Shell Pipeline Company LP

FALCON ETHANE PIPELINE SYSTEM

Cumulative Impact Assessment
for Pennsylvania (Allegheny, Beaver, and Washington Counties)

August 2018

Submitted by:
Shell Pipeline Company LP
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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ABACT</td>
<td>Antidegradation Best Available Combination of Technologies</td>
</tr>
<tr>
<td>ATWS</td>
<td>Additional Temporary Workspace</td>
</tr>
<tr>
<td>BMPs</td>
<td>Best Management Practices</td>
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<tr>
<td>CEA</td>
<td>Comprehensive Environmental Assessment</td>
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<td>CIA</td>
<td>Cumulative Impacts Assessment</td>
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<td>CIAA</td>
<td>Cumulative Impacts Assessment Area</td>
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<tr>
<td>dBA</td>
<td>A-weighted decibels</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EI</td>
<td>Environmental Inspector</td>
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<td>EIA</td>
<td>U.S. Energy Information Administration</td>
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<tr>
<td>eFACTS</td>
<td>Environment, Facility, Application, Compliance Tracking System</td>
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<td>ESCGP</td>
<td>Erosion and Sediment Control General Permit</td>
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<td>E&amp;SCP</td>
<td>Erosion and Sediment Control Plan</td>
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<td>EV</td>
<td>Exceptional Value</td>
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<td>FERC</td>
<td>Federal Energy Regulatory Commission</td>
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<td>HDD</td>
<td>Horizontal Directional Drilling</td>
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<td>HP</td>
<td>Horsepower</td>
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<td>High-Quality</td>
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<td>IR</td>
<td>Inadvertent Returns</td>
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<td>JPA</td>
<td>Joint Permit Application</td>
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<tr>
<td>Ldn</td>
<td>Day-night average sound level</td>
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<tr>
<td>LOD</td>
<td>Limits of Disturbance</td>
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<td>MP</td>
<td>Mile Post</td>
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<td>NRHP</td>
<td>National Register of Historic Places</td>
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<td>Pa.C.S.</td>
<td>Pennsylvania Consolidated Statutes</td>
</tr>
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<td>PADEP</td>
<td>Pennsylvania Department of Environmental Protection</td>
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<td>PEM</td>
<td>Palustrine Emergent</td>
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<td>PennDOT</td>
<td>Pennsylvania Department of Transportation</td>
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<tr>
<td>PFO</td>
<td>Palustrine Forested</td>
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<td>PHMC</td>
<td>Pennsylvania Historical and Museum Commission Bureau of Historic Plan</td>
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<tr>
<td>Plan</td>
<td>Upland Erosion Control, Revegetation and Maintenance Plan</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Plant</td>
<td>Pennsylvania Shell Chemical Plant</td>
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<td>PNDI</td>
<td>Pennsylvania Natural Diversity Inventory</td>
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<td>Procedures</td>
<td>Wetland and Waterbody Construction and Mitigation Procedures</td>
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<td>Project</td>
<td>Falcon Ethane Pipeline System</td>
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<td>PFO</td>
<td>Palustrine Forested</td>
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<td>PSS</td>
<td>Palustrine Scrub-Shrub</td>
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<tr>
<td>ROW</td>
<td>Right-of-Way</td>
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<td>SPLC</td>
<td>Shell Pipeline Company LP</td>
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<td>United States Army Corps of Engineers</td>
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<td>USFWS</td>
<td>United States Fish and Wildlife Service</td>
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<tr>
<td>WQS</td>
<td>Water Quality Standard</td>
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1.0 Introduction

Shell Pipeline Company LP (SPLC) proposes to build, own, and operate the Falcon Ethane Pipeline System (Project). The Project will consist of an approximately 98-mile common carrier ethane supply pipeline that will be located in southwestern Pennsylvania, Ohio, and West Virginia. Falcon will connect three major ethane sources in Houston, Pennsylvania; Scio, Ohio; and Cadiz, Ohio to Shell Chemical’s planned Pennsylvania Petrochemical Plant (Plant) located in Monaca, Pennsylvania.

The location of the pipeline system will be in a key area that will link the rich gas areas of the Marcellus and Utica shale reservoirs to the future petrochemical plant in Monaca, Pennsylvania. Approximately 70 percent of the North American polyethylene market is located within a 700-mile radius of Pittsburgh, Pennsylvania. The system will allow for a safe and reliable means of transporting ethane feed stock to the Plant. The Project will bring new jobs to the area, with up to 1,000 construction workers involved in building the pipeline. The Project will also support four to five permanent employees when complete to operate and maintain the line.

The Project will consist of an approximately 11-mile 10-inch diameter steel pipeline that will run from the existing MarkWest Cadiz, Ohio facility to a junction point located two miles southeast of Scio, Ohio. An approximately 53-mile 12-inch diameter steel pipeline will stretch from the Utica East Ohio plant in Scio, Ohio to a junction site located four miles southwest of the Plant (referred to as the Scio to Junction Pipeline). A third 12-inch diameter steel pipeline will originate out of MarkWest’s Houston, Pennsylvania fractionation plant and proceed north to the junction site that is located four miles southwest of the Monaca Plant (referred to as the Houston to Junction Pipeline). Then, a 16-inch diameter steel pipeline will continue north from that junction site to the Plant in Monaca, Pennsylvania (referred to as the Junction to Monaca Pipeline).

Overall, approximately 43.4 miles of pipeline will be located in Ohio, 8.7 miles in West Virginia, and 45.5 miles in Pennsylvania. Construction activities will temporarily disturb both soil and ground cover during installation of the pipeline. The proposed Project will typically utilize a 100-foot-wide limit-of-disturbance (LOD) for general construction. Additional temporary work space will be utilized strategically throughout the Project. The total disturbed area for the entire Project is approximately 580 acres along the proposed pipeline; including approximately 103 acres in Allegheny County, approximately 293 acres in Beaver County, and approximately 184 acres in Washington County. These disturbances will be mostly temporary although some permanent impact will occur associated with maintaining the 50-foot permanent right-of-way (ROW) in herbaceous cover. Disturbed areas will be seeded with the appropriate upland, wetland, or riparian seed mix consisting of native species and mulched upon placement of the proposed pipeline. After construction, the permanent ROW will be maintained by mowing and/or trimming activities. Additional information on the construction process is provided in the Erosion and Sediment Control General Permit Plan (ESCGP-2) drawings and narrative previously provided for review.

An Alternatives Analysis of the proposed Project was prepared during planning, pipeline routing, and aboveground facility siting which details the efforts taken to route the alignment. SPLC sited the ROW to avoid and minimize impacts to wetlands and waterbodies to the extent practicable for the entire Project. However, because this is a linear project, complete avoidance of all wetlands and waterbodies was not possible or practicable. The Project will permanently impact approximately 0.17 acres of wetlands in Pennsylvania, which includes limited palustrine forested (PFO) and scrub-shrub (PSS) wetland cover type
conversion across 7 wetlands falling within three counties in Pennsylvania. The resulting PFO and PSS wetland cover type conversion, as a result of maintenance of the permanent ROW, will be mitigated for through compensatory mitigation at an offsite mitigation bank and the functions and values of these wetlands will be restored upon completion of the Project as palustrine emergent wetlands (PEM) onsite. SPLC also proposes to complete compensatory mitigation for 0.25 acres of temporary PFO/PSS conversion that will occur in the temporary construction ROW, though these areas will be restored and allowed to revert back to a PFO/PSS strata type. As presented in the Comprehensive Environmental Assessment (CEA) and Alternatives Analysis, with the implementation and proper installation and maintenance of the Project’s best management practices (BMPs), pre-construction (i.e. pre-disturbance) wetland function and values will be restored and impacts to wetlands and streams will be minor and mostly temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

SPLC filed Chapter 105 Water Obstruction & Encroachment Permit applications (Chapter 105 applications) with the Pennsylvania Department of Environmental Protection (PADEP) in September 2017 requesting permits to construct and maintain various water obstructions and encroachments associated with the Project, including crossings of wetlands and interrelated wetland areas (inclusive of adjacent streams). In compliance with PADEP’s regulations, SPLC has assessed the potential cumulative impacts associated with Project crossings of wetlands and interrelated wetland areas.

This cumulative impacts assessment (CIA) has been prepared to comply with the requirements of 25 Pennsylvania Code (Pa. Code) Section (§) 105.14(b)(14) and 105.15 and the PADEP’s technical guidance document entitled Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006 (PADEP 2018a) for the purpose of evaluating the cumulative impact of the Project and other potential or existing projects, and to determine if numerous piecemeal changes may result in a major impairment of the wetland resources, or interrelated wetland areas. This CIA also has been prepared to comply with the requirements of § 105.18a(a)(6) and 105.18a(b)(6) to evaluate if the effect of the Project when considered in combination with the impacts of other potential or existing projects, including consideration of interrelated wetland areas (inclusive of adjacent streams), may result in the impairment of the Commonwealth’s exceptional value (EV) wetland resources or a major impairment of the Commonwealth’s other wetland resources, respectively.

