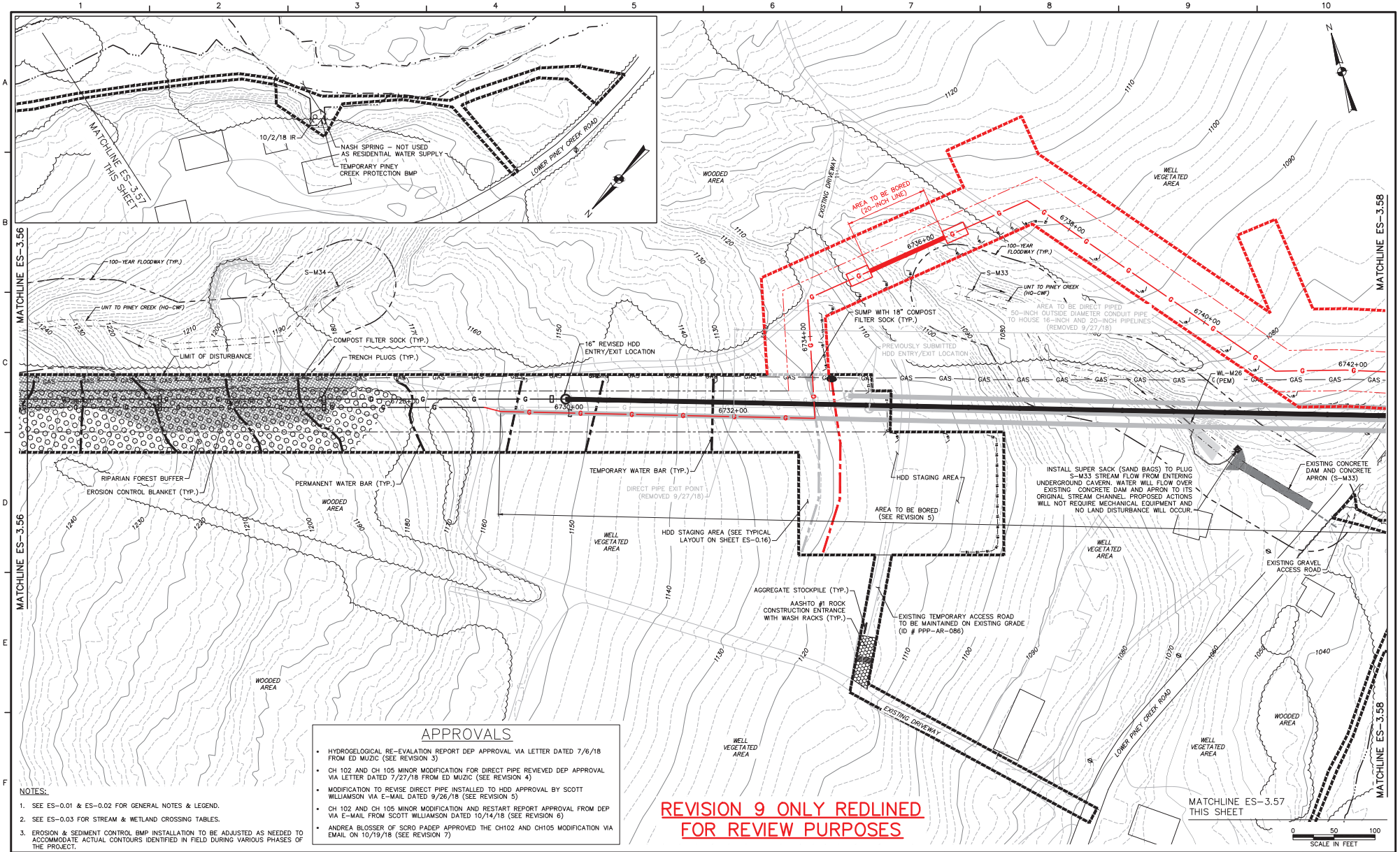
Shovel Test C-34



Shovel Test B-19



Attachment E: Engineer Map Depicting Location of 36BL0122



APPROVALS

- HYDROGEOLOGICAL RE-EVALATION REPORT DEP APPROVAL VIA LETTER DATED 7/6/18 FROM ED MUZIC (SEE REVISION 3)
- CH 102 AND CH 105 MINOR MODIFICATION FOR DIRECT PIPE REVIEVED DEP APPROVAL VIA LETTER DATED 7/27/18 FROM ED MUZIC (SEE REVISION 4)
- MODIFICATION TO REVISE DIRECT PIPE INSTALLED TO HDD APPROVAL BY SCOTT WILLIAMSON VIA E-MAIL DATED 9/26/18 (SEE REVISION 5)
- CH 102 AND CH 105 MINOR MODIFICATION AND RESTART REPORT APPROVAL FROM DEP VIA E-MAIL FROM SCOTT WILLIAMSON DATED 10/14/18 (SEE REVISION 6)
- ANDREA BLOSSER OF SCRO PADEP APPROVED THE CH102 AND CH105 MODIFICATION VIA EMAIL ON 10/19/18 (SEE REVISION 7)

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

REVISION 9 ONLY REDLINED FOR REVIEW PURPOSES

TETRA TECH
www.tetratech.com
661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS

NO.	BY	DATE	REMARKS
3	RS	6/20/18	CENTERLINE AND HDD MODIFICATION
4	RS	7/12/18	CENTERLINE AND DIRECT PIPE MODIFICATION (REMOVED 9/27/18)
5	RS	7/27/18	CENTERLINE AND HDD MODIFICATION
6	RS	10/11/18	ADDITIONAL LOD FOR IR RESPONSE
7	RS	10/18/18	ADDED SPRING AND IR LOCATION
8	RS	11/1/18	ADDED CONTROLS FOR S-M33
9	RS	12/11/18	20" CENTERLINE AND HDD MODIFICATION/ LOD MODIFICATION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 57 OF 73

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-3.57
SHEET 3.57 OF 102

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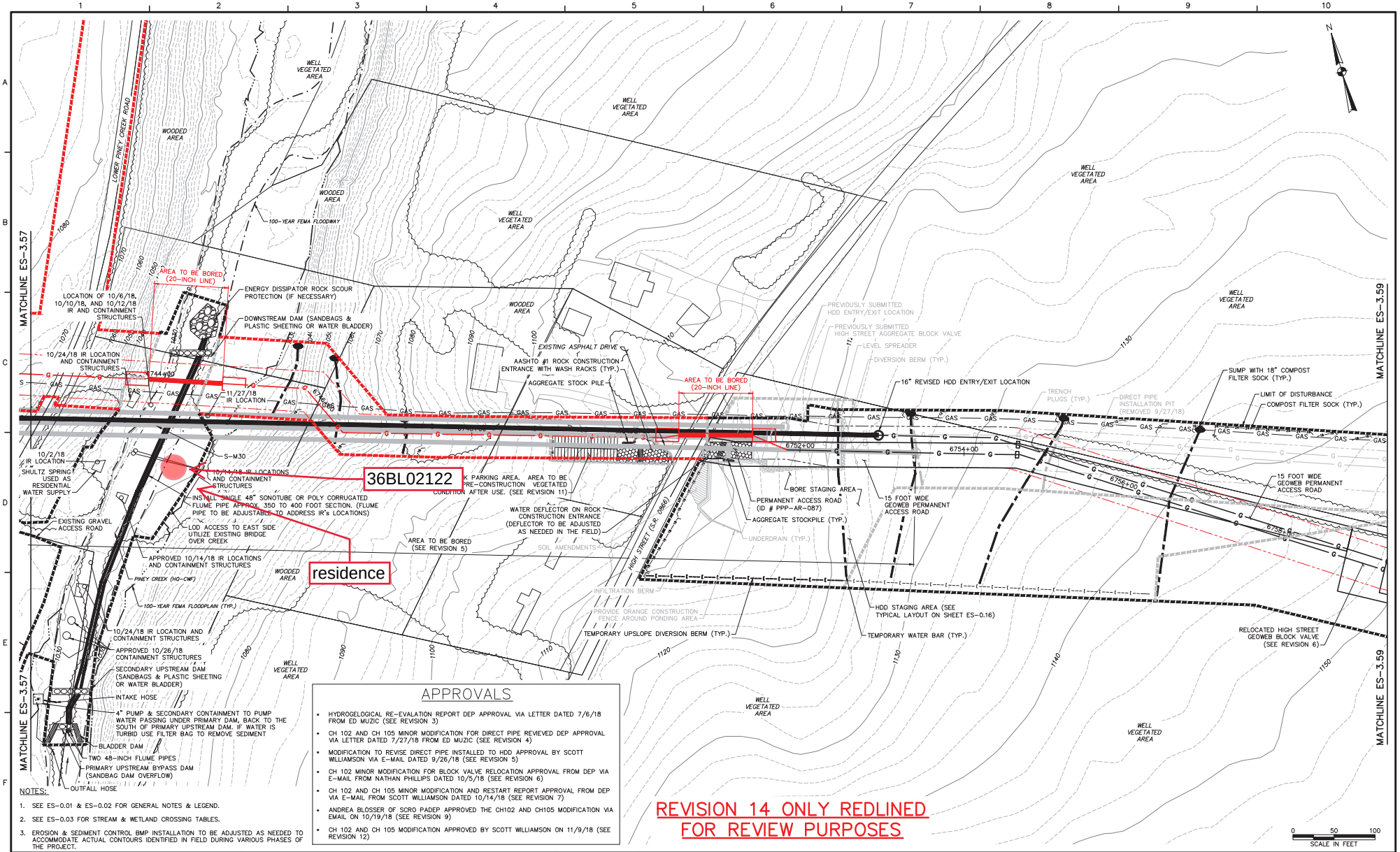

