TETRA TECH

PITT-08-19-011

August 2, 2019

Project Number 212IC-PB-00387

Via E-mail and overnight Fed Ex
Mr. John Hohenstein
Pennsylvania Department of Environmental Protection
Waterways and Wetlands Program
Southeast Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Re: Sunoco Pipeline LP – Pennsylvania Pipeline Project (Mariner East II)
Chapter 105 Permit No. E15-862 – Major Modification
REVISED Modification Request-Installation Method Change at PA Turnpike/0280 HDD
Upper Uwchlan Township, Chester County, PA

Dear Mr. Hohenstein:

On behalf of Sunoco Pipeline LP (SPLP), please accept the enclosed revised drawings and information related to the Chapter 105 major modification. The original modification request for a change in the route and installation method for the 16 and 20-inch diameter pipelines from a Horizontal Directional Drill (HDD) to open-trench installation was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on April 30, 2019. The enclosed materials have been revised to include the crossing of a palustrine emergent fringe wetland (Q76) associated with the previously reported/identified Stream S-Q83 (Unnamed tributary to Marsh Creek) and updates to the Pennsylvania Natural Diversity Inventory (PNDI) process. The proposed limit-of-disturbance has not been modified and the area of wetland disturbance is approximately 0.09 acre.

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 (revised)
- B – Resource Photographs (revised)
- C – Environmental Assessment (revised)
- D – Applicable 102 Drawings (applicable sheets/drawings revised)
- E – Site Plan and Aquatic Resource Impact Table (revised)
- F – Proof of PHMC Coordination (no change - not included with this submittal)
- G – PNDI Update (recent PFBC response included; no other changes)
- H – Application Fee Calculation (revised)
- I – Supplemental Joint Permit Information (no change - not included with this submittal).

Enclosed are two (2) hard copies of the modification request to facilitate your review. The enclosed fee of $800 (new fee of $3,300 minus the previously provided fee of $2,500) is for the processing of a Chapter 105 major modification and the additional resource impacts (Attachment H). Please note that the Chester County Conservation District and U.S. Army Corps of Engineers-Philadelphia District will also be provided 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

Mr. John Hohenstein
Department of Environmental Protection
August 2, 2019

SPLP appreciates your continued 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
C. Smith, PADEP Southeast Region
J. Sofranko, Chester County Conservation District
D. Caplan, U.S. Army Corps of Engineers, Philadelphia District
M. Gordon, Sunoco Pipeline LP
C. Embry, Sunoco Pipeline LP
M. Styles, Sunoco Pipeline LP
L. Gremminger, Energy Transfer
B. Schaeffer, Tetra Tech

ATTACHMENT A

Project Description and Alternative Analysis

Project Description

Sunoco Pipeline LP (SPLP) requests a major permit modification for a change in the route and installation method for both the 16 and 20-inch diameter pipelines. This modification request is from a Horizontal Directional Drill (HDD) to an open-trench installation across stream Q-83 and wetland Q76, and conventional bore under Styer Road. Difficulties were encountered while drilling the permitted 16-inch pipeline on the original alignment. In 2018, SPLP performed additional geologic investigations and as a result of these analysis, believes that abandoning the HDD is the preferred alternative at this location.

SPLP proposes to reroute both pipelines around two wetlands and cross one perennial stream S-Q83 (Unnamed Tributary (UNT) to Marsh Creek) and an emergent wetland Q76. In addition, the requested reroute will cross the floodways of streams S-Q83, S-16r, and S-Q84. Stream S-Q83 will be crossed utilizing one or more of the following open-trench excavation methods for installation of the pipelines across waterbodies (refer to the E&S Plan standard typical drawings for details):

- **Dry Open Cut** - Minor waterbodies with no flow at the time of construction may be crossed using the open-cut crossing method.
- **Dry Flume** – A flumed crossing directs and contains the stream flow through an alternate mechanism across the stream channel to allow for the trenching and pipe installation to occur in dry conditions. Where practical, this allows for drier trenching, pipe installation, and restoration while maintaining continuous downstream flow.
- **Dry Pump Bypass** - The dam and pump bypass method may be used for crossings of waterbodies where pumps can adequately transfer stream flow volumes around the workspace. Similar to the flume crossing, this method allows for drier trenching, pipe installation, and restoration while maintaining continuous downstream flow.
- **Dry Cofferdam** – The cofferdam method, typically used on large streams/rivers, involves the installation of a cofferdam to isolate and divert flow around the workspace in two phases. The first phase consists of the cofferdam installation on one of the banks and approximately halfway into the river to allow safe and dry installation of the pipeline across the river. The second phase involves the same process but from the opposite bank. This method allows continuous flow around the workspace and eliminates concerns about sensitive species passage.

The selected open-trench, dry stream crossing method will 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 flow is contained and directed/conveyed across the work area, the trench will be excavated, and both the 16-inch and the 20-inch pipes will be installed via the open trench method through the stream and wetland 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 both the perennial stream (S-Q83) and emergent wetland (Q76).

Timber mats will be placed along the travel lane through the wetland and a temporary bridge will be placed across the the stream to avoid soil compaction, allow for trench excavation, and stream substrate and wetland topsoil segregation as well as stockpiling in adjacent upland areas. Once the pipes and appropriate trench plugs are installed, the trench will be backfilled, restored to pre-existing elevations and hydrology, and will be stabilized with native vegetation. 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 requested modification will reduce the number of wetland crossings and impacts, and will eliminate the risk of potential discharges associated with HDD inadvertent returns (IRs). In addition, the localized impacts are considered minor and temporary for this modification and will not result in any loss of water quality/quantity. The work completed to date for the 16-inch HDD will be abandoned: specifically, the drill stem will be removed/pulled and all work areas restored in accordance with permit conditions/requirements.

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

Alternatives Analysis

The crossing of aquatic 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). To avoid direct impacts to these resources, SPLP originally planned to HDD under a few wetlands and streams. However, during the HDD of the 16-inch pipe there were a number of loss of circulation (LOC) occurrences that significantly slowed the HDD progress. SPLP stopped work on this HDD and evaluated a number of different crossing alternatives, including a reroute further to the northeast and a change in construction method from HDD to open-trench.

The existing HDD profile/plan for both the 16 and 20-inch pipelines is in proximity to the Marsh Creek State Park/Marsh Creek Lake Natural Heritage Area. Accordingly, SPLP wants to protect these sensitive areas from potential IRs associated with the continuation of HDD activities in the area based on the existing geology and difficulties experienced during the initial attempts to install the 16-inch pipe. An open-trench installation of the pipe along the existing/permitted route would require impacting two wetlands and 3 streams and would be located within the proposed build-out areas of Pennsylvania Turnpike 76.

SPLP evaluated other routes that would minimize environmental impacts and avoid potential future growth requirements of the PA Turnpike 76. A reroute to the west would align the pipelines directly through the Marsh Creek State Park and Marsh Creek Lake Natural Heritage Area. A reroute to the east would minimize impacts to these areas and reduce the number of aquatic resource crossings to one stream and one wetland, and the floodways of 3 streams. In addition, a reroute in this area could utilize the existing road right-of-way of Meadow Creek Lane and avoid having to create a new “greenfield” corridor for the majority of the route.

In conclusion, the subsurface geology at this particular location is not considered suitable for an HDD crossing based on the difficulties experienced during the 16-inch HDD. In addition, an open-trench installation through this area is not desirable due to resource impacts and potential future development plans. An alternative route to the west of the proposed crossing would result in more environmental (forested areas, wetlands, parks, NHA) impacts. Consequently, it is the professional opinion of the HDD Reevaluation Team, consisting of the Geotechnical Evaluation Leader, Professional Geologists, Professional Engineers, and other construction specialists that a reroute to the east using the open-trench, dry construction method for the stream and wetland crossing will have the least impact, as the work area and wetland/stream construction will be managed in accordance with all permit conditions and can be completed in the most efficient and timely manner, including restoration/stabilization of the aquatic resources.

ATTACHMENT B

Resource Photographs

Photo Log - PA Turnpike 76 / 280 Reroute

Notes: S-Q83 -- 1/31/2019

View of S-Q83. Facing northeast, upstream. Stream will be crossed by the proposed reroute via open cut/trench with dam-and-pump in place (dry crossing).

Notes: S-Q83 -- 1/31/2019

View of S-Q83. Facing southwest, downstream. Stream will be crossed by the proposed reroute via open cut/trench with dam-and-pump in place (dry crossing).

Notes: S-Q83 -- 2/26/2019

View looking northwest of stream S-Q83 – proposed crossing location and width of LOD.

Notes: S-Q83 -- 2/26/2019

View looking east of stream S-Q83 – upstream toward location of proposed crossing

Notes: Wetland Q76 -- 07/27/2019

View looking south across wetland sample plot for PEM wetland

Notes: Upland Point for wetland Q76 --07/27/2019

View looking northwest across upland sample plot for wetland Q76

ATTACHMENT C

Environmental Assessment

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

August 2019

Note: The EA provided herein provides information relevant to the major permit modification required at the Pennsylvania Turnpike/0280 HDD Reroute in Upper Uwchlan Township, Chester County, Pennsylvania, and includes specific excerpts and information previously submitted by Sunoco Pipeline, LP as part of the approved Pennsylvania Pipeline Project (PPP) Chapter 105 Joint Permit (E15-862).

Module S1: Project Summary

S1.A Overall Project Description

Sunoco Pipeline LP (SPLP) requests a major permit modification for a change in the route and installation method for both the 16 and 20-inch diameter pipelines. This modification request is from a Horizontal Directional Drill (HDD) to an open-trench installation across stream Q-83 and wetland Q76, and conventional bore under Styer Road. Difficulties were encountered while drilling the permitted 16-inch pipeline on the original alignment. In 2018, SPLP performed additional geologic investigations and as a result of these analysis, believes that abandoning the HDD is the preferred alternative at this location. Based on the number of difficulties that SPLP experienced and the potential for inadvertent returns (IRs) in proximity to the Marsh Creek State Park/Marsh Creek Lake Natural Heritage Area, SPLP evaluated a number of different options, including a reroute further to the northeast and a change in construction method from HDD to open-trench.

SPLP proposes to reroute both pipelines around two wetlands and cross one perennial stream S-Q83 (Unnamed Tributary (UNT) to Marsh Creek) and a palustrine emergent (PEM) wetland Q76. In addition, the requested reroute will cross the floodways of streams S-Q83, S-16r, and S-Q84. Stream S-Q83 will be crossed utilizing one or more of the following open-trench excavation methods for installation of the pipeline across waterbodies (refer to the E&S Plan standard typical drawings for details):

- **Dry Open Cut** – Minor waterbodies with no flow at the time of construction may be crossed using the open-cut crossing method.
- **Dry Flume** – A flumed crossing directs and contains the stream flow through an alternate mechanism across the stream channel to allow for the trenching and pipe installation to occur in dry conditions. Where practical, this allows for drier trenching, pipe installation, and restoration while maintaining continuous downstream flow.
- **Dry Pump Bypass** – The dam and pump bypass method may be used for crossings of waterbodies where pumps can adequately transfer stream flow volumes around the workspace. Similar to the flume crossing, this method allows for drier trenching, pipe installation, and restoration while maintaining continuous downstream flow.
- **Dry Cofferdam** – The cofferdam method, typically used on large streams/rivers, involves the installation of a cofferdam to isolate and divert flow around the workspace in two phases. The first phase consists of the cofferdam installation on one of the banks and approximately halfway into the river to allow safe and dry installation of the pipeline across the river. The second phase involves the same process but from the opposite bank. This method allows continuous flow around the workspace and eliminates concerns about sensitive species passage.

The selected open-trench, dry stream crossing method will 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 flow is contained and directed/conveyed across the work area, the trench will be excavated, and both the 16-inch and the 20-inch pipes will be installed via the open trench method through the stream and wetland 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 both the perennial stream (S-Q83) and PEM wetland (Q76).

Timber mats will be placed along the travel lane through the wetland and a temporary bridge will be placed along the travel lane where the stream is crossed to avoid soil compaction, allow for trench excavation, and stream substrate and wetland topsoil segregation and stockpiling in adjacent upland areas. Once the pipe and appropriate trench plugs are installed, the trench will be backfilled, restored to pre-existing elevations and hydrology, and will be stabilized with native vegetation. 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 requested modification will reduce the number of wetland crossings and impacts and will eliminate the risk of potential discharges associated with HDD IRs. In addition, the localized impacts are considered minor and temporary for this modification and will not result in any loss of water quality/quantity. The work completed to date for the 16-inch HDD will be abandoned: specifically, the drill stem will be removed/pulled and all work areas restored in accordance with permit conditions/requirements.