This CIA prepared for the Project addresses the cumulative impact of the Project, and other potential or existing projects within the Cumulative Impact Assessment Area (CIAA) of the Project (see Section 2.5 for a discussion of the CIAA). As part of this analysis, the wetland impacts associated with all the Chapter 105 applications for all three counties related to this Project and other identified projects have been evaluated to determine if the impacts may result in the impairment of the Commonwealth’s EV wetland resources or a major impairment of the Commonwealth’s other wetland resources. Additionally, although not specifically required under § 105.18a(a)(6) and 105.18a(b)(6), this CIA also addresses potential cumulative impacts to other environmental resources, including groundwater, fisheries, endangered and threatened species, vegetation, cultural resources, geological resources and soil, land use, air quality, and noise.

The methodology for preparing this CIA is discussed in Section 2.0, Section 3.0 describes the cumulative actions included in this assessment, and Section 4.0 summarizes the cumulative impacts to wetlands and interrelated wetland areas of this Project and other potential or existing projects within the CIAA. Section 5.0 details the other aforementioned potential cumulative impacts to the environment.
2.0 Methodology

In accordance with Section 5a and 5b of the PADEP’s technical guidance entitled *Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006*, SPLC identified and considered other existing and potential projects permanently impacting each wetland resource including:

a. Other Existing Permanent Project Impacts – Existing permanent wetland impacts in, along, across or projecting into the wetland resource.

b. Other Potential Projects Proposing Permanent Impacts – Future anticipated permanent wetland impacts in, and along, across or projecting into the wetland resource including:

   (i) Proposed but not yet built permanent wetland impacts proposed by the applicant; or
   (ii) Other permanent wetland impacts proposed by other entities within the wetland resource currently under review by PADEP; and
   (iii) Other permanent wetland impacts from projects proposed by other entities authorized by valid PADEP Chapter 105 Water Obstruction and Encroachment Permits (issued in the last five years; i.e., not expired), but not constructed.

As indicated in PADEP’s technical guidance, where a temporary wetland impact is proposed to be properly restored, the applicant does not need to identify the temporary impact as an adverse cumulative impact on the wetland resource. Therefore, temporary impacts and their restoration measures have been discussed as provided in the Project CEA, but those temporary impacts are not considered an adverse cumulative impact and have not been discussed within this CIA. Only those impacts tied to permanent wetland conversion of forested and scrub habitat to emergent (PFO and PSS to PEM) habitat are detailed herein, as the Project does not propose any permanent wetland fill.

The limits of the CIAA generally corresponded with the Project LOD where impacts will result from installation of the pipeline, related workspace and access roads. In some instances, areas immediately adjacent to the Project LOD, were included in the CIAA in order to identify projects with activities in the last 5 years that overlap impacts or are immediately adjacent to the Project alignment. In addition, per the PADEP informal guidance and industry standard, other actions that occurred greater than five years ago in the past are considered to be contributing to the existing environmental conditions and those impacts have not been included in the CIA.

In order to identify existing and proposed projects in the area that may contribute to cumulative impacts to wetlands and waterbodies, SPLC reviewed the following resources:

1. Energy Information Administration (EIA) website for current and historical natural gas pipeline projects (EIA 2018);
2. Federal Energy Regulatory Commission (FERC) website for list of pending and approved jurisdictional interstate natural gas pipeline projects (FERC 2018a and 2018b);
3. United States Army Corps of Engineers Pittsburgh District website for listing of public notices tied to projects with jurisdictional impacts (USACE 2018);
4. PADEP’s *Pennsylvania Bulletin* for Chapter 105 and other land development permit applications and permits (PA Bulletin 2018);
5. PADEP portal on large pipeline projects occurring in the state (PADEP 2018b);
6. Pennsylvania’s Environment Facility Application Compliance Tracking System (eFACTS) (eFACTS 2018),
7. PADEP eMAP for viewing the location of permitted impacts as identified/link to eFACTS (PADEP 2018c);
8. Pennsylvania Department of Transportation (PennDOT) Multimodal Project Management System Interactive website for projects planned, underway or completed in the area (PennDOT 2018a and 2018b);
9. PADEP Oil and Gas mapping website to identify any potential new oil and gas wells in the area (PADEP 2018d and 2018e);
10. Review of historic aerials to identify areas of earth disturbance and development along and adjacent to the Project alignment;
11. Completion of online searches for information and confirmation of findings based on news articles, and company and Project websites; and
12. Project specific survey data for utilities identified during survey efforts tied to the Project.

Upon review of these resources, projects were narrowed down by date, state, municipality, regulatory authority, and status. Projects were further narrowed down to include: 1) projects occurring within the past five years or future or present projects; and 2) projects occurring in Pennsylvania and within the Project affected counties and municipalities. The resultant list of projects was then searched by docket number using FERC’s elibrary to review Resource Reports, project descriptions, location maps, and alignment sheets to determine the project’s location. Projects were georeferenced and workspaces and pipelines were digitized using ArcMap to determine if projects were (or will be) within the CIAA. If projects were (or will be) within the CIAA they were evaluated for further cumulative impacts as detailed in this report and within Appendix A (Figure) and Appendix B (Tables).

2.1 Wetland Definitions

As defined in 25 Pa. Code § 105.1, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs and similar areas.

As defined in 25 Pa. Code § 105.17, wetlands are categorized as either EV Wetlands or Other Wetlands. EV wetlands are wetlands that exhibit one or more of the following characteristics and those that do not fall within the category of “Other”:

- Wetlands that are hydrologically connected to or located within 1/2-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).
- Wetlands that are located in or along the floodplain of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards [WQS]) and the
floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. §§ 1271—1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P.S. §§ 820.21—820.29) (PA Code 2018).

- Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.
- Wetlands located in areas designated by PADEP as “natural” or “wild” areas within state forest or park lands, wetlands located in areas designated as federal wilderness areas under the Wilderness Act (16 U.S.C.A. § 1131—1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as national natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. § 461—467).

The proposed Project does traverse three EV wetlands related to habitat for endangered or threatened species and while public and private drinking water supplies are present along the alignment, review of wetlands did not identify any EV wetlands associated with these water supplies. The Project does not impact any wetlands within a state forest or park lands, areas designated as federal wilderness areas or areas designated as National Natural Landmarks, and the Project area does not contain any wild or naturally reproducing trout streams.

### 2.2 Wetland Functions

Wetland functions that have been analyzed are defined within 25 Pa. Code § 105.1 and include the following:

- Serving natural biological functions, including food chain production; general habitat; and nesting, spawning, rearing and resting sites for aquatic or land species.
- Providing areas for study of the environment or as wildlife sanctuaries or refuges.
- Maintaining natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, natural water filtration processes, current patterns or other environmental characteristics.
- Shielding other areas from wave action, erosion or storm damage.
- Serving as a storage area for storm and flood waters.
- Providing a groundwater discharge area that maintains minimum base flows.
- Serving as a prime natural recharge area where surface water and groundwater are directly interconnected.
- Preventing pollution.
- Providing recreation.

### 2.3 Interrelated Wetland Area

Permanent impacts resulting from the Project and other ongoing and future projects in the vicinity of the Project, when considered cumulatively, could result in potentially greater cumulative impacts to specific wetlands and the interrelated wetland areas, which includes adjacent streams. This CIA considers impacts to wetlands based on the previously-listed functions. In addition, as a conservative approach, an analysis of streams crossed by the Project and other ongoing and future projects in the vicinity of the Project has
been included within this CIA to address the interrelated wetland areas, regardless of whether streams are adjacent to affected wetlands.

### 2.4 Impairment and Major Impairment

The terms “impairment” and “major impairment” are not defined in Chapter 105; however, because wetlands are subject to PADEP’s antidegradation requirements set forth at 25 Pa. Code § Chapter 93, PADEP must protect the level of water quality necessary to protect the current uses pursuant to 25 Pa. Code § 93.4a(b).1. In addition, any wetlands that are impaired must be replaced in accordance with 25 Pa. Code § 105.20a, as pursuant to 25 Pa. Code § 105.18a(b)(7). For the purposes of this assessment, “impairment” and “major impairment” are defined as the long-term loss of water quality necessary to protect the current uses where replacement of those impaired wetlands cannot be attained.