APPROVALS

- HYDROGEOLOGICAL RE-EVALATION REPORT DEP APPROVAL VIA LETTER DATED 7/6/18 FROM ED MUZIC (SEE REVISION 3)
- CH 102 AND CH 105 MINOR MODIFICATION FOR DIRECT PIPE REVIEWED DEP APPROVAL VIA LETTER DATED 7/27/18 FROM ED MUZIC (SEE REVISION 4)
- MODIFICATION TO REVISE DIRECT PIPE INSTALLED TO HDD APPROVAL BY SCOTT WILLIAMSON VIA E-MAIL DATED 9/26/18 (SEE REVISION 5)
- CH 102 MINOR MODIFICATION FOR BLOCK VALVE RELOCATION APPROVAL FROM DEP VIA E-MAIL FROM NATHAN PHILLIPS DATED 10/5/18 (SEE REVISION 6)
- CH 102 AND CH 105 MINOR MODIFICATION AND RESTART REPORT APPROVAL FROM DEP VIA E-MAIL FROM SCOTT WILLIAMSON DATED 10/14/18 (SEE REVISION 7)
- ANDREA BLOSSER OF SCRO PADEP APPROVED THE CH102 AND CH105 MODIFICATION VIA EMAIL ON 10/19/18 (SEE REVISION 9)
- CH 102 AND CH 105 MODIFICATION APPROVED BY SCOTT WILLIAMSON ON 11/9/18 (SEE REVISION 12)

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
3. EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

REVISION 14 ONLY REDLINED FOR REVIEW PURPOSES

TETRA TECH
www.tetratech.com
661 ANDERSEN DRIVE – FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS

NO.	BY	DATE	REMARKS
8	RS	10/15/18	IR LOCATION ADDED
9	RS	10/18/18	ADDED SPRING AND IR LOCATION
10	RS	10/25/18	ADDED 10/24/18 IR LOCATION AND CONTAINMENT STRUCTURES
11	RS	10/31/18	ADDITIONAL LOD FOR STAGING AREA
12	RS	11/1/18	EXTENDED LOD, ADDED STREAM DAMS, FLUME, PUMP, & 10/26 IR CONTAINMENTS
13	RS	11/28/18	ADDED 11/27/18 IR LOCATION
14	RS	12/11/18	20" CENTERLINE AND HDD MODIFICATION/ LOD MODIFICATION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK

SUNOCO PIPELINE L.P.
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 3

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

BLAIR COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 58 OF 73

DATE:	2/6/2017
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-3.58
SHEET 3.58 OF 102

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ATTACHMENT G

PNDI Update

1. PROJECT INFORMATION

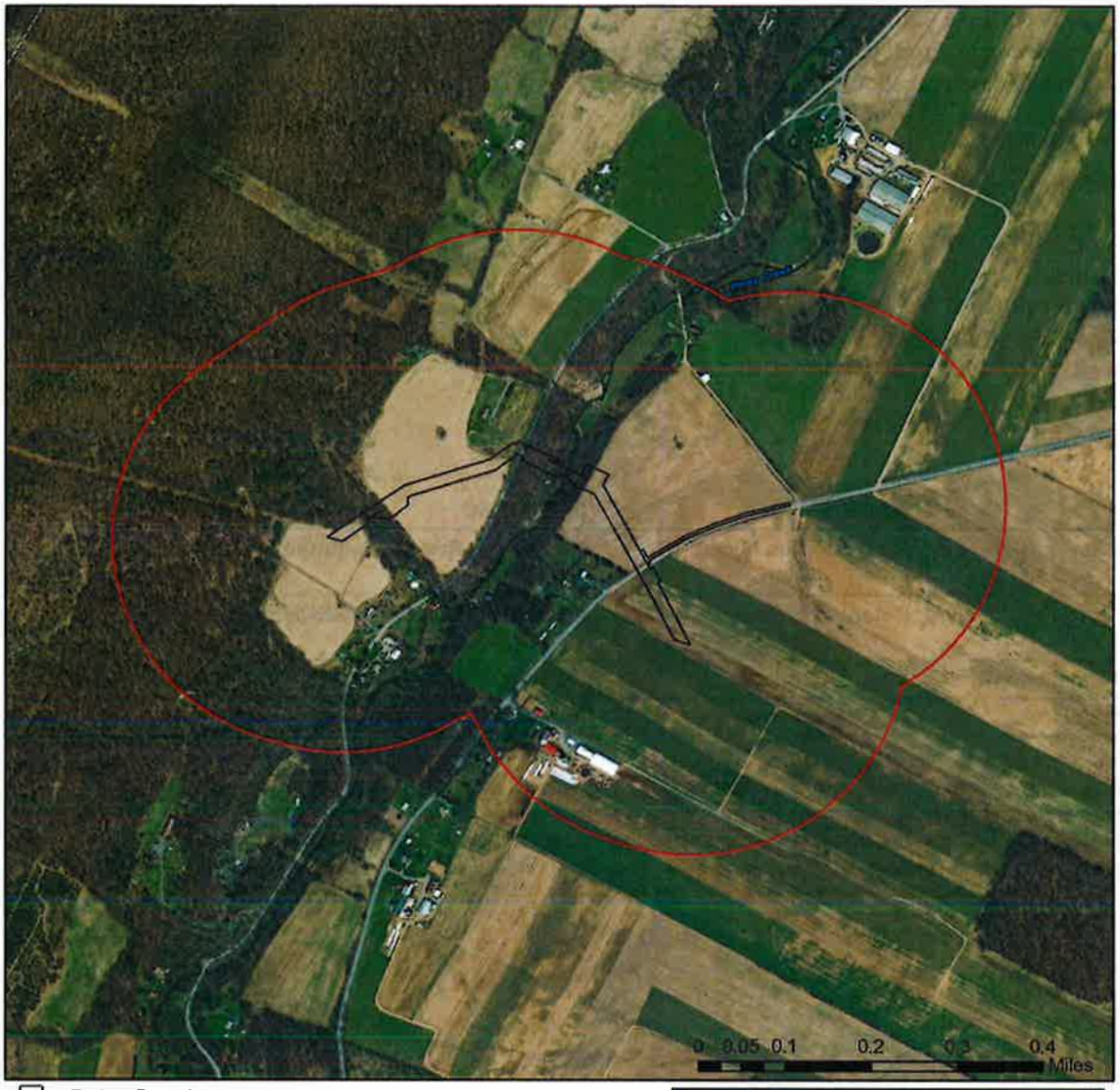
Project Name: **Mariner East 2 Piney Creek 16" Reroute**
Date of Review: **1/28/2019 02:56:18 PM**
Project Category: **Energy Storage, Production, and Transfer, Energy Transfer, Pipeline (e.g., gas, oil) -- NEW (construction of new line in a new location)**
Project Area: **6.05 acres**
County(s): **Blair**
Township/Municipality(s): **WOODBURY**
ZIP Code: **16693**
Quadrangle Name(s): **FRANKSTOWN**
Watersheds HUC 8: **Upper Juniata**
Watersheds HUC 12: **Piney Creek**
Decimal Degrees: **40.435380, -78.266172**
Degrees Minutes Seconds: **40° 26' 7.3674" N, 78° 15' 58.2207" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Conservation Measure**	**No Further Review Required, See Agency Comments**
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	**Avoidance Measure**	**See Agency Response**