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 (E15-862; APS 879047). 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 (E15-862), 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 access to this 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 (E15-862), 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-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-east in Pennsylvania makes the Project water-dependent.

Summary of Resources & Impacts

The impacts associated with the open-trench and timber mat travel lanes across Wetland Q76 will total approximately 0.08 acre of permanent and 0.002 acre of temporary wetland impacts. In addition, installation of the pipes and temporary bridge across Stream S-Q83 (including floodway) and the floodways of Streams S-Q84 and S16r will result in approximately 0.007 acre of permanent and no temporary stream impacts as the 50-foot-wide right-of-way will be maintained for operation of the pipelines, and approximately 0.158 acre of permanent and 0.069 acre of temporary floodway impacts. Note: Streams S-Q84 and S16r will not be crossed by the pipeline (i.e., not excavated) but their floodways are located in the requested limits-of-disturbance (LOD) and have been included in the floodway impacts. Although PADEP defines operation and maintenance activities as permanent impacts, the impacts are considered minor/localized and temporary as most of the disturbed areas of the streams will be restored to their preconstruction condition (i.e., elevation, flow, stream substrate, stream banks, hydrologic conditions). In addition, the wetland soils will be segregated during construction (double ditching) to maintain the native seed bank/composition and the PEM wetland will be reseeded with native wetland species following construction. Furthermore, the resource crossings will not involve any permanent fill, the streams will not be relocated, and there will be no permanent loss of stream or wetland habitat or permanent loss of functions and values associated with this modification request. Please refer to *Attachment E* of this permit modification request packet for the updated Aquatic Resource Impact Table.

Stream S-Q84 is designated under the Pennsylvania Code, Title 25, Chapter 93, § 93.9h as High Quality (HQ) – Trout Stocked Fishes (TSF) and migratory fishes (MF) stream. There is currently no seasonal timing restriction on this stream; however, SPLP will work with the appropriate agencies to avoid and minimize potential impacts to trout/spawning/migrating fish and will comply with any new restrictions or timing limitations.

In addition, an updated Pennsylvania Natural Diversity Index (PNDI) review (PNDI-677023) was submitted for the requested reroute area. Please refer to *Section 2.C in Module S2* of this EA.

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 Chester 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 PA Turnpike/0280 HDD reroute, and the stream has been labeled on the map to show the location of the resource crossings.

Similarly, an *Aquatic Resources Report* for Chester County was prepared in July 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. In January 2019, an additional wetland and stream delineation survey was conducted for this permit modification request. Another field survey was conducted in July 2019 to reassess the limits of wetland Q76 during the growing season and resulted in an extension of the wetland area across the proposed LOD. A supplemental Aquatic Resources Report (prepared in February 2019) including information on Stream S-Q83 and another supplemental Aquatic Resources Report (prepared in July 2019) are included as Appendix S2.A-2.

The Project site is approximately 167 feet from the boundary of Marsh Creek State Park, situated on the northwest side of the PA Turnpike. The main publicly accessible portion of Marsh Creek State Park and Marsh Creek Lake are located on the opposite or south side of the PA Turnpike from the requested reroute. The Project reroute crosses approximately 2.41 acres of the Marsh Creek Lake Natural Heritage Area (NHA), which is part of Marsh Creek State Park, but also includes surrounding housing developments and agricultural fields. There are numerous streams and wetlands within the area that provide habitat for a variety of plant and animal species. Stream S-Q83 and wetland Q76 are located within this NHA.

One public water supply (PWS) groundwater well was identified within 0.5 mile of the Turnpike/0280 reroute at the former Upattinas School. Because of the distant location of the well relative to the requested reroute, the proposed open -trench construction method through this area is not expected to impact this well. The Upattinas School was closed to the public in 2014 and is now owned by Warwick Land Development, Inc.

S2.B Aquatic Resources

SPLP identified all aquatic resources present within the overall Project area in Attachment 11 Enclosure A of SPLP's Chapter 105 Joint Permit Application by County and in Appendix S2.A-2 of this EA. For this permit modification request, the resources that would be affected include Stream S-Q83 (including floodway), as well as the floodways of Streams S-Q84 and S16r. No wetlands identified in the January 2019 survey will be impacted by the requested modification.

Wetland Q76 is associated with the floodplain of stream S-Q83. At the time of the survey (July 2019), the depth to the water table was 6 inches and the soils were saturated at a depth of 3 inches. Hydric soils were present to a depth of 16 inches and dominant vegetation consisted of Japanese stiltgrass (*Microstegium vimineum*), false nettle (*Boehmeria cylindrica*), and American tearthumb (*Persicaria sagittata*).

Stream S-Q83 is identified as a perennial tributary to Marsh Creek. The stream channel is approximately 5 feet in width with a bank height of 1.5 feet. At the time of the field investigation (January 2019), the stream exhibited an average water depth of 6 inches. The stream bed consisted of a mix of boulder, cobble, and gravel substrates.

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 Stream S-Q83 is High Quality (HQ) – Trout Stocked Fishes (TSF) and migratory fishes (MF) stream. Activities within the stream are considered 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 new request was submitted to the PNDI on February 20, 2019 (PNDI-677023). Based on the results of this search, the PFBC identified a Threatened Species and has requested further review of the proposed reroute, and the USFWS also requested further review of the proposed reroute. Accordingly, SPLP provided the requested information regarding the proposed Turnpike/0280 Reroute to both the PFBC and USFWS. The PFBC provided a response on March 26, 2019 that requested a habitat assessment for the Eastern redbelly turtle (*Pseudemys rubriventris*) be conducted and the results submitted to the agency. In a telephone conversation on March 29, 2019 between Mr. Robert Anderson of the USFWS and Mr. Pat Green of Tetra Tech, the USFWS confirmed that the species of concern identified in the PNDI receipt was the bog turtle (*Glyptemys muhlenbergii*) and requested that a licensed bog turtle surveyor assess the stream and surrounding habitat to identify if the area is suitable transient habitat for adjacent, known populations of bog turtles. Accordingly, surveys were conducted by qualified experts during the appropriate season for both the Eastern redbelly turtle and bog turtle (May 6th): the results/recommendations from these surveys are presented below.

- No potential permanent habitat for the eastern redbelly turtle was identified during the survey, but it is possible that pond P1r provides transient or temporary habitat for individuals. Due to this potential, SPLP has committed to using super-silt fence as a wildlife barrier to the workspace near pond P1r.

- No potential habitat for the bog turtle was identified during the survey, and it is unlikely that stream S-Q83 provides transient habitat for bog turtles.

The survey reports and results were submitted to the PFBC and USFWS on July 18, 2019 and copies of all information and agency coordination was provided to the PADEP and USACE as well. The PFBC has reviewed the report and agrees that the reroute will not adversely impact the Eastern redbelly turtle and the proposed silt fence should be implemented during construction (refer to Attachment G for a copy of this response). The USFWS has not yet provided any formal response to the survey results.

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- and 20-inch diameter pipelines from HDD to conventional open-trench crossing methodology. Due to the proposed reroute and aquatic resources that would be directly or in directly impacted, a brief description of the stream and wetland are provided below for this permit modification request. As discussed above, the aquatic resources present within the surveyed LOD of the proposed reroute

that would be directly or indirectly impacted include Stream S-Q83, its floodway, and the floodways of S-Q84 and S16r, and wetland Q76.

The wetlands and streams identified for the PA Turnpike/0280 Reroute are located within the physiographic province of the Piedmont Upland section. The surrounding land uses include state park land and an NHA, which includes natural resource and recreational areas; single family residences; roads (including the PA Turnpike), existing pipeline ROW; and forested areas. There are existing trees or shrubs in the riparian buffers (refer to *Attachment B* of this permit modification for current photographs of the resource crossings).

Stream S-Q83, an UNT to Marsh Creek, is identified as a perennial stream providing potential habitat for seasonal spawning of game and non-game fish species. The stream also has 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 this is a perennial stream, it supports a continuous flow of water with moderate rates of flushing and residence times.

Because the stream is classified as HQ - TSF, seasonal migration of trout during spawning would likely occur in Stream S-Q83 based on its perennial flow characteristics. Similarly, the potential for anadromous fish migration is also likely to occur in Stream S-Q83. SPLP is not aware of any timing window restrictions associated with this stream; however, SPLP will work with the appropriate agencies to avoid/minimize potential impacts to the stream's trout resources and comply with any agency restrictions or limitations.

Both Wetland Q76 and Stream S-Q83 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 stream ecosystems. In addition, the stream may 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 a stream. The stream likely supports 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 stream is also likely utilized by a variety of wildlife species as a source of drinking water.

The water quality of the stream is considered good, as evidenced by its classification as HQ-TSF and MF classifications. However, based on the size and location of the stream it is unlikely that it is utilized for recreational or sport fishing opportunities.

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 PA Turnpike/0280 Reroute
Open-Trench Crossing Method

Resource Category	Corps 404		PADEP/105	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Wetlands (Q76)	0.086	0	0.002	0.084
Streams (S-Q83)	0.011	N/A	0.000	0.007
Floodways (S-Q84 and S16r)	N/A	N/A	0.158	0.069*

* Floodway disturbance includes the stream impacts within the calculations, i.e. the floodway disturbance is the total proposed disturbance according to Chapter 105 regulations.

S3B. Standard Information Responses

The requested permit modification for the Turnpike/0280 Reroute will not impact any resources identified in Module S2, Part A with the exception of Marsh Creek Lake NHA and Prime Farmland soils.

The requested modification workspace area is located approximately 167 feet from the boundary of Marsh Creek State Park, situated on the northwest side of the PA Turnpike. The larger, publicly accessible portion of Marsh Creek State Park and Marsh Creek Lake are located on the opposite or south side of the PA Turnpike from the requested reroute. Marsh Creek State Park is not directly crossed and any impacts associated with the permit modification request in the vicinity of the park are considered a minor, temporary disturbance to the surrounding landscape, wildlife, and recreational activities in the general area. No permanent impacts to Marsh Creek State Park are anticipated.

Marsh Creek Lake NHA

The Project reroute will cross approximately 2.41 acres of the Marsh Creek Lake NHA, which covers a total of 500 acres. While most of this NHA is a part of the Marsh Creek State Park, its boundary also encompasses surrounding housing developments and agricultural fields. The NHA is reported to support two butterfly species of concern, mulbery wing (*Poanes Massasoit*) and black dash (*Euphyes conspicuous*), a plant species of concern, Nuttall's tick trefoil (*Desmodium nuttalii*), and a sensitive species of concern (not specified). While this area would have previously been crossed via the HDD method, the portion of the NHA crossed represents approximately 0.4% or a nominal amount of the entire NHA area and the proposed reroute is not anticipated to result in direct or long-term impacts to the purpose/functions of this area and its habitats as there would be no change in existing land use. Stream S-Q83 is located within this NHA; please refer to Section S3.D for discussion of direct and indirect impacts to Stream S-Q83.

Prime Farmland

The proposed reroute would cross a small amount of designated prime farmland soils. Specifically, this modification would impact 1.129 acres of mapped prime farmland soils. However, while the reroute crosses prime farmland soils, the area is residential, with no agricultural activities currently occurring. Nevertheless, 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 by utilizing the required BMPs to avoid and minimize sedimentation and erosion or runoff, and soil compaction where needed. Specifically, SPLP will employ, as needed general, stabilization and structural controls to divert stormwater flows, convey runoff, prevent sediments from moving off-site, and reduce the erosive forces of runoff waters. Compost filter socks and other structural controls will be utilized during construction activities. The proposed modification would not have long-term impacts on Prime Farmland soils.

Public Water Supply – Former Upattinas School

As noted above, no potential impacts are anticipated to the former Upattinas School well as a result of this permit modification request.

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-trench S-Q83 (an UNT to Marsh Creek) and associated floodways, and wetland Q76 was provided in the original PPP Chapter 105 Joint Permit Application (E15-862; APS 879047) 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 PPP Chapter 105 Joint Permit Application (E15-862; APS 879047). Excerpts from the submittal relevant to this permit modification request are discussed below.

