8000-PM-OOGM0005 Rev. 1/2014
Notice of Intent

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF WATER MANAGEMENT
OFFICE OF OIL AND GAS MANAGEMENT

OFFICIAL USE ONLY
ID # _____
Date Received _____

NOTICE OF INTENT (NOI) FOR COVERAGE UNDER THE EROSION AND SEDIMENT CONTROL GENERAL PERMIT (ESCGP-2) FOR EARTH DISTURBANCE ASSOCIATED WITH OIL AND GAS EXPLORATION, PRODUCTION, PROCESSING, OR TREATMENT OPERATIONS OR TRANSMISSION FACILITIES

READ THE INSTRUCTIONS PROVIDED IN THIS PERMIT APPLICATION PACKAGE BEFORE COMPLETING THIS FORM.

PLEASE PRINT OR TYPE INFORMATION IN BLACK OR BLUE INK.

SECTION A. APPLICANT INFORMATION

APPLICATION TYPE **NEW** ☒ **RENEWAL** ☐ **MAJOR MODIFICATIONS** ☐ **EXPEDITED** ☐ **PHASED** ☐

Applicant's Last Name (If applicable) Gordon	First Name Matthew	MI L	Phone (610) 216-0583 (cell) FAX	
Organization Name or Registered Fictitious Name Sunoco Pipeline, L.P.			Phone (610) 670-3284 (office) FAX	
Mailing Address 535 Fritztown Road	City Sinking Spring		State PA	ZIP + 4 19608
Email Address mlgordon@sunocologistics.com				
Co-Applicant's Last Name (If applicable)	First Name	MI	Phone FAX	
Organization Name or Registered Fictitious Name			Phone FAX	
Mailing Address	City		State	ZIP + 4
Email Address				

SECTION B. SITE INFORMATION

Site Name Pennsylvania Pipeline Project			
Site Location Chester and Delaware Counties			
Site Location – City Elverson Township, Chester County to Upper Chichester Township, Delaware County		State PA	ZIP+4
Detailed Written Directions to Site See Directions in Attachment 1			

County	Municipality	City	Boro	Twp.
Chester and Delaware	See Municipalities Table in Attachment 2	☐	☒	☒

SECTION C. PROJECT INFORMATION

1. Total Project Area/Project Site (Ac):	286	Total Disturbed Area (Ac):	286

2. Project Name Pennsylvania Pipeline Project

3. Project Type (Check all that apply)

☐ Oil/Gas Well ☒ Transmission Facility ☐ Gathering Facility ☐ Processing Facility ☐ Treatment Facility
☐ Centralized Fresh Water Impoundment ☐ Centralized Wastewater Impoundment ☐ Water Pipeline
☐ Ground/Surface Water Withdrawal Site ☐ Other

If Oil/Gas well, is the well conventional or unconventional? ☐ Conventional ☐ Unconventional

Project Description

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL) transportation of up to 350,000 barrels per day. The project involves the installation of approximately two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. Construction activities will involve clearing and grubbing, trenching, pipe installation, site restoration, and access road construction/improvement. Erosion and sediment controls will be in place during earth disturbance activities. Following completion of pipeline installation, the area will be returned to the general grade present prior to pipeline installation in order to maintain preconstruction elevations and drainage patterns. Disturbed areas will be seeded and mulched. Erosion and sedimentation devices will be maintained until site work is complete and revegetation is successful.

The project will be constructed for 35 miles in the PADEP South East Region. The project disturbance by county is as follows:

Chester County: 184 Acres
Delaware County: 95 Acres, Twin Oaks Pump Station Expansion 6.46 acres (Total 102 acres)

4. Please provide the latitude and longitude coordinates for the center of the project. The coordinates should be in degrees, minutes seconds (DD MM SS.SS) and North American Datum 1983. For linear projects provide the project's termini.

Latitude 40º degrees 9' minutes 20.15" seconds Longitude -75º degrees 50' minutes 34.44" seconds

Latitude 39º degrees 50' minutes 40.48" seconds Longitude -75º degrees 25' minutes 7.23" seconds

Horizontal Collection Method: ☐ GPS ☒ Interpolated from U.S.G.S. Topographic Map ☐ DEP's eMAP

5. U.S.G.S. 7.5 min. Quad Map Name Elverson, Pottstown, Downingtown, Wagontown, Malvern, West Chester, Media, Marcus Hook, and Bridgeport (Include a copy of the project area on the 7.5 min quad map)

6. Will the project be conducted as a phased permit project? ☐ Yes ☒ No

If Yes, Include Master Site Plan Estimated Timetable for Phased Projects. ☐ Additional sheet(s) attached.

Phase No. or Name	Description	Total Area	Disturbed Area	Start Date	End Date

7. List existing and previous land use for a minimum of the previous 5 years. Forested/ agricultural/ rural residential

8. Other Pollutants: Will the stormwater discharge contain pollutional substances other than sediment? ☐ Yes ☒ No
   If yes, explain and provide any available quantitative data.

9. Will fuels, chemicals, solvents, other hazardous waste or materials be used or stored on site during earth disturbance activities?
   Yes ☒ No ☐ **(If yes, a PPC Plan must be maintained on site during earth disturbance.)**

10. Does the project have the potential to discharge to siltation-impaired waters?
    Yes ☒ No ☐ **(If yes, show how the project will not result in a net change in volume, rate or water quality. See section G below.)**

11. Has the project site been investigated to identify naturally occurring geologic formations or soil types that may cause pollution when disturbed?
    Yes ☒ No ☐
    Have naturally occurring geologic formations or soil types that may cause pollution when disturbed been identified?
    Yes ☒ No ☐ **(If yes, BMPs to avoid or minimize the potential pollution must be utilized.)**

12. Has the project site been analyzed to determine potential thermal impacts to surface waters of the Commonwealth?
    Yes ☒ No ☐
    Have potential thermal impacts to surface water of the Commonwealth from earth disturbance activity been identified?
    Yes ☒ No ☐ **(If yes, BMPs to avoid, minimize or mitigated the thermal pollution must be utilized.)**

13. Have the E&S Plan and PCSM/SR Plan been planned, designed and implemented to be consistent?
    Yes ☒ No ☐

14. Have existing and/or proposed Riparian Forest Buffers been identified?
    Yes ☒ N/A ☐ **(If not, they must be shown on the plans.)**

15. Is a riparian buffer waiver being requested?
    Yes ☒ No ☐
    If yes, the applicant requesting a waiver must submit a written request that demonstrates that reasonable alternatives will meet the requirements of 25 Pa. Code § 102.14 and to demonstrate that any existing riparian buffer will remain undisturbed to the extent practicable.

16. Have antidegradation implementation requirements for special protection waters been addressed?
    Yes ☒ No ☐ **(If no, antidegradation requirements must be included in the plan.)** N/A ☐

17. Has the seasonal high groundwater level been identified at all excavation locations for pits and impoundments other than those which will contain top-hole water, fresh water and uncontaminated drill cuttings?
    Yes ☐ No ☐ N/A ☒ **(If no, be advised that a 20-inch separation between the seasonal high groundwater and the bottom of all pits and impoundments containing pollutional substances is required.)**

18. Receiving Water/Watershed Name
    See Table in Attachment 3.

    Chapter 93, Designated Use and Existing Use Stream Classification

    ☒ High Quality ☒ Exceptional Value
    ☒ Other WWF, CWF, TSF

    ☒ Siltation-impaired

    Secondary Receiving Water

    Name of Municipal or Private Separate Storm Sewer Operator
    See Table in Attachment 4

19. Is an Expedited Review being requested? Yes ☐ No ☒
    If yes, be advised that the Expedited Review is not available for all projects. Refer to the "Expedited Review Process" Item 8, Page 17 of the ESCGP-2 Instructions to determine if your project is eligible.

SECTION D. EROSION AND SEDIMENT CONTROL PLAN BMPS
See the attached Instructions on how to complete this section.

Erosion and Sediment Control Plan BMPs should be designed to minimize accelerated erosion and sedimentation through limiting the extent and duration of earth disturbance, protection of existing drainage and vegetation, limiting soil compaction and controlling the generation of increased runoff. The Department recommends the use of the Erosion and Sediment Control BMP Manual to achieve this goal. The E&S Plan must meet the requirements of Pa. Code § 102.4(b) and submitted with the NOI.

1. E & S Plan

The E & S Plan must satisfy at least one of subparagraph A or B below.

Provide a brief summary of proposed BMPs and their performance to manage E & S for the project. If E & S BMPs and their application do not follow the guidelines referenced in the Pa. Erosion and Sediment Pollution Control Program Manual, provide documentation to demonstrate performance equivalent to, or better than, the BMPs in the Manual.

Compost Filter Socks - This temporary sedimentation control measure consists of wood or metal posts driven through a compost filled mesh tube. Filter socks will be located as needed on side-slope and down-slope boundaries of disturbed areas. Compost filter socks will be sized using the DEP Construction Detail.

Tarpaulin Covers - Tarpaulin covers may be used, as necessary, to protect topsoil storage stockpiles from wind and precipitation erosion. Stockpile slopes will be 2:1 or less. A minimal amount of soil will be stockpiled so that the height of the stockpile is less than 35 feet.

Rock Filter Outlet – Rock filter outlets will be used, as necessary, to address problems of concentrated flows to sediment barriers. In the event of unanticipated concentrated flow and sediment barrier failure, install a rock filter outlet unless the concentrated flow can be diverted away from the barrier. Rock filter outlets used in drainage areas with HQ and EV waters need a 6” layer of compost installed on the upslope side of the rock.

Rock Construction Entrance – Temporary access routes will be established on and proximate to the site to facilitate construction activities. The use of access routes will help confine truck and equipment traffic to specific corridors thus minimizing land disturbance and protecting vegetation. Site traffic during wet weather will be limited. No vehicles will be permitted in streams or rivers.

Wash Racks – Wash racks will be used at rock construction entrances and will be designed to accommodate anticipated vehicular traffic. A water supply will be made available at wash racks to wash the wheels of vehicles exiting the site.

Pumped Water Filter Bag – Pumped water filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. Compost filter socks shall be installed within 50 feet of any receiving surface water or where grassy area is not available.

Erosion Control Blanket - A manufactured erosion control blanket shall be installed on all slopes 3:1 (H:V) or steeper and within 100 feet of stream banks, where applicable. The blanket shall be biodegradable but capable of providing protection for two growing seasons. Straw or similar fiber material shall be placed between two biodegradable nets. The top net shall be heavyweight and UV stabilized; the bottom net shall be a lightweight netting. Erosion control blankets shall be anchored and stapled in place in accordance with the manufacturer's recommendations and the detail on the construction drawings. For slopes between 3:1 and 1:1 (H:V) use erosion control blanket SC 150 as manufactured by North American Green or Owner approved equal material or equal method.

Waterbars – Waterbars shall be installed across the right-of-way on all slopes greater than 5%. Waterbars should be constructed at a slope of 2% and discharge to a well-vegetated area. Waterbars should not discharge into an open trench. Waterbars should be oriented so that the discharge does not flow back onto the right-of-way. Obstructions (e.g. compost filter socks etc.) should not be placed in any waterbars. Where needed, they should be located below the discharge end of the waterbar.

Trench Plugs - To be used to prevent piping along the pipeline.

A. ☒ E & S plan is designed using BMPs in the Pennsylvania Erosion & Sedimentation Pollution Control Manual (ESPC) (Technical Guidance #3632134-008/March 2012)

OR

B. ☐ E & S plan is designed using an alternative BMP or design standard

2. Riparian Buffer Information

A. Will you be protecting, converting or establishing a riparian buffer or a riparian forest buffer as a part of this project?

Protect ☒ Yes ☐ No Convert ☒ Yes ☐ No Establish ☐ Yes ☒ No

B. Will you be protecting, converting or establishing a voluntary riparian forest buffer as part of this project?

☐ Yes ☒ No

C. Are you proposing to conduct oil and gas activities for which site reclamation or restoration is required as part of the Chapter 78 permit authorization in a high quality or exceptional value watershed that is currently attaining its designated use and within 150 ft of a perennial or intermittent river, stream or creek or lake, pond or reservoir?

☐ Yes ☒ No If yes, provide a demonstration that any existing riparian buffer is undisturbed to the extent practicable.

D. If the regulations require a riparian buffer or riparian forest buffer and you are not providing one, list the waiver provisions in the Chapter 102 regulations, Section 102.14(d)(2)(i)-(vi), that you are requesting and provide additional documentation to demonstrate reasonable alternatives for compliance with 102.14 requirements and to demonstrate that any existing reparian buffer will remain undisturbed to the extent practicable.

(See Attachment 6 for Riparian Buffer Waiver Request Information)
This project qualifies for an exception of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix). Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan. Existing riparian forest buffers will be protected to the extent practicable by minimizing the limit of disturbance at stream crossings. In addition to the exception, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the extent practicable. The limit of disturbance has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide surrounding the stream channel. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Note: If the proposed activity protects, converts or establishes a riparian or riparian forest buffer a Buffer Management Plan is required in the PCSM Plan.

3. Thermal Impacts Analysis

Please explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential thermal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. The disturbed areas will be reseeded as soon as practicable following construction

SECTION E. SITE RESTORATION (SR) PLAN BMPS

See the attached Instructions on how to complete this section.

If this section is not applicable to your project, please indicate by checking this box: N/A ☐

For earth disturbance projects involving oil and gas activities authorized by Chapter 78 (well pads) or pipelines and other similar utility infrastructure provide the information outlined below. If your project includes both oil and gas activities authorized by Chapter 78 (well pads) or pipelines and other similar utility infrastructure and other activities requiring Post Construction Stormwater Management, provide the information outlined in this Section as well as Section F.

Site Restoration BMPs should be designed to use natural measures to eliminate pollution, infiltrate runoff, not require extensive construction/maintenance activity, promote pollutant reduction, and preserve the integrity of stream channels. The Department recommends the use of PA Stormwater BMP manual to achieve this goal. The SR Plan must meet the requirements of Pa Code § 102.8(n) and be submitted with the NOI.

1. Site Restoration Plan Information – The Site Restoration Plan should be designed to maximize volume reduction technologies, eliminate (where possible) or minimize point source discharges to surface waters, preserve the integrity of stream channels, and protect the physical, biological and chemical qualities of the receiving surface water.

Design standards applied to develop the Site Restoration Plan. Check those that apply.

☒ Act 167 Plan – The attached SR Plan is consistent with an applicable approved Act 167 Plan.

Complete the following for all approved Act 167 Stormwater Management Plans. (Use additional sheets if necessary)

Act 167 Plan Name	Date Adopted	Consistency Letter Included	☐
See Table in Attachment 5		Verification Report Included	☒

***NOTE**: A consistency letter is not required if a verification report is provided. Please see NOI Instructions.* The Site Restoration Plan must satisfy either sub paragraph A, B, **or** C below. Check those that apply.

A. ☒ Act 167 Plan approvals on or after January 2005 - The attached PCSM Plan, in its entirety, is consistent with all requirements pertaining to rate, volume, and water quality from an Act 167 Stormwater Management Plan approved by DEP on or after January 2005. Letter A must be checked if a current, DEP approved Act 167 plan exists.

B. ☒ The PCSM meets the standard design criteria from the PA Stormwater BMP Manual. For projects involving oil and gas activities authorized by a permit issued under Chapter 78 (well pads) or pipelines and other similar utility infrastructure, post construction stormwater management requirements are met for all areas that are restored to preconstruction conditions or to a condition of meadow in good condition or better.

C. ☐ Alternative Design Standard – The attached PCSM Plan was developed using approaches other than 102.8(g)(2). Demonstrate/explain in the space provided below how this standard will be either more protective than what is required in 102.8(g)(2) or will maintain and protect existing water quality and existing and designated uses.