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

Mariner East 2 Piney Creek 16" Reroute

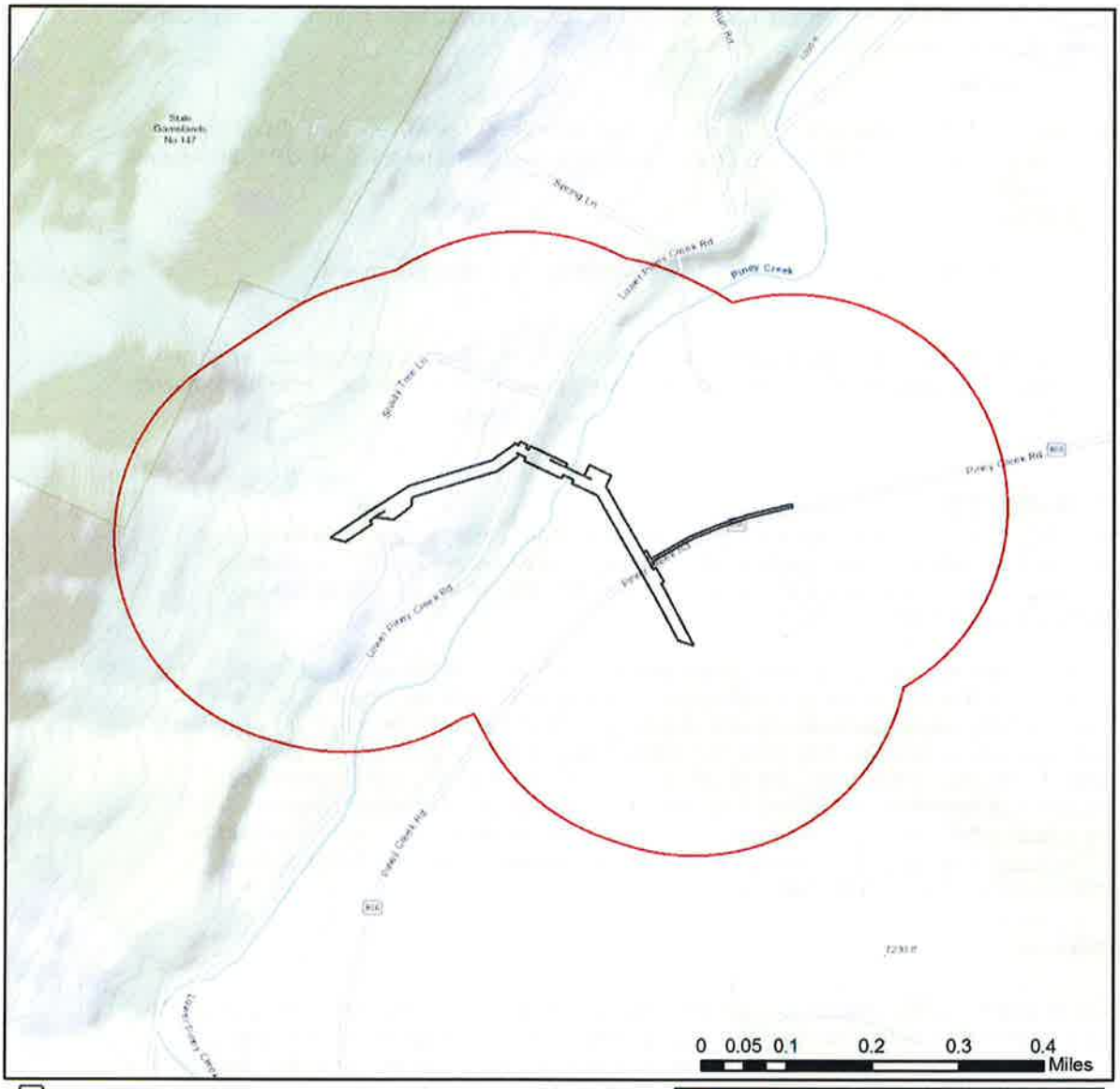


Project Boundary

Buffered Project Boundary

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

Mariner East 2 Piney Creek 16" Reroute



Project Boundary

Buffered Project Boundary

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

RESPONSE TO QUESTION(S) ASKED

Q1: Will the entire project area (including any discharge), plus a 300 feet buffer around the project area, all occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard?
Your answer is: No

Q2: How many acres of woodland, forest, forested fencerows and trees will be cut, cleared, removed, disturbed or flooded (inundated) as a result of carrying out all aspects or phases of this project? [Round acreages UP to the nearest acre (e.g., 0.2 acres = 1 acre).]
Your answer is: 1 to 10 acres

Q3: Is tree removal, tree cutting or forest clearing necessary to implement all aspects of this project?
Your answer is: Yes

Q4: How many acres of woodland, forest, forested fencerows and trees will be cut, cleared, removed, disturbed or flooded (inundated) as a result of carrying out all aspects or phases of this project? [Round acreages UP to the nearest acre (e.g., 0.2 acres = 1 acre).]
Your answer is: 1 to 10 acres

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:

Conservation Measure: Potential impacts to state and federally listed species which are under the jurisdiction of both the Pennsylvania Game Commission (PGC) and the U.S. Fish and Wildlife Service may occur as a result of this project. As a result, the PGC defers comments on potential impacts to federally listed species to the U.S. Fish and Wildlife Service. No further coordination with the Pennsylvania Game Commission is required at this time.

PA Department of Conservation and Natural Resources
RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Thalictrum coriaceum	Thick-leaved Meadow-rue	Endangered	Threatened	Flower late May - June

PA Fish and Boat Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service
RESPONSE:
Avoidance Measure: Conduct any tree cutting, tree inundation (flooding), and prescribed burning between November 15 and March 31. ALSO, when conducting timber harvesting (rather than land clearing for development), implement the Fish and Wildlife Service's Forest Management Guidelines for Indiana Bat Swarming Habitat found at https://www.fws.gov/northeast/pafo/endangered/forestry.html.

As the project proponent or applicant, I certify that I will implement the above Avoidance Measure:
_____(Signature)

Avoidance Measure: Conduct any tree cutting, tree inundation (flooding), and prescribed burning from October 1 to March 31. ALSO, when conducting timber harvesting (rather than land clearing for development), implement the Fish and Wildlife Service's Forest Management Guidelines in Indiana Bat Summer Habitat found at https://www.fws.gov/northeast/pafo/endangered/forestry.html.

As the project proponent or applicant, I certify that I will implement the above Avoidance Measure:
_____(Signature)

SPECIAL NOTE: **If you agree to implement the above Avoidance Measure, no further coordination with this agency regarding threatened and endangered species and/or special concern species and resources is required.** If you are not able to comply with the Avoidance Measures, you are required to coordinate with this agency - please send project information to this agency for review (see "What to Send" section).

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

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

7. PROJECT CONTACT INFORMATION

Name: Elizabeth Norment
Company/Business Name: Tetra Tech
Address: 301 Ellicott St.
City, State, Zip: Buffalo NY 14203
Phone: (716) 541-9225 Fax: (716) 849-9920
Email: elizabeth.norment@tetratech.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature 01/28/2019 date

ATTACHMENT H

Application Fee Calculation

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERWAYS ENGINEERING AND WETLANDS

CHAPTER 105 FEE(S) CALCULATION WORKSHEET

Additional information can be found at 25 PA Code §105.13 (relating to regulated activities – information and fees), the General Permit Registration (3150-PM-BWEW0500), the Joint Permit Application (3150-PM-BWEW0036) and the Dam Permit Application (3140-PM-BWEW0001)

Federal, State, county or municipal agencies or municipal authorities: ☐ **EXEMPT from fees**

These entities are exempt from these fees. If the applicant falls into one of these categories, please check the box above and provide only the first page of this worksheet with the project application or registration.

ALL OTHERS:

1. Please place an "X" in the box next to all authorizations that apply to the project and complete the fee information below those authorization(s). Projects may require multiple authorizations and fees, further clarification and examples are included below and at the end of this document.
2. Total each authorization, Section, and Part. Part One is for Water Obstructions and Encroachment authorizations, Part Two is for Dam Safety authorizations.
3. Please provide this completed worksheet (page 1 and page 2 and/or page 3, as is appropriate to the project) and a check for the applicable fee(s) with the project application or registration. The check should be made payable to the "**Commonwealth of Pennsylvania Clean Water Fund**" OR "**_____ Conservation District Clean Water Fund**", whichever is the reviewing entity.

NOTES:

Per *25 PA Code §105.13(c)(2)(iii)* Disturbance review fees are calculated by individually adding all of the permanent and temporary impacts to waterways, floodways, floodplains and bodies of water including wetlands to the next highest tenth acre and multiplying the permanent and temporary impacts by the respective fees and then these amounts are added to the other applicable fees.