The proposed open cut/trench crossing of wetland Q76 will result in approximately 0.084 acre of permanent and 0.002 acre of temporary wetland impacts. As defined by PADEP, permanent impacts include direct and indirect effects resulting from the placement or construction of the pipeline and impacts to those areas necessary for the long-term 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: wetland will be restored to its original condition (i.e., wetland soils, hydrophytic vegetation, elevation, flow, stream substrate, hydrologic conditions, etc.). SPLP will not maintain the ROW through the wetland area (i.e., no mowing); therefore, the pre-and post-construction conditions of the wetland will remain the same. In addition, the Project would not involve any permanent fill or conversion of wetland cover type/vegetation, and there would be no permanent loss of wetlands or streams associated with the permit modification.

As previously noted, Wetland Q76 is classified as an emergent wetland and is located in the floodplains stream S-Q83. The open cut/trench construction method through this wetland would be a temporary disturbance to the wetland's vegetation, hydrology, soils, and functions and values. In order to reduce impacts, SPLP has reduced the construction workspace width to 50-feet. SPLP will separate topsoil during construction and replace the wetland soil to its original horizon and elevation to maintain the natural seed bed and facilitate revegetation of the disturbed wetland area. Based on implementation of these avoidance, minimization, and mitigation measures, effects of the requested open cut/trench crossing are likely to be minimal. As previously noted, SPLP will restore the disturbed wetland area to its pre-existing condition such that surface water hydrology is restored and the re-establishment of hydrophytic vegetation is facilitated. SPLP will also implement E&S BMPs to ensure the functions and values of Wetland Q76 incur nominal impacts. Similarly, temporary and minor impacts would occur to the food chain, nesting/resting, and feeding activities within the wetland. Additional detail regarding wetland construction methods were provided in the Project' Chapter 105 Joint Permit Application in Attachment 11 Enclosure E Part 2.

The open-trench crossing of Stream S-Q83 and the LOD located within the floodways of Streams S-Q84 and S16r will result in approximately 0.007 acre of permanent and no temporary stream impacts, and 0.158 acre of permanent and 0.069 acre of temporary floodway impacts. PADEP defines permanent impacts as direct and indirect impacts resulting from the placement or construction of the pipeline and to those areas necessary for the long-term operation and maintenance of the pipeline. Temporary impacts include areas affected during construction of the Project that will be restored when construction is completed. All physical/ecological impacts are considered minor and temporary as the stream will be restored to its original condition (i.e., elevation, flow, stream substrate, hydrologic conditions, etc.). SPLP will not maintain the ROW through the stream (i.e., no mowing); therefore, the pre-and post-construction conditions of the stream will remain the same. In addition, the Project would not involve any permanent fill and there would be no permanent loss of stream associated with the Project.

Impacts to Stream S-Q83 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 Stream S-Q83 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 within the construction right-of-way. 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 to Stream S-Q83 if substantial changes to stream 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. SPLP is not aware of any timing window restriction associated with this stream crossing; however, SPLP will work with the appropriate agencies to avoid/minimize potential impacts to the stream's trout resources and comply with any

agency restrictions or limitations, if required. No impacts to fish migration are anticipated during Project operations.

Project construction will result in the clearing of areas located 100-150 feet landward of the HQ stream (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 stream. SPLP has sited the right-of-way such that the stream crossing is generally perpendicular and thereby of minimal impact. In addition, the Project will not alter the volume of water or flow rates that the stream typically/naturally experiences. Furthermore, the stream channel will be restored to pre-construction contours, thereby restoring pre-existing flushing characteristics and patterns within the stream 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. Trench plugs will be installed in the trench at the entry and exit of the wetland/stream crossing to prevent draining of the resources 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.

There are no proposed aboveground facilities associated with this permit modification request. Therefore, construction is not expected to negatively impact the ability of the stream and wetland to either store or control storm and flood waters.

SPLP has designed the Project to avoid and minimize impacts to aquatic 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 (E15-862) 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). The stream crossed by the proposed Turnpike/0280 reroute is classified as HQ-TSF and MF. Therefore, the antidegradation requirements applicable to this permit modification include protection of the existing water uses (93.4a(b)) and water quality (93.4a(c)) of HQ streams. Wetland Q76 is not classified as and EV wetland; therefore, the protection of existing water use and quality of EV wetlands (93.4a(d)) is not applicable to this reroute.

Resource	HQ/ EV	Cover Type Conversion	Antidegradation Requirement		ABACT Measure	Justification	E & S Sheet No.
			Non-Discharge	ABACT			
Stream S-Q83	HQ	Yes		X	Compost filter socks, immediate stabilization, PPC plan & 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 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-6.25

Note: the red text indicates the changes associated with the requested reroute and associated permit modification.

- **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 the extent possible; 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 Stream S-Q83, including floodway, and the floodways of Streams S-Q84 and S16r 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 stream crossed by this requested permit modification. Specifically, SPLP has reduced the construction right-of-way (ROW) to the extent possible; 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 (typically less than 2 days); planned a dry construction method for the pipes' crossing; designed the crossings such that the pipelines will be 5 feet under the stream, 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 crossing. 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 the stream, 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 stream 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. As noted above, no species of concern or suitable habitat have been identified within the LOD of the proposed reroute. a new PNDI search review did not identify any T&E species or Special Species of Concern associated with the Goldfinch Lane/William Penn Avenue Reroute. Please refer to Module 2, S2.C of this Environmental Assessment and *Attachment G* of this permit modification request packet for additional information.

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 water quality such that the existing water use or aquatic life of HQ resources will be affected.

Please refer to the complete *Antidegradation Analysis* in Attachment 11, Enclosure E (Part 5) of the PPP Chapter 105 Joint Permit Application (E15-862) for additional details/information.

S3.F Alternatives Analysis

An Alternatives Analysis was prepared and submitted as part of the PPP Chapter 105 Joint Permit Application (E15-862) in Attachment 11, Enclosure E (Part 3). In addition, an Alternatives Analysis specific to this permit modification request has been conducted.

The crossing of aquatic 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 a few wetlands and streams. However, during the HDD of the 16-inch pipe there were a number of loss of circulation (LOC) occurrences that significantly slowed the HDD progress. SPLP stopped work on the 16-inch HDD and evaluated a number of different options.

The existing HDD profile/plan for both the 16 and 20-inch pipelines is in proximity to the Marsh Creek State Park/Marsh Creek Lake Natural Heritage Area. Accordingly, SPLP wants to protect these sensitive areas from potential IRs associated with the continuation of HDD activities in the area based on the difficulties experienced during the initial attempts to install the 16-inch pipe. An open-trench installation along the existing/permitted route would require impacting two wetlands and 3 streams and is located within the potential build-out areas of Pennsylvania Turnpike 76.

SPLP evaluated other routes that would minimize environmental impacts and avoid potential future growth requirements of the PA Turnpike 76. A reroute to the west would align the pipelines directly through the Marsh Creek State Park and Marsh Creek Lake Natural Heritage Area. A reroute to the east would minimize impacts to these areas and reduce the number of aquatic resource crossings to one stream, its floodway, and the floodways of 2 other streams. In addition, a reroute in this area could utilize the existing road right-of-way of Meadow Creek Lane and avoid having to create a new "greenfield" corridor for the majority of the route.

In conclusion, the subsurface geology at this particular location is not considered suitable for an HDD crossing based on the difficulties experienced during the 16-inch HDD. In addition, an open-trench installation through this area is not desirable due to resource impacts and potential future development plans. An alternative route to the west of the proposed crossing would result in

more environmental (forested areas, wetlands, parks, NHA) impacts. Consequently, it is the professional opinion of the HDD Reevaluation Team, consisting of the Geotechnical Evaluation Leader, Professional Geologists, Professional Engineers, and other construction specialists that a reroute to the east using the open-trench, dry construction method for the one stream crossing will have the least impact, as the work area and stream flow will be managed in accordance with all permit conditions and can be completed in the most efficient and timely manner, including restoration/stabilization of the stream.

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 (E15-862; APS 879047) in Attachment 11, Enclosure E (Part 2). Potential secondary impacts to wetlands/streams and their aquatic habitat, water quantity, and water quality resulting from the Project were discussed in Section 4.1 of that report. Excerpts applicable to the proposed permit modification and additional pertinent information are discussed below.

Potential secondary impacts to wetland/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 reducing the area of disturbance and clearing, minimizing the duration of construction activities in the wetland/stream area, implementing the E&S BMPs (Attachment D) and appropriate ABACT measures, and restoring the disturbed areas with vegetation to avoid impacts off the ROW.

Other potential secondary impacts such as the introduction of invasive or exotic vegetation will be avoided by topsoil segregation of trench material, which maintains the native seed source, and the prompt establishment of native or temporary cover immediately following construction. In addition, restoration of stream bank and wetland areas by planting native shrub vegetation will avoid secondary impacts to adjacent habitat caused by changes in vegetative community or establishment of invasive or exotic vegetation.

Potential secondary impacts on adjacent wetland and stream 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, and through implementation of temporary and permanent erosion and sediment (E&S) controls (refer to Attachment D of this permit modification packet). Restoration of the resource areas with native plant species will avoid potential secondary impacts to adjacent habitat from changes in vegetation communities as well as 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. 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 (E15-862) in Attachment 11, Enclosure E (Part 6). The CIA addresses the cumulative impact for the entire Project and other potential or existing SPLP projects, and other oil and gas projects within the Cumulative Impact Assessment Area (CIAA) of the Project.

The cumulative impacts to the stream and wetland identified in the surveyed portion of the reroute and associated with the open-trench crossing methodology 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 impacts associated with the requested modification for the open-trench method, and other potential or existing SPLP projects, and other projects evaluated within the CIAA will result in a cumulative wetland/waterbody disturbance of approximately 64,996 linear feet. These disturbances will result in no loss of waters or long-term water-quality and quantity. As documented in the CIA, with the implementation of each potential or existing project in compliance with best management practices and permit conditions, all the disturbances to the wetland and stream 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 aquatic 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). To avoid direct impacts to these resources, SPLP originally planned to HDD under the wetland/stream complex. However, as described in Project Description (Attachment A of this permit modification request packet) SPLP has evaluated a number of different crossing alternatives, including a reroute further to the northeast and a change in construction method from HDD to open-trench.

The existing HDD profile/plan for both the 16 and 20-inch pipelines is in proximity to the Marsh Creek State Park/Marsh Creek Lake Natural Heritage Area. Accordingly, SPLP wants to protect these sensitive areas from potential IRs associated with the continuation of HDD activities in the area based on the difficulties experienced during the initial attempts to install the 16-inch pipe. An open-trench installation method along the existing/permitted route would require impacting two wetlands and 3 streams and is located within the potential build-out areas of Pennsylvania Turnpike 76.

SPLP evaluated other routes that would minimize environmental impacts and avoid potential future growth requirements of the PA Turnpike 76. A reroute to the west would align the pipelines directly through the Marsh Creek State Park and Marsh Creek Lake Natural Heritage Area. A reroute to the east would minimize impacts to these areas and reduce the number of aquatic resource crossings to one stream and one wetland, and the floodways of 3 other streams. In addition, a reroute in this area could utilize the existing road right-of-way of Meadow Creek Lane and avoid having to create a new “greenfield” corridor for the majority of the route.

The subsurface geology at this particular location is not considered suitable for an HDD crossing based on the difficulties experienced during the 16-inch HDD. An alternative route to the west of the proposed crossing would result in more environmental (forested areas, wetlands, parks, NHA) impacts. Consequently, it is the professional opinion of the HDD Reevaluation Team, consisting of the Geotechnical Evaluation Leader, Professional Geologists, Professional Engineers, and other construction specialists that a reroute to the east using the open-trench, dry construction method for the one stream crossing will have the least impact, as the work area and stream flow will be managed in accordance with all permit conditions and can be completed in the most efficient and timely manner, including restoration/stabilization of the stream.

To minimize impacts to the stream’s water quality during the open-trench crossing, the stream will be crossed while dry and the workspace will be reduced to the extent possible. In addition, the proposed open-trench crossing of stream resources does not propose any permanent fill or loss of stream, and the impacts to the wetland and stream resources are considered minor and temporary. The wetland, stream and adjacent buffers will be restored in accordance with the revised/updated E&S Plan (refer to *Attachment D* of this permit modification request packet) that dictates the restoration of the existing topography, stream bed substrate, hydrology, and vegetation.

As demonstrated within SPLP’s Chapter 105 Joint Permit Application, 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 (E15-862) and *Attachment E* of this permit modification request.

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

SPLP will construct the requested permit modification in accordance with the Chapter 102 Permit requirements and will implement erosion and sediment control BMPs and ABACT measures (HQ stream), 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-trench dry crossing of Stream S-Q83, Wetland Q76, and the floodways of Streams S-Q83, S-Q84 and S16r.