### 2.5 Cumulative Impact Assessment Area

Pursuant to the requirements of 25 Pa. Code §§ 105.14(b)(14), 105.15, 105.18a(a)(6), and 105.18a(b)(6) and PADEP’s technical guidance entitled Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006, the CIAA for this analysis includes the ROW utilized by the Project and immediately adjacent permanent wetland or waterbody impacts from other identified projects. Additionally, consideration of impacts to wetlands and interrelated wetland areas (inclusive of adjacent streams) included the use of detailed in-field data located within the survey corridor of analysis for the Project. As indicated in PADEP’s technical guidance, where a temporary wetland impact is proposed to be properly restored, that temporary impact does not need to be identified as an adverse cumulative impact on the wetland resource. Accordingly, in the Cumulative Wetland and Stream Impact Tables presented in Appendix B, SPLC has identified only those impacts along the Project alignment that have an overlapping permanent impact with another project resulting in a cumulative permanent impact. For this assessment, as it relates to wetlands, only a wetland conversion impact (PFO/PSS to PEM) within the 50-foot permanent ROW is considered a permanent impact and for streams only that portion of a stream’s linear footage present within the limits of the 50-foot permanent ROW is considered a permanent impact.
3.0 Cumulative Actions

Pursuant to the requirements of 25 Pa. Code § 105.14(b)(14), 105.15, 105.18(a)(6), and 105.18a(b)(6) and PADEP’s technical guidance entitled Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006, this evaluation focused on the potential cumulative impacts of this Project and other potential or existing projects within the CIAA.

SPLC has identified several other projects that could potentially contribute to cumulative impacts when considered in conjunction with the proposed Project. These other projects include natural gas development projects (natural gas wells, pipeline gathering systems and interstate pipelines); electric generation and transmission projects; transportation projects; and residential, commercial and industrial development projects.

Based on the methodology described in Section 2.0 and 3.0, a total of seventeen (17) other project actions were identified as other potential or existing other projects to be considered as part of this evaluation. Table 3.1 provides a brief description of these actions, identifies the locations of the actions relative to the Project and county-specific location, and characterizes the timeframe for these actions (e.g., past, present and future). Figure 1 in Appendix A shows the location of these potential or existing projects within the CIAA.
<table>
<thead>
<tr>
<th>Figure Identifier</th>
<th>Owner/Operator</th>
<th>Project Name</th>
<th>Project Type (e.g. Oil&amp;Gas, Electric, Transportation, Residential, Commercial)</th>
<th>Project Description</th>
<th>State Falcon County/Municipality</th>
<th>Current Status, if known (Planning, Pending, On-going, In-service)</th>
<th>Permit Number (FERC Docket, PADEP)²</th>
<th>Closest Distance to Project (miles)</th>
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<tr>
<td>PA-1</td>
<td>Equitrans LP</td>
<td>HI56 Bare Pipe Replacement Project</td>
<td>Gas Pipeline</td>
<td>Project includes the replacement of three sections (2.6 miles) of existing pipeline.</td>
<td>PA Beaver/Independence</td>
<td>On-Going</td>
<td>FERC Blanket Permit CP89-676 PADEP Water Quality WQ05-016</td>
<td>Houston to Junction Pipeline crosses at MP 24.9</td>
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<tr>
<td>PA-2</td>
<td>National Fuel Gas Supply Corporation</td>
<td>Line N to Monaca Project</td>
<td>Gas Pipeline</td>
<td>Construct and operate approximately 4.5 miles of 12-inch pipeline.</td>
<td>PA Beaver/Potter</td>
<td>Pending</td>
<td>FERC Prior Notice Docket No. CP18-135 PADEP Water Quality WQ05-022</td>
<td>Junction to Monaca Pipeline crosses at MP 3.43</td>
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<td>PA-3</td>
<td>CONSOL Allegheny County Airport Authority (ACAA) Well Pad 3</td>
<td>Gas Well</td>
<td>Construction of well pad and access road.</td>
<td>PA Allegheny/Findlay</td>
<td>In-Service</td>
<td>PADEP E02-07-001 CH 105 JPA</td>
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<td>Houston to Junction Pipeline 0.32 miles east of MP 22</td>
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<td>PA-4</td>
<td>Range Resources Appalachia LLC Lesnick John 11170</td>
<td>Gas Well</td>
<td>Unconventional well and well pad.</td>
<td>PA Washington/Mount Pleasant</td>
<td>Pending</td>
<td>PADEP Oil &amp; Gas Permit Number 125-28399</td>
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<td>Houston to Junction Pipeline 0.04 miles east of MP 3.6</td>
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<td>PA-5</td>
<td>Range Resources Appalachia LLC Minton Williams 12298 4H</td>
<td>Gas Well</td>
<td>Unconventional well and well pad.</td>
<td>PA Beaver/Independence</td>
<td>Pending</td>
<td>PADEP Oil &amp; Gas Permit Number 007-20586</td>
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<td>Houston to Junction Pipeline 0.03 miles west of MP 23.8</td>
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<td>PA-6</td>
<td>Energy Transfer Partners, LLC Revolution Pipeline Project</td>
<td>Gas Pipeline</td>
<td>100 mile gas pipeline commencing in Butler Co. PA to a cryogenic gas processing plant in Washington Co. PA.</td>
<td>PA Beaver/Raccoon</td>
<td>Pending</td>
<td>PADEP PAG109622 Hydrostatic</td>
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<td>Houston to Junction Pipeline crosses at MP 28.8</td>
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<tr>
<td>PA-7</td>
<td>MarkWest Liberty Midstream and Resources, LLC Liberty Pipeline Project</td>
<td>Ethane Pipeline</td>
<td>34 mile ethane pipeline system that transports ethane from Sherwood, WV to Houston, PA.</td>
<td>PA Washington/Charitiers</td>
<td>In-Service</td>
<td>Not Identified</td>
<td></td>
<td>Houston to Junction Pipeline parallels MP 0.20 - MP 0.30 then crosses</td>
</tr>
<tr>
<td>PA-8</td>
<td>CONE Midstream Partners, LP ACAA Pipeline Project</td>
<td>Gas Pipeline</td>
<td>7 miles of pipeline with downstream delivery capacity of 120 BBtu/d.</td>
<td>PA Washington/Robinson</td>
<td>In-Service</td>
<td>PADEP CH 105 GP5 vs. GP1's Allegheny &amp; Washington ESX14-003-0008 E&amp;S ESCGP</td>
<td></td>
<td>Houston to Junction Pipeline crosses at MP 11.3, 11.4, 11.8 and parallels MP12.0-13.6</td>
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**Cumulative Impact Assessment**

**Falcon Ethane Pipeline System**

Table 3.1 Existing or Proposed Projects Considered for Potential Cumulative Impacts

<table>
<thead>
<tr>
<th>Figure Identifier</th>
<th>Owner/Operator</th>
<th>Project Name</th>
<th>Project Type (e.g. Oil&amp;Gas, Electric, Transportation, Residential, Commercial)</th>
<th>Project Description</th>
<th>State Falcon County/Municipality</th>
<th>Current Status, if known (Planning, Pending, On-going, In-service)</th>
<th>Permit Number (FERC Docket, PADEP)²</th>
<th>Closest Distance to Project (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-1</td>
<td>Equitrans LP</td>
<td>HI56 Bare Pipe Replacement Project</td>
<td>Gas Pipeline</td>
<td>Project includes the replacement of three sections (2.6 miles) of existing pipeline.</td>
<td>PA Beaver/Independence</td>
<td>On-Going</td>
<td>FERC Blanket Permit CP89-676 PADEP Water Quality WQ05-016</td>
<td>Houston to Junction Pipeline crosses at MP 24.9</td>
</tr>
<tr>
<td>PA-2</td>
<td>National Fuel Gas Supply Corporation</td>
<td>Line N to Monaca Project</td>
<td>Gas Pipeline</td>
<td>Construct and operate approximately 4.5 miles of 12-inch pipeline.</td>
<td>PA Beaver/Potter</td>
<td>Pending</td>
<td>FERC Prior Notice Docket No. CP18-135 PADEP Water Quality WQ05-022</td>
<td>Junction to Monaca Pipeline crosses at MP 3.43</td>
</tr>
<tr>
<td>PA-3</td>
<td>CONSOL Allegheny County Airport Authority (ACAA) Well Pad 3</td>
<td>Gas Well</td>
<td>Construction of well pad and access road.</td>
<td>PA Allegheny/Findlay</td>
<td>In-Service</td>
<td>PADEP E02-07-001 CH 105 JPA</td>
<td></td>
<td>Houston to Junction Pipeline 0.32 miles east of MP 22</td>
</tr>
<tr>
<td>PA-4</td>
<td>Range Resources Appalachia LLC Lesnick John 11170</td>
<td>Gas Well</td>
<td>Unconventional well and well pad.</td>
<td>PA Washington/Mount Pleasant</td>
<td>Pending</td>
<td>PADEP Oil &amp; Gas Permit Number 125-28399</td>
<td></td>
<td>Houston to Junction Pipeline 0.04 miles east of MP 3.6</td>
</tr>
<tr>
<td>PA-5</td>
<td>Range Resources Appalachia LLC Minton Williams 12298 4H</td>
<td>Gas Well</td>
<td>Unconventional well and well pad.</td>
<td>PA Beaver/Independence</td>
<td>Pending</td>
<td>PADEP Oil &amp; Gas Permit Number 007-20586</td>
<td></td>
<td>Houston to Junction Pipeline 0.03 miles west of MP 23.8</td>
</tr>
<tr>
<td>PA-6</td>
<td>Energy Transfer Partners, LLC Revolution Pipeline Project</td>
<td>Gas Pipeline</td>
<td>100 mile gas pipeline commencing in Butler Co. PA to a cryogenic gas processing plant in Washington Co. PA.</td>
<td>PA Beaver/Raccoon</td>
<td>Pending</td>
<td>PADEP PAG109622 Hydrostatic</td>
<td></td>
<td>Houston to Junction Pipeline crosses at MP 28.8</td>
</tr>
<tr>
<td>PA-7</td>
<td>MarkWest Liberty Midstream and Resources, LLC Liberty Pipeline Project</td>
<td>Ethane Pipeline</td>
<td>34 mile ethane pipeline system that transports ethane from Sherwood, WV to Houston, PA.</td>
<td>PA Washington/Charitiers</td>
<td>In-Service</td>
<td>Not Identified</td>
<td></td>
<td>Houston to Junction Pipeline parallels MP 0.20 - MP 0.30 then crosses</td>
</tr>
<tr>
<td>PA-8</td>
<td>CONE Midstream Partners, LP ACAA Pipeline Project</td>
<td>Gas Pipeline</td>
<td>7 miles of pipeline with downstream delivery capacity of 120 BBtu/d.</td>
<td>PA Washington/Robinson</td>
<td>In-Service</td>
<td>PADEP CH 105 GP5 vs. GP1's Allegheny &amp; Washington ESX14-003-0008 E&amp;S ESCGP</td>
<td></td>
<td>Houston to Junction Pipeline crosses at MP 11.3, 11.4, 11.8 and parallels MP12.0-13.6</td>
</tr>
</tbody>
</table>