Entities proposing structures or activities to occupy a Submerged Lands of the Commonwealth must obtain a Submerged Lands License Agreement (SLLA) and pay the appropriate annual charge. The applicant will be contacted if this charge applies to the project.

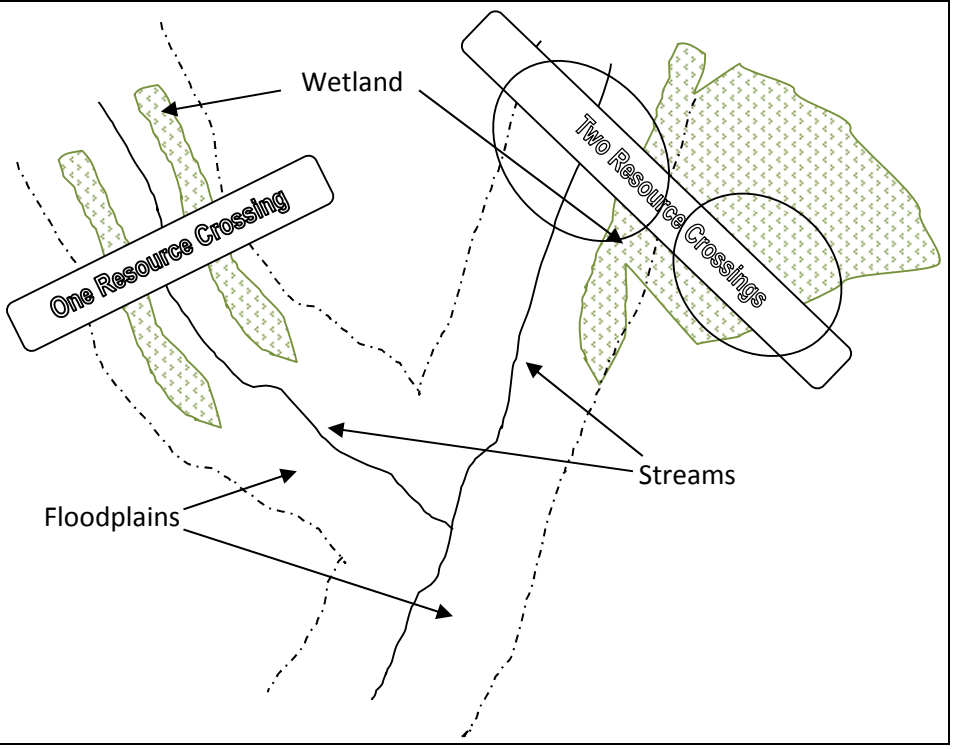
Floodway – The channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

Wetland and Stream Clarification:

[1] In many instances, wetlands are located within the floodplain of a stream. These resources for the purposes of calculating disturbance fees are considered co-located or overlapping and the area of disturbance would only be used once.

[2] In the case of GP-5, GP-7 and GP-8 fees are charged per structure per resource crossing and the following also applies to the disturbance fees:

- A crossing of the stream and the floodplain with wetlands present within the floodplain is considered one resource crossing.
- When the crossing traverses a stream and the floodplain and a wetland that is located outside of the floodplain or a wetland that extends out beyond the floodplain, it is considered two resource crossings.



PART ONE: WATER OBSTRUCTIONS AND ENCROACHMENTS

SECTION A. APPLICATION FEES

☐ **WATER OBSTRUCTION AND ENCROACHMENT PERMIT** (Joint Permit Application)
Some activities or structures within a project may also qualify for an accumulation of General Permit fees, please mark the box above indicating an Individual Water Obstruction and Encroachment Permit AND the corresponding fee(s) in the General Permit section below those. Activities or structures not qualifying for a General Permit fee must include a disturbance fee.

☐ Administrative Filing Fee[1]		$ 1,750	+	
☐ Temporary Disturbance ($400/0.1ac)	_____.____ acres x $4,000 =	$ _____	+	
☐ Permanent Disturbance ($800/0.1ac)	_____.____ acres x $8,000 =	$ _____		= $ _____
	WO&E FEE subtotal (a)			$ _____

☐ **GENERAL PERMIT(S)** (select activity/structure(s) below, see page 4 for "#" explanation)
Some activities or structures within a project requiring an Individual Water Obstruction and Encroachment Permit may qualify for an accumulation of General Permit fees, please mark the corresponding fee(s) below but not the box above indicating a General Permit.

☐ GP-1 Fish Habitat Enhancement Structures		$ 50	= $ _____
☐ GP-2 Small Docks and Boat Launching Ramps	_____ (#) x	$ 175	= $ _____
☐ GP-3 Bank Rehabilitation, Bank Protection and Gravel Bar Removal	_____ (#) x	$ 250	= $ _____
☐ GP-4 Intake and Outfall Structures	_____ (#) x	$ 200	= $ _____
☐ GP-5 Utility Line Stream Crossings[2]	_____ (#) x _____ (#) x	$ 250	= $ _____
☐ GP-6 Agricultural Crossings and Ramps	_____ (#) x	$ 50	= $ _____
☐ GP-7 Minor Road Crossings[2]	_____ (#) x	$ 350	= $ _____
☐ GP-8 Temporary Road Crossings[2]	_____ (#) x	$ 175	= $ _____
☐ GP-9 Agricultural Activities		$ 50	= $ _____
☐ GP-10 Abandoned Mine Reclamation		$ 500	= $ _____
☐ GP-11 Maintenance, Testing, Repair, Rehabilitation, or Replacement of Water Obstructions and Encroachments[1]		$ 750	+
☐ Temporary Disturbance ($400/0.1ac)	_____.____ acres x $4,000 =	$ _____	+
☐ Permanent Disturbance ($800/0.1ac)	_____.____ acres x $8,000 =	$ _____	= $ _____
☐ GP-15 Private Residential Construction in Wetlands[1]		$ 750	+
☐ Temporary Disturbance ($400/0.1ac)	_____.____ acres x $4,000 =	$ _____	+
☐ Permanent Disturbance ($800/0.1ac)	_____.____ acres x $8,000 =	$ _____	= $ _____
	GP(s) FEE subtotal (b)		$ _____

PART ONE: SECTION A. APPLICATION FEE(S) subtotal (a+b=c) $ _____

SECTION B. OTHER FEES

☐ Environmental Assessment for Waived Activities (§105.13(c)(2)(iv))		$ 500		$ _____
☒ Amendment to Water Obstruction and Encroachment Permit				
☒ Major Amendment[1]		$ 500	+	
☒ Temporary Disturbance	0.2 acres x $4,000 =	$ 800	+	$ 1,300
☒ Permanent Disturbance	0.3 acres x $8,000 =	$ 2,400		= $ 3,700
☐ Minor Amendment		$ 250		$ _____

Transfer of Water Obstruction and Encroachment Permit *does not require submission of this form; see Application for Transfer of Permit / Submerged Lands License Agreement (3150-PM-BWEW-0016)*

PART ONE: SECTION B. OTHER FEE(S) subtotal (d) $ 3,700

PART ONE: FEE(S) TOTAL (c+d=e) $ 3,700

DEP USE ONLY			
FEE TOTAL:	_____	Permit / Authorization Number (s):	_____
Correct Amount:	_____	Check #: _____	_____
Check Amount:	_____	Payable to: _____	_____

PART TWO: DAM SAFETY (USE ONE FEE SHEET PER DAM)

SECTION A. APPLICATION FEES

☐ **DAM PERMIT APPLICATION – NEW DAM**

☐ Size A	☐ Hazard 1 $26,500	☐ Hazard 2 $26,500	☐ Hazard 3 $25,500	☐ Hazard 4 $23,500	$ _____
☐ Size B	☐ Hazard 1 $19,000	☐ Hazard 2 $19,000	☐ Hazard 3 $18,500	☐ Hazard 4 $17,000	$ _____
☐ Size C	☐ Hazard 1 $10,500	☐ Hazard 2 $10,500	☐ Hazard 3 $10,000	☐ Hazard 4 $ 8,000	$ _____