2. Riparian Buffer Information

A. Will you be protecting, converting or establishing a riparian buffer or a riparian forest buffer as part of this activity?
Protect ☒ Yes ☐ No Convert ☒ Yes ☐ No Establish ☐ Yes ☒ No

B. Will you be protecting, converting or establishing a voluntary riparian forest buffer as part of this activity?
☐ Yes ☒ No

C. Are you proposing to conduct oil and gas activities for which site reclamation or restoration is required under a permit issued under the auhtority of the 2012 Oil and Gas Act and Chapter 78 in a high quality or exceptional value watershed that is currently attaining its designated use and within 150 ft of a perennial or intermittent river, stream or creek or lake, pond or reservoir?

☐ Yes ☒ No If yes, provide a demonstration that any existing riparian buffer is undisturbed to the extent practicable.

D. If the regulations require a riparian buffer or riparian forest buffer and you are **not** providing one, list below the waiver provisions in the Chapter 102 regulations, Section 102.14(d)(i)-(vi), that you are requesting and provide additional documentation to demonstrate reasonable alternatives for compliance with 102.14 requirements and to demonstrate that any existing reparian buffer will remain undisturbed to the extent practicable.

(See Attachment 6 for Riparian Buffer Waiver Request Information)
This project qualifies for an exception of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix). Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan. Existing riparian forest buffers will be protected to the extent practicable by minimizing the limit of disturbance at stream crossings. In addition to the exception, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the extent practicable. The limit of disturbance has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide surrounding the stream channel. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible.

Note: If the proposed activity protects, converts or establishes a riparian or riparian forest buffer a Buffer Management Plan is required in the PCSM Plan.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

This section does not need to be completed for areas of projects involving oil and gas activities authorized by Chapter 78 (well pads) or pipelines and other similar utility infrastructure which will be restored to meadow in good condition or better or existing conditions.

Watershed Name: N/A - Restoring pipeline right of way to a meadow condition. See Section F for stormwater management calculations associated with the permanent access roads and block valves.			
Design storm frequency _____ Rainfall amount _____ inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)			
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs			
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs			
Stormwater discharge rate for the design frequency storm	Pre-construction	Post Construction	Net Change
1) 2-Year/24-Hour			
2) 10-Year/24-Hour			
3) 50-year/24-Hour			
4) 100-year/24-Hour			

4. SUMMARY DESCRIPTION OF SITE RESTORATION BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Site Restoration ☒ Restore Site to Meadow in Good Condition or Better, or Existing Conditions	Infiltration/Recharge Detention/WQ Treatment	_____	_____
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☒ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Detention Basins	Water Quality Treatment	_____ _____	_____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☒ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☐ _____	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and Site Restoration Plans that the discharge will not cause erosion, damage, or a nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months.

SECTION F. POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) PLAN BMPS

See the attached Instructions on how to complete this section.

If this section is not applicable to your project, please indicate by checking this box: N/A ☐

For earth disturbance projects requiring post construction stormwater management, provide the information outlined below. If your project includes both oil and gas activities authorized under a well permit issued under the 2012 Oil and Gas Act and Chapter 78 (well pads) or pipelines and other similar utility infrastructure and other activities requiring Post Construction Stormwater Management, provide the information outlined in this Section as well as Section E.

Post Construction Stormwater Management BMPs should be designed to use natural measures to eliminate pollution, infiltrate runoff, not require extensive construction/maintenance activity, promote pollutant reduction, and preserve the integrity of stream channels. The Department recommends the use of PA Stormwater BMP manual to achieve this goal. If PCSM BMPS and their application do not follow the guidelines referenced in the PA Stormwater BMP Manual, provide documentation to demonstrate performance equivalent to, or better than, the BMPs in the Manual.

1. Post Construction Stormwater Management Plan Information – The Post Construction Stormwater Management Plan must meet the requirements in 25 Pa. Code §102.8 and should be designed to maximize volume reduction technologies, eliminate (where possible) or minimize point source discharges to surface waters, preserve the integrity of stream channels, and protect the physical, biological and chemical qualities of the receiving surface water.

Design standards applied to develop the Post Construction Stormwater Management Plan. Check those that apply.

☒ Act 167 Plan – The attached PCSM Plan is consistent with an applicable approved Act 167 Plan.

Complete the following for all approved Act 167 Stormwater Management Plans. (Use additional sheets if necessary)

Act 167 Plan Name	Date Adopted	Consistency Letter Included ☐
See Table in Attachment 5		Verification Report Included ☒

NOTE: A consistency letter is not required if a verification report is provided. Please see NOI Instructions.

The PCSM Plan must satisfy either subparagraph A, B, **or** C below. Check those that apply. If a current, DEP approved Act 167 Plan exists, letter A must be checked.

A. ☒ Act 167 Plan approvals on or after January 2005 - The attached PCSM Plan, in its entirety, is consistent with all requirements pertaining to rate, volume, and water quality from an Act 167 Stormwater Management Plan approved by DEP on or after January 2005.

B. ☒ The PCSM meets the standard design criteria from 102.8(g)(2) and (3) the PA Stormwater BMP Manual. [Note: PCSM plans have to meet both the volume and rate requirements in the regulations, which are provided in these 2 sections].

C. ☐ Alternative Design Standard – The attached PCSM Plan was developed using alternative approaches as provided in 102.8(g)(2)(iv) and 102.(g)(3)(iii). Demonstrate/explain in the space provided below how this standard will be either more protective than what is required in 102.8(g)(2) and 102.8(g)(3) or will maintain and protect existing water quality and existing and designated uses.

2. Riparian Buffer Information

A. Will you be protecting, converting or establishing a riparian buffer or a riparian forest buffer as part of this activity?

Protect ☒ Yes ☐ No Convert ☒ Yes ☐ No Establish ☐ Yes ☒ No

B. Will you be protecting, converting or establishing a voluntary riparian forest buffer as part of this activity?

☐ Yes ☒ No

C. Are you proposing to conduct oil and gas activities for which site reclamation or restoration is is required under a well permit issued under the authority of the 2012 Oil and Gas Act and Chapter 78 and in a high quality or exceptional value watershed that is currently attaining its designated use and within 150 ft of a perennial or intermittent river, stream or creek or lake, pond or reservoir?

☐ Yes ☒ No If yes, provide a demonstration that any existing riparian buffer is undisturbed to the extent practicable.

D. If the regulations require a riparian buffer or riparian forest buffer and you are not providing one, list below the waiver provisions in the Chapter 102 regulations, Section 102.14(d)(i)-(vi), that you are requesting and provide additional documentation to demonstrate reasonable alternatives for compliance with 102.14 requirements and to demonstrate that any existing reparian buffer will remain undisturbed to the extent practicable.

(See Attachment 6 for Riparian Buffer Waiver Request Information)

This project qualifies for an exception of the riparian forest buffer requirement under Chapter 102.14(d)(1)(ix). Existing riparian forest buffers within the project area are identified on the E&S plan drawings in Attachment 2 of the E&S Plan. Existing riparian forest buffers will be protected to the extent practicable by minimizing the limit of disturbance at stream crossings. In addition to the exception, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

All disturbance activities, including those which impact riparian forest buffers, have been reduced to the extent practicable. The limit of disturbance has been reduced to 50 feet wide at all stream crossings within the riparian forest buffer area where possible. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian forest buffer, the LOD has been reduced to 50 feet wide surrounding the stream channel. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control BMPs. In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian forest buffers where possible

Note: If the proposed activity protects, converts or establishes a riparian or riparian forest buffer a Buffer Management Plan is required in the PCSM Plan.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: Boot Road - Chester County

Design storm frequency 2-yr Rainfall amount 3.30 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0	0.17	0.17
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	0.06	0.08	0.03
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		0.06	0
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	1.109	0.945	0.164
2) 10-Year/24-Hour	4.319	3.890	0.429
3) 50-year/24-Hour	8.438	8.125	0.313
4) 100-year/24-Hour	10.88	10.75	0.13

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	_____ _____ _____	_____ _____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☒ Infiltration Berm	Infiltration/Recharge	_____ _____ _____ 1208	_____ _____ _____ 0.46

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

A licensed professional or designee shall be present on site for the construction of the infiltration berm.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: Exton Junction - Chester County

Design storm frequency 2-yr Rainfall amount 3.30 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0	0.17	0.17
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	0.0058	0.019	-0.0132
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		0.01	0
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	1.125	1.108	0.017
2) 10-Year/24-Hour	4.164	3.803	0.361
3) 50-year/24-Hour	7.010	6.924	0.086
4) 100-year/24-Hour	7.922	7.780	0.142

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	_____ _____ _____	_____ _____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☒ Infiltration berm	Infiltration/Recharge	_____ _____ _____ 4124	_____ _____ _____ 1.41

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months.

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

A licensed professional or designee shall be present on site for the construction of the infiltration berm.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: Glen Mills - Delaware County

Design storm frequency 2-yr Rainfall amount 3.30 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0	0.15	0.18
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	0.02	0.04	0.02
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		0.02	0
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	0.324	0.287	0.037
2) 10-Year/24-Hour	1.279	0.998	0.281
3) 50-year/24-Hour	2.706	2.170	0.536
4) 100-year/24-Hour	3.45	2.842	0.608

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	_____ _____ _____	_____ _____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☒ Infiltration Berm	Infiltration/Recharge	_____ _____ _____ 871	_____ _____ _____ 0.24

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months.

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

A licensed professional or designee shall be present on site for the construction of the infiltration berm.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: Walnut Bank - Chester County

Design storm frequency 2-yr Rainfall amount 3.30 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0	0.23	0.23
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	.005	.026	.021
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		0.005	0
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	0.003	0.001	0.002
2) 10-Year/24-Hour	0.094	0.091	0.003
3) 50-year/24-Hour	1.4	1.175	0.225
4) 100-year/24-Hour	2.785	2.530	0.255

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	_____ _____ _____	_____ _____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☒ Infiltration berm	Infiltration/Recharge	_____ _____ _____ 853	_____ _____ _____ 0.52

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months.

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

A licensed professional or designee shall be present on site for the construction of the infiltration berm.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: West Baltimore Pike - Delaware County

Design storm frequency 2-yr Rainfall amount 3.30 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0	0.17	0.17
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	0.05	0.06	0.01
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		0.05	0
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	2.361	2.022	0.339
2) 10-Year/24-Hour	5.027	4.78	0.247
3) 50-year/24-Hour	8.586	8.196	0.39
4) 100-year/24-Hour	10.33	9.826	0.504

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas ☐ Infiltration Trench ☐ Infiltration Bed ☐ Infiltrated Basin	Infiltration/Recharge	_____ _____ _____	_____ _____ _____
Natural Area Conservation ☐ Streamside Buffer Zone ☐ Wetland Buffer Zone ☐ Sensitive Area Buffer Zone ☐ Pre-Construction Drainage Pattern Intact	Infiltration/Recharge	_____ _____ _____ _____	_____ _____ _____ _____
Stormwater Retention ☐ Constructed Wetlands ☐ Wet Ponds ☐ Retention Basin	Detention/Retention	_____ _____ _____	_____ _____ _____
Sediment and Pollutant Removal ☐ Vegetated Filter Strips ☐ Compost Filter Sock ☐ Detention Basins	Water Quality Treatment	_____ _____ _____	_____ _____ _____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☐ Riprap Aprons ☐ Upslope Diversions ☒ Infiltration Berm	Infiltration/Recharge	_____ _____ _____ 2974	_____ _____ _____ 0.62

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

Potential themal impacts to surface waters will be minimized by minimizing clearing and retaining existing vegetation where possible. Permanent seeding will occur as soon as practicable during germinating months

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

A licensed professional or designee shall be present on site for the construction of the infiltration berm.

3. SUMMARY TABLE FOR SUPPORTING CALCULATION AND MEASUREMENT DATA
See Attachment D in the Instructions on how to Complete This Section

Watershed Name: Baldwin Run (Twin Oaks Pump Station)

Design storm frequency 2-yr Rainfall amount 3.40 inches	Pre-construction	Post Construction	Net Change
Impervious area (acres)	0.00	1.509	+1.509
Volume of stormwater runoff (acre-feet) without planned stormwater BMPs	7,024	14,377	+7,353
Volume of stormwater runoff (acre-feet) with planned stormwater BMPs		5,050	-1,974
Stormwater discharge rate for the design frequency storm			
1) 2-Year/24-Hour	0.66	0.27	-0.39
2) 10-Year/24-Hour	2.57	0.68	-1.89
3) 50-year/24-Hour	6.20	1.21	-4.99
4) 100-year/24-Hour	8.64	1.47	-7.17

4. SUMMARY DESCRIPTION OF POST CONSTRUCTION STORMWATER BMPs

In the lists below, check the BMPs identified in the Post Construction Stormwater Management Plan. The primary function(s) of the BMP listed in the functions column (infiltration/recharge; detention/retention; water quality). Additional functions may be added if applicable to that BMP. List the stormwater volume and area of runoff to be treated by each BMP type when calculations are required. If any BMP in the Site Restoration Plan is not listed below, describe it in the space provided after "Other".

BMP	Function(s)	Volume of stormwater treated	Acres treated
Bio-infiltration areas	Infiltration/Recharge		
☐ Infiltration Trench		_____	_____
☐ Infiltration Bed		_____	_____
☐ Infiltrated Basin		_____	_____
Natural Area Conservation	Infiltration/Recharge		
☐ Streamside Buffer Zone		_____	_____
☐ Wetland Buffer Zone		_____	_____
☐ Sensitive Area Buffer Zone		_____	_____
☐ Pre-Construction Drainage Pattern Intact		_____	_____
Stormwater Retention	Detention/Retention		
☐ Constructed Wetlands		_____	_____
☒ Wet Ponds		33,803 cf	2.132
☐ Retention Basin		_____	_____
Sediment and Pollutant Removal	Water Quality Treatment		
☐ Vegetated Filter Strips		_____	_____
☐ Compost Filter Sock		_____	_____
☐ Detention Basins		_____	_____

Access Road Design ☐ Road Crowning ☐ Ditches ☐ Turnouts ☐ Culverts ☐ Roadside Vegetated Filter Strips	Infiltration/Recharge	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Stormwater Energy Dissipaters ☐ Level Spreaders ☒ Riprap Aprons ☐ Upslope Diversions ☐ _____	Infiltration/Recharge	_____ 33,803 cf _____ _____	_____ 2.132 _____ _____

5. Off-site Discharge Analysis.

Does the activity propose any off-site discharges to areas other than surface waters? ☐ Yes ☒ No

If yes, it is the applicant's responsibility to ensure that they have legal authority for any off-site discharge.

The Applicant must provide a demonstration in both the E&S and PCSM Plans that the discharge will not cause erosion, damage, or nuisance to off-site properties.

6. Thermal Impact Analysis.

Explain how thermal impacts associated with this project were avoided, minimized, or mitigated.

There is no anticipated thermal impacts associated with the project. All runoff is routed to a detention/infiltration basin. The infiltration and detention facilities will slow release of runoff and promote infiltration/evaporation to minimize and mitigate any potential thermal impacts.

7. Critical PCSM Plan stages.

Identify and list critical stages of implementation of the PCSM Plan for which a licensed professional or designee shall be present on site.

Professional oversght during construction of wet pond.

SECTION G. ANTIDEGRADATION ANALYSIS

This section must be completed where earth disturbance activities will be conducted in special protection or siltation-impaired watersheds.