3-1
Table 3.1 Existing or Proposed Projects Considered for Potential Cumulative Impacts

<table>
<thead>
<tr>
<th>Figure Identifier</th>
<th>Owner/Operator</th>
<th>Project Name</th>
<th>Project Type (e.g. Oil&amp;Gas, Electric, Transportation, Residential, Commercial)</th>
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<th>Current Status, if known (Planning, Pending, On-going, In-Service)</th>
<th>Permit Number (FERC Docket, PADEP)</th>
<th>Closest Distance to Project (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-9</td>
<td>MarkWest Liberty Midstream and Resources, LLC</td>
<td>Imperial-Cibus Ranch Compressor Station</td>
<td>Compressor Station</td>
<td>Natural gas compressor station consisting of twelve electric reciprocating compressors rated at 5,000 horsepower each.</td>
<td>PA</td>
<td>Washington/Robinson</td>
<td>On-Going</td>
<td>PADEP GPS-63-00992 Air Permit ESX14-125-0073 E&amp;S ESCGP ESX15-125-0004 E&amp;S ESCGP</td>
</tr>
<tr>
<td>PA-10</td>
<td>Shell Chemical Appalachia LLC</td>
<td>Shell Petrochemical Plant</td>
<td>Facility</td>
<td>Redevelopment of an existing industrial site for ethane cracker and polyethylene units, natural gas-fired cogeneration facility, loading dock, and wastewater plant.</td>
<td>PA</td>
<td>Beaver/Potter</td>
<td>On-Going</td>
<td>PADEP E04-250-A2 CH 105 JPA E04-250 CH 105 JPA WQM Permit No. 0478205, Amendment 2</td>
</tr>
<tr>
<td>PA-11</td>
<td>Sunoco Pipeline, L.P.</td>
<td>Mariner West</td>
<td>Ethane Pipeline</td>
<td>Provides transportation of ethane products from processing and fractionating areas in Houston, PA to Marysville, MI and the Canadian border. Capacity to transport approx. 50 thousand barrels per day of ethane.</td>
<td>PA</td>
<td>Beaver/Potter/Raccoon Washington/Chartiers</td>
<td>In-Service</td>
<td>Not Identified</td>
</tr>
<tr>
<td>PA-12</td>
<td>Sunoco Pipeline, L.P.</td>
<td>Pennsylvania Pipeline Project</td>
<td>Propane/Ethane/Butane Pipeline</td>
<td>Transports NGLs from the Marcellus and Utica shale areas in western PA, WV and eastern OH to destinations in PA, including Marcus Hook Industrial Complex on the Delaware River. Project, will expand the total takeaway capacity to 345 thousand barrels per day for interstate and intrastate propane, ethane and butane.</td>
<td>PA</td>
<td>Washington/Chartiers</td>
<td>On-Going</td>
<td>PADEP CH 105 JPA Allegheny Co. E02-1773 Beaver Co. E04-369 Washington Co. E63-710</td>
</tr>
<tr>
<td>PA-13</td>
<td>Air Liquide</td>
<td>Nitrogen Gas Pipeline Project</td>
<td>Nitrogen Pipeline</td>
<td>Construction of new nitrogen pipeline to Shell Facility.</td>
<td>PA</td>
<td>Beaver/Potter</td>
<td>On-Going</td>
<td>PADEP CH 105 GP050418206 GP080418204</td>
</tr>
</tbody>
</table>
## Table 3.1 Existing or Proposed Projects Considered for Potential Cumulative Impacts

<table>
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<th>Current Status, if known (Planning, Pending, On-going, In-Service)</th>
<th>Permit Number (FERC Docket, PADEP)</th>
<th>Closest Distance to Project (Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-14</td>
<td>Pennsylvania Turnpike Commission</td>
<td>The Southern Beltway Project</td>
<td>Transportation</td>
<td>Constructing new Section 55A-2 of the PA Turnpike, as a component of the overall construction of a new 13.3-mile section between U.S Route 22 and Interstate 79.</td>
<td>PA Washington/Robinson</td>
<td>On-going</td>
<td>USACE CELRP-OP-F 2001-132 PADEP E63-698 CH 1-5 JPA</td>
<td>Houston to Junction Pipeline parallels from MP 11-11.4 and then crosses</td>
</tr>
<tr>
<td>PA-15</td>
<td>WestPenn Power</td>
<td>Not Identified</td>
<td>Electric</td>
<td>New 1.3 mile electric line in Robinson Township to connect to MarkWest Cibus Ranch Compressor Station.</td>
<td>PA Washington/Robinson</td>
<td>In-Service</td>
<td>Not Identified</td>
<td>Houston to Junction Pipeline crosses MP 11.2</td>
</tr>
<tr>
<td>PA-16</td>
<td>Maronda Homes</td>
<td>Maronda Farms</td>
<td>Residential</td>
<td>Single family home housing development.</td>
<td>PA Allegheny/Findlay</td>
<td>On-going</td>
<td>PADEP PAC020231 PAC020230 PAG2000204039R1</td>
<td>Houston to Junction Pipeline crosses at MP 19.2-20.5</td>
</tr>
<tr>
<td>PA-17</td>
<td>Imperial Land Corporation</td>
<td>Findlay Industrial Park</td>
<td>Commercial</td>
<td>Findlay Industrial Park is a 400 acre development located at the Westport exit of PA Route 576.</td>
<td>PA Allegheny/Findlay</td>
<td>In-Service</td>
<td>Not Identified</td>
<td>Houston to Junction Pipeline 0.09 miles west of MP 15.6</td>
</tr>
</tbody>
</table>

a: Planning = proponents have identified a potential project but have not yet obtained or submitted applications for the necessary regulatory authorizations  
Pending = proponents have submitted permit applications but not yet obtained regulatory authorizations for a proposed project  
On-Going = regulatory permits have been issued or work is actively being conducted  
In-Service = project is completed and currently in operation  
Unknown = no information available on project status

b: Not Identified = no information available on project through review of various public sources.
4.0 Cumulative Impacts

Cumulative impacts are estimated by aggregating the impacts of the Project with the impacts of other potential or existing projects. The analysis of cumulative impacts is presented on both a state-wide and county-specific basis. A summary of the wetland and interrelated wetland area (inclusive of adjacent streams) impacts within the CIAA are included in Table 4.1 and Table 4.2, respectively.

The Cumulative Wetland and Stream Tables B-1 and B-2 in Appendix B present a detailed compilation of the potential cumulative impacts to wetlands and streams associated with the Project and other projects in the CIAA. These tables summarize the impacts of the Project on wetlands and streams within the CIAA; summarize the impacts for each individual identified project action on wetlands and streams within the CIAA; and, present the total aggregate (e.g., cumulative) permanent impacts on wetlands and streams within the CIAA. Within these tables SPLC has identified all those resources present along the Project alignment that have an overlapping permanent impact with another project. The narrative discussion of the cumulative impacts below is intended to supplement the detailed information presented Appendix B.