☐ **STAGED CONSTRUCTION**

NO. OF STAGES BEYOND INITIAL STAGE _____ X APPLICATION FEE _____ X 0.90 (90%) $ _____

☐ **DAM PERMIT APPLICATION – MODIFICATION OF DAM**

☐ Size A	☐ Hazard 1 $18,500	☐ Hazard 2 $18,500	☐ Hazard 3 $18,500	☐ Hazard 4 $18,000	$ _____
☐ Size B	☐ Hazard 1 $12,000	☐ Hazard 2 $12,000	☐ Hazard 3 $12,000	☐ Hazard 4 $11,500	$ _____
☐ Size C	☐ Hazard 1 $ 7,500	☐ Hazard 2 $ 7,500	☐ Hazard 3 $ 7,500	☐ Hazard 4 $ 7,500	$ _____

☐ **STAGED CONSTRUCTION**

NO. OF STAGES BEYOND INITIAL STAGE _____ X APPLICATION FEE _____ X 0.85 (85%) $ _____

☐ **DAM PERMIT APPLICATION – OPERATION & MAINTANANCE OF EXISTING DAM**

☐ Size A	☐ Hazard 1 $12,500	☐ Hazard 2 $12,500	☐ Hazard 3 $12,000	☐ Hazard 4 $10,000	$ _____
☐ Size B	☐ Hazard 1 $10,000	☐ Hazard 2 $10,000	☐ Hazard 3 $ 9,500	☐ Hazard 4 $ 8,500	$ _____
☐ Size C	☐ Hazard 1 $ 7,000	☐ Hazard 2 $ 7,000	☐ Hazard 3 $ 6,500	☐ Hazard 4 $ 6,000	$ _____

PART TWO: SECTION A. APPLICATION FEE(S) subtotal (a) $ _____

SECTION B. OTHER FEES

☐ Letter of Amendment or Authorization

☐ Major (≥$250,000)

☐ Size A $14,700 ☐ Size B $ 8,700 ☐ Size C $ 4,400 $ _____

☐ Minor (<$250,000)

☐ Size A $ 1,300 ☐ Size B $ 1,000 ☐ Size C $ 650 $ _____

☐ Major Dam Design Revision

☐ Size A $ 4,700 ☐ Size B $ 3,200 ☐ Size C $ 1,700 $ _____

☐ Environmental Assessment

☐ Environmental Assessment for Dam Removal (§105.12(a)(16)) $ 500 $ _____

☐ Non-Jurisdictional Dams $ 900 $ _____

☐ Letter of Amendment or Authorization

☐ Size A $ 1,400 ☐ Size B $ 1,000 ☐ Size C $ 900 $ _____

☐ Transfer of Dam Permit

☐ No Proof of Financial Responsibility $ 550 ☐ Proof of Financial Responsibility $300 $ _____

☐ Annual Registration

☐ Hazard 1 $ 1,500 ☐ Hazard 2 $ 1,500 ☐ Hazard 3 $ 800 $ _____

PART TWO: SECTION B. OTHER FEE(S) subtotal (b) $ _____

PART TWO: FEE(S) TOTAL (a+b=c) $ _____

DEP USE ONLY			
FEE TOTAL:	_____	Permit / Authorization Number (s):	_____
Correct Amount:	_____	Check #: _____	_____
Check amount:	_____	Payable to: _____	_____

ATTACHMENT I

Supplemental Joint Permit Application Information

- **Joint Application Form Landowner List**
- **General Information Form**
- **Act 14 Notifications**
- **Stormwater and Floodplain Management Analysis**

Supplemental Joint Application Form Landowner List

Adjacent Landowner List
Piney Creek HDD Reroute
Major Permit Modification

PIN	Landowner	Address
24.00-11..-002.00-000	Robert L. Gorsuch and Sondra Nash, individually, as Joint Tenants with the Right of Survivorship	477 Lower Piney Creek Road Williamsburg, PA 16693
24.00-11..-045.00-000	Landowners Kenneth O. Stone. tenant in common, and not as joint tenants with right of survivorship, Jill A. Stone, tenant in common, and not as joint tenants with right of survivorship	806 Lower Piney Creek Road Williamsburg, PA 16693

Supplemental General Information Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the Department.

Related ID#s (If Known)		DEP USE ONLY
Client ID#	**APS ID#**	Date Received & General Notes
Site ID#	**Auth ID#**	
Facility ID#		

CLIENT INFORMATION

DEP Client ID#	**Client Type / Code** NPACO			
Organization Name or Registered Fictitious Name Sunoco Pipeline L.P.		**Employer ID#** (EIN) 23-3102656	**Dun & Bradstreet ID#** 11-339-2331	
Individual Last Name NA	**First Name**	**MI**	**Suffix**	**SSN**
Additional Individual Last Name NA	**First Name**	**MI**	**Suffix**	**SSN**
Mailing Address Line 1 525 Fritztown Road		**Mailing Address Line 2**		
Address Last Line – City Sinking Spring	**State** PA	**ZIP+4** 19608	**Country** USA	
Client Contact Last Name Gordon	**First Name** Matthew	**MI** L	**Suffix**	
Client Contact Title Senior Director		**Phone** 610-670-3284	**Ext**	
Email Address MLGordon@sunocologistics.com		**FAX**		

SITE INFORMATION

DEP Site ID#	**Site Name** Pennsylvania Pipeline Project - Piney Creek HDD Reroute				
EPA ID# NA	**Estimated Number of Employees to be Present at Site** 0				
Description of Site Installation of an approximately 0.57 mile 16-inch natural gas liquid pipeline through Woodbury Township in Blair County, Pennsylvania					
County Name Blair	**Municipality** Woodbury Township	**City** ☐	**Boro** ☐	**Twp** ☒	**State**
County Name	**Municipality**	**City** ☐	**Boro** ☐	**Twp** ☐	**State**
Site Location Line 1 Refer to Attachment 8 (Location Map)		**Site Location Line 2**			
Site Location Last Line – City		**State**	**ZIP+4**		
Detailed Written Directions to Site The proposed Project site begins approximately 0.16 mil northwest of Lower Piney Creek Road and 0.24 mile southwest of Shady Tree Lane heading northeast approximately 0.23 mile until it intersects Lower Piney Creek Road and heads southeast for approximately 0.28 mile (approximately 0.11 mile past High Street).					
Site Contact Last Name Gordon	**First Name** Matthew	**MI** L	**Suffix**		
Site Contact Title Senior Director		**Site Contact Firm**			
Mailing Address Line 1 525 Fritztown Road		**Mailing Address Line 2**			

Mailing Address Last Line – City			State	ZIP+4
Sinking Spring			PA	19608
Phone	**Ext**	**FAX**	**Email Address**	
610-670-3284				

NAICS Codes (Two- & Three-Digit Codes – List All That Apply)	**6-Digit Code** (Optional)
23	493190

Client to Site Relationship

FACILITY INFORMATION

Modification of Existing Facility	**Yes**	**No**
1. Will this project modify an existing facility, system, or activity?	☐	☐
2. Will this project involve an addition to an existing facility, system, or activity?	☐	☐

If "Yes", check all relevant facility types and provide DEP facility identification numbers below.

	Facility Type	DEP Fac ID#		Facility Type	DEP Fac ID#
☐	Air Emission Plant		☐	Industrial Minerals Mining Operation	
☐	Beneficial Use (water)		☐	Laboratory Location	
☐	Blasting Operation		☐	Land Recycling Cleanup Location	
☐	Captive Hazardous Waste Operation		☐	Mine DrainageTrmt/LandRecyProjLocation	
☐	Coal Ash Beneficial Use Operation		☐	Municipal Waste Operation	
☐	Coal Mining Operation		☐	Oil & Gas Encroachment Location	
☐	Coal Pillar Location		☒	Oil & Gas Location	0
☐	Commercial Hazardous Waste Operation		☐	Oil & Gas Water Poll Control Facility	
☐	Dam Location		☐	Oil & Gas Wastewater Storage Impoundment	
☐	Deep Mine Safety Operation -Anthracite		☐	Public Water Supply System	
☐	Deep Mine Safety Operation -Bituminous		☐	Radiation Facility	
☐	Deep Mine Safety Operation -Ind Minerals		☐	Residual Waste Operation	
☐	Encroachment Location (water, wetland)		☐	Storage Tank Location	
☐	Erosion & Sediment Control Facility		☐	Water Pollution Control Facility	
☐	Explosive Storage Location		☐	Water Resource	
			☐	Other:	

Latitude/Longitude Point of Origin	**Latitude**			**Longitude**		
	Degrees	**Minutes**	**Seconds**	**Degrees**	**Minutes**	**Seconds**
Enters County at	78	16	12	40	26	**1**

Horizontal Accuracy Measure	Feet NA --or-- Meters
Horizontal Reference Datum Code	☐ North American Datum of 1927 ☒ North American Datum of 1983 ☐ World Geodetic System of 1984
Horizontal Collection Method Code	SURVY, GPSDF, GISR
Reference Point Code	CTROD
Altitude	Feet NA --or-- Meters
Altitude Datum Name	☐ The National Geodetic Vertical Datum of 1929 ☐ The North American Vertical Datum of 1988 (NAVD88)
Altitude (Vertical) Location Datum Collection Method Code	
Geometric Type Code	POINT
Data Collection Date	2018 and 2019
Source Map Scale Number	NA Inch(es) = Feet
--or--	Centimeter(s) = Meters

PROJECT INFORMATION

Project Name

Pennsylvania Pipeline Project - Piney Creek HDD Reroute

Project Description

SPLP proposes a Major Modification to the Pennsylvania Pipeline Project within Woodbury Township, Blair County. The modification is for the 16-inch pipeline and includes an approximately 0.57 mile reroute and the elimination of the Horizontal Directional Drill S2-0142-Lower Piney Creek. The reroute will increase the LOD by 14.54 acres and contains three (3) stream crossings (including two (2) that were crossed by the original route). The pipeline will be installed using open cut methodology and a conventional bore crossing under Piney Creek Road/High Street (State Route 866).