Part 1 NONDISCHARGE ALTERNATIVES EVALUATION

The applicant must consider and describe any and all nondischarge alternatives for the entire project area which are environmentally sound and will**:**

- Minimize accelerated erosion and sedimentation during the earth disturbance activity
- Achieve no net change from pre-development to post-development volume, rate and concentration of pollutants in water quality

E & S Plan	*Official Use Only*	PCSM/Site Restoration Plan	*Official Use Only*
Check off the environmentally sound nondischarge Best Management Practices (BMPs) listed below to be used prior to, during, and after earth disturbance activities that have been incorporated into your E & S Plan based on your site analysis. For non-discharge BMPs not checked, provide an explanation of why they were not utilized. Also for BMPs checked, provide an explanation of why they were utilized. (Provide your analysis and attach additional sheets if necessary) The best possible pipeline route was selected based on landowner agreements, and minimization of environmental impacts, and engineering/constructibiliy factors. The project's disturbed area will be limited to the area required for construction, and the duration of construction will be minimized to the extent practicable. Riparian forest buffers will be protected to the extent practicable during construcion activities at stream crossings.		Check off the environmentally sound nondischarge Best Management Practices (BMPs) listed below to be used after construction that have been incorporated into your PCSM/SR Plan based on your site analysis. For non-discharge BMPs not checked, provide an explanation of why they were not utilized. Also for BMPs checked, provide an explanation of why they were utilized. (Provide your analysis and attach additional sheets if necessary) The best possible pipeline route was selected based on landowner agreements, and minimization of environmental impacts, and engineering/constructibility factors. The pipeline right of way will be restored to a meadow condition at original contours to maintain the pre-construction drainage patterns. Riparian forest buffers will be protected to the extent practicable.	
Nondischarge BMPs ☐ Alternative Siting ☐ Alternative location ☐ Alternative configuration ☐ Alternative location of discharge ☒ Limited Disturbed Area ☒ Limiting Extent & Duration of Disturbance (Phasing, Sequencing) ☐ Riparian Buffers (150 ft. min.) ☐ Riparian Forest Buffer (150 ft. min.) ☐ Other _____		**Nondischarge BMPs** ☐ Alternative Siting ☐ Alternative location ☐ Alternative configuration ☐ Alternative location of discharge ☐ Low Impact Development (LID / BSD) ☐ Riparian Buffers (150 ft. min.) ☐ Riparian Forest Buffer (150 ft. min.) ☐ Infiltration ☐ Water Reuse ☒ Other re-construction drainage pattern intact within the right of way	

Will the non-discharge alternative BMPs eliminate the net change in rate, volume and quality during and after construction?

☐ Yes ☒ No

If yes, antidegradation analysis is complete.
If no, proceed to Part 2.

PART 2 ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT)			
If the net change in stormwater discharge from or after construction is not fully managed by nondischarge BMPs, the applicant must utilize ABACT BMPs to manage the difference. The Applicant must specify whether the discharge will occur during construction, post-construction or both, and identify the technologies that will be used to ensure that the discharge will be a non-degrading discharge. ABACT BMPs include but are not limited to:			
E & S Plan	***Official Use Only***	**PCSM/Site Restoration Plan**	***Official Use Only***
☒ **Treatment BMPs:** ☐ Sediment basin with skimmer ☐ Sediment basin ratio of 4:1 or greater (flow length to basin width) ☐ Sediment basin with 4-7 day detention ☐ Flocculants ☒ Compost Filter Socks ☐ Compost Filter Sock Sediment Basin ☒ RCE w/ Wash Rack ☐ **Land disposal:** ☐ Vegetated filters ☐ Riparian buffers <150ft. ☐ Riparian Forest Buffer <150ft. ☐ Immediate stabilization ☒ **Pollution prevention:** ☒ PPC Plans ☐ Street sweeping ☐ Channels, collectors and diversions lined with permanent vegetation, rock, geotextile or other non-erosive materials ☐ **Stormwater reuse technologies:** ☐ Sediment basin water for dust control ☐ Sediment basin water for irrigation ☒ **Other** Rock construction entrances with wash racks, compost filter socks, erosion control blanket placed within 100-feet of streams		☐ **Treatment BMPs:** ☒ Infiltration Practices ☐ Wet ponds ☐ Created wetland treatment systems ☐ Vegetated swales ☐ Manufactured devices ☐ Bio-retention/infiltration ☐ Green Roofs ☐ **Land disposal:** ☐ Vegetated filters ☐ Riparian Buffers <150ft. ☐ Riparian Forest Buffer <150ft. ☐ Disconnection of roof drainage ☐ Bio-retention/bio-infiltration ☒ **Pollution prevention:** ☐ Street sweeping ☐ Nutrient, pesticide, herbicide or other chemical application plan alternatives ☒ PPC Plans ☐ Non-structural Practices ☒ Restoration BMPs ☐ **Stormwater reuse technologies:** ☐ Divert rainwater into impoundment ☐ Underground storage ☐ Spray/Drip Irrigation ☐ **Other** _____	

SECTION H. COMPLIANCE REVIEW

Is the applicant in violation of any existing permit, regulation, order, or schedule of compliance issued by the Department within the last 5 years?

☒ Yes ☐ No

If yes, provide the permit number or facility name, a brief description of the violation, the compliance schedule (including dates and steps to achieve compliance) and the current compliance status. (Attach additional information on a separate sheets, when necessary)

Notices of Violations attached in formal application

SECTION I. CERTIFICATION BY PERSON PREPARING APPLICATION

I do hereby certify to the best of my knowledge, information, and belief, that the Erosion and Sediment Control and PCSM/Site Restoration Plans are true and correct, represent actual field conditions, and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Print Name Robert F. Simcik, P.E.	Signature 8/24/15	Professional Seal
Company Tetra Tech		
Address 661 Andersen Drive, Foster Plaza 7, Pittsburgh, PA 15220		
Phone (412) 921-8163		
Most Recent DEP Training Attended Location Greensburg, PA Date 04/03/2014		
e-Mail Address robert.simcik@tetratech.com		

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

EXPEDITED REVIEW PROCESS

In addition to the certification required above applicants using the expedited permit review process must attach an E&S and PCSM/Site Restoration Plans developed and sealed by a licensed professional engineer, surveyor or professional geologist. The plans shall contain the following certification:

I do hereby certify to the best of my knowledge, information, and belief, that the E & S Control and SR/PCSM BMPs are true and correct, represent actual field conditions and are in accordance with the 25 Pa. Code Chapters 78 and 102 of the Department's rules and regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SECTION J. APPLICANT CERTIFICATION

Applicant Certification. I certify under penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. The responsible official's signature also verifies that the activity is eligible to participate in the permit, and that the applicant agrees to abide by the terms and conditions of the permit. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Matthew L. Gordon - Project Manager - Sunoco Print Name and Title of Applicant	Print Name and Title of Co-Applicant (if applicable)
Signature of Applicant	Signature of Co-Applicant
8/24/2015 Date Application Signed	Date Application Signed

Notarization

Sworn to and subscribed to before me this 24TH day of August, 2015

Ronald J. Furman
Notary Public

Commonwealth of Pennsylvania
County of _____
My Commission expires _____

AFFIX SEAL

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Ronald J. Furman, Notary Public
Spring Twp., Berks County
My Commission Expires April 4, 2016
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

SECTION K. CONTACT FOR ADDITIONAL INFORMATION				
Contact's Last Name	First Name	MI	Phone	(412) 921-8163
Simcik	Robert	F	FAX	
Mailing Address	City		State	ZIP + 4
661 Andersen Drive, Foster Plaza 7	Pittsburgh		PA	15220
e-Mail Address robert.simcik@tetratech.com				

ATTACHMENT 1:

Site Directions

Detailed Written Directions to the Site

Chester County

From the DEP South East Regional Office to Exton Junction Block Valve site (approximately 500 Lancaster Pike, Exton, PA 19341)

Head northwest on E Main St toward Swede St (0.3 mi). Turn left onto Markley St (0.1 mi). Continue onto US-202 S/William F. Dannehower Memorial Bridge (14.3 mi). Take the US-30 W exit toward Downingtown/Coatesville (0.2 mi). Keep left, follow signs for US-30 E/US-30 BUS/Exton/Frazer (0.3 mi). Turn right onto US-30 BUS/Lancaster Pike/Lincoln Hwy E. The drive for the Exton Junction Block Valve (500 Lancaster Pike) will be on the left approximately 1.6 miles down the road.

Delaware County

From the DEP South East Regional Office to West Baltimore Pike Block Valve site (approximately 219 Lenni Road, Glen Riddle, PA 19063)

Head southeast on E Main St toward Strawberry Alley (1.6 mi). Continue onto E Ridge Pike (0.2 mi). Continue onto E Main St (0.2 mi). Continue onto Ridge Pike (0.7 mi). Slight right to merge onto I-476 S (0.2 mi). Merge onto I-476 S (13.2 mi). Take exit 5 to merge onto U.S. 1 S/Media Bypass (0.7 mi). Merge onto U.S. 1 S/Media Bypass (3.3 mi). U.S. 1 S/Media Bypass turns slightly right and becomes U.S. 1 S/W Baltimore Pike (1.0 mi). Turn left onto PA-452 S (0.6 mi). Slight right onto Lenni Rd. The entrance to the West Baltimore Pike Block Valve site will be on the right approximately 500 feet down the road.

ATTACHMENT 2:

Municipalities Table

Municipalities

Pennsylvania Pipeline Project

SouthEast Region

County	Muncipality
Chester	Elverson Borough
	West Nantmeal Township
	East Nantmeal Township
	Wallace Township
	Upper Uwchlan Township
	Uwchlan Township
	West Whiteland Township
	East Whiteland Township
	West Goshen Township
	East Goshen Township
	Westtown Township
Delaware	Thornbury Township
	Edgmont Township
	Middletown Township
	Aston Township
	Brookhaven Borough
	Chester Township
	Upper Chichester Township

ATTACHMENT 3:

Water/Watershed Table

Receiving Waters Table

Pennsylvania Pipeline Project

Southeast Region

Stream Name	County	Township	Chapter 93 Designated Use (Existing Use, if applicable)	Chapter 93 Code	Siltation Impaired
UNT to Conestoga River	Chester	West Nantmeal	WARM WATER FISHES	WWF	No
UNT to South Branch French Creek	Chester	West Nantmeal	EXCEPTIONAL VALUE	EV	No
South Branch French Creek	Chester	West Nantmeal	EXCEPTIONAL VALUE	EV	No
UNT to Marsh Creek	Chester	West Nantmeal	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Marsh Creek	Chester	East Nantmeal	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Upper East Branch Brandywine Creek	Chester	Wallace	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Marsh Creek	Chester	Wallace	WARM WATER FISHES	HQ	No
UNT to Marsh Creek	Chester	Upper Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	No
Marsh Creek	Chester	Upper Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	No
Black Horse Creek	Chester	Upper Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Black Horse Creek	Chester	Upper Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	No
Shamona Creek	Chester	Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	Yes
UNT to Shamona Creek	Chester	Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	Yes
UNT to Upper East Branch Brandywine Creek	Chester	Uwchlan	HIGH QUALITY-TROUT STOCKING	HQ	No
UNT to Valley Creek	Chester	Uwchlan	COLD WATER FISHES	CWF	Yes
UNT to Valley Creek	Chester	West Whiteland	COLD WATER FISHES	CWF	Yes
Valley Creek	Chester	West Whiteland	COLD WATER FISHES	CWF	Yes
East Branch Chester Creek	Chester	West Whiteland	TROUT STOCKING	TSF	Yes
East Branch Chester Creek	Chester	West Goshen	TROUT STOCKING	TSF	Yes
UNT to Chester Creek	Chester	West Goshen	TROUT STOCKING	TSF	Yes
UNT to Ridley Creek	Chester	West Goshen	HIGH QUALITY-TROUT STOCKING	HQ	Yes
UNT to Chester Creek	Chester	Westtown	TROUT STOCKING	TSF	Yes
UNT to Ridley Creek	Chester	Westtown	HIGH QUALITY-TROUT STOCKING	TSF	Yes
UNT to Ridley Creek	Delaware	Thornbury	HIGH QUALITY-TROUT STOCKING	TSF	Yes
UNT to Chester Creek	Delaware	Thornbury	TROUT STOCKING	TSF	Yes
UNT to Chester Creek	Delaware	Edgmont	TROUT STOCKING	TSF	Yes
UNT to Ridley Creek	Delaware	Edgmont	TROUT STOCKING	TSF	Yes
UNT to Chester Creek	Delaware	Middletown	TROUT STOCKING	TSF	Yes
Rocky Run	Delaware	Middletown	HIGH QUALITY-COLD WATER FISHES	HQ	Yes
UNT to Rocky Run	Delaware	Middletown	HIGH QUALITY-COLD WATER FISHES	HQ	Yes
UNT to Chester Creek	Delaware	Middletown	TROUT STOCKING	TSF	Yes
Chrome Run	Delaware	Middletown	TROUT STOCKING	TSF	Yes
Crum Run	Delaware	Middletown	TROUT STOCKING	TSF	Yes
UNT to Crum Run	Delaware	Middletown	TROUT STOCKING	TSF	Yes
Chester Creek	Delaware	Middletown	TROUT STOCKING	TSF	Yes
UNT to Chester Creek	Delaware	Aston	TROUT STOCKING	TSF	Yes
Chester Creek	Delaware	Aston	TROUT STOCKING	TSF	Yes
Chester Creek	Delaware	Aston	WARM WATER FISHES	WWF	Yes
UNT to Delaware River	Delaware	Aston	WARM WATER FISHES	WWF	No
UNT to Baldwin Run	Delaware	Aston	WARM WATER FISHES	WWF	Yes
Chester Creek	Delaware	Brookhaven	WARM WATER FISHES	WWF	Yes
UNT to Baldwin Run	Delaware	Chester	WARM WATER FISHES	WWF	Yes
Baldwin Run	Delaware	Chester	WARM WATER FISHES	WWF	Yes
UNT to Chester Creek	Delaware	Chester	WARM WATER FISHES	WWF	Yes
UNT to Delaware River	Delaware	Chester	WARM WATER FISHES	WWF	No
UNT to Baldwin Run	Delaware	Upper Chichester	WARM WATER FISHES	WWF	Yes
UNT to Delaware River	Delaware	Upper Chichester	WARM WATER FISHES	WWF	No

Recieving Wetlands
Pennsylvania Pipeline Project
South-East Region

Municipality	Receiving Water	Number of Wetlands	Number of EV Wetlands (Classification)
CHESTER COUNTY			
West Nantmeal	UNT to South Branch French Creek	9	3 (EV Stream)
West Nantmeal	UNT to Marsh Creek	1	0
East Nantmeal	UNT to Marsh Creek	2	0
Wallace	UNT to Marsh Creek	6	0
Upper Uwchlan	UNT to Marsh Creek	18	7 (Wild Trout); 1 (Bog Turtle)
Uwchlan	UNT to Shamona Creek	5	2 (Bog Turtle)
West Whiteland	UNT to Valley Creek	17	2 (Wild Trout)
West Whiteland	UNT to Chester Creek	2	0
West Goshen	UNT to Chester Creek	1	0
East Goshen	UNT to Chester Creek	2	0
Westtown	UNT to Chester Creek	1	0
DELAWARE COUNTY			
Edgmont	UNT to Chester Creek	6	0
Middletown	UNT to Chester Creek	18	1 (Wild Trout); 1 (Red Bellied Turtle)
Aston	UNT to Chester Creek	1	0
Aston	UNT to Baldwin Run	3	0
Chester	UNT to Baldwin Run	12	0
Chester	UNT to Chester Creek	2	0
Upper Chichester	UNT to Baldwin Run	14	0

ATTACHMENT 4:

Storm Sewer Operator Table

Municipal Separate Storm Sewer Operators

Pennsylvania Pipeline Project

Southeast Region

MUNICIPALITY	TYPE	COUNTY	STATUS	PERMIT NUMBER	APPROVED
WEST WHITELAND	Township	Chester	Individual	PAI130530	2/18/2004
EAST GOSHEN	Township	Chester	Individual	PAI130520	2/23/2004
WEST GOSHEN	Township	Chester	Individual	PAI130532	2/13/2004
UPPER UWCHLAN	Township	Chester	Individual	PAI130527	2/19/2004
UWCHLAN	Township	Chester	Individual	PAI130505	2/19/2004
WALLACE	Township	Chester	Individual	PAI130529	2/18/2004
WESTTOWN	Township	Chester	Individual	PAI130528	2/23/2004
BROOKHAVEN	Borough	Delaware	General	PAG130125	2/10/2004
ASTON	Township	Delaware	General	PAG130122	2/23/2004
MIDDLETOWN	Township	Delaware	Individual	PAI130510	2/4/2004
THORNBURY	Township	Delaware	Individual	PAI130517	2/27/2004
EDGMONT	Township	Delaware	Individual	PAI130522	2/23/2004
UPPER CHICHESTER	Township	Delaware	General	PAG130082	1/28/2004
CHESTER	Township	Delaware	General	PAG130089	1/31/2004