4.1 Proposed Project Impacts

SPLC has routed the proposed pipeline facilities and work areas to avoid and minimize effects on wetlands and waterbodies to the greatest extent practicable while maintaining engineering standards and safety. However, because this is a linear project, complete avoidance of all wetlands and waterbodies was not possible or practicable, also taking into consideration the balance of requisite landowner approval required for the final routing alignment. The routing process has allowed SPLC to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety, and where possible, taking advantage of co-locating with existing utilities, which has been achieved with 41% of the alignment. With the proper installation and maintenance of the Project’s BMPs, impacts to wetlands and streams will be minor and mostly temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

The Project will result in temporary disturbance to waterbodies and wetlands during construction and also permanent conversion impacts to wetland resources as a result of operation and maintenance. Permanent cumulative disturbances were calculated using the engineered Project area, which utilized a 50-foot wide permanent ROW, along the length of the Project, which will be maintained for the life of the Project, including within wetlands and streams. Those wetlands and streams where earth disturbance was avoided as a result of horizontal directional drilling (HDD) methodology, a 50-foot permanent earth disturbance impact has not been provided for since there will be no impact within these areas. As mentioned conversion of PFO and PSS wetlands to PEM wetlands will occur within the 50-foot wide maintained ROW. Trees within the pipeline ROW (including trees located within wetlands), which may have roots that could damage the pipeline coating, will be cut and removed from the permanent ROW.

As demonstrated in the CEA and Alternatives Analysis, with the proper installation and maintenance of the Project’s BMPs, impacts to wetlands and streams will be minor and mostly temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

Per PADEP’s definition of a cumulative impact within Technical Guidance Number 310-2137-006, the following details the rationale of what is considered a permanent wetland or stream impact as considered throughout this CIA and detailed within the supporting tables.
Permanent Impacts

- A permanent wetland impact is a PFO or PSS wetland that falls within the limits of the Project’s 50-foot permanent ROW that will be maintained as a PEM wetland for the life of the pipeline.

- A permanent stream impact is that linear feet of stream that falls within the limits of the 50-foot permanent ROW.

Permanent Cumulative Impact

- A cumulative permanent wetland impact is a PFO or PSS wetland that falls within the limits of the Project’s permanent ROW that also has an overlapping impact with an identified project that has or will impact this same resource. In respect to those past projects considered for the CIA, this relates to wetlands that were PFO prior to being cleared and reverted to PEM for a past project. These instances have been assessed as an identified project permanent impact. While the SPLC Project will not have a permanent impact, since this wetland is presently PEM, the past project subsequently resulted in a permanent impact to a PFO wetland and therefore this has been accounted for as a cumulative impact.

- A permanent cumulative stream impact is where the Project’s 50-foot permanent ROW overlaps with an identified project’s permanent ROW and they share a permanent impact. For this CIA it has been assumed by SPLC that all identified utilities have or will have a 50-foot permanent ROW.

4.1.1 Wetland Impacts

The wetland impact table (Table 4-1) lists potential permanent wetland impact acreages for wetlands crossed by the pipeline and identified projects in the CIAA. As shown in Table 4-1 and Table B-1 (Appendix B), as a result of SPLC’s wetland avoidance and minimization effort, the Project will cross a total of 74 wetlands in Pennsylvania for permanent ROW, including those wetlands avoided by HDD, resulting in permanent conversion impact of approximately 0.17 acres of wetlands required for maintenance of the permanent ROW for the life of the Project. The Project will result in a limited PFO and PSS wetland cover type conversion to PEM across 7 wetlands in Pennsylvania. The permanent ROW conversion of PFO and PSS wetland to PEM would not result in a significant change in the functions and values of the wetlands impacted by the Project; some functions/values may be slightly altered as it relates to changing cover type from forest to herbaceous (wildlife habitat), some will not be altered (groundwater discharge), and others may be increased due the establishment of a thick herbaceous ground cover (sediment retention and nutrient removal). In addition, wetlands avoided by HDD that are present within the limits of the 50-foot permanent ROW will not be cleared or maintained and therefore all earth disturbance impacts will be avoided within these resources. While the use of HDD can create the potential for inadvertent returns (IR), SPLC has provided PADEP their Inadvertent Returns from HDD: Assessment, Preparedness, Prevention and Response Plan, which will be implemented should such an event occur. This plan details how HDDs will be monitored during construction to ensure proper installation of the HDD and to also quickly identify when an IR is occurring in order to immediately cease activities and implement corrective action and cleanup.

Impacts to wetlands on the county-wide basis are presented in Table 4.1 and Table B-1. SPLC proposes off-site compensatory mitigation at a mitigation bank to compensate for the limited conversion of PFO and
PSS wetlands to PEM wetlands within the 50-foot wide maintained ROW. Compensatory mitigation is discussed in detail in Requirement T of the JPA.

As indicated in PADEP’s cumulative impact technical guidance, where a temporary impact is proposed to be properly restored, that temporary impact has not been identified as an adverse cumulative impact on the resource. Because all PEM wetlands will be restored to pre-construction conditions and allowed to revegetate, no long-term or permanent impacts to PEM wetlands will result from the pipeline. Within Table B-1, SPLC has identified all those resources present along the Project alignment that have an overlapping permanent impact with another project which represents a permanent cumulative impact.

Wetlands that will be temporarily altered will be restored to pre-construction conditions and allowed to revegetate and will be monitored for the appropriate timeframe mandated by federal and state agencies (typically 3-5 years) to ensure restoration success. Upon completion of construction in wetlands, all topsoil disturbed during construction will be replaced to original horizons, and wetland contours will be restored. This will restore the drainage patterns to pre-construction conditions and will promote re-establishment of wetland hydrology and hydrophytic vegetation. If a perched wetland is encountered, the associated clay layer that maintains that portion of the perched wetland hydrology will be segregated and then replaced along the same horizon during backfilling of the pipeline, and compacted so that hydrology will be maintained. Trench plugs will be installed at the edges of wetlands before the trench is backfilled to restore hydrology to pre-construction conditions. Trench plugs will also be installed at 100-foot intervals within wetland crossings that exceed 100-feet. As a result of these BMPs, restoration measures, and monitoring the emergent wetlands within the ROW will be successfully revegetated, and any impacts will be temporary. Additionally, there are no instances of above- or below-ground fill within the temporary ROW. As a result, there will be no long-term impacts, such as conversion, to wetlands outside of the permanent 50-foot ROW.

The standard crossing method on wetlands is via open trenching. SPLC would minimize the length of time that topsoil is segregated and the trench is open to the extent possible. BMPs, including the use of timber mats and assembling pipeline in upland locations, would be implemented to further avoid and minimize wetland disturbance. Where trench dewatering is necessary, water would be discharged through an energy-dissipation structure such as a filter bag into a well-vegetated upland area to minimize erosion associated with discharge.

SPLC will adhere to BMPs to minimize impacts to wetlands. The stormwater BMPs for this Project have been planned to minimize the extent of the proposed earth disturbance, maximize protection of existing drainage features and vegetation, minimize soil compaction and employ measures and controls that minimize the generation of increased stormwater runoff. Stormwater management site planning techniques were used throughout the site design process to preserve natural systems and hydrologic functions to the maximum extent possible through the use of non-structural BMPs.

To maintain water quality in wetland resources crossed by the Project or downgradient (potential secondary impacts) of the construction ROW, SPLC will implement pollution prevention procedures. To minimize impacts, SPLC would implement an approved E&SCP that would be executed throughout the duration of the Project to reduce risks of erosion and sedimentation, and stormwater runoff from construction areas with exposed soils. Erosion controls, such as compost filter socks and/or silt fencing would be utilized in an effort to avoid the transport of disturbed sediments to wetlands to the maximum extent practicable. To ensure BMPs are correctly implemented, Environmental Inspectors (EIs) will oversee the installation of erosion control devices and once installed, BMPs would be monitored by EIs and maintained by contractors until grading and restoration efforts are finalized.
4.1.2 Waterbody Impacts

The waterbody impact tables (Table 4-2 and Table B-2 - Appendix B) list those permanent impacts for the maintenance of the 50-foot permanent ROW. Impacts to waterbodies on the county-wide basis are presented in Table 4-2 and Table B-2. The permanent ROW for the proposed Project will cross a total of 135 streams in Pennsylvania, including those avoided by HDD, that will involve a total of 51 perennial streams and a total of 84 intermittent/ephemeral streams crossing. Installation and operation of the 50-permanent ROW, excluding areas avoided by HDD that will have no resulting surface impact, result in an aggregate impact of approximately 0.88 acres and 7,254.23 linear feet tied to the permanent ROW along the 45.5-mile alignment in Pennsylvania.

Temporary impacts to surface waterbodies during construction activities include stream bank vegetation removal, stream bank disturbances and, in some instances, flow modifications during dry-crossing construction. The crossing of all streams located within the Project ROW will use temporary equipment bridge installation and/or timber matting to facilitate the crossing of waterbodies with vehicles, equipment and haul trucks. As indicated in PADEP’s technical guidance, where a temporary impact is proposed to be properly restored, that temporary impact has not been identified as an adverse cumulative impact on the resource. All temporary impacts related to the Project have been excluded in the CIA since they will be restored after construction.