Project Consultant Last Name	First Name	MI	Suffix
Schaeffer	Brad		

Project Consultant Title	Consulting Firm
Environmental Project Manager	Tetra Tech, Inc.

Mailing Address Line 1	Mailing Address Line 2
301 Ellicott Street	

Address Last Line – City	State	ZIP+4
	Buffalo	14203

Phone	Ext	FAX	Email Address
716-849-9419	9227	716-849-9420	

Time Schedules	Project Milestone (Optional)

1.	**Have you informed the surrounding community and addressed any concerns prior to submitting the application to the Department?**	☒	Yes	☐	No
2.	**Is your project funded by state or federal grants?**	☐	Yes	☒	No

Note: If "Yes", specify what aspect of the project is related to the grant and provide the grant source, contact person and grant expiration date.
Aspect of Project Related to Grant
Grant Source: _____
Grant Contact Person: _____
Grant Expiration Date: _____

3.	**Is this application for an authorization on Appendix A of the Land Use Policy? (For referenced list, see Appendix A of the Land Use Policy attached to GIF instructions)**	☒	Yes	☐	No

Note: If "No" to Question 3, the application is not subject to the Land Use Policy.
If "Yes" to Question 3, the application is subject to this policy and the Applicant should answer the additional questions in the **Land Use Information** section.

LAND USE INFORMATION

Note: Applicants are encouraged to submit copies of local land use approvals or other evidence of compliance with local comprehensive plans and zoning ordinances.

1.	**Is there an adopted county or multi-county comprehensive plan?**	☒	Yes	☐	No
2.	**Is there an adopted municipal or multi-municipal comprehensive plan?**	☒	Yes	☐	No
3.	**Is there an adopted county-wide zoning ordinance, municipal zoning ordinance or joint municipal zoning ordinance?**	☒	Yes	☐	No

Note: If the Applicant answers "No" to either Questions 1, 2 or 3, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 4 and 5 below.
If the Applicant answers "Yes" to questions 1, 2 and 3, the Applicant should respond to questions 4 and 5 below.

4.	**Does the proposed project meet the provisions of the zoning ordinance or does the proposed project have zoning approval?** If zoning approval has been received, attach documentation.	☒	Yes	☐	No
5.	**Have you attached Municipal and County Land Use Letters for the project?**	☐	Yes	☒	No

COORDINATION INFORMATION

Note: The PA Historical and Museum Commission must be notified of proposed projects in accordance with DEP Technical Guidance Document 012-0700-001 and the accompanying Cultural Resource Notice Form.

If the activity will be a mining project (i.e., mining of coal or industrial minerals, coal refuse disposal and/or the operation of a coal or industrial minerals preparation/processing facility), respond to questions 1.0 through 2.5 below.

If the activity will not be a mining project, skip questions 1.0 through 2.5 and begin with question 3.0.

1.0	**Is this a coal mining project?** If "Yes", respond to 1.1-1.6. If "No", skip to Question 2.0.	☐	Yes	☒	No
1.1	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be equal to or greater than 200 tons/day?**	☐	Yes	☐	No
1.2	**Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be greater than 50,000 tons/year?**	☐	Yes	☐	No
1.3	**Will this coal mining project involve coal preparation/ processing activities in which thermal coal dryers or pneumatic coal cleaners will be used?**	☐	Yes	☐	No
1.4	**For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No
1.5	**Will this coal mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐	Yes	☐	No
1.6	**Will this coal mining project involve underground coal mining to be conducted within 500 feet of an oil or gas well?**	☐	Yes	☐	No
2.0	**Is this a non-coal (industrial minerals) mining project?** If "Yes", respond to 2.1-2.6. If "No", skip to Question 3.0.	☐	Yes	☒	No
2.1	**Will this non-coal (industrial minerals) mining project involve the crushing and screening of non-coal minerals other than sand and gravel?**	☐	Yes	☐	No
2.2	**Will this non-coal (industrial minerals) mining project involve the crushing and/or screening of sand and gravel with the exception of wet sand and gravel operations (screening only) and dry sand and gravel operations with a capacity of less than 150 tons/hour of unconsolidated materials?**	☐	Yes	☐	No
2.3	**Will this non-coal (industrial minerals) mining project involve the construction, operation and/or modification of a portable non-metallic (i.e., non-coal) minerals processing plant under the authority of the General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)?**	☐	Yes	☐	No
2.4	**For this non-coal (industrial minerals) mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?**	☐	Yes	☐	No
2.5	**Will this non-coal (industrial minerals) mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?**	☐	Yes	☐	No

3.0	**Will your project, activity, or authorization have anything to do with a well related to oil or gas production, have construction within 200 feet of, affect an oil or gas well, involve the waste from such a well, or string power lines above an oil or gas well?** If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0.	☐	Yes	☒	No
3.1	**Does the oil- or gas-related project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)?**	☐	Yes	☐	No
3.2	**Will the oil- or gas-related project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or storm water system?** If "Yes", discuss in *Project Description*.	☐	Yes	☐	No
3.3	**Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities?**	☐	Yes	☐	No
4.0	**Will the project involve a construction activity that results in earth disturbance?** If "Yes", specify the total disturbed acreage. **4.0.1 Total Disturbed Acreage** 14.54 acres	☒	Yes	☐	No
5.0	**Does the project involve any of the following?** If "Yes", respond to 5.1-5.3. If "No", skip to Question 6.0.	☒	Yes	☐	No
5.1	**Water Obstruction and Encroachment Projects – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water?**	☒	Yes	☐	No
5.2	**Wetland Impacts – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a wetland?**	☒	Yes	☐	No
5.3	**Floodplain Projects by the commonwealth, a Political Subdivision of the commonwealth or a Public Utility – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a floodplain?**	☒	Yes	☐	No
6.0	**Will the project involve discharge of stormwater or wastewater from an industrial activity to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system?**	☐	Yes	☒	No
7.0	**Will the project involve the construction and operation of industrial waste treatment facilities?**	☐	Yes	☒	No
8.0	**Will the project involve construction of sewage treatment facilities, sanitary sewers, or sewage pumping stations?** If "Yes", indicate estimated proposed flow (gal/day). Also, discuss the sanitary sewer pipe sizes and the number of pumping stations/treatment facilities/name of downstream sewage facilities in the *Project Description*, where applicable. **8.0.1 Estimated Proposed Flow (gal/day)**	☐	Yes	☒	No
9.0	**Will the project involve the subdivision of land, or the generation of 800 gpd or more of sewage on an existing parcel of land or the generation of an additional 400 gpd of sewage on an already-developed parcel, or the generation of 800 gpd or more of industrial wastewater that would be discharged to an existing sanitary sewer system?**	☐	Yes	☒	No
	9.0.1 Was Act 537 sewage facilities planning submitted and approved by DEP? If "Yes" attach the approval letter. Approval required prior to 105/NPDES approval.	☐	Yes	☒	No
10.0	**Is this project for the beneficial use of biosolids for land application within Pennsylvania?** If "Yes" indicate how much (i.e. gallons or dry tons per year). **10.0.1 Gallons Per Year (residential septage)** _____ **10.0.2 Dry Tons Per Year (biosolids)**	☐	Yes	☒	No
11.0	**Does the project involve construction, modification or removal of a dam?** If "Yes", identify the dam. **11.0.1 Dam Name**	☐	Yes	☒	No