ATTACHMENT 5:

Act 167 Tracking Table

ACT 167 PLAN TRACKING TABLE
Pennsylvania Pipeline Project
South East Region

County	Countywide Act 167 Plan?	Name of Adopted Plan	Date Approved	Municipalities That Have Enacted the Plan
Chester	Yes	County-wide Act 167 Stormwater Management Plan for Chester County, PA	July 2, 2013	All Municipalities
		Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	West Whiteland, East Goshen, Westtown, Thornbury
		Conestoga River Act 167 Plan	October 24, 2005	Elverson, West Nantmeal
Delaware	No	Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	Thornbury, Edgmont, Chester, Aston, Middletown, Brookhaven
		Ridley Creek Act 167 Plan	1988	Edgmont, Thornbury

ATTACHMENT 6:

RIPARIAN BUFFER WAIVER REQUEST INFORMATION

Attachment 6 - Riparian Buffer Waiver Request

Pennsylvania Pipeline Project -

South East Region: Spread 6

March 2016

Prepared for:

Sunoco Logistics, L.P.
525 Fritztown Road
Sinking Spring, PA

Prepared by:
Tetra Tech, Inc. 661
Andersen Drive
Pittsburgh, PA 15220

TABLE OF CONTENTS

Section **Page**

LIST OF ATTACHMENTS 2
LIST OF ACRONYMS 2
PENNSYLVANIA PIPELINE PROJECT - RIPARIAN BUFFER WAIVER REQUEST 3
DEMONSTRATION OF WAIVER NECESSITY 3
ALTERNATIVES ANALYSIS 3
Baseline project alternative 4
No impact alternative 4
Route Selection 5
Route Variations 5
DEMONSTRATION OF MINIMIZING IMPACTS 8
MEETING REQUIREMENTS OF CHAPTER 102 8

LIST OF ATTACHMENTS

1 Table 2 – Riparian Buffer Waiver Information

2 Riparian Buffer Site Plans

LIST OF ACRONYMS

ACRONYM	MEANING
BMP	Best Management Practice
E&SC	Erosion and Sediment Control
EV	Exceptional Value
HQ	High Quality
LOD	Limit of Disturbance
PCSM	Post-Construction Stormwater Management
ROW	Right of way
SR	Sight Restoration

PENNSYLVANIA PIPELINE PROJECT - RIPARIAN BUFFER WAIVER REQUEST

The Pennsylvania Pipeline Project qualifies for an exception of the riparian buffer requirement under Chapter 102.14(d)(1)(ix) for areas within the Chapter 105 permit area. Site plan drawings attached with this narrative are provided to show the 150 foot riparian buffer areas along HQ/EV streams for which this waiver is being prepared. The waiver is being requested for all non-perpendicular crossings of the riparian buffers. The site plans show the location and limits of the work and earth disturbance. Table 2 is provided as a summary and indication of the locations for which the waiver is being requested. Table 2 also indicates the designated use of the receiving water, if the water is impaired and if the water has a total maximum daily load, TMDL.

In addition to the exception, we are requesting a waiver under 102.14(d)(2)(ii) for areas within 150' of surface waters that are outside of the Chapter 105 permit area.

DEMONSTRATION OF WAIVER NECESSITY

A riparian buffer waiver is necessary to complete the intended scope of the pipeline project. The project involves the installation of two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, PA to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. Spread 6 (South East Region) of this project are cross through Chester and Delaware Counties, PA. Due to the linear nature of the project and the surrounding topography, riparian buffers could not be avoided altogether.

ALTERNATIVES ANALYSIS

During the development and siting of the proposed project, SPLP considered a number of different alternatives including the No-Impact as well as alternate routes and construction design methods. While it is impractical to document all the actions taken by SPLP to avoid/minimize impacts on a project of this size, the intent of this section is to provide a summary of the major actions SPLP has taken to accomplish this goal. Impacts to environmental resources, including riparian buffers, were evaluated during the pipeline routing phase of the project. Field teams were deployed to evaluate alternate routes based on environmental and constructability constraints. The final route that was selected minimizes environmental impacts to the maximum extent practicable while still maintaining the project's overall constructability and ensuring a safe working environment while also taking landowner constraints into consideration. Additionally, several variations of horizontal direction drill profiles were evaluated to minimize pullback areas, additional workspaces, and overall disturbance within riparian buffers. Permanent features, such as access roads and block valves, were evaluated to locate the features outside of the riparian buffer, where possible.

BASELINE PROJECT ALTERNATIVE

The Baseline Project Alternative considers that the project is built based on ease of construction and not limiting impacts to resources. The project would significantly impact resources if HDD's were not performed to minimize impacts to resources and were instead open cut installations of the pipeline. Necking down of the ROW at resources and locating temporary workspaces 10 feet from resources is a significant construction constraint that is done to minimize the impacts to streams, wetlands, and riparian buffers.

NO IMPACT ALTERNATIVE

The No-Impact Alternative considers the potential benefits and adverse impacts if the project were not constructed. If the Project were not constructed, one potential benefit would be the absence of environmental impacts associated with construction and operation of the project; however, the local communities/markets in need of the natural gas liquids (NGLs) that would no longer be provided would be adversely impacted. Specifically, the purpose/need of the Project to transport low cost Marcellus Shale production to markets locally and domestically in the U.S. and to international markets would not be met. Consequently, the No-Action Alternative would likely require the use of other energy sources to satisfy the growing energy demand that would not be met by the Project. Accordingly, customers in those markets would have fewer available and likely more expensive options for obtaining natural gas supplies in the near future.

According to the Energy Information Administration's (EIA) Annual Energy Outlook 2015, energy consumption is projected to grow through 2040 even with increases in energy conservation and energy efficiency (EIA 2015). This is evident in the natural gas industry, where domestic consumption increased 2.8 percent from 2013 to 2014, to 73.6 billion cubic feet per day (Bcfd). Within Pennsylvania alone, natural gas consumption increased from 706.2 Bcfd in 1997 to 1,090 Bcfd in 2013, with dramatic usage coming from the electric generation sector. Due to the increasing demands for energy and abundant supply of natural gas, natural gas consumption is forecast to continue to increase, adding to the rapid growth and expansion of natural gas drilling and production currently in occurrence. Unfortunately, despite the vast increases in natural gas production, the lack of distribution infrastructure has constrained the natural gas market. These constraints have caused many portions of eastern Pennsylvania and New England to be affected by volatile natural gas prices, particularly during cold snaps in the winter heating season. The spikes in price mostly result from insufficient pipeline capacity to transport natural gas supplies to those markets where it is mostly needed. As such, the Pennsylvania Public Utilities Commission (PA PUC) has indicated that additional pipelines could help remove these constraints and stabilize regional markets, and would help move the vastly increased Marcellus Shale gas production to consumers (PA PUC 2015).

Under the No Impact Alternative, customers would be required to find alternative means to transport gas produced in the central Marcellus fairway to accessible markets. Consequently, other pipeline construction and

the associated environmental impacts would be necessary because existing infrastructure is currently not sufficient to provide firm transportation service for the large volumes required to alleviate supply shortages in eastern Pennsylvania and nearby markets in New England, as well as other areas. As such, the No-Impact Alternative would not fulfill the purpose or objectives of the Project and was not selected.

ROUTE SELECTION

SPLP has co-located the project with an existing ROW for the majority of the route. This is a major means for avoiding new impacts to sensitive resources (i.e., forested wetlands) and for minimizing environmental impacts for the entire project. In addition to this major routing decision, SPLP has implemented a number of other route variations, both minor and major, to further reduce the environmental impacts associated with the project. The following sections provide an overview of just a few of these variations across the different counties in the South East region traversed by the project.

Route Variations

SPLP evaluated numerous minor route variations along the original proposed route in response to engineering and environmental constraints identified during the initial/early planning and design process, during field surveys, and coordination regarding other issues of concern (i.e. land use impacts, permanent easement acquisitions, and overall project costs). A large number of these variations were specifically developed to reduce impacts in environmentally sensitive areas such as wetlands and streams, riparian buffers, cultural/historical significant resources, and threatened/endangered species habitats or those habitats for species of concern.

Existing publicly available data, including aerial photography, topographic maps, National Wetland Inventory ("NWI") maps, USGS quadrangle maps, and parcel maps/attributes were incorporated into a project specific geographic information system (GIS) geo-database used for initial analysis of each route variation. Where feasible, landowners were contacted to survey properties and discuss potential easements. In addition, field surveys were conducted to evaluate further routing opportunities. The intent was to identify an environmentally sound, technically feasible, and cost-effective pipeline route for the transportation of NGLs.

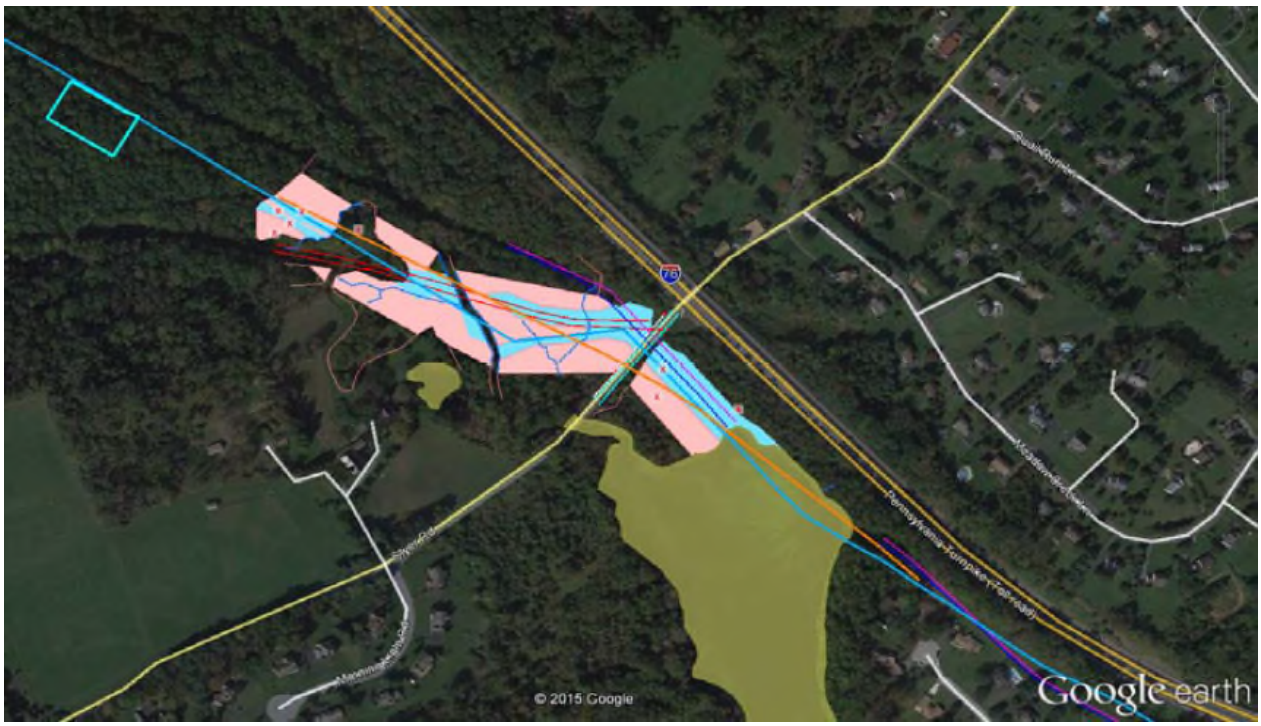
In order to provide a few examples of the minor route variations evaluated and incorporated into the project, one route variation for each County is described below (Table 1). Through the incorporation of the route variations presented below, potential impacts to aquatic resources including wetlands and streams, threatened/endangered or species of concern, riparian buffers and cultural resources were reduced.

Table 1 – Route Variations Evaluated

Variation Number	County	Figure Reference	Variation Description	Status
1	Chester	Figure 13	This route variation allows for an improved pipeline ROW drill profile, allowing for an easier HDD through an environmentally sensitive area.	Incorporated
2	Delaware	Figure 14	This ROW avoids a space-constrained area between the waste treatment plant and river bed, as well as wetland areas.	Incorporated

Route Variation 1: Located in Chester County, this approximately 0.46-mile route variation moves the centerline of the pipelines south from the original proposed route to reduce impacts to forested wetlands, streams, and the Marsh Creek Reservoir. In addition, this variation allows SPLP to maintain a direct drill profile.

Figure 13: Route Variation 1

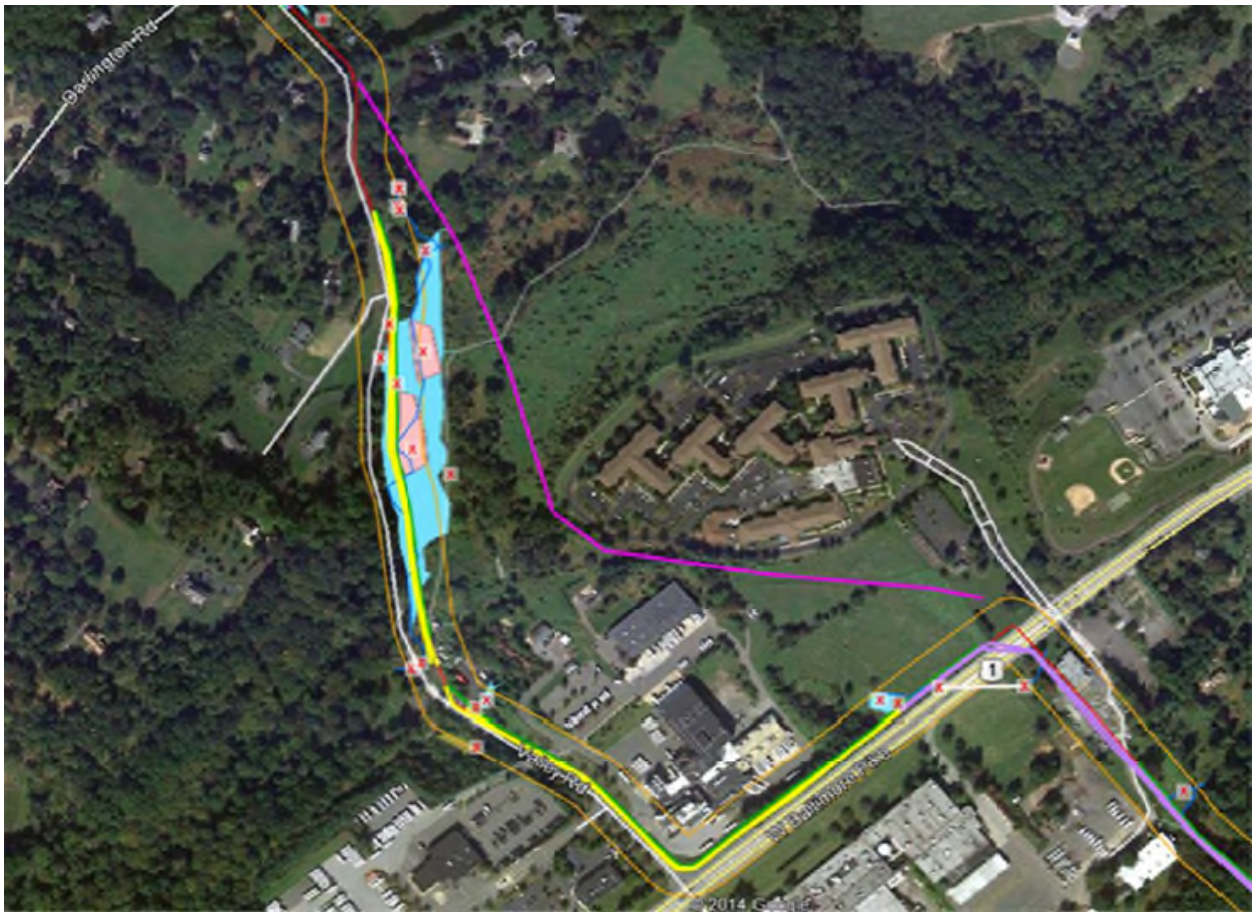


Note: dark blue = Buckeye Pipeline; purple = Enterprise Pipeline; red = Texas Eastern Pipeline;

Light blue = original route; orange = proposed alternate route; shaded blue/pink = wetlands

<u>Route Variation 2:</u> Located in Delaware County, this approximately 0.58-mile route variation moves the centerline of the pipelines southeast from the original proposed route to avoid limited space between the waste treatment plant and the river bed, and also to avoid wetland areas.