SPLC proposes to cross waterbodies with flow at the time of construction using a combination of trenchless and conventional dry-crossing methods. SPLC will locate ATWS for waterbodies crossed by the Project at least 50-feet from water’s edge, except where not feasible. For streams located parallel to the alignment, but not crossed by the Project, SPLC will maintain at least 15-feet of undisturbed vegetation between the waterbody and the construction ROW, where feasible. Riparian buffers would be protected in accordance with Chapter 102 guidelines and permit conditions as the inclusion of vegetated buffers along streams helps to minimize impacts to water quality.

During dry construction installations, natural drainage patterns, flushing characteristics and current flow patterns of waterbodies may be temporarily disturbed. However, the normal quantity of stream flow will continue unabated by diverting flows through (i.e., flume) or around (i.e., dam and pump) the installation area. All natural flow patterns will be restored to pre-construction conditions upon Project completion.

To maintain water quality in the stream resources crossed by the Project or downgradient (potential secondary impacts) of the construction ROW, SPLC will implement pollution prevention procedures. SPLC will implement construction methods and soil erosion and sediment control measures in accordance with PADEP’s E&S Manual to maintain flow/hydrology, protect sources/headwaters, minimize soil mixing and compaction, and minimize direct and secondary impacts to on-site and off-site resources. To minimize impacts, SPLC would implement an approved E&SCP that would be implemented throughout the duration of the Project to reduce risks of erosion and sedimentation, and stormwater runoff from
construction areas with exposed soils. Erosion controls, such as compost filter socks and/or silt fencing would be utilized in an effort to avoid the transport of disturbed sediments to surface waterbodies to the maximum extent practicable. To ensure BMPs are correctly implemented, EIs will oversee the installation of erosion control devices and once installed, BMPs would be monitored by EIs and maintained by contractors until grading and restoration efforts are finalized. Further, the use of HDD will avoid water quality impacts for those streams avoided by this construction method. While the use of HDD can create the potential for IRs, SPLC has submitted to PADEP their Inadvertent Returns from HDD: Assessment, Preparedness, Prevention and Response Plan, which will be implemented should such an event occur.

SPLC will conduct all activities in accordance with their Chapter 102 Permit requirements and will implement erosion and sediment control BMPs; including appropriate antidegradation best available combination of technologies (ABACT) measures for high-quality (HQ) stream resources crossed by the alignment. The proposed Project will cross a total of 5 waterbodies that are classified as HQ. Importantly, the proposed Project will not cross any EV waters. In accordance with the PADEP’s antidegradation requirements contained within the Chapter 93, WQS (Title 25 Pa. Code, Chapter 93), which require the maintenance and protection of existing WQS for HQ and EV waterbodies, SPLC is proposing to implement specific BMPs for HQ waters to ensure impacts are minimized to the greatest extent practicable. Specifically, SPLC will employ a number of BMPs classified by PADEP as ABACT to reduce impacts at HQ waterbody crossings. An Anti-Degradation Analysis has been provided to PADEP as part of the technical response request for the entire Project in Pennsylvania. The CEA provides a detailed description of the stream crossing construction methods as well as a discussion of potential impacts to streams, including the impact avoidance and minimization measures SPLC has and/or will implement.

### 4.2 Other Project Impacts

SPLC has identified several other projects that could potentially contribute to cumulative impacts when considered with the proposed Project. These include natural gas development projects (natural gas wells, pipeline gathering systems and interstate pipelines); electric generation and transmission projects; transportation projects; and residential and commercial development projects.

Seventeen other projects, including two FERC natural gas projects, three natural gas wells, seven midstream pipelines and facilities, one electrical transmission project, one transportation project, one residential project, one commercial development and one industrial development project have been identified within the CIAA as past (have been constructed/and operational and placed in service within the last five years), present (currently under construction) or proposed for construction in the near future (2018 to 2019). The location of these other projects is depicted in Figure 1-1 in Appendix A. The following provides a brief overview of each identified project and how it relates to the proposed Project as detailed in Table 3-1, summarized in Tables 4-1 and 4-2 and specific related impacts detailed in Appendix B Tables B-1 and B-2.

#### FERC Natural Gas Projects

There are two projects being reviewed by FERC that are located within the vicinity of the Project, Equitran’s H156 Bare Pipe Replacement Project (Docket No. CP89-676 Blanket Permit) and National Fuel Gas’ Line N to Monaca Project (Docket No. CP11-161-000 Prior Notice).
H156 Bare Pipe Replacement Project (PA-1)

The H-156 Bare Pipe Replacement Project consists of the replacement of approximately 13,800 linear feet of 8-inch diameter bare natural gas pipe with coated, 8-inch diameter natural gas pipe within Equitran’s existing ROW. The Project is part of Equitran’s compliance program and is required to maintain the integrity of their operating system. The project will consist of the use of lift and lay construction and the replacement pipeline will be located in the same trench as the existing line. The existing 8-inch pipeline will be taken out of service, purged, and removed.

Equitran’s H156 pipeline crosses the proposed Houston to Junction Pipeline in Beaver County, Independence Township at MP 24.9 where it parallels the permanent ROW alignment for 460-feet. At this location there is one ephemeral drainage to Raccoon Creek that is present within the limits of both projects and their permanent ROW. A summary of this overlapping permanent stream impact is detailed within Table B-2 as it relates to potential cumulative impacts within the CIAA.

Line N to Monaca Project (PA-2)

National Fuel Gas is proposing the Line N to Monaca Project which will consist of approximately 4.5 miles of 12-inch diameter natural gas transmission pipeline that will terminate at a metering and regulating station located at the Shell Chemical Appalachia, LLC Pennsylvania Chemical Plant site. National Fuel Gas’ alignment crosses the Houston to Junction Pipeline in Beaver County, Potter Township at MP 3.43 just prior to also terminating at the proposed tie-in location at the Shell Plant.

SPLC has reviewed the filed alignment sheet for the Line N to Monaca Project and where these alignments cross no regulated wetland or stream resources are present in the overlapping construction workspace. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA since there are no overlapping regulated impacts.

Natural Gas Well Development Projects

Review of Pennsylvania’s Oil and Gas mapper, PA Bulletin and eFACTs identified three permitted unconventional wells, two owned by Range Resources Appalachia LLC and one by CONSOL. All three are located adjacent to the Project alignment.

Allegheny County Airport Authority (ACAA) Well Pad 3 (PA-3)

CONSOL’s ACAA Well Pad 3 is currently under construction and situated near the Houston to Junction Pipeline in Allegheny County, Findlay Township 0.32 miles east of MP 22.0. While in proximity to the proposed Project, it is not immediately adjacent and does not share any overlapping of impacts or have adjacent impacts. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA since there are no overlapping regulated impacts.

Lesnick John 11170 well (PA-4)

The Lesnick John 11170 Well is located near the Houston to Junction Pipeline in Washington County, Mount Pleasant Township and has been permitted but has not commenced construction and the area still consists of open undeveloped land. The proposed well is situated 0.04 miles east of MP 3.6 and the limits
of the HDD workspace required for the crossing of the Montour Trail. While adjacent to the proposed pipeline alignment, the area pertaining to the well does not contain any regulated wetland or stream resources in the Project construction workspace or areas immediately adjacent to it. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA since there are no overlapping regulated impacts.

**Minton Williams 12298 4H well (PA-5)**

The Minton Williams 12298 4H Well is located near the Houston to Junction Pipeline in Beaver County, Independence Township and has been permitted but has not commenced construction and the area still consists of agricultural land. The proposed well is situated 0.03 miles west of MP 23.8. While adjacent to the proposed pipeline alignment, the area pertaining to the well does not contain any regulated wetland or stream resources in the Project construction workspace or areas immediately adjacent to it. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA since there are no overlapping regulated impacts.

**Natural Gas Gathering Systems Projects**

**Revolution Pipeline (PA-6)**

Energy Transfer Partners, LLC’s Revolution Pipeline consists of a 100-mile gas pipeline that will commence at a compressor station in Butler County traveling to a processing plant in Washington County, where the natural gas liquids will be diverted into Mariner East. This project is pending and not yet constructed and crosses the Houston to Junction Pipeline in Beaver County, Raccoon Township at MP 28.8.

At the potential crossing and assuming a 50-foot permanent ROW for this proposed pipeline, this project’s alignment will not encounter any regulated resources within the limits of the Houston to Junction Pipeline construction workspace, as no features were identified within this area. Therefore, there are no permanent wetland and waterbody impacts located in the Project’s CIAA. Because no quantitative wetland and stream impacts occurred for this other project within the CIAA, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.

**Liberty Pipeline (PA-7)**

In Washington County, Chartiers Township MarkWest Liberty Midstream and Resources, LLC installed the Liberty Pipeline commencing at the Houston fractionation plant and traveling southwest. This pipeline has been constructed and is operational and transports purity ethane from Majorsville, Pennsylvania, to Houston, Pennsylvania where it provides shippers direct access to multiple, major ethane takeaway projects including Mariner West and Mariner East.