12.0	**Will the project interfere with the flow from, or otherwise impact, a dam?** If "Yes", identify the dam. **12.0.1 Dam Name**	☐	Yes	☒	No
13.0	**Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)?** If "Yes", identify each type of emission followed by the amount of that emission. **13.0.1 Enter all types & amounts of emissions; separate each set with semicolons.** NA	☐	Yes	☒	No
14.0	**Does the project include the construction or modification of a drinking water supply to serve 15 or more connections or 25 or more people, at least 60 days out of the year?** If "Yes", check all proposed sub-facilities. **14.0.1 Number of Persons Served** _____ **14.0.2 Number of Employee/Guests** _____ **14.0.3 Number of Connections** _____	☐	Yes	☒	No
	14.0.4 Sub-Fac: Distribution System	☐	Yes	☐	No
	14.0.5 Sub-Fac: Water Treatment Plant	☐	Yes	☐	No
	14.0.6 Sub-Fac: Source	☐	Yes	☐	No
	14.0.7 Sub-Fac: Pump Station	☐	Yes	☐	No
	14.0.8 Sub Fac: Transmission Main	☐	Yes	☐	No
	14.0.9 Sub-Fac: Storage Facility	☐	Yes	☐	No
15.0	**Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery?**	☐	Yes	☒	No
16.0	**Is your project to be served by an existing public water supply?** If "Yes", indicate name of supplier and attach letter from supplier stating that it will serve the project. **16.0.1 Supplier's Name** Altoona Water Authority Huntingdon Area Water and Sewage Authority	☒	Yes	☐	No
	16.0.2 Letter of Approval from Supplier is Attached	☐	Yes	☒	No
17.0	**Will this project involve a new or increased drinking water withdrawal from a stream or other water body?** If "Yes", should reference both Water Supply and Watershed Management. **17.0.1 Stream Name**	☐	Yes	☒	No
18.0	**Will the construction or operation of this project involve treatment, storage, reuse, or disposal of waste?** If "Yes", indicate what type (i.e., hazardous, municipal (including infectious & chemotherapeutic), residual) and the amount to be treated, stored, re-used or disposed. **18.0.1 Type & Amount** Non-hazardous/Construction related C&D waste will be disposed; Amount unknown	☒	Yes	☐	No
19.0	**Will your project involve the removal of coal, minerals, etc. as part of any earth disturbance activities?**	☐	Yes	☒	No
20.0	**Does your project involve installation of a field constructed underground storage tank?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **20.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No
21.0	**Does your project involve installation of an aboveground storage tank greater than 21,000 gallons capacity at an existing facility?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **21.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No

22.0	**Does your project involve installation of a tank greater than 1,100 gallons which will contain a highly hazardous substance as defined in DEP's Regulated Substances List, 2570-BK-DEP2724?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **22.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No
23.0	**Does your project involve installation of a storage tank at a new facility with a total AST capacity greater than 21,000 gallons?** If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. **23.0.1 Enter all substances & capacity of each; separate each set with semicolons.**	☐	Yes	☒	No
24.0	**Will the intended activity involve the use of a radiation source?**	☐	Yes	☒	No

CERTIFICATION

I certify that I have the authority to submit this application on behalf of the applicant named herein and that the information provided in this application is true and correct to the best of my knowledge and information.

Type or Print Name Matthew Gordon

	Senior Director	2-1-2019
Signature	**Title**	**Date**

Supplemental Act 14 Notifications

PITT-01-19-034

January 30, 2019

Project Number 212C-PB-00387

Blair County
423 Allegheny Street, Suite 142
Hollidaysburg, PA 16648

Reference: Sunoco Pipeline, L.P. (SPLP)
Pennsylvania Pipeline Project
Major Modification I

To Whom It May Concern:

This municipal notice, under the requirements of Acts 14, 67, 68, and 127, is to inform you that our client, Sunoco Pipeline, L.P. (SPLP), is applying for coverage under the Erosion and Sediment Control General Permit (ESCGP-3) for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing or Treatment Operations or Transmission Facilities and for coverage under Chapter 105 Joint Permit for Water Obstruction and Encroachment.

Project Name: Pennsylvania Pipeline Project

Applicant Name: Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Project Description: Sunoco Pipeline, L.P. (SPLP) proposes a Major Modification to the Pennsylviana Pipeline Project within Woodbury Township, Blair County. The Major Modification consists of a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Piney Creek Horizontal Directional Drill (HDD). This permit request is to convert the HDD to open cut methodolgy for the majority of the reroute, and a conventional auger bore under Piney Creek Road / High Street (State Route 866). The reroute will increase the limits-of-disturbance by 14.54 acres and contain one new stream crossing.

Site Location: Project crosses through High Street (SR 866) approximately 3.5 miles south of Williamsburg, PA.

Enclosed is a copy of the Notice of Intent (NOI) application for an ESCGP-3, General Information Form (GIF) for the Wetlands and Waterways permit application, and Location map of the proposed major modification route. Please submit any comments concerning this project within 30 days from date of receipt of this letter to:

Pennsylvania Department of Environmental Protection (PA DEP)
400 Waterfront Drive
Pittsburgh, Pennsylvania 15222
Phone: (412) 442-4000

Tetra Tech
661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

Should you have questions regarding this correspondence, please do not hesitate to contact me at 412.921.8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
E&S Task Manager

RFS/clm

Enclosure: Site Location Maps; Notice of Intent; GIF

cc: File 212C-PB-00387

January 31,2019

Dear Customer:

The following is the proof-of-delivery for tracking number **774354500621**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	H.SHEPPLEY	**Delivery location:**	423 ALLEGHENY STREET HOLLIDAYSBURG, PA 16648
Service type:	FedEx Priority Overnight	**Delivery date:**	Jan 31, 2019 11:49
Special Handling:	Deliver Weekday Adult Signature Required		

Shipping Information:

Tracking number:	774354500621	**Ship date:**	Jan 30, 2019
		Weight:	0.5 lbs/0.2 kg

Recipient:
Commissioners
Blair County
423 Allegheny Street
HOLLIDAYSBURG, PA 16648 US

Shipper:
ADMIN OFFICE
Tetra Tech, Inc.
Foster Plaza Building 7
661 Andersen Drive
Pittsburgh, PA 15220 US

Reference 212IC-BF-00037.500
Purchase order number: Carson/Morris

Thank you for choosing FedEx.

PITT-01-19-035

January 30, 2019

Project Number 212C-PB-00387

Woodbury Township
6385 Clover Creek Road
Willamsburg, PA 16693

Reference: Sunoco Pipeline, L.P. (SPLP)
Pennsylvania Pipeline Project
Major Modification I

To Whom It May Concern:

This municipal notice, under the requirements of Acts 14, 67, 68, and 127, is to inform you that our client, Sunoco Pipeline, L.P. (SPLP), is applying for coverage under the Erosion and Sediment Control General Permit (ESCGP-3) for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing or Treatment Operations or Transmission Facilities and for coverage under Chapter 105 Joint Permit for Water Obstruction and Encroachment.

Project Name: Pennsylvania Pipeline Project

Applicant Name: Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Project Description: Sunoco Pipeline, L.P. (SPLP) proposes a Major Modification to the Pennsylviana Pipeline Project within Woodbury Township, Blair County. The Major Modification consists of a change in the route and installation method for the 16-inch diameter pipeline previously permitted as the Piney Creek Horizontal Directional Drill (HDD). This permit request is to convert the HDD to open cut methodolgy for the majority of the reroute, and a conventional auger bore under Piney Creek Road / High Street (State Route 866). The reroute will increase the limits-of-disturbance by 14.54 acres and contain one new stream crossing

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Pennsylvania Department of Environmental Protection (PA DEP)
400 Waterfront Drive
Pittsburgh, Pennsylvania 15222
Phone: (412) 442-4000

Tetra Tech
661 Andersen Drive, Pittsburgh, PA 15220-2700
Tel 412.921.7090 Fax 412.921.4040 www.tetratech.com

Should you have questions regarding this correspondence, please do not hesitate to contact me at 412.921.8163 or via e-mail at Robert.Simcik@tetratech.com.