Figure 14: Route Variation 2



Note: yellow = original route; purple = proposed alternate route; blue- and pink-shaded areas = emergent and forested wetlands

DEMONSTRATION OF MINIMIZING IMPACTS

All disturbance activities, including those which impact riparian buffers, have been reduced to the maximum extent practicable. The limit of disturbance (LOD) has been reduced to 50 feet wide at all stream crossings within the riparian buffer area where possible adjacent to the stream area required for crossing and construction. In areas where it is not practicable to reduce the LOD throughout the entire extent of the riparian buffer, the LOD has been reduced to 50 feet wide within 10 feet of the stream banks to limit the proximity of the work areas as per the stream crossing detail from the PADEP manual. The operations within the LOD near stream crossings typically includes a topsoil stockpile, a stockpile for pipe trench excavation material, a pipe trench, a travel lane, a work area for equipment operation and pipeline welding outside the trench, and an area to install the erosion control best management practices (BMPs). In addition, site conditions such as steep slopes, varying depths of topsoil, and other on-site conditions limit the amount of work area. Reducing the LOD to a greater extent could potentially result in unsafe working conditions and would hinder the ability to complete the stream crossing within the required time frame of 24 hours or less. Workspaces that provide additional space for stream crossing activities have been placed outside of riparian buffers where possible. The PCSM berms and trenches are not located within riparian buffers.

MEETING REQUIREMENTS OF CHAPTER 102

All other aspects of Chapter 102 are being met. The project's Erosion and Sediment Control Plan and Site Restoration/PCSM Plan have been designed in accordance with Chapter 102. In accordance with Chapter 102, and E&S plan has been developed to minimize the sediment entering the buffer areas. A site restoration plan is proposed to revegetate the areas adjacent to the buffers within the right of way. The PCSM plan has been design to control runoff rate and volume which may be discharge through riparian buffer areas.

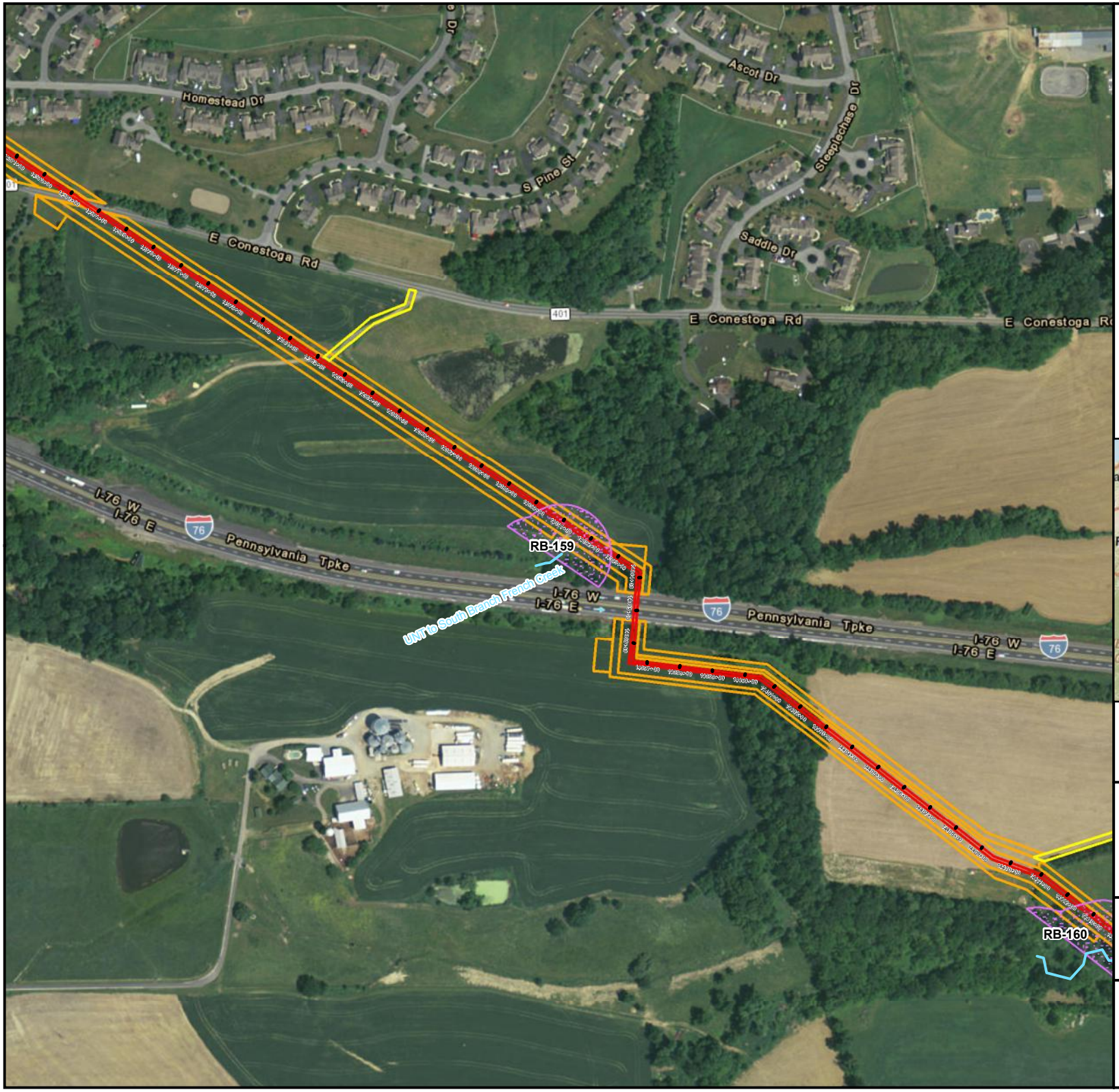
Table 2:

Riparian Buffer Waiver Information

South East Region

E&S SHEET NUMBER	STREAM NAME	PERPENDICULAR OR NON-PERPENDICULAR	STATIONING	DESIGNATED USE	SITE PLAN DESIGNATION (RB-)	IMPAIRMENT	TMDL (Yes/No)	LENGTH OF BUFFER	WIDTH OF BUFFER	AREA OF BUFFER	LENGTH OF TIME OF DISTURBANCE
CHESTER											
ES- 6.04	UNT to South Branch French Creek	Non	56+00	EV	159	Source Unknown - Pathogens	No	336.96	189.02	0.98	24 hrs
ES - 6.05	South Branch French Creek	Non	76+00 through 83+00	EV	160	Source Unknown - Pathogens	No	787.66	213.05	2.99	48 hrs
ES - 6.07	UNT to South Branch French Creek	Non	106+00	EV	161	Source Unknown - Pathogens	No	908.47	210.75	3.55	24 hrs
ES - 6.07	UNT to South Branch French Creek	Non	109+50	EV	161	Source Unknown - Pathogens	No	908.47	210.75	3.55	24 hrs
ES - 6.07	UNT to South Branch French Creek	Parallel	116+00	EV	162	Source Unknown - Pathogens	No	221.28	66.59	1.53	30 days
ES - 6.09	UNT to Marsh Creek	Non	143+50	HQ-TSF	163	NA	Yes	541.09	301.69	2.29	24 hrs
ES - 6.09	UNT to Marsh Creek	Non	154+00	HQ-TSF	164	NA	Yes	418.45	210.59	1.74	24 hrs
ES - 6.11	UNT to Marsh Creek	Non	187+00	HQ-TSF	165	NA	Yes	352.70	231.29	1.43	24 hrs
ES - 6.17	UNT to Marsh Creek	Parallel	282+00 through 285+00	HQ-TSF	166	NA	Yes	504.03	179.59	1.73	24 hrs
ES - 6.19	UNT to Marsh Creek	Non	322+00	HQ-TSF	167	NA	Yes	407.77	225.58	1.88	24 hrs
ES - 6.20	UNT to Marsh Creek	Non	337+50 through 343+00	HQ-TSF	168	NA	Yes	558.46	277.39	2.24	24 hrs
ES - 6.24	Marsh Creek	Non	402+00 through 405+00	HQ-TSF	169	NA	Yes	536.39	365.48	2.29	48 hrs
ES - 6.25	UNT to Marsh Creek	Parallel	415+00 through 418+00	HQ-TSF	170	NA	Yes	681.00	210.90	3.17	30 days
ES - 6.26	Black Horse Creek	Parallel	448+50 to 450+00	HQ-TSF	171	NA	Yes	414.69	215.89	1.87	30 days
ES - 6.27	UNT to Black Horse Creek	Non	455+00	HQ-TSF	172	NA	Yes	792.82	210.79	3.55	24 hrs
ES - 6.30	UNT to Marsh Creek	Non/Parallel	497+00 through 509+00	HQ-TSF	175	NA	Yes	1299.71	212.17	5.72	24 hrs
ES - 6.30	UNT to Marsh Creek	Parallel	503+00 through 508+00	HQ-TSF	175	NA	Yes	1299.71	212.17	5.72	24 hrs
ES - 6.30	UNT to Marsh Creek	Non	511+50/ 513+00 through 515+50	HQ-TSF	176	NA	Yes	811.89	212.24	2.85	24 hrs
ES - 6.35	UNT to Shamona Creek	Non	588+00 through 593+00	HQ-TSF	180	NA	Yes	704.30	211.45	3.13	24 hrs
ES - 6.57	UNT to Ridley Creek	Parallel	953+00 through 960+00	HQ-TSF	182	NA	Yes	957.51	320.55	3.83	30 days
DELAWARE											
ES - 6.14	Rocky Run	Parallel	235+00 through 236+50	HQ-CWF	185	Urban Runoff/Storm Sewers - Source Unknown; Urban Runoff/Storm Sewers - Water/Flow Variability; Urban Runoff/Storm Sewers - Siltation; Agriculture - Cause Unknown	No	726.73	210.06	2.60	24 hrs

Note: The waiver requests are a direct result of locating the line within and adjacent to the existing right of way.