The Houston to Junction Pipeline parallels this pipeline from MP 0.20 to 0.30 after leaving the Houston Facility and then crosses it. At this location there is one emergent wetland present within the limits of this projects permanent ROW and adjacent to the proposed Project. A summary of this permanent wetland impact is detailed within Table B-1 as it relates to potential cumulative impacts within the CIAA.
ACAA Pipeline (PA-8)

CONE Midstream Partners, LP has installed the ACAA natural gas gathering line which is operational and associated with the MarkWest Imperial Cibus Ranch Compressor Station in Washington County, Robinson Township.

The proposed Houston to Junction Pipeline in Robinson Township will cross this pipeline at MP 11.3, 11.4, 11.8 and then parallels this line from MP 12.0-13.6. Where the Project parallels this existing pipeline they both cross one ephemeral drainage to Little Raccoon Run that is present within the limits of both projects and their permanent ROW. A summary of this overlapping permanent stream impact is detailed within Table B-2 as it relates to potential cumulative impacts within the CIAA.

Imperial-Cibus Ranch Compressor Station (PA-9)

MarkWest Liberty Midstream and Resources, LLC is in the process of constructing the Imperial-Cibus Ranch Compressor Station in Washington County, Robinson Township, which is an electric driven station consisting of twelve electric reciprocating compressors rated at 5,000 horsepower (hp) each. The proposed Houston to Junction Pipeline will cross this property from MP 10.4-11.3.

While resources were identified along the pipeline alignment within this property, they have been avoided by the compressor station footprint and limits of construction. Therefore, there are no permanent wetland and waterbody impacts located in the Project’s CIAA. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.

Shell Petrochemical Plant (PA-10)

Shell Chemical Appalachia LLC is currently undertaking the construction of the Shell Petrochemical Plant in Beaver County, Potter Township where the Junction to Monaca Pipeline will terminate at MP 3.69. This project entails the redevelopment of an existing industrial site for ethane cracker and polyethylene units, a natural gas-fired cogeneration facility, a loading dock, and a wastewater plant.

SPLC has reviewed the footprint of this project where the proposed tie-in will occur for the Junction to Monaca Pipeline and no regulated wetland or stream resources are present in the overlapping construction workspace. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA since there are no overlapping regulated impacts.

Mariner West (PA-11)

Sunoco Pipeline, L.P. constructed the Mariner West pipeline which provides transportation of ethane products from processing and fractionating areas in Houston, Pennsylvania to Marysville, Michigan and the Canadian border with capacity to transport approximately 50 thousand barrels per day of ethane.

The Project takes the opportunity to co-locate with this existing utility within Beaver County, Potter and Raccoon Townships and at the start of the alignment in Washington County, Chartiers Township. Specifically, the Junction to Monaca Pipeline parallels Mariner West from MP 0.0-1.7 and the Houston to Junction Pipeline parallels from MP 0.0-0.09 and then MP 28.7-31.37.
Due to co-locating this existing utility there are wetland and stream resources immediately adjacent to or overlapping the permanent ROW between these two alignments. A summary of these overlapping wetland and stream permanent impacts are detailed within Table B-1 and Table B-2 as it relates to potential cumulative impacts within the CIAA.

**Pennsylvania Pipeline Project (PA-12)**

Sunoco Pipeline, L.P. is currently constructing the Pennsylvania Pipeline Project commonly referred to as Mariner East II which will transport natural gas liquids from the Marcellus and Utica shale areas in western Pennsylvania, West Virginia and eastern Ohio to destinations in Pennsylvania, including the Marcus Hook Industrial Complex on the Delaware River. This project will expand the total takeaway capacity of the existing system to 345 thousand barrels per day for interstate and intrastate propane, ethane and butane.

After leaving the Houston Facility the Houston to Junction Pipeline parallels this existing pipeline in Washington County, Chartiers Township from MP 0.20 to 0.60. Due to co-locating this existing utility there are wetland and stream resources immediately adjacent to or overlapping the permanent ROW between these two alignments. A summary of these overlapping wetland and stream permanent impacts are detailed within Table B-1 and Table B-2 as it relates to potential cumulative impacts within the CIAA.

**Other Pipeline Projects**

**Air Liquide Nitrogen Pipeline (PA-13)**

Air Liquide is proposing one 12-inch nitrogen line that is required for the Shell Plant and will terminate at the same overall location as the Junction to Monaca Pipeline in Beaver County, Potter Township and they will follow a parallels alignment from MP 3.13-3.69.

Where the Project parallels this proposed nitrogen pipeline they both cross one intermittent drainage to an unnamed tributary to Ohio River that is present within the limits of both projects and their permanent ROW. A summary of this overlapping permanent stream impact is detailed within Table B-2 as it relates to potential cumulative impacts within the CIAA.

**Transportation Projects**

**Southern Beltway Project (PA-14)**

The Pennsylvania Turnpike Commission is currently constructing their Southern Beltway Project in Washington County, Robinson Township which consists of the overall construction of a new 13.3-mile section of turnpike between U.S Route 22 and Interstate 79. The Houston to Junction Pipeline parallels the roadway alignment from MP 11-11.4 and then crosses it.

At this location the roadway alignment will permanently impact two wetland features delineated within the limits of the Project workspace that extends into the roadway footprint. This project’s permanent wetland impacts do encompass the same areal extent as the SPLC Project’s as it relates to immediately adjacent resources. A summary of this adjacent wetland impact is detailed within Table B-1 as it relates to potential cumulative impacts within the CIAA.
**Electric Generation and Transmission Project**

**WestPenn Power Transmission Line (PA-15)**

WestPenn Power installed a new 1.3 mile electric transmission line associated with the MarkWest Imperial Cibus Ranch Compressor Station in Washington County, Robinson Township. The proposed Houston to Junction Pipeline will cross this electric transmission line at MP 11.2 and at this location there are no identified regulated features present at the overlap of construction workspace for either project.

This project’s permanent wetland and waterbody impacts are not located in the Project’s CIAA. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.

**Commercial/ Residential Development Projects**

**Maronda Homes Subdivision (PA-16)**

Maronda Homes is in the planning and design stages of their Maronda Farms housing development in Allegheny County, Findlay Township. The Houston to Junction Pipeline crosses this development from MP 19.2-20.5 and SPLC has worked closely with the developer to route the alignment through this area.

While several wetlands and streams are present along the Project alignment through this planned development, the limits of the housing construction and grading has avoided these resources. This project’s permanent wetland and waterbody impacts do not encompass the same areal extent as the SPLC Project’s wetlands or waterbodies, but the project is adjacent to the Project ROW. Accordingly, no quantitative wetland and stream impacts occurred for this other project within the CIAA. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.

**Findlay Industrial Park (PA-17)**

Imperial Land Corporation completed construction of their Findlay Industrial Park in Allegheny County, Findlay Township which consists of a 400 acre development located at the Westport exit of PA Route 576. The proposed Houston to Junction Pipeline will cross this property at MP 15.6.

While resources were identified along the pipeline alignment within this property, they have been avoided by the industrial park footprint and limits of construction. As such, this project’s permanent wetland and waterbody impacts are not located within the CIAA. As a result, this project is not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.
4.3 Cumulative Impacts on Wetlands

During construction the Project will impact approximately 2.45 acres of wetlands in Pennsylvania within the limits of the permanent ROW, which excludes wetlands avoided by HDD. As shown in Table 4.1, of that amount 0.17 acres will consist of permanent conversion of PFO and PSS wetlands to PEM wetlands associated with maintenance of the permanent ROW. The remaining amount is tied to PEM wetlands that will be restored and only temporarily impacted by construction. When the permanent conversion is added to the permanent overlap wetland impacts from all other projects in the CIAA (approximately 1.65 acres of wetlands; see Table 4-1 and Table B-1 in Appendix B), a maximum of 0.01 acres of wetlands could be permanently impacted, resulting in a cumulative areal extent of wetland impact of approximately 0.01 acres. As is relates to the proposed Project, the 0.17 acres of wetlands will be mitigated for offsite at an approved mitigation bank owned and managed by RES. SPLC also proposes to complete compensatory mitigation for 0.25 acres of temporary PFO/PSS conversion that will occur in the temporary construction ROW, though these areas will be restored and allowed to revert back to a PFO/PSS strata type.

With the implementation of each potential or existing project in compliance with BMPs and permit conditions and required mitigation, all of the remaining disturbances to wetlands are (existing projects) or are anticipated to be (potential projects) minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

<table>
<thead>
<tr>
<th>County</th>
<th>Wetlands Impacts Summary (acres)</th>
<th>Total Proposed Project Impact(\text{a})</th>
<th>Total Other Projects Impact within CIAA</th>
<th>Overlap of Wetland Impacts</th>
<th>Total Cumulative Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>Perm</td>
<td>Perm</td>
<td>Perm</td>
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<tr>
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</tr>
</tbody>
</table>

Notes:
\(a\): All individual and aggregate acreage values are rounded to the nearest hundredth of an acre, such that county subtotals and the Project-wide total may not necessarily equal the individual rounded values presented.
\(b\): Permanent impacts consists of those wetland impacts that consist of a permanent conversion in wetland type PFO/PSS to PEM.