Sincerely,

Robert F. Simcik, P.E.
E&S Task Manager

RFS/clm

Enclosure: Site Location Maps; Notice of Intent; GIF

cc: File 212C-PB-00387

Carson, Megan

From: TrackingUpdates@fedex.com
Sent: Thursday, January 31, 2019 3:27 PM
To: Morris, Christine
Subject: FedEx Shipment 774354565250 Delivery Exception

We were unable to complete delivery of your package

See "Resolving Delivery Issues" for recommended actions

See "Preparing for Delivery" for helpful tips

Tracking # 774354565250

Ship date:
Wed, 1/30/2019

ADMIN OFFICE
Tetra Tech, Inc.
Pittsburgh, PA 15220
US

Delivery exception

Scheduled delivery:
Fri, 2/1/2019 by 4:30 pm

Supervisors
Woodbury Township
6385 Clover Creek Road
WILLIAMSBURG, PA 16693
US

Shipment Facts

FedEx attempted, but was unable to complete delivery of the following shipment:

Tracking number:	774354565250
Status:	Delivery exception
Door Tag number:	DT105085632326
Purchase order number:	Carson/Morris
Reference:	212IC-BF-00037.500
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	1/31/2019 by 4:30 pm

Supplemental Stormwater and Floodplain Management Analysis

TETRA TECH

January 30, 2019

Mr. Craig Hamilton
Woodbury Township Supervisor
6385 Clover Creek Road
Williamsburg, PA 16693

Reference: **Sunoco Pipeline L.P. – Pennsylvania Pipeline Project**
Piney Creek HDD Reroute
Act 167 Stormwater/Floodplain Management Program Consistency Request-
UPDATED Project Workspaces

Dear Supervisor:

On behalf of Sunoco Pipeline, L.P., Tetra Tech, Inc. is writing to provide updated workspaces/floodplain maps associated with the Pennsylvania Pipeline Project's (PPP) Piney Creek HDD Reroute (Project) in Woodbury Township (Township). This letter is being sent as part of a Major Modification Request to our Chapter 105 Water Obstruction and Encroachment Permit Application and as part of Act 167 Stormwater/Floodplain Management Consistency requirements. The township previously provided a floodplain consistency letter for the PPP workspaces on December 9, 2015, and indicated the Township does not have a local Stormwater Management Plan effective in the Project area. We would like to request the Township's input again on the attached latest Project reroute in your township (updated workspaces are highlighted as additions and subtractions).

As shown, the Project reroute and changes to the workspace do not affect the Township's previous consistency determination. Although the Township does not have a stormwater management plan, the Project ROW remains located within Woodbury Township. The Project will be designed, constructed, and operated in compliance with all applicable provisions of 25 Pennsylvania Code, Chapter 102 Regulations (Erosion and Sediment Control) and Post Construction Stormwater Management Best Management Practices including the implementation of Antidegradation Best Available Combination of Technologies (ABACT methods) where applicable, to maintain the designated use of receiving waters in the area and no increase in stormwater runoff, rate or volume would occur.

Consistent with the letter we previously sent, no aboveground facilities or new access roads are proposed in FEMA designated floodways or 100-year floodplains. The Project reroute for the Project pipeline ROW would cross FEMA-designated 100-year floodplain/floodway but the entire pipeline will be buried and preconstruction contours and elevations will be restored to existing conditions following pipeline installation. Therefore, no changes or increases to the base flood elevation would occur.

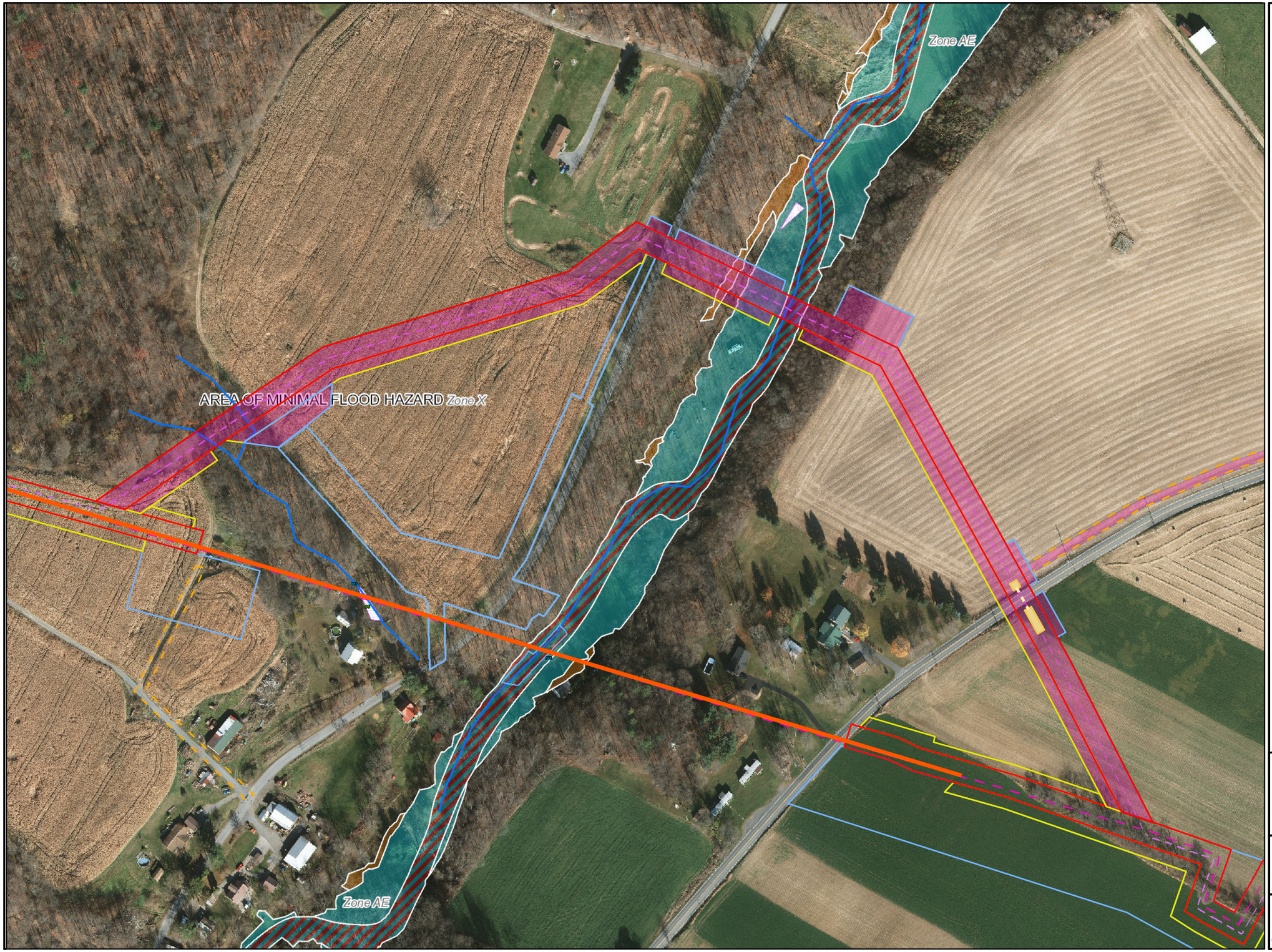
Based on the above information, we have determined that the new Project reroute and workspace changes do not affect the Township's previous consistency determination. If you have further questions/comments or disagree with this determination, please contact me, Ailene Batoon at (716) 849-9419 or via email at ailene.batoon@tetratech.com within 30 days of receipt of this letter. Thank you for your time.

Sincerely,

Ailene Batoon
Tetra Tech, Inc.

Enclosures: Updated Site Plan/Floodplain Maps

Tetra Tech
301 Ellicott St, Buffalo, New York 14203
Tel 716.849.9419 Fax 716.849.9420 www.tetratech.com



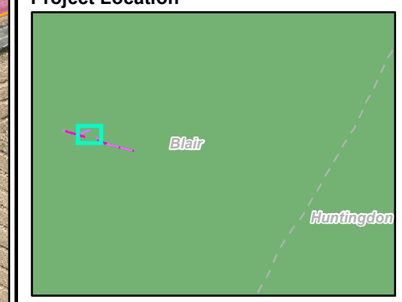
Legend

- Added Workspace
- Recently Installed PPP 20-inch Pipeline Corridor
- Proposed PPP 16-inch Pipeline Piney Creek Reroute
- HDD
- Bore
- Bore Pit
- ATWS
- Permanent ROW
- Temporary Access Road
- Temporary ROW
- Stream
- Wetlands

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Floodway
- 0.2% Annual Chance Flood Hazard
- Reduced Risk Due to Levee

Project Location



N

0 100 200 400

1 inch = 200 feet

FEMA NFHL Designated Floodplains Along the Sunoco Pennsylvania Pipeline Project, Blair County, PA.
Sheet 1 of 1

Prepared By: TETRA TECH

Date: 01/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 01/2019. Aquatics, TT 2013-2019.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\projects\112C06958-PPP\MXD\Permits\Permit\Mods\Piney\FEMA.mxd JL