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

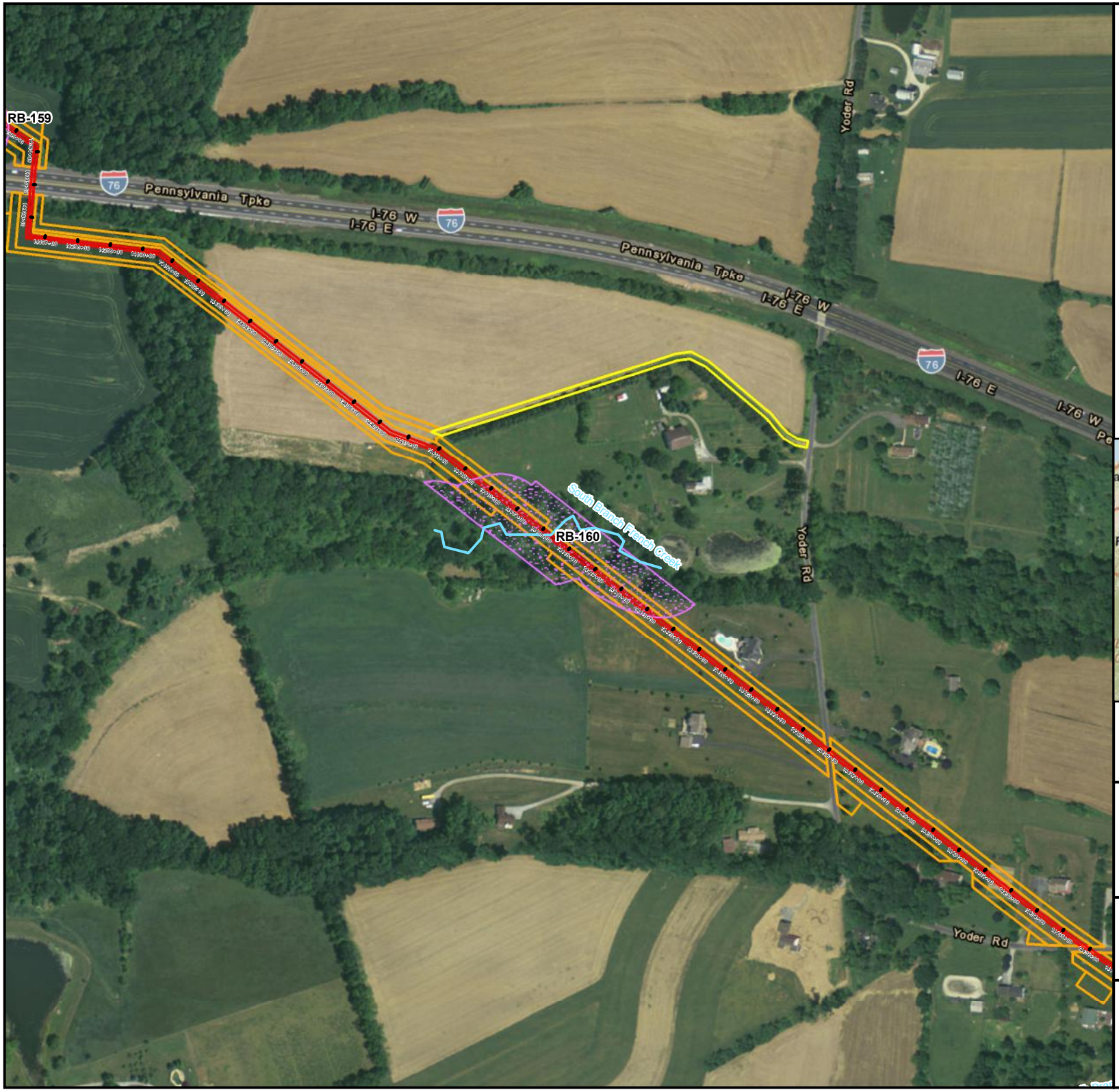
Meters: 0 60.95 121.9

RB-159
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

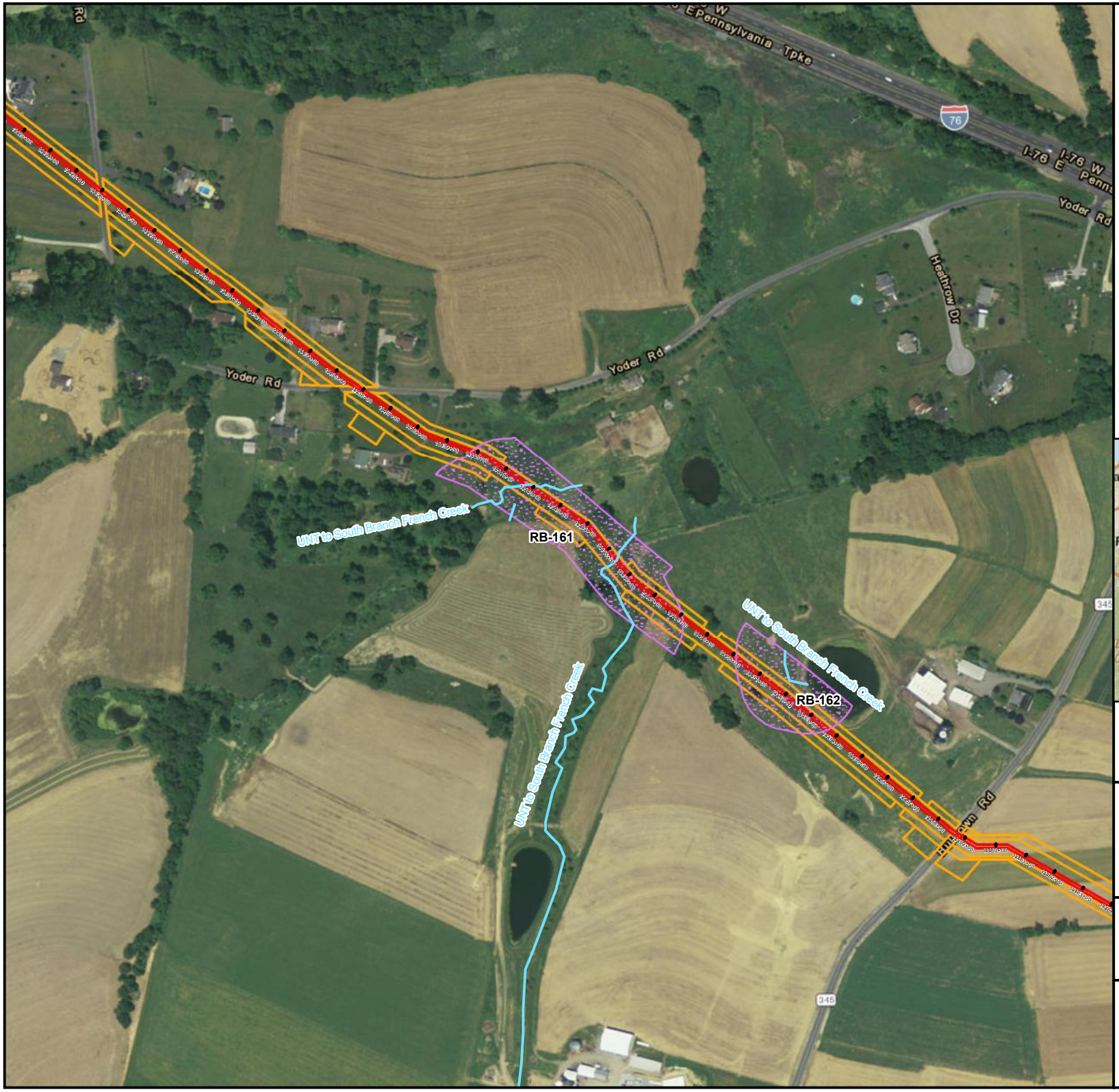
Meters: 0 60.95 121.9

RB-160
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

Feet: 0 200 400
Meters: 0 60.95 121.9

RB-161
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP

Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

Feet: 0 200 400
Meters: 0 60.95 121.9

RB-162
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP

Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

Meters: 0 60.95 121.9

RB-163
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP

Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

Meters: 0 60.95 121.9

RB-164
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP

Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

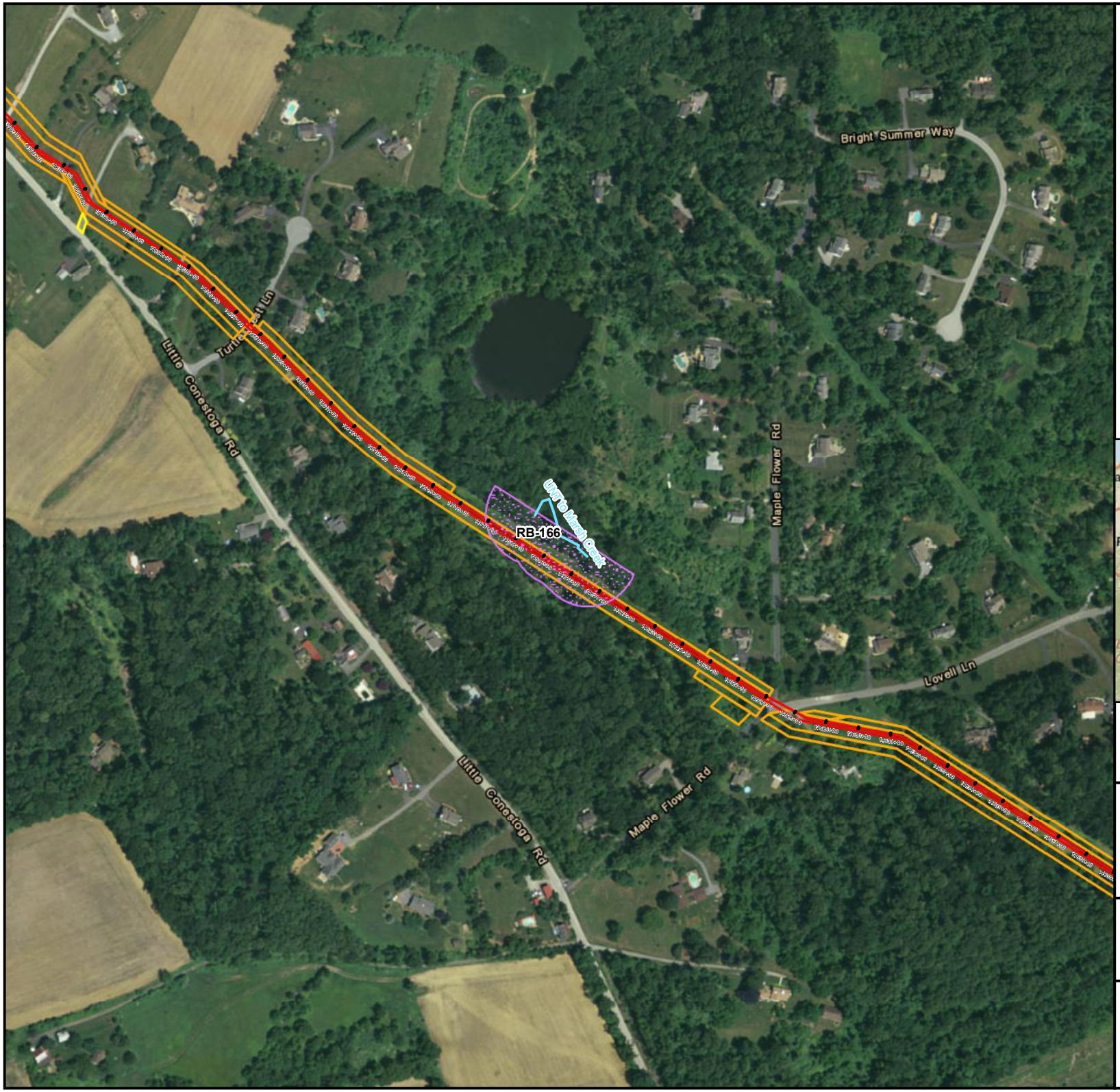
Meters: 0 60.95 121.9

RB-165