4.4 Consideration of Interrelated Wetland Areas (Inclusive of Adjacent Streams)

As shown in Table 4.2, the Project will impact approximately 7,254.23 linear feet of waterbodies with the permanent ROW, which excludes streams avoided by HDD. When added to the waterbody impacts from all other projects in the CIAA (approximately 888.45 linear feet of waterbodies; see Table 4.2 and Table B-2 in Appendix B), a maximum of 8,142.68 linear feet of waterbodies could be impacted. However, that maximum impact assumes an overlap of all waterbody impacts. In reality, as Table B-2 shows, only approximately 6 percent of waterbody impacts would overlap, resulting in a cumulative waterbody disturbance of approximately 410.12 linear feet.

Implementation of the Project and other projects evaluated within the CIAA will result in the cumulative waterbody disturbance of approximately 410.12 linear feet. With the implementation of each potential or existing project in compliance with BMPs, permit conditions and required mitigation, all of the remaining
disturbances to streams are or are anticipated to be minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

**Table 4.2 Summary of Potential Cumulative Impacts to Streams from the Proposed Project and Other Projects in the CIAA**

<table>
<thead>
<tr>
<th>County</th>
<th>Total Proposed Project Impact Perm</th>
<th>Total Other Projects Impact within CIAA Perm</th>
<th>Overlap of Stream Impacts Perm</th>
<th>Total Cumulative Impact Perm</th>
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<td><strong>888.45</strong></td>
<td><strong>410.12</strong></td>
<td><strong>410.12</strong></td>
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</table>

*a: Permanent linear feet impacts consists of that portion of stream that is within the limits of the 50-foot permanent pipeline easement, but excludes those streams avoided by use of HDD.*
5.0 Cumulative Impacts on Other Environmental Resources

While § 105.18a(a)(6) and 105.18a(b)(6) require cumulative evaluation of the Project as it relates to permanent impacts to regulated waters of the Commonwealth, when considered in combination with the permanent impacts of other potential or existing projects, SPLC also considered additional values of the environment, some of which have been detailed within the JPA applications submitted to PADEP for the Project and discussed as part of the Comprehensive Environmental Assessment. SPLC will also discuss these same resources here as it relates to cumulative impacts. These resources include:

- Groundwater
- Water Use and Quality
- Fisheries, Wildlife, and Threatened and Endangered Species
- Vegetation
- Cultural Resources
- Geological Resources and Soils
- Land Use, Recreation and Aesthetics
- Air Quality
- Noise

The evaluation of the cumulative impacts on these listed resources considered impacts from other projects that overlap or are immediately adjacent to the proposed Project such as gathering lines and facility installation, and recently completed or ongoing FERC-jurisdictional pipeline construction. Other unrelated infrastructure projects included an electric transmission line, as well as transportation and commercial/residential and industrial projects. Therefore, most of the projects identified in Table 3-1 are included in the consideration of potential cumulative impacts for the detailed resources discussed below.

5.1 Groundwater

Projects involving construction of pipelines, mid-stream facilities and electric transmission facilities, transportation infrastructure, and commercial/residential and industrial developments have the potential to interact with groundwater resources through surface excavation and in some instances the use of HDD technology can potentially have subsurface interactions with groundwater. Though not anticipated, potential impacts associated with construction of the Project on ground water resources will be limited to ground water near or at the ground surface and will be disturbed during a short-term construction window. Therefore, any potential impact on groundwater is anticipated to be minor, temporary and localized. Installation of the pipeline facilities will require trenching to approximately 6 to 7 feet below the surface to allow for the minimum cover requirements (typically 36 inches).

Due to the necessary trenching depths required for construction of the Project, it is anticipated that some degree of groundwater management will be necessary to allow for safe installation of the pipeline facilities. Trench dewatering activities will be performed on an as-needed basis, typically with 3- to 4-inch, low-flow trash pump and/or electric submersible pump systems. Dewatering operations will be supervised by EIs to ensure infiltrated groundwater is properly discharged to appropriate receiving structures. Receiving structures will be positioned on the down-slope side of the trench within the same generally vicinity of the withdrawal location. This method of trench dewatering will permit immediate local groundwater recharge; therefore, impacts to groundwater resources will be limited to the temporary displacement of localized shallow groundwater.
The construction of the Project will involve the use of HDD installation technique for avoiding environmentally sensitive resources or obstructions that occur along the Project pipeline route. SPLC has created a Water Supply Monitoring Plan to identify protocols and outline procedures for, where requested, pre- and post-HDD construction monitoring of all wells and springs within 450-feet of each HDD bore location that could be impacted by HDD construction activities associated with the Project, in addition to all well and spring within 150-feet from all mainline construction. With landowner permission, monitoring will include water quality testing, which will be used to document the water supply’s conditions before the HDD work begins and after the project is complete. This Plan further identifies SPLC’s intent to mitigate to the extent evidence reveals that project-related HDD construction activities adversely affect private water supply sources. SPLC will, when necessary, work with affected landowners to identify appropriate steps to remedy any potential impacts.

With SPLC’s implementation of mitigation measures during construction, including the Project-specific BMPs, which incorporate the state-guidelines, and public and private well monitoring pre- and post-construction, these measures will reduce the cumulative impacts on the watersheds encompassing those waterbodies potentially affected by the Project. Therefore, SPLC does not believe a significant cumulative impact to groundwater resources will result from Project construction in conjunction with other recent, ongoing, or reasonably foreseeable project in the vicinity (Table 3-1).

5.2 Water Use and Quality

SPLC has designed the Project to avoid and minimize impacts on wetlands and waterbodies in the vicinity of the Project facilities. SPLC believes that impacts on wetlands and waterbodies resulting from the Project will be limited to the immediate vicinities of specific crossing locations and will be temporary in nature.

Direct impacts on “Waters of the U.S.” including wetlands, are regulated by the USACE under Section 404 of the federal Clean Water Act (CWA) (33 U.S.C. § 1344). Pennsylvania has the ability to provide certification under Section 401 of the Clean Water Act (33 U.S.C. § 1341), that any discharge authorized by the USACE will comply with state-specific water quality standards. The 401 certification is the federal authorization. PADEP also regulates impacts on wetlands and watercourses by requiring state-specific permits for such activities by way of state-specific laws and regulations, including the Pennsylvania Clean Streams Law (35 P.S. § 691.1 et seq.), Pennsylvania Dam Safety and Encroachments Act 32 P.S. § 693.1 et seq.), and implementing regulations (25 Pa. Code Chapters 93 (Water Quality Standards), 105 (Dam Safety and Waterway Management)). The PADEP issues these state-specific permits pursuant to state law, not pursuant to federal law or federal delegation.

Pennsylvania also implements a state-specific permit for construction projects that involve soil disturbances exceeding one acre. Pennsylvania regulates this activity pursuant to the Pennsylvania Clean Streams Law and Pennsylvania Storm Water Management Act (32 P.S. §680.1 et seq.) and implementing regulations (25 Pa. Code Chapters 91, 92, 95 & 102). These permits require implementation of appropriate BMPs during and after construction to adequately control stormwater discharges.

Potential impacts from Project construction-related sedimentation and turbidity will be limited to short-term, temporary disturbances by following the adopted waterbody crossing procedures utilized for open trenching (e.g. dan/pump, flume). During construction stream flows will be unimpeded and only temporarily excluded from the workspace limits within the stream; upon completion of installation and
backfilling (typically less than 24 hrs.) the dam/pump or flume components will be removed and flow will immediately be returned to the excluded portion of the stream. Once all flow is returned to the stream some residual sedimentation will occur but will be short-term and will return to preconstruction water quality within a short period of time. No long-term or permanent impacts are anticipated after restoration of stream bottoms and regrowth of stream bank and aquatic vegetation. Further, the use of HDD will avoid water quality impacts for those stream avoided by this construction method. While the use of HDD can create the potential for inadvertent returns, SPLC has submitted to PADEP their Inadvertent Returns from HDD: Assessment, Preparedness, Prevention and Response Plan, which will be implemented should such an event occur. Once construction is complete, streambeds and banks will be restored to pre-construction conditions to the fullest extent possible, thus minimizing potential long-term impacts to fisheries, other aquatic resources, and these species' habitats. Operation and routine maintenance of the pipeline and appurtenant facilities will not affect fishery resources within the Project area.

Impacts to PEM wetlands generally will be temporary in nature and allowed to return to their pre-existing vegetated cover type following Project construction. This will be accomplished through regrading and returning contours to their pre-construction state to ensure that proper hydrological conditions are restored, the wetland area will be reseeded with the