In addition, SPLP will implement all protective and/or preventative requirements required by the agencies with regard to trout resources.

S4.C Compensatory Mitigation

This permit modification request for a Project reroute and construction methodology change to a conventional open-trench dry crossing of one stream and one wetland would result in minor, short-term, and temporary impacts. No permanent fill of wetlands/streams and/or relocation of these resources would occur. The stream, wetland, and floodways would be restored to their original conditions and there will be no loss of resource function; therefore, no compensatory mitigation is 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

Wetland Q76, Stream S-Q83, including its floodway, and the floodways of S-Q84 and S16r 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 wetland and stream 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 (E15-862) as well as all applicable permits and clearances.

Attachment S2.A-1

Location Map

Previously Provided – No Change

Attachment S2.A-2

Supplemental Aquatic Resources Reports

Aquatic Resources Report
0280 Reroute
Chester County, Pennsylvania

August 2019

Prepared for:

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1.0 Introduction

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Pipeline L.P. to perform a wetland assessment of an approximately 8-acre area surrounding a section of Right-of Way (ROW) located between Greenridge Road and Styer Road in Upper Uwchlan Township, Chester County, Pennsylvania.

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 – Wetland 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 (Downingtown, PA 2001).
- Soil survey maps, descriptions, and lists, to determine presence and extent of hydric and upland soils (USDA NRCS 2007), Web Soil Survey database for Chester County, PA.
- NWI geospatial data available from the USFWS for the survey area (USFWS, Wetlands Mapper, data downloaded January 2019); 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

Wetland Q76 was extended by Tetra Tech based on a site visit conducted in January 2019 (Tetra Tech 2019). Following review of the report summarizing that effort, the US Army Corps of Engineers (USACE) requested an additional site visit in July 2019 to evaluate the potential for further expanded wetland area north of the delineated wetland. Specifically, USACE noted the potential of additional palustrine emergent (PEM) and possible palustrine scrub-shrub (PSS) areas adjacent to stream S-Q83 and requested the collection of soils data in that area.

Following the review of background information, two wetland scientists and a technician performed a field survey on July 27, 2019. The surveys 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 residential lawn, mowed field, scrub-shrub, woodlots, and several sparsely-concentrated residential homes. 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 five (5) 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 0280 Reroute

Soil Symbol	Soil Name and Brief Description[1]	Hydric Soil Classification
GdB	Gladstone gravelly loam, 3 to 8 percent slopes	Not Hydric
GeD	Gladstone-Parker gravelly loams, 15 to 25 percent slopes	Not Hydric
GfD	Gladstone gravelly loam, 8 to 25 percent slopes, very boulder	Partially
Ha	Hatboro silt loam	Hydric
UugD	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes	Partially

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

Mapped Wetlands
One (1) USFWS mapped NWI feature was identified in the survey area. The NWI feature is classified as a temporary flooded, broad-leaved deciduous palustrine forested system (USFWS code PFO1A).

Mapped Waterbodies
No waterbodies were identified on the USGS topographic maps.

3.2 Delineated Aquatic Resources

One (1) existing wetland was extended through the expanded survey area. No new streams or ponds were identified during the field survey.

Wetlands
No new wetlands were identified within the survey corridor during survey efforts. One wetland, Q76, was extended from its modified (January 2019) delineation limits. The extension of wetland Q76 is a palustrine emergent wetland located in a narrow floodplain adjacent to stream S-Q83. The shrub area observed by USACE near wetland extension is located entirely in upland habitat. Though some hydrophytic vegetation was present in the understory vegetation, presence was observed to be below the thresholds required to meet USACE parameters for the hydric vegetation criteria of wetland delineation. Additionally, the shrub species themselves were not classified as hydrophytic. Hydrology indicators were identified inconsistently throughout the reevaluation areas, and where identified, the signature was generally weak. Specifically, some oxidized rhizospheres were identified in low concentrations. Soil cores were largely uniform in color and texture, lacking distinctive wetland characteristics such as redox concentrations or depletions noted in the delineated extension of wetland Q76.

4.0 Summary

Tetra Tech completed an aquatic resource survey on an approximately 8-acre area surrounding a section of Right-of Way (ROW) located between Greenridge Road and Styer Road in Upper Uwchlan Township, Chester County, Pennsylvania. Tetra Tech expanded the boundary of one (1) existing resource that meets USACE criteria for wetland delineation. Attachment A provides figures regarding the site location and geometry and alignments of the delineated features. Attachment B provides a photographic log for each of the new resources delineated within the survey area, and Attachment C provides 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.

Environmental Laboratory. 1987. United States Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. 100 pp.

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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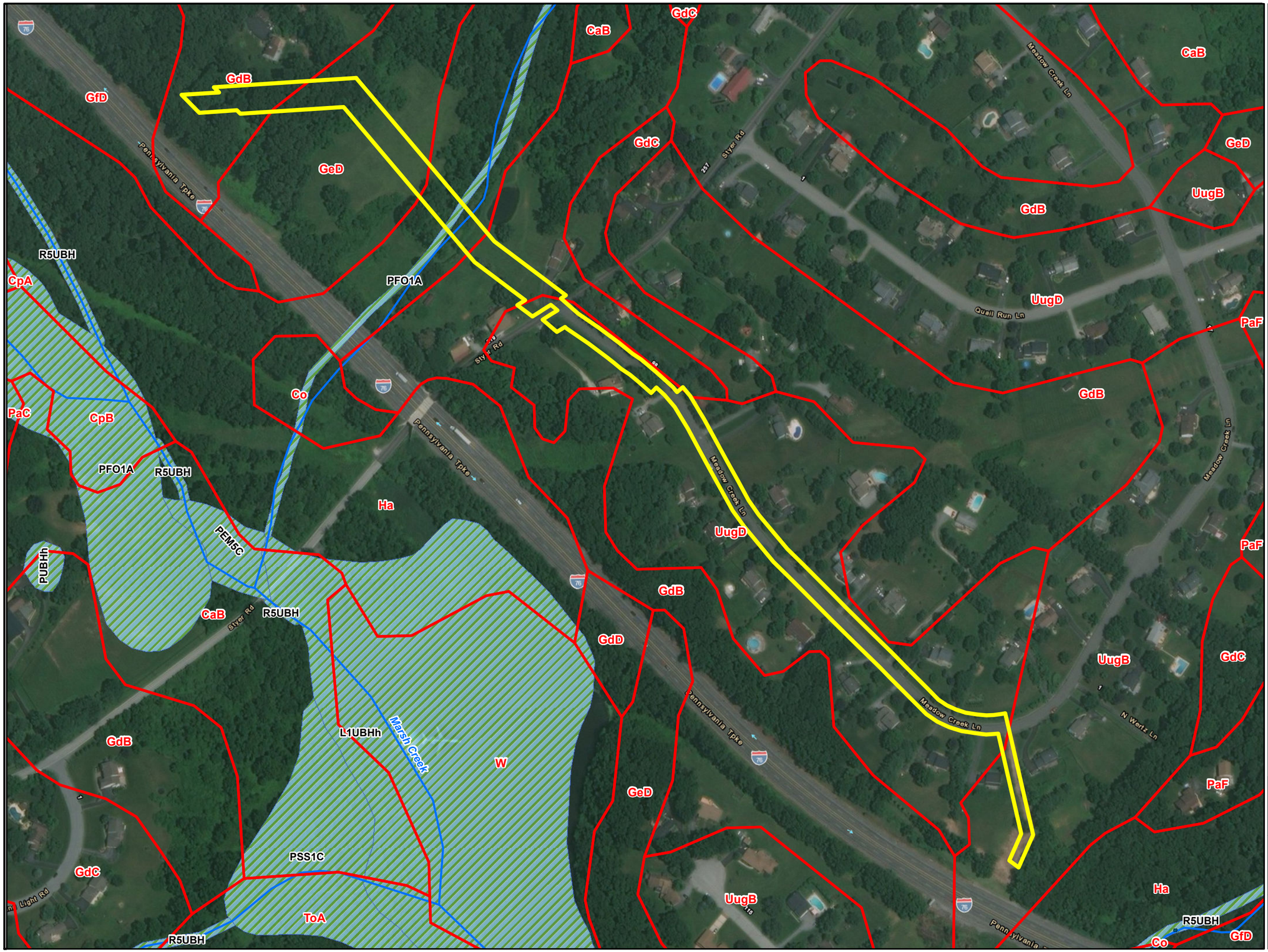
United States Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont (Version 2.0). Vicksburg, MS. 179 pp.

United States Department of Agriculture, Natural Resources Conservation Service and University of California Davis. 2011. SoilWeb App. Available at http://casoilresource.lawr.ucdavis.edu /soilweb-apps/.

United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey [online]. Accessed January 2019. Available at https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

ATTACHMENT A

FIGURES



Legend

- Survey Area
- NHD
- NWI Wetlands
- Soils

Location

0 125 250 500

1 inch = 250 feet

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

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI World Imagery 07/03/2017.
Soils USDA 09/18/2018 Chester County,
NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

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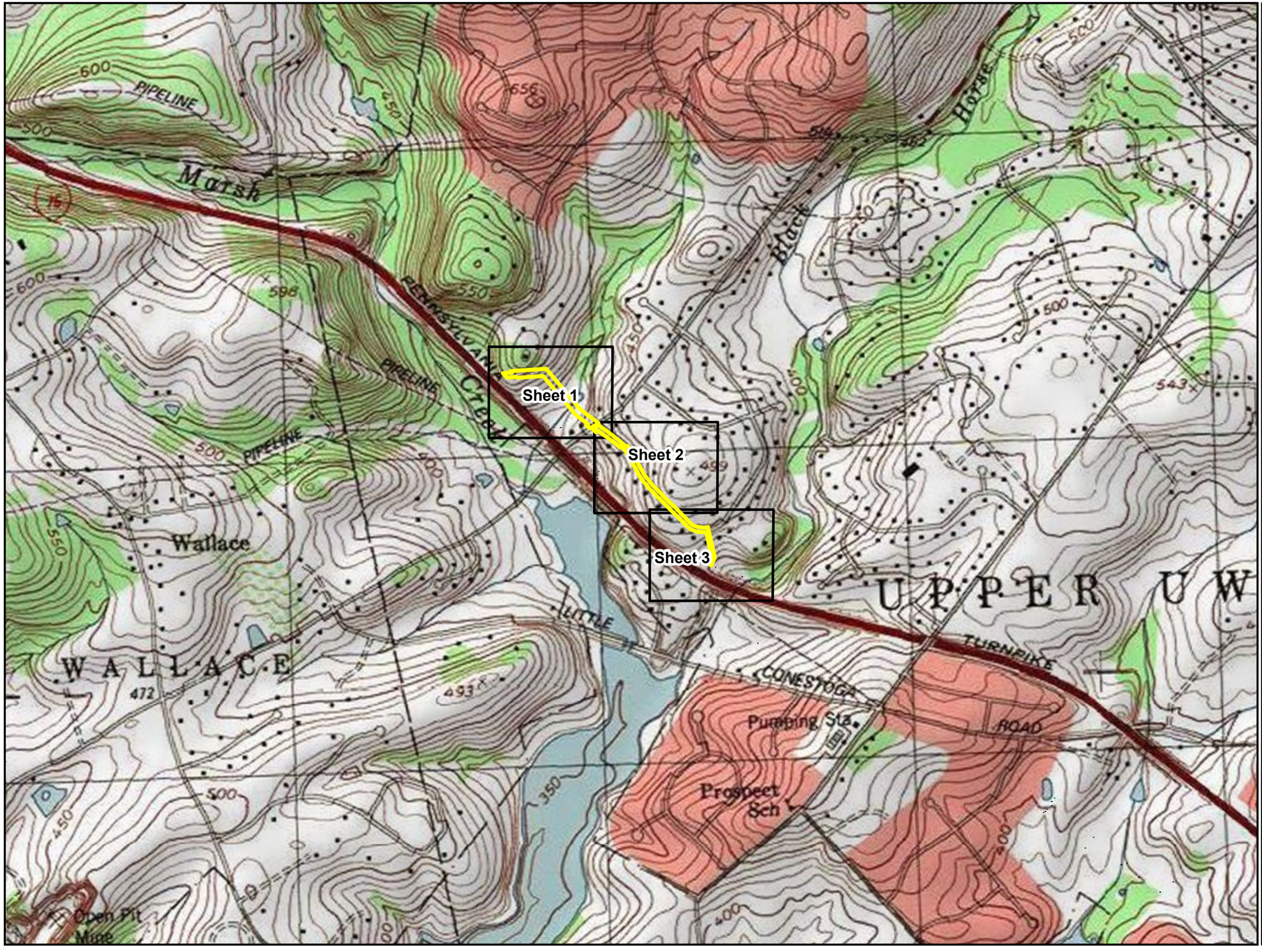

Legend

- Survey Area
- Sheet Boundary

Project Location

0 500 1,000 2,000

1 inch = 1000 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA. Sheet Key

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI US Topo Maps

Coordinate System: NAD 83 Stateplane, PA South, Feet

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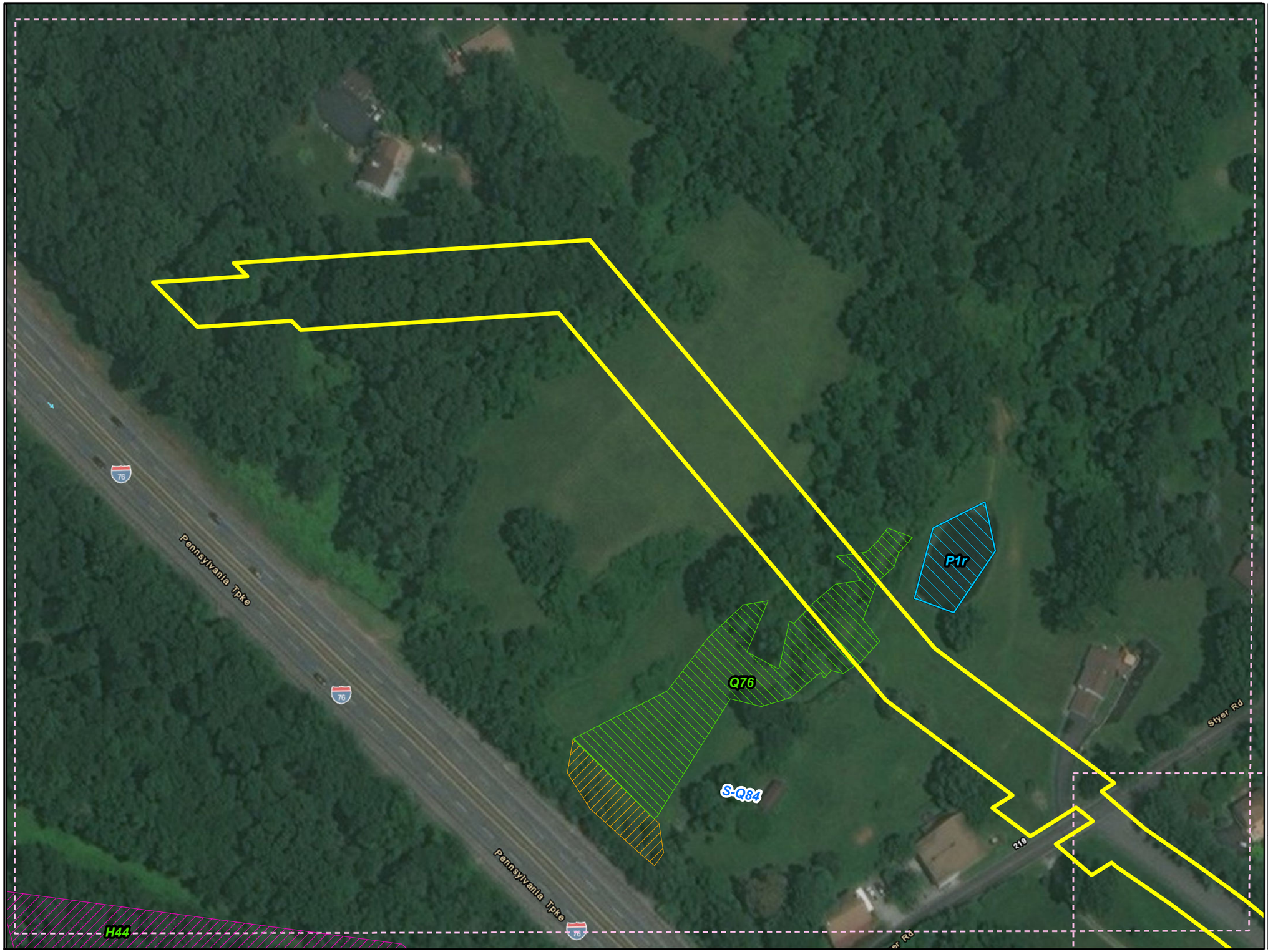
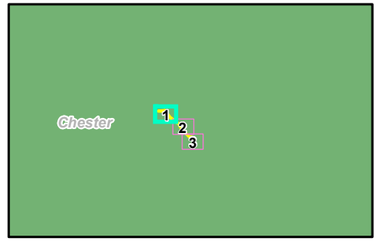


Legend

- Survey Area
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- Sheet Boundary

Sheet Identifier



N

0 50 100 200

1 inch = 100 feet

Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA. Sheet 1 of 3

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI World Imagery 07/03/2017

Coordinate System: NAD 83 Stateplane, PA South, Feet

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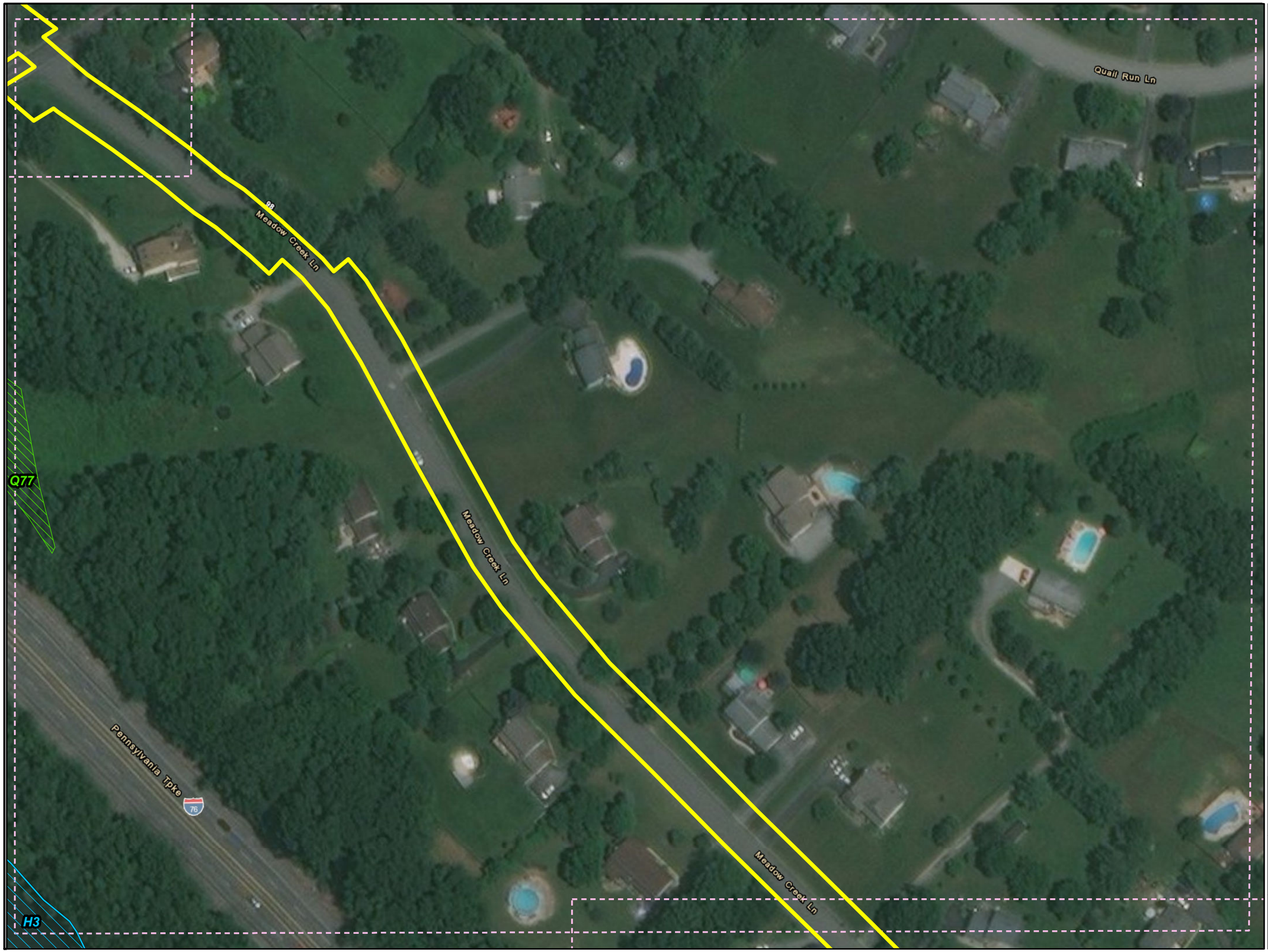
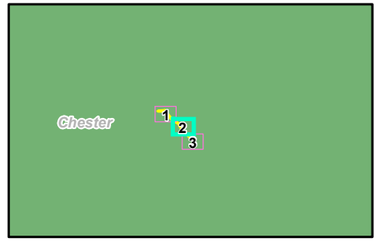


Legend

- Survey Area
- PEM Wetland
- Pond
- Sheet Boundary

Sheet Identifier



N

0 50 100 200

1 inch = 100 feet

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

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI World Imagery 07/03/2017

Coordinate System: NAD 83 Stateplane, PA South, Feet

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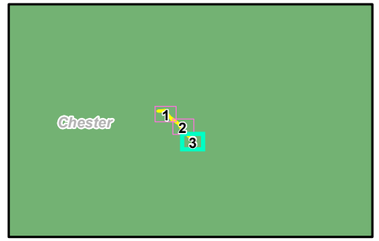
Legend

- Survey Area
- PEM Wetland
- PFO Wetland
- Sheet Boundary

Sheet Identifier



N

0 50 100 200

1 inch = 100 feet

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

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI World Imagery 07/03/2017

Coordinate System: NAD 83 Stateplane, PA South, Feet

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ATTACHMENT B

WATERBODY PHOTOGRAPHIC LOG

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project (PPP) – 0280 Re-route

Photographer: K. Berend
Date: 7/27/2019
Photo No.: 1
Direction: South

Comments: Extension of wetland Q76 (PEM) – wetland sample point

Photographer: G. McBrien
Date: 7/27/2019
Photo No.: 2
Direction: West

Comments: Extension of wetland Q76 – upland sample point

WETLAND PHOTOGRAPHIC LOG

Company: Sunoco Pipeline, L.P.
Project: Pennsylvania Pipeline Project (PPP) – 0280 Re-route

Photographer: G. McBrien
Date: 7/27/2019
Photo No.: 3
Direction: n/a

Comments: Soil profile for extension of wetland Q76 (PEM).

ATTACHMENT C

WATERBODY DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 0280 Meadow Creek reroute City/County: Upper Uwchlan Twp, Chester Co. Sampling Date: 7/27/19

Applicant/Owner: SPLP State: PA Sampling Point: Q76 ext - wet

Investigator(s): K. Berend, W. Darling, G. McBrien Section, Township, Range: —

Landform (hillslope, terrace, etc.): floodplain of creek Local relief (concave, convex, none): none Slope (%): —

Subregion (LRR or MLRA): LRR S, MLRA: 148 Lat: 40.091419° N Long: -75.728214° W Datum: —

Soil Map Unit Name: Hatboro silt loam NWI classification: n/a

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

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 ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✓ 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: Q76ext - wet

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
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: _____)			
1. Microstegium vimineum	60	✓	FAC
2. Persicaria Sagittata	10		OBL
3. Boehmeria cylindrica	20	✓	OBL
4. Impatiens capensis	2		FACW
5. Ambrosia spp.	2		–
6. Eutrochium graminifolia	2		FAC
7. Cyperus esculentus	2		FACW
8.			
9.			
10.			
11.			
	98 = Total Cover		
50% of total cover: 49	20% of total cover: 19		
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 ✓ No _____

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

SOIL

Sampling Point: Q76 - wet

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 4/1	100	light brown				sand	
1-16	10YR 4/1	90					loam	
	10YR 5/6	10		20	RM	M	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 ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 0280 Meadow Creek reroute City/County: Upper Uwchlan Twp., Chester Co. Sampling Date: 7/27/19

Applicant/Owner: SPLP State: PA Sampling Point: Q76-up1

Investigator(s): K. Berend, W. Darling, G. McBrien Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain of creek Local relief (concave, convex, none): slope to E Slope (%): 15

Subregion (LRR or MLRA): LRR: S, MLRA: 148 Lat: 40.091660° N Long: -75.728101 °W Datum:

Soil Map Unit Name: Hatboro silt loam NWI classification: —

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

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

Wetland Hydrology Present? Yes ____ 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: Q76 ext-upl

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1. Liriodendron tulipifera	40	✓	FACU
2. Juglans nigra	30	✓	FACU
3.			
4.			
5.			
6.			
7.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Sapling/Shrub Stratum (Plot size:)			
1. Eleagnus umbellata	5		FACU?
2. Lonicera spp.	10		–
3. Rosa multiflora	20	✓	FACU
4. Rubus phoenicolasius	10	✓	FACU
5.			
6.			
7.			
8.			
9.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		
Herb Stratum (Plot size:)			
1. Dicanthelium clandestinum	15	✓	FACW
2. Toxicodendron radicans	15	✓	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Woody Vine Stratum (Plot size:)			
1. Vitis riparia	20	✓	FAC
2. Smilax spp.	10		–
3.			
4.			
5.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 7 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 15	x 2 =	30
FAC species 35	x 3 =	105
FACU species 105	x 4 =	420
UPL species 0	x 5 =	0
Column Totals: 155 (A)		555 (B)

Prevalence Index = B/A = 3.58

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 ✓

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

SOIL

Sampling Point: Q76 ext-upl

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/4	100					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 ✓

Remarks:

Refusal at 10" - rock

ATTACHMENT D

Applicable 102 Drawings
(E&S and Restoration)

MATCHLINE ES-6.23

MATCHLINE ES-6.23

SEE STREAM BYPASS INSERT

100-YEAR FEMA FLOODPLAIN (TYP.)

MARSH CREEK (HQ-TSF)

S-H52

S-Q200

UNT TO MARSH CREEK (HQ-TSF)

WL-Q75 (PFO)

EROSION CONTROL BLANKET (TYP.)

ADDITIONAL TEMPORARY WORK SPACE FOR CONTRACTOR USE (I.E., STAGINGPARKING, SOIL STOCKPILING, OR OTHER USES).

TRENCH PLUGS (TYP.)

PERMANENT WATER BAR (TYP.)

COMPOST FILTER SOCK (TYP.)

RIPARIAN FOREST BUFFER

TEMPORARY EQUIPMENT CROSSING (TYP.)

SEE SHEETS S-H52-A AND S-H52-B FOR SITE SPECIFIC PLANS

ADDITIONAL TEMPORARY WORK SPACE FOR CONVENTIONAL BORE CROSSING (SEE TYPICAL LAYOUT ON SHEET ES-0.17)

AREA TO BE JACK BORED/HAMMER BORED (SEE REVISION 3)

SUBSIDENCE AREA

TRENCH DEWATERING LOCATION

SURVEY PROPERTY LINE TAX ID 32-03-0027.0000 OWNED BY PENNSYLVANIA TURNPIKE COMMISSION

S-Q81

PA TURNPIKE

UNT TO MARSH CREEK (HQ-TSF)

WL-H42 (PEM)

WL-H42 (PFO)

PULL BACK AREA

EARTH DISTURBANCE TO BE MINIMIZED TO THE AREA REQUIRED FOR CONSTRUCTION. TOPSOIL TO BE STRIPPED AND STOCKPILED WHERE EARTH DISTURBANCE IS REQUIRED.

INFILTRATION BERM (TYP.)

TEMPORARY SLOPE PIPE (TYP.)

GREEN RIDGE ROAD

AGGREGATE STOCKPILE (TYP.)

AASHTO #1 ROCK CONSTRUCTION ENTRANCE WITH WASH RACKS(TYP.)

TEMPORARY GRADING TO ACCOMMODATE HDD ACTIVITIES

PERMANENT WATER BAR (TYP.)

HDD STAGING AREA

HDD STAGING AREA (SEE TYPICAL LAYOUT ON SHEET ES-0.16)

LIMIT OF DISTURBANCE

REVISED REDLINE PREVIOUSLY SUBMITTED HDD ENTRY/EXIT LOCATION (REVISION 4 – REMOVED)

ORIGINALLY SUBMITTED HDD ENTRY/EXIT LOCATION

EARTH DISTURBANCE TO BE MINIMIZED TO THE AREA REQUIRED FOR CONSTRUCTION. TOPSOIL TO BE STRIPPED AND STOCKPILED WHERE EARTH DISTURBANCE IS REQUIRED.

GEOHAZARD (STEEP SLOPES) STA. 14751+70–14752+10 MITIGATION MEASURE A,B

GEOHAZARD (STEEP SLOPES) STA. 14752+30–14752+50 MITIGATION MEASURE A,B

WELL VEGETATED AREA

WOODED AREA

0 50 100
SCALE IN FEET

MATCHLINE ES-6.25

MATCHLINE ES-6.25

STREAM BYPASS INSERT

ATWS APPROVED (SEE REVISION 5)

SCREENED INLET

PROPOSED LOCATION OF 5'H X 11'W AQUADAM

PUMP

TRENCH DEWATERING LOCATION

PROPOSED LOCATION OF 5'H X 11'W AQUADAM

ATWS APPROVED (SEE REVISION 5)

ENERGY DISSIPATER

0 20 40
SCALE IN FEET

GEOHAZARD MITIGATION MEASURES LEGEND:

A – THE CONTRACTOR SHOULD EXERCISE ADDITIONAL CARE IN MANAGING STORMWATER, SEEPS, AND STOCKPILES.

B – IF THE STEEP PORTION OF THE SLOPE IS DISTURBED, AN ENGINEER SHOULD EVALUATE IF THE SLOPE SHOULD BE BACKFILLED AND RESTORED WITH HORIZONTAL LIFTS.

C – AN ENGINEER SHOULD RECONNOITER THE LOCATION PRIOR TO EARTHMOVING AND MONITOR DURING CONSTRUCTION AND RESTORATION EFFORTS.

APPROVALS

- BORE MODIFICATION APPROVED BY JOHN HOHENSTEIN OF SERO DEP ON 6/21/18 (SEE REVISION 3)
- CHAPTER 102 AND 105 MODIFICATION APPROVED BY JOHN HOHENSTEIN OF SERO DEP VIA LETTER DATED 9/17/18 (SEE REVISION 5)

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 7 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
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	3/5/18	BORE METHOD REVISION
4	RS	6/26/18	HDD AND CENTERLINE MODIFICATION
5	RS	8/3/18	ATWS ADDED FOR STREAM BYPASS INSERT
6	RS	12/17/18	PROPERTY LINE AND SUBSIDENCE ADDED
7	RS	3/12/19	16" AND 20" RE-ROUTE

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ROBERT F. SIMCIK ENGINEER

SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 6

1–20" & 1–16" WELDED STEEL NATURAL GAS PIPELINES

CHESTER COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 24 OF 74

DATE:	2/6/17
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-6.24
SHEET 6.24 OF 99

R:_Marcellus Shale Projects\Sunoco\5958 – Penn Pipeline Project\17 – Chester\E&S\Turnpike 280 – Option 3 & 4\E&S\5958ES006.24 (3).dwg PIT NICHOLE.NAJESKI 7/30/2019 9:22:52 AM

GEOHAZARD MITIGATION MEASURES LEGEND:

A – THE CONTRACTOR SHOULD EXERCISE ADDITIONAL CARE IN MANAGING STORMWATER, SEEPS, AND STOCKPILES.

B – IF THE STEEP PORTION OF THE SLOPE IS DISTURBED, AN ENGINEER SHOULD EVALUATE IF THE SLOPE SHOULD BE BACKFILLED AND RESTORED WITH HORIZONTAL LIFTS.

C – AN ENGINEER SHOULD RECONNOITER THE LOCATION PRIOR TO EARTHMOVING AND MONITOR DURING CONSTRUCTION AND RESTORATION EFFORTS.

NOTES:

1. SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
2. SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
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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	6/26/18	HDD MODIFICATION
4	RS	3/12/19	16" AND 20" RE-ROUTE
5	RS	7/30/19	EXTENDED WETLAND WL-Q76

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
ROBERT F. SIMCIK

SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 6

1-20" & 1-16" WELDED STEEL NATURAL GAS PIPELINES

CHESTER COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 25 OF 74

DATE:	2/6/17
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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ES-6.25
SHEET 6.25 OF 99

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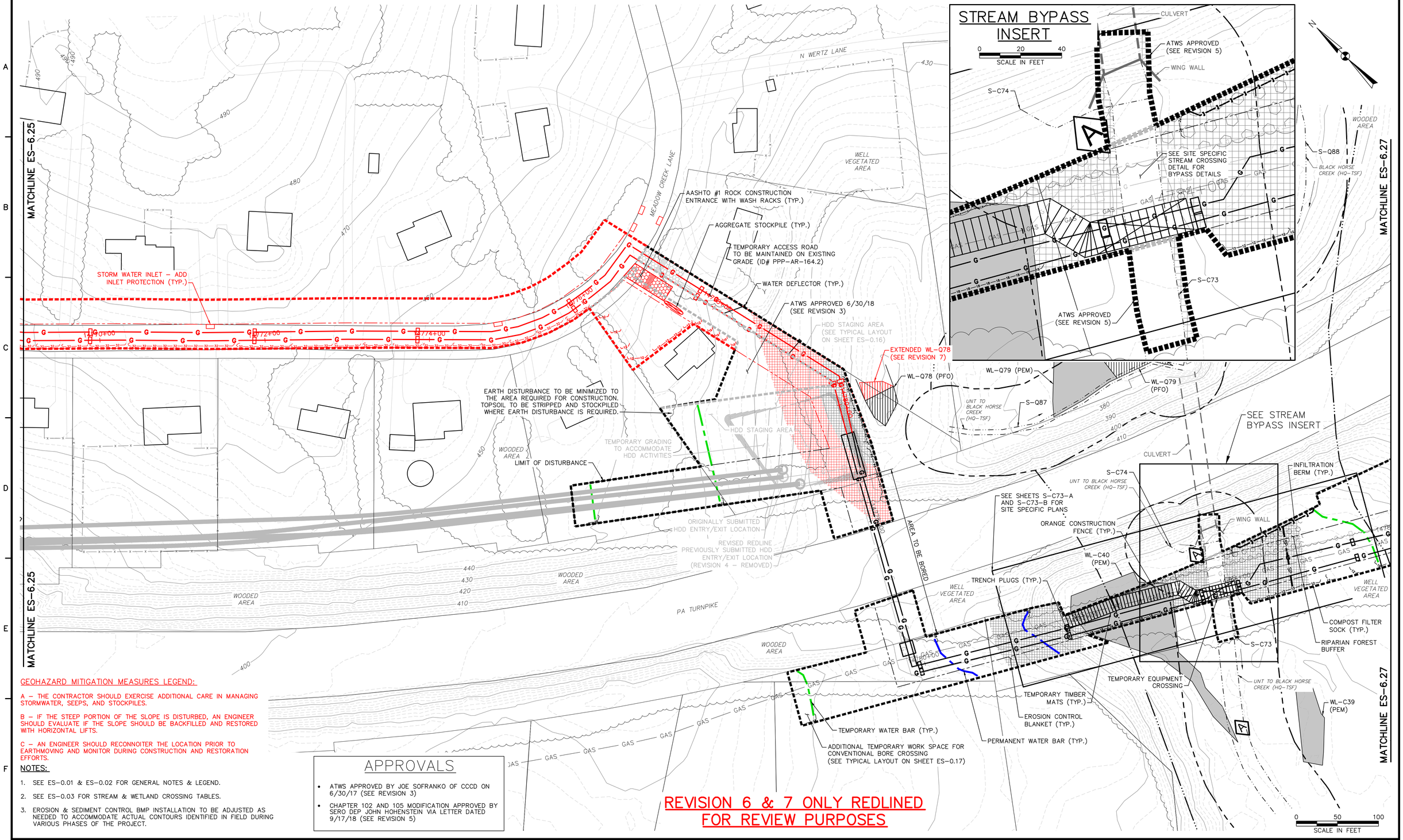

GEOHAZARD MITIGATION MEASURES LEGEND:

A – THE CONTRACTOR SHOULD EXERCISE ADDITIONAL CARE IN MANAGING STORMWATER, SEEPS, AND STOCKPILES.

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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.

APPROVALS

- ATWS APPROVED BY JOE SOFRANKO OF CCCD ON 6/30/17 (SEE REVISION 3)
- CHAPTER 102 AND 105 MODIFICATION APPROVED BY SERO DEP JOHN HOHENSTEIN VIA LETTER DATED 9/17/18 (SEE REVISION 5)

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3	RS	6/28/17	ATWS ADDED
4	RS	6/26/18	HDD MODIFICATION
5	RS	7/26/18	ATWS MODIFICATION AND STREAM BYPASS INSERT
6	RS	3/12/19	16" AND 20" RE-ROUTE
7	RS	7/30/19	EXTENDED WETLAND WL-Q78

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER ROBERT F. SIMCIK 078433-E

SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT CONSTRUCTION SPREAD 6

1-20" & 1-16" WELDED STEEL NATURAL GAS PIPELINES

CHESTER COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
SHEET 26 OF 74

DATE:	2/6/17
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS

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SHEET 6.26 OF 99

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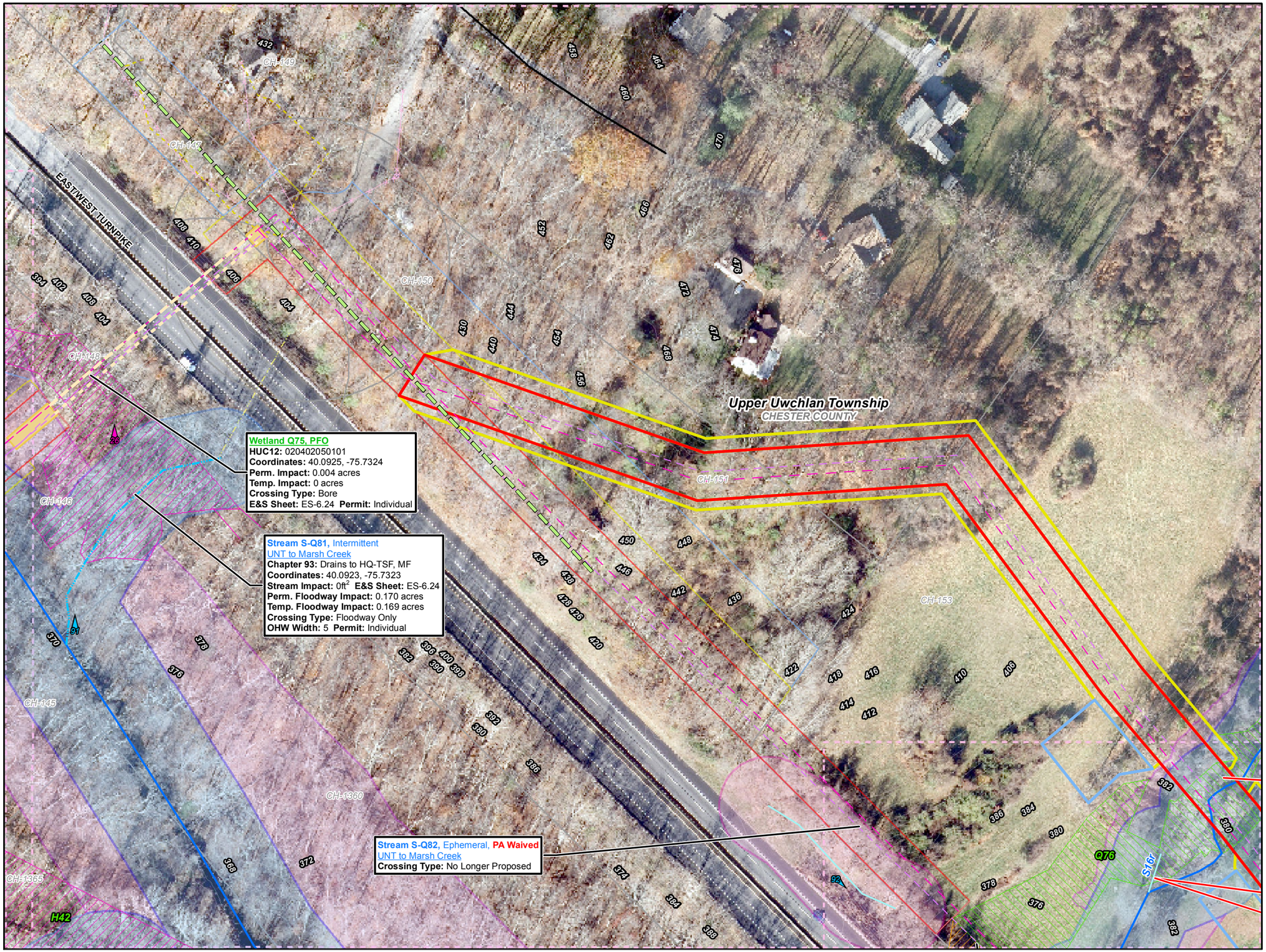
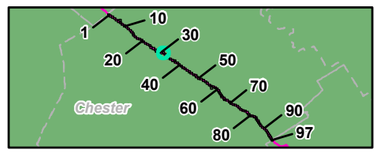
ATTACHMENT E

Updated Site Plan
Aquatic Resource Impact Table



Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, HDD
- PPP 1, FlexBor
- PPP 2, Bore
- PPP 2, HDD
- PPP 2, FlexBor
- 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, Chester County, PA.
Sheet 31 of 98

Prepared By: TETRA TECH

Date: 07/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2016.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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Stream S-Q83, Perennial
UNT to Marsh Creek
Chapter 93: HQ-TSF, MF
Coordinates: 40.0909, -75.7287
Stream Impact: 320ft² **E&S Sheet:** ES-6.25
Perm. Floodway Impact: 0.158 acres
Temp. Floodway Impact: 0.069 acres
Crossing Type: Dry Crossing
OHW Width: 5 **Permit:** Individual

Stream S-Q83, Ch. 106 area
UNT to Marsh Creek
Coordinates: 40.0909, -75.7287
Perm. Floodplain Impact: 0.028 acres
Temp. Floodplain Impact: 0.019 acres
Crossing Type: Open Cut

Stream S16r, Ephemeral
UNT to Marsh Creek
Chapter 93: Drains to HQ-TSF, MF
Coordinates: 40.0912, -75.7284
Stream Impact: 0ft² **E&S Sheet:** ES-6.25
Perm. Floodway Impact: 0.158 acres
Temp. Floodway Impact: 0.069 acres
Crossing Type: Floodway Only
OHW Width: 1 **Permit:** Individual

Wetland Q76, PEM
HUC12: 020402050101
Coordinates: 40.0912, -75.7287
Perm. Impact: 0.084 acres
Temp. Impact: 0.002 acres
Crossing Type: Open Cut
E&S Sheet: ES-6.25 **Permit:** Individual

Stream S-Q84, Intermittent
UNT to Marsh Creek
Chapter 93: Drains to HQ-TSF, MF
Coordinates: 40.0909, -75.7285
Stream Impact: 0ft² **E&S Sheet:** ES-6.25
Perm. Floodway Impact: 0.158 acres
Temp. Floodway Impact: 0.069 acres
Crossing Type: Floodway Only
OHW Width: 2 **Permit:** Individual

Wetland Q76, PSS
Crossing Type: No Longer Proposed

Stream S-Q83, Perennial
UNT to Marsh Creek
Chapter 93: HQ-TSF, MF
Coordinates: 40.0909, -75.7287
Stream Impact: 15ft² **E&S Sheet:** ES-6.25
Perm. Floodway Impact: 0.007 acres
Temp. Floodway Impact: 0 acres
Crossing Type: HDD
OHW Width: 5 **Permit:** Individual

Wetland Q77, PEM
Crossing Type: No Longer Proposed

Stream S-Q86, Ephemeral
UNT to Marsh Creek
Crossing Type: No Longer Proposed

Stream S-Q83, Ch. 106 area
UNT to Marsh Creek
Coordinates: 40.0909, -75.7287
Perm. Floodplain Impact: 0.001 acres
Temp. Floodplain Impact: 0 acres
Crossing Type: HDD

Stream S-Q84, Intermittent
UNT to Marsh Creek
Chapter 93: Drains to HQ-TSF, MF
Coordinates: 40.0909, -75.7285
Stream Impact: 0ft² **E&S Sheet:** ES-6.25
Perm. Floodway Impact: 0.007 acres
Temp. Floodway Impact: 0 acres
Crossing Type: HDD Floodway
OHW Width: 2 **Permit:** Individual

Stream S-Q85, Intermittent, **PA Waived**
UNT to Marsh Creek
Crossing Type: No Longer Proposed

Upper Uwchlan Township
CHESTER COUNTY

EAST/WEST TURNPIKE

Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, HDD
- PPP 1, FlexBor
- PPP 2, Bore
- PPP 2, HDD
- PPP 2, FlexBor
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- Temporary ROW
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- ROW-Travel and Clearing LOD
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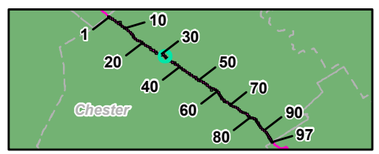
- Bore Pits
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- Chapter 105 Floodway
- Waived Floodway
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 32 of 98

Prepared By: TETRA TECH

Date: 07/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2016.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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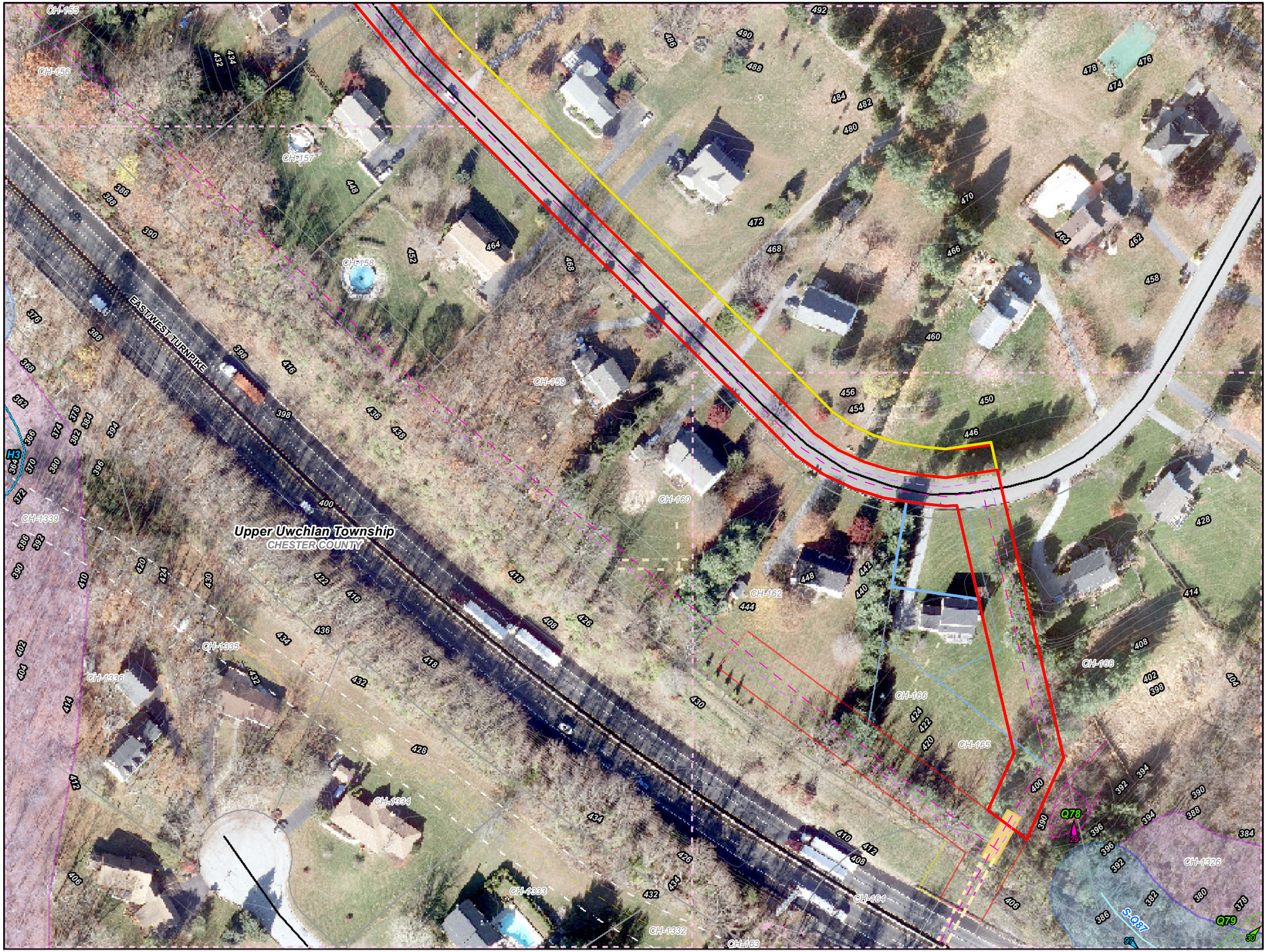

Legend

- Sheet Boundary
- PPP 1
- PPP 2
- PPP 1, Bore
- PPP 1, HDD
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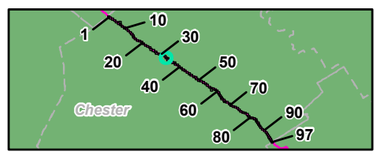
- Ch. 106 Floodplain Fringe



N

0 25 50 100 150 200

1 inch = 100 feet

Site Plan for the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 33 of 98

Prepared By: TETRA TECH

Date: 07/2019

Base Map; SPLP 2014-2016, Roads from NRCS Geo-spatial Data Giveaway, 100-Year Floodplain from FEMA NFHL, downloaded 9/2016. Aquatics, TT 2013-2016.

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\Projects\112\C5958.PPP\MXD\Permits\CountyPermits\ChesterCountySitePlan_Rev5

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

Applicant's Name / Client Sunoco Pipeline LP

AQUATIC RESOURCE IMPACT TABLE
FOR PENNSYLVANIA CHAPTER 105 WATER OBSTRUCTION AND ENCROACHMENT APPLICATION / REGISTRATION

Project / Site Name: Pennsylvania Pipeline Project: S3-0280 Reroute Modification Date: 7/29/2019

DEP USE ONLY			Project Information									PADEP / 105		
PADEP Permit Number	Single Complete Crossing No.	Crossing Number	Fee	Structure / Activity unique identifier	Aquatic Resource Type	Latitude dd nad83	Longitude dd nad83	Waters Name	PA Code Chapter 93 Designation	Work Proposed	DEP Impact Type temp / perm	Watercourse Impact Top of Bank to Top of Bank Length and Width in feet	Floodway Impact Top of Bank Landward Length and Width in feet	Wetland Impact Dimension Length and Width in feet
			see supporting tables	S-Q83	Perennial	40.0909	-75.7287	UNT to Marsh Creek	HQ-TSF, MF	Excavation	Perm	64 - 5	N/A	N/A
			see supporting tables	S-Q83, S-Q84, S16r	Floodway	40.0909	-75.7287	UNT to Marsh Creek	HQ-TSF, MF	Excavation	Perm	N/A	155 - 50	N/A
			see supporting tables	S-Q83, S-Q84, S16r	Floodway	40.0909	-75.7287	UNT to Marsh Creek	HQ-TSF, MF	Fill	Temp	N/A	156 - 125	N/A
			see supporting tables	Q76	PEM	40.0912	-75.7287	Wetland	N/A	Excavation	Perm	N/A	N/A	77-50
			see supporting tables	Q76	PEM	40.0912	-75.7287	Wetland	N/A	Fill	Temp	N/A	N/A	13 - 11

PADEP Impact Type: temporary or permanent.

Permanent Impacts are those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into a watercourse, floodway or body of water.

Temporary Impacts are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into a watercourse, floodway or body of water (these are considered permanent impacts).

Table 1. Wetland Impact Summary for the Mariner East 2 S3-0280 Reroute Modification – Chester County – 07/29/2019

Wetland ID	Cover Class[1]	Coordinates	PADEP Permanent Impact (acre)[2]	PADEP Temporary Impact (acre)[2]
Q76	PEM	40.0192, -75.7287	0.084	0.002
1 wetland			**0.084 acre**	**0.002 acre**

[1] Field classification based on Cowardin et al. 1979.

[2] Permanent and temporary impacts calculated in accordance with the PADEP impact calculation instructions. The presented acreage is the proposed impact for each resource calculated by GIS analysis, (rather than length x width) and provides a more accurate summation of impacts and therefore the fee calculation for Chapter 105 permitting.

Table 2. Waterbody Impact Summary for the Mariner East 2 S3-0280 Reroute Modification – Chester County – 07/29/2019

Stream ID	Stream Name	Coordinates	Stream Permanent Impact (sq. ft.)[1]	Stream Temporary Impact (sq. ft.)[1]	PADEP Permanent Floodway Disturbance (acre)[1, 2]	PADEP Temporary Floodway Disturbance (acre)[1, 2]
S-Q83	UNT to Marsh Creek	40.0909, -75.7287	320	-	0.158	0.069
S-Q84	UNT to Marsh Creek	40.0909, -75.7285	-	-		
S16r	UNT to Marsh Creek	40.0912, -75.7284	-	-		
3 Streams			**320 sq. ft.**	**0 sq. ft.**	**0.158 acre**	**0.069 acre**

[1] Permanent and temporary impacts calculated in accordance with the PADEP impact calculation instructions. The presented acreage is the proposed impact for each resource calculated by GIS analysis, (rather than length x width) and provides a more accurate summation of impacts and therefore the fee calculation for Chapter 105 permitting.

[2] Floodway disturbance includes the stream impacts within the calculations, i.e. the floodway disturbance is the total proposed disturbance according to Chapter 105 regulations.

ATTACHMENT G

PNDI Update

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Gas Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823

July 30, 2019

IN REPLY REFER TO
SIR# 50864

Tetra Tech
Pat Green
301 Ellicott Street
Buffalo, New York 14203

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 677023_1
S3-0280 Meadow Creek Road
CHESTER County: Upper Uwchlan Township

Dear Pat Green:

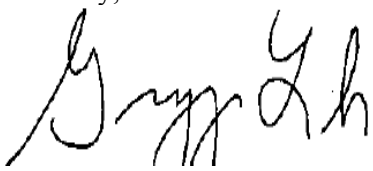
This responds to your updated Pennsylvania Natural Diversity Inventory (PNDI) submission regarding the SPLP Pennsylvania Pipeline Project. Previous correspondence from this office, dated March 26, 2019, requested a habitat assessment to investigate potential impacts to the Eastern Redbelly Turtle (*Pseudemys rubriventris*).

According to the report prepared by Qualified Surveyor Bryon DuBois, the habitats on site to do not appear to contain suitable habitat to support the life history requirements of redbelly turtles, though the possibility of a transient use exists. I concur with the results of the evaluation; therefore, I do not foresee the proposed project resulting in adverse impacts to the Eastern Redbelly Turtle. Additionally, the proposed measure of installing an exclusion barrier (super-silt fence) at the edge of the workspace, in between the referenced pond, should be implemented to avoid turtles from entering the work area.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Greg Lech at 610-847-8772 and refer to the SIR # 50864. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,



Greg Lech
Natural Gas Section

GPL/dn

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.

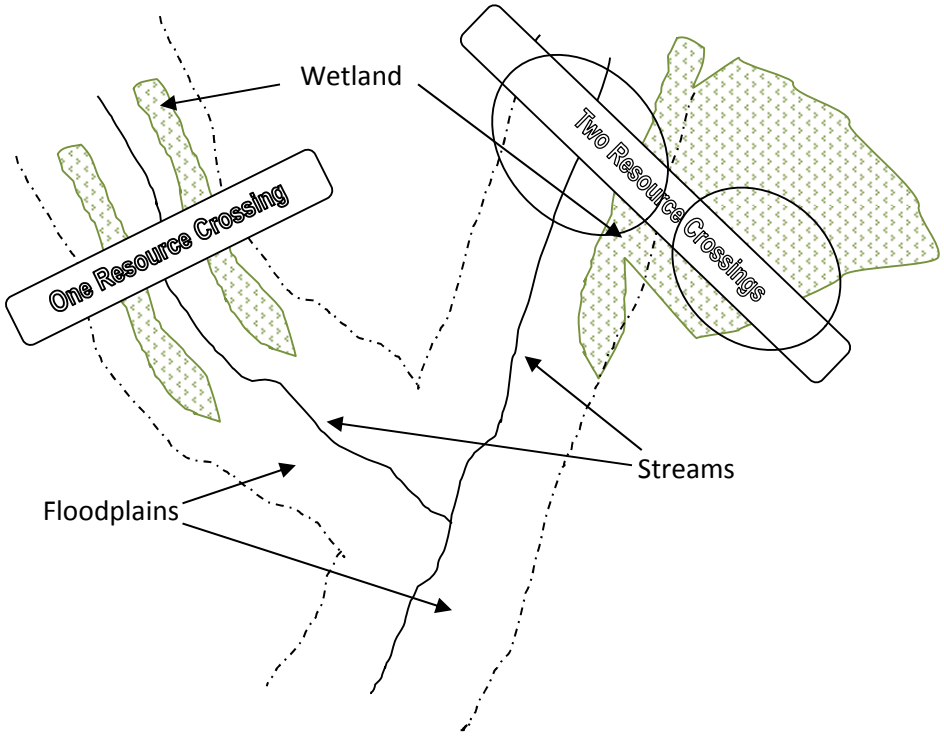
Floodway – The channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area 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)			$ 0

☐ **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)			$ 0

PART ONE: SECTION A. APPLICATION FEE(S) subtotal (a+b=c) $ 0

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	0.1 acres x $4,000 =	$ 400	+	$ 900
☒ Permanent Disturbance	0.3 acres x $8,000 =	$ 2,400		= $ 3,300
☐ 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) $ 3,300

PART ONE: FEE(S) TOTAL (c+d=e) $ 3,300

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:	

Table 1. Wetland Impact Summary for the Mariner East 2 S3-0280 Reroute Modification – Chester County – 07/29/2019

Wetland ID	Cover Class[1]	Coordinates	PADEP Permanent Impact (acre)[2]	PADEP Temporary Impact (acre)[2]
Q76	PEM	40.0192, -75.7287	0.084	0.002
1 wetland			**0.084 acre**	**0.002 acre**

[1] Field classification based on Cowardin et al. 1979.

[2] Permanent and temporary impacts calculated in accordance with the PADEP impact calculation instructions. The presented acreage is the proposed impact for each resource calculated by GIS analysis, (rather than length x width) and provides a more accurate summation of impacts and therefore the fee calculation for Chapter 105 permitting.

Table 2. Waterbody Impact Summary for the Mariner East 2 S3-0280 Reroute Modification – Chester County – 07/29/2019

Stream ID	Stream Name	Coordinates	Stream Permanent Impact (sq. ft.)[1]	Stream Temporary Impact (sq. ft.)[1]	PADEP Permanent Floodway Disturbance (acre)[1, 2]	PADEP Temporary Floodway Disturbance (acre)[1, 2]
S-Q83	UNT to Marsh Creek	40.0909, -75.7287	320	-	0.158	0.069
S-Q84	UNT to Marsh Creek	40.0909, -75.7285	-	-		
S16r	UNT to Marsh Creek	40.0912, -75.7284	-	-		
3 Streams			**320 sq. ft.**	**0 sq. ft.**	**0.158 acre**	**0.069 acre**

[1] Permanent and temporary impacts calculated in accordance with the PADEP impact calculation instructions. The presented acreage is the proposed impact for each resource calculated by GIS analysis, (rather than length x width) and provides a more accurate summation of impacts and therefore the fee calculation for Chapter 105 permitting.

[2] Floodway disturbance includes the stream impacts within the calculations, i.e. the floodway disturbance is the total proposed disturbance according to Chapter 105 regulations.

Table 3. Impact Fee Calculation for the Mariner East 2 S3-0280 Reroute Modification – Chester County – 07/29/2019

Component	Sum or Total (acre or dollars)
PADEP Permanent Impacts to Wetlands	0.084
PADEP Temporary Impacts to Wetlands	0.002
PADEP Permanent Impacts to Streams	0.158
PADEP Temporary Impacts to Streams	0.069
Total Proposed PADEP Permanent Impacts[1]	**0.242**
Total Proposed PADEP Temporary Impacts[1]	**0.071**
Permanent Impact Fee	$2,400
Temporary Impact Fee	$400
Chapter 105 Administrative Fee	$500
Total Chapter 105 Review Fee	**$3,300**

[1] This total is rounded up to the next tenth of an acre to calculate fees in accordance with PADEP guidance.