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

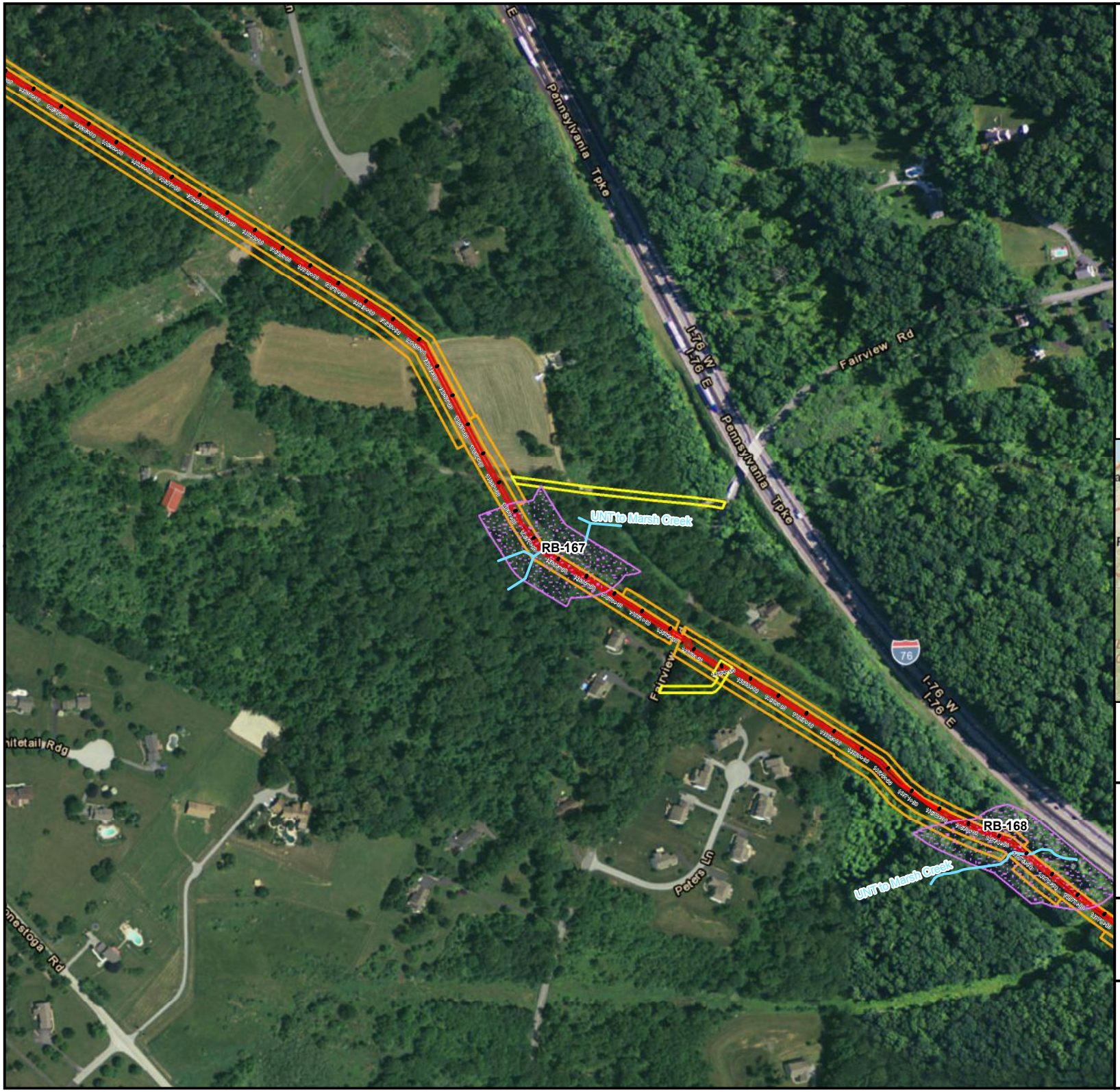
Meters: 0 60.95 121.9

RB-166
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

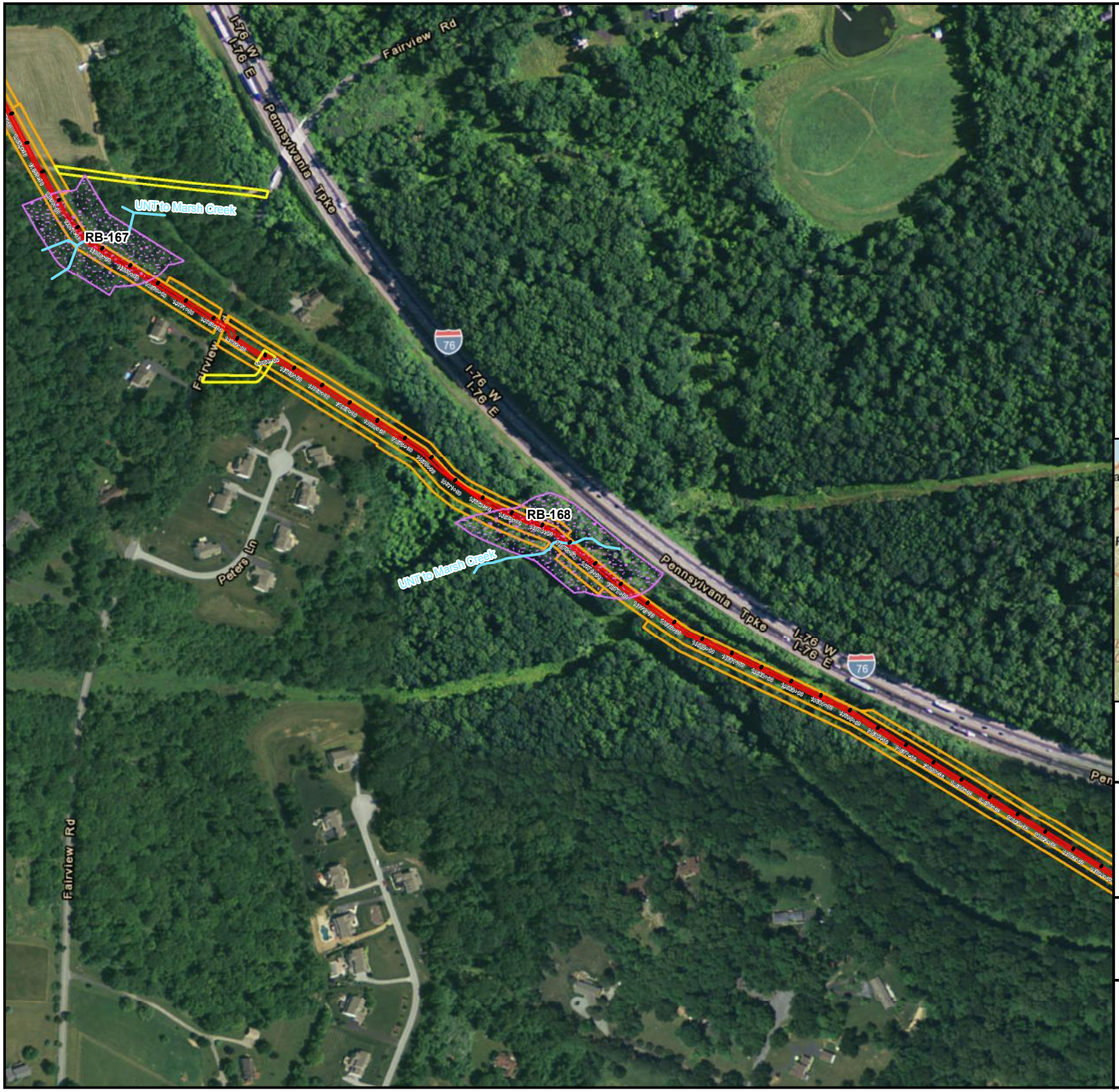
Meters: 0 60.95 121.9

RB-167
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

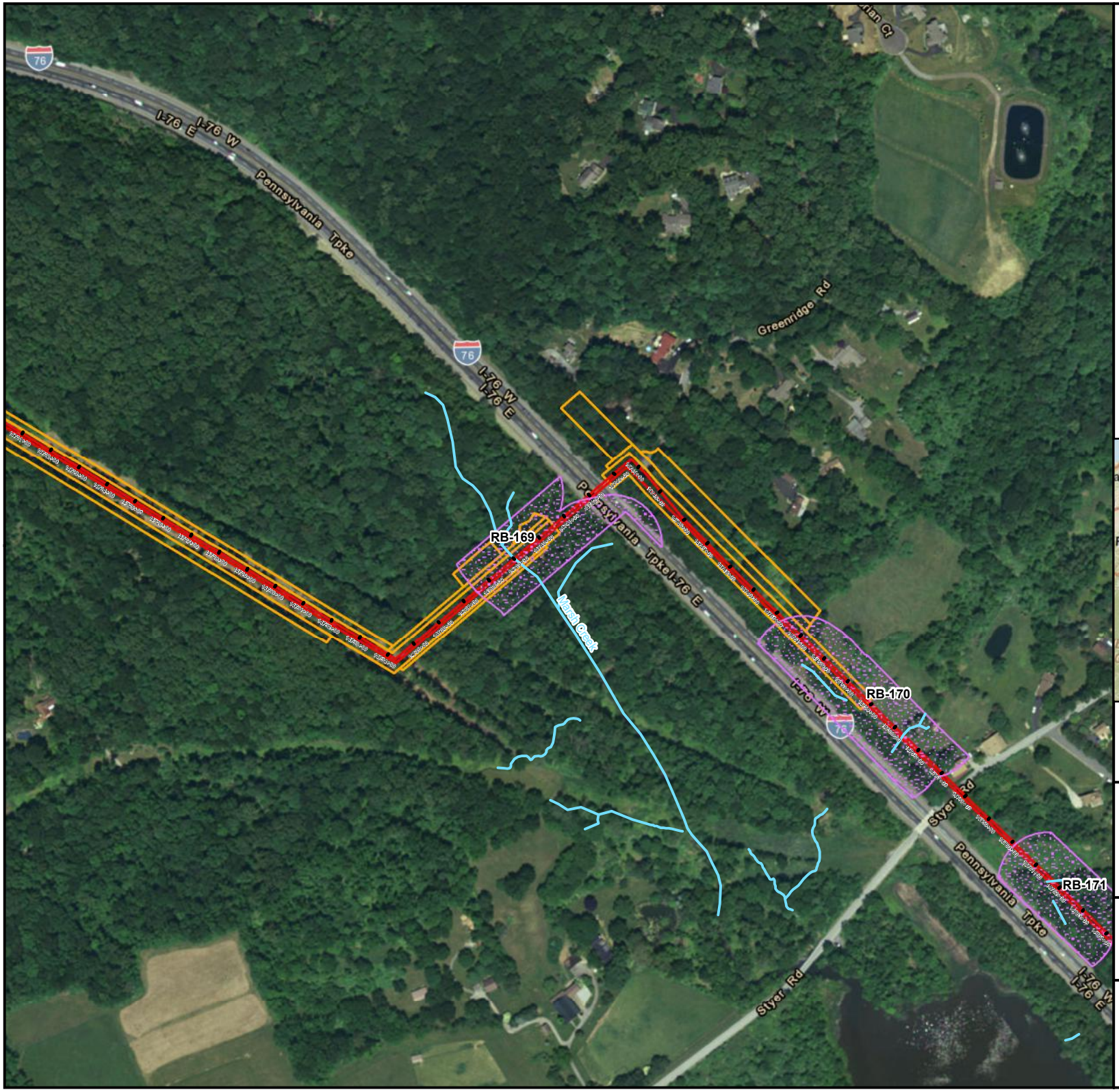
Meters: 0 60.95 121.9

RB-168
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

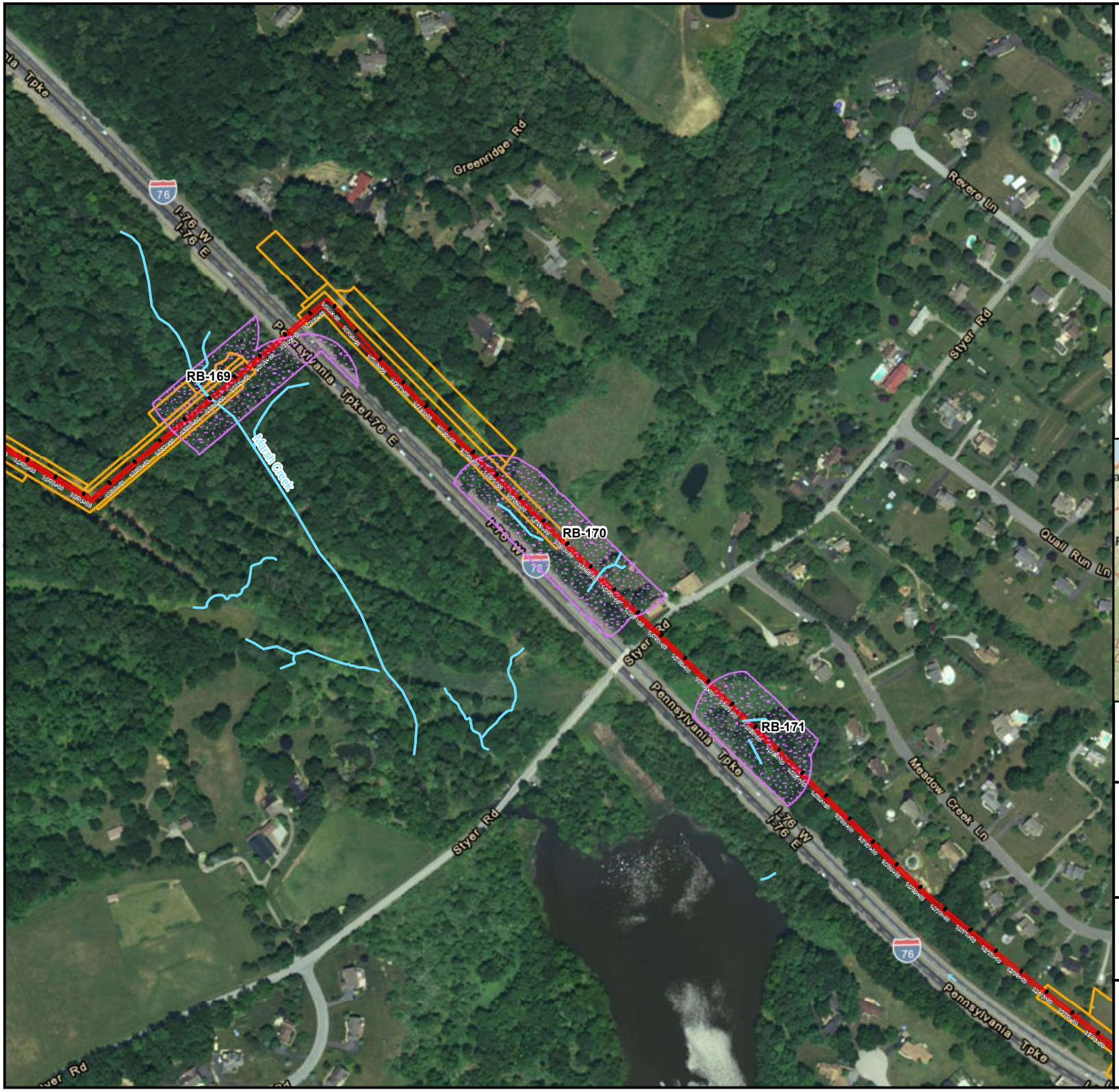
Meters: 0 60.95 121.9

RB-169
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

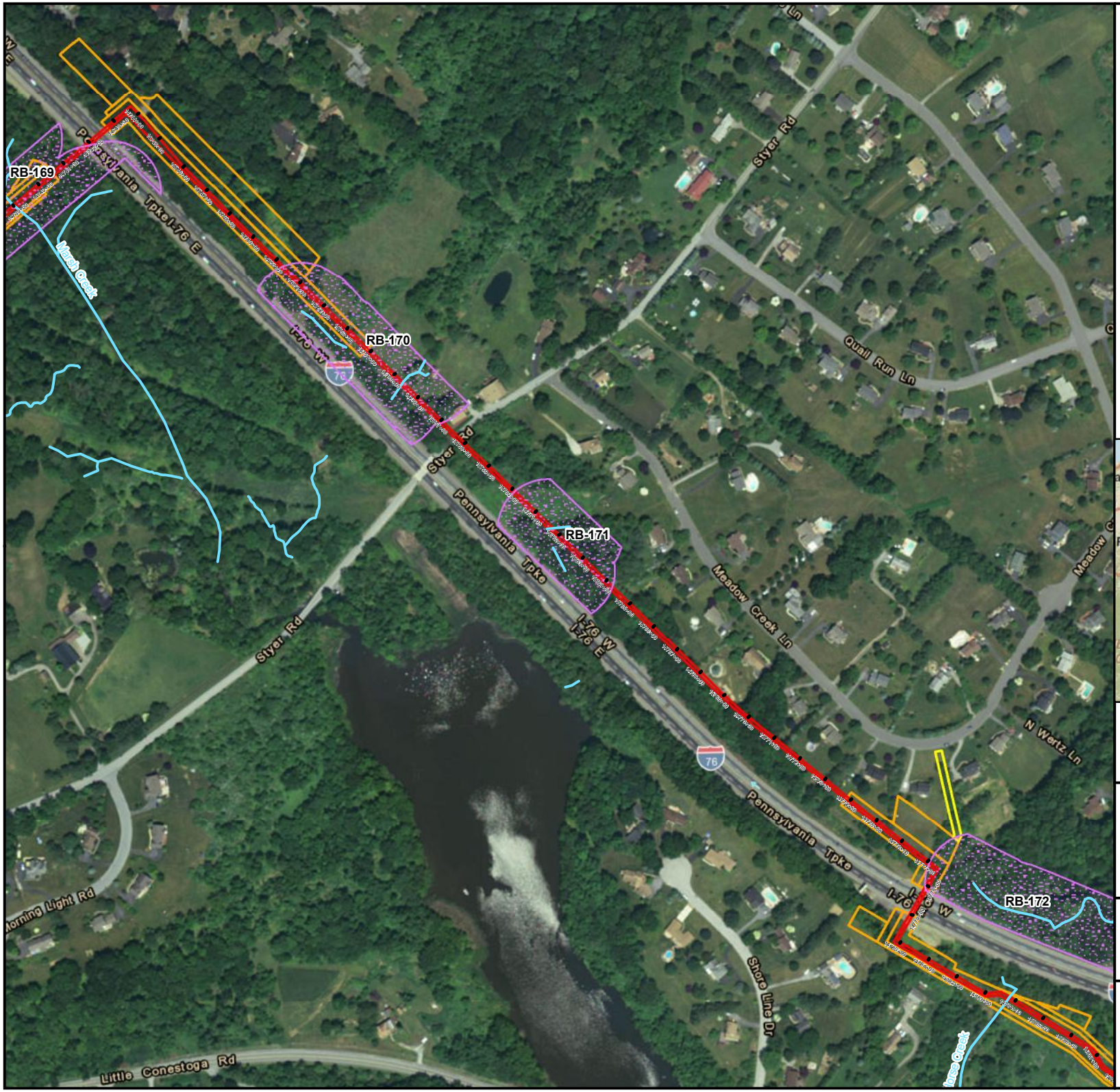
Meters: 0 60.95 121.9

RB-170
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

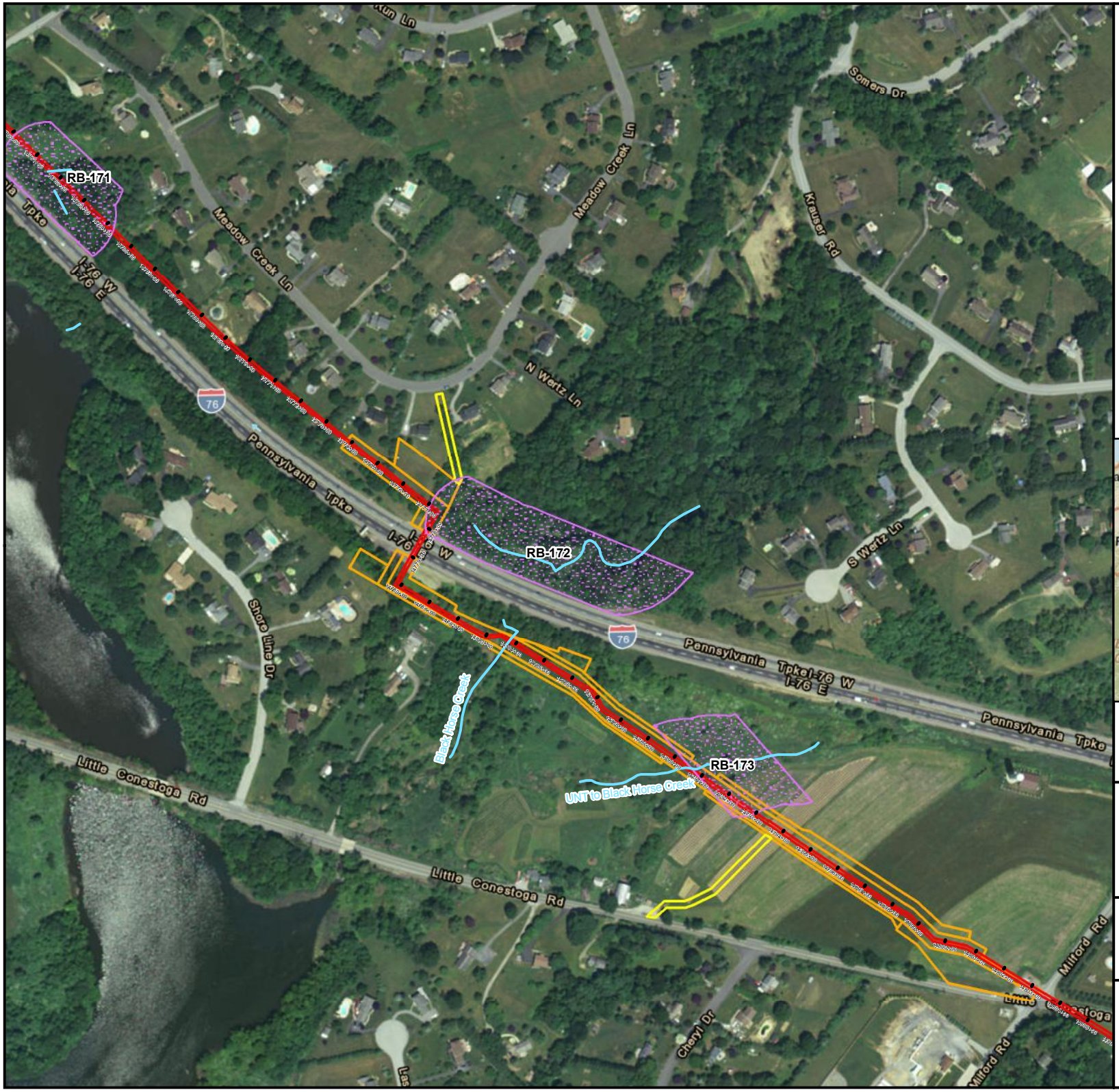
Meters: 0 60.95 121.9

RB-171
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

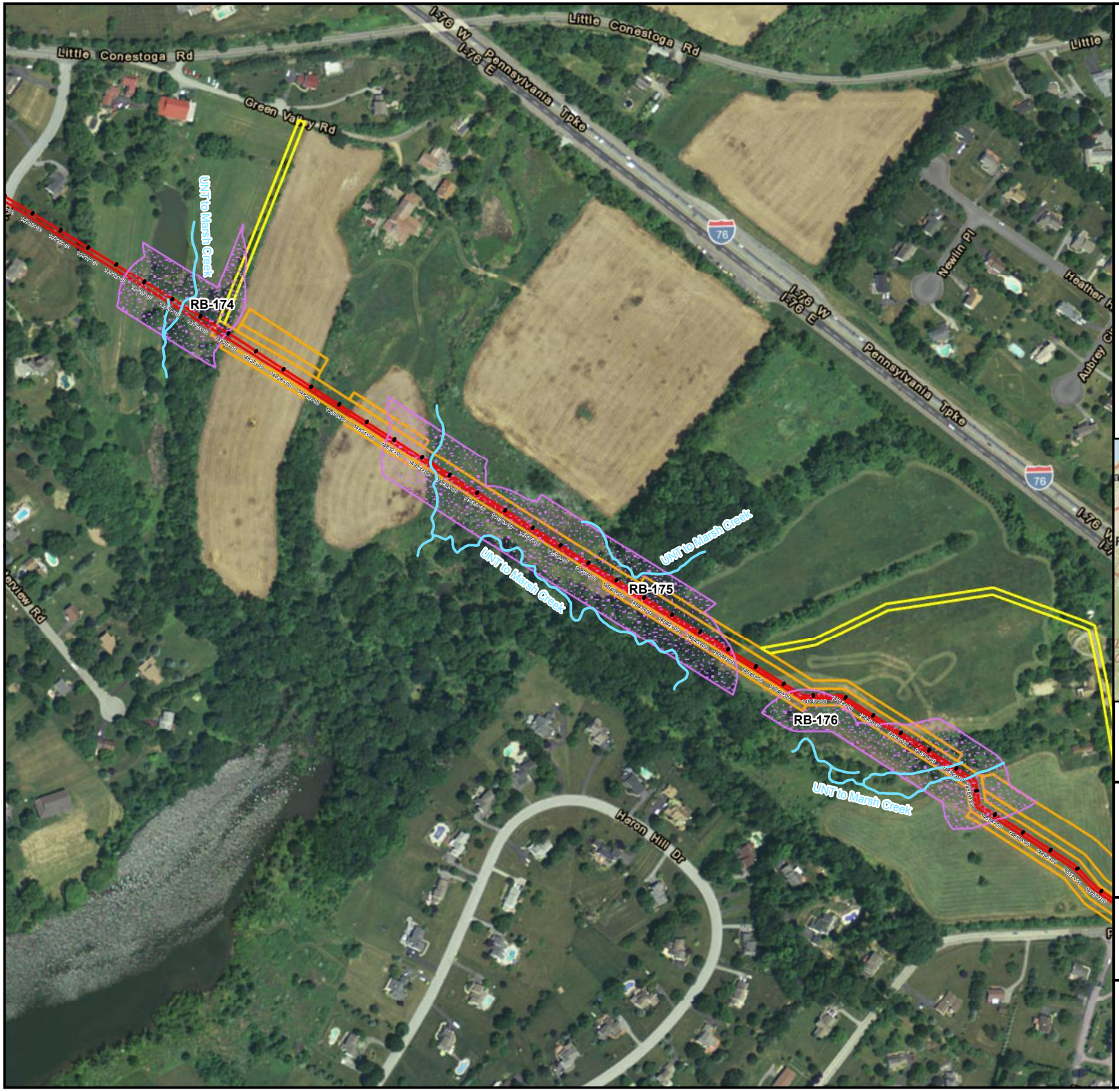
Meters: 0 60.95 121.9

RB-172
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENN\PIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

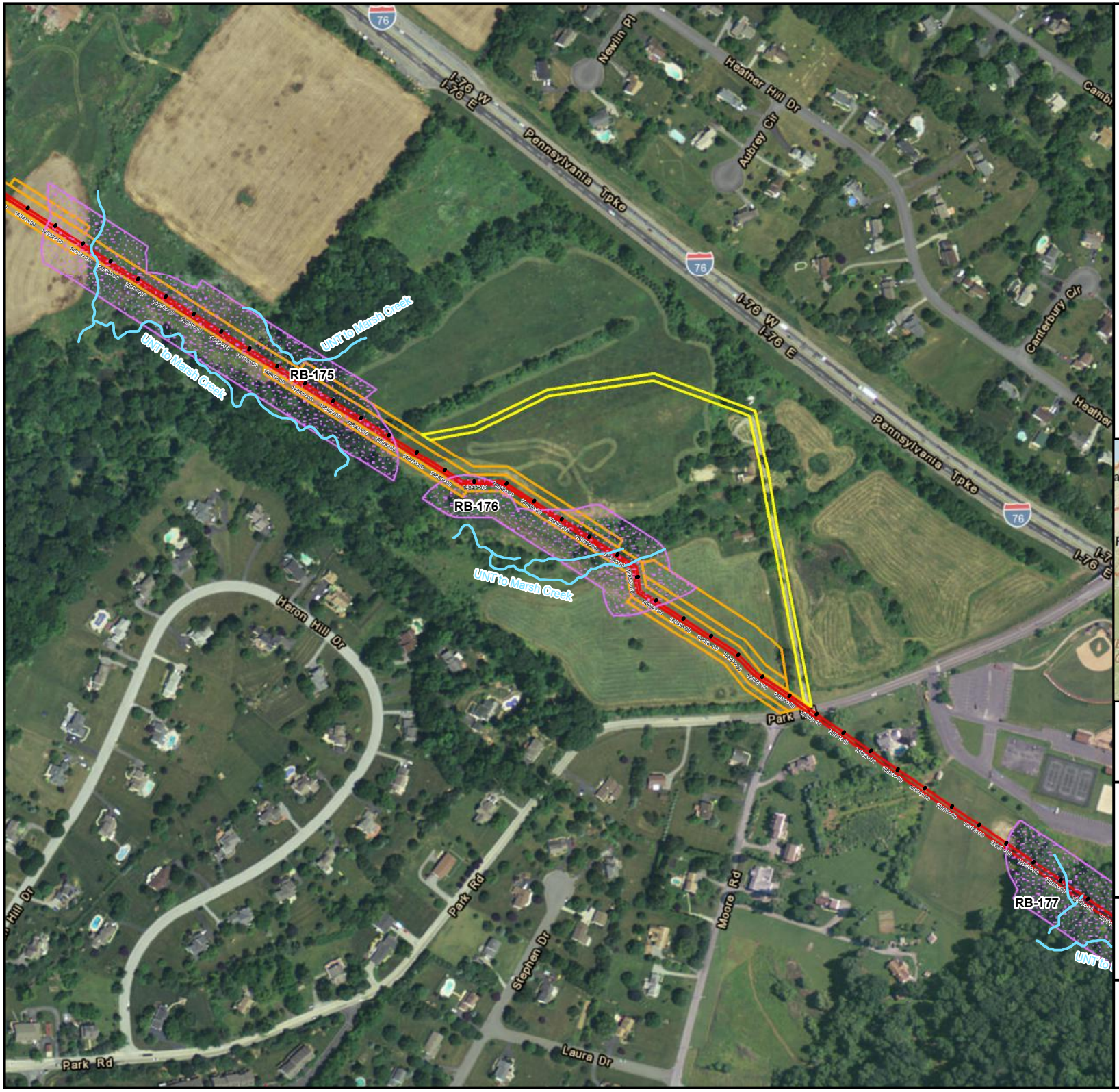
Meters: 0 60.95 121.9

RB-175
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

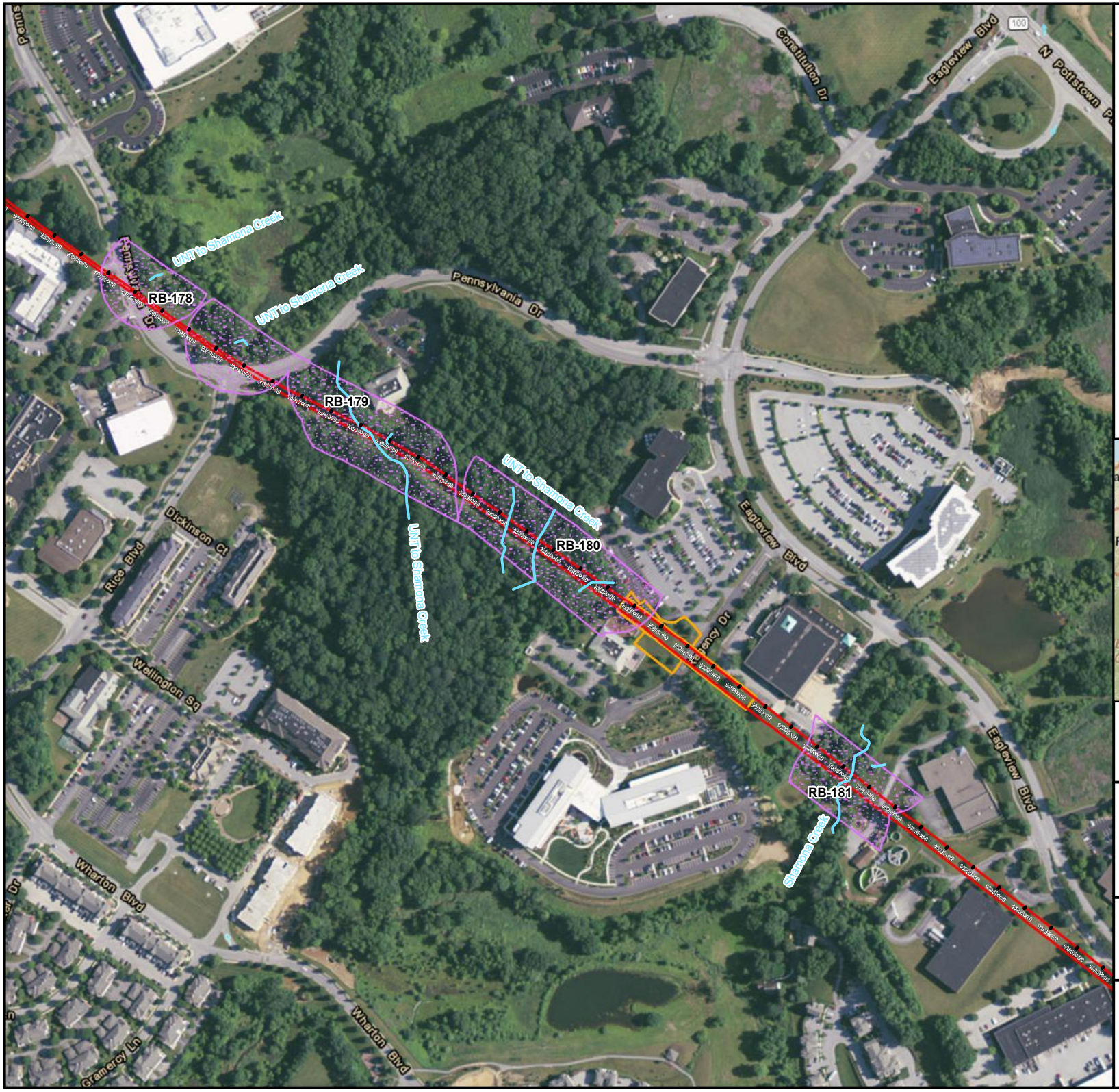
Meters: 0 60.95 121.9

RB-176
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier

N

Feet: 0 200 400

Meters: 0 60.95 121.9

RB-180
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

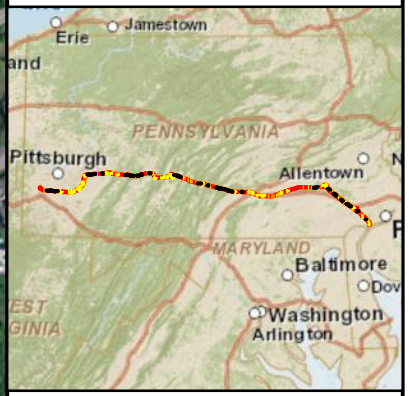
Notes:
1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP

Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier



N

Feet: 0 200 400

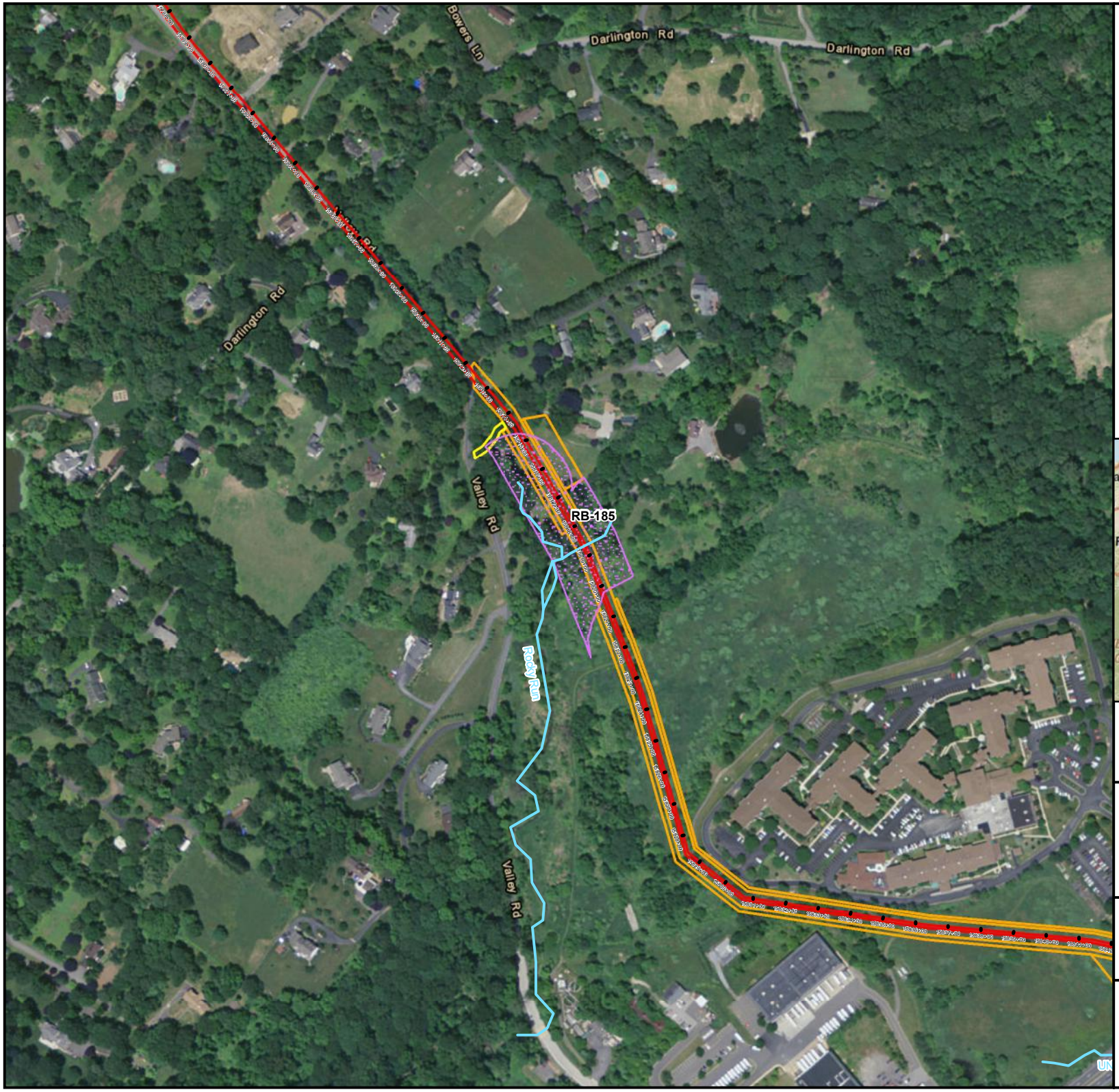
Meters: 0 60.95 121.9

RB-182
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

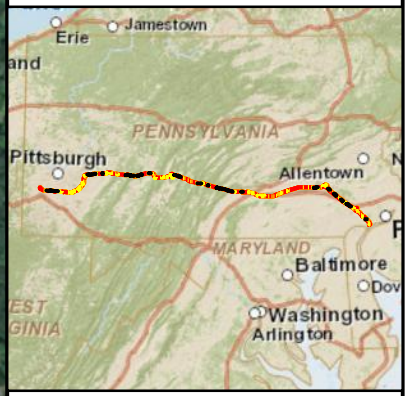
PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP



Legend

- Stationing
- Stream
- Riparian Buffer (HQ-EV)
- Access Road
- Alignment Centerline
- Limit of Disturbance
- ATWS
- Block Valve Site Layout
- Pump Station Layout

Sheet Identifier



N

Feet: 0 200 400

Meters: 0 60.95 121.9

RB-185
HQ-EV RIPARIAN BUFFER
PENNSYLVANIA PIPELINE PROJECT
FEBRUARY 25, 2016 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PENNSYLVANIA

TETRA TECH

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

PGH P:\GIS\SUNOCO\MARINER EAST 2\MXD\PENNPIPELINE_RIPARIANHABITAT_SC_SE.MXD 03/04/16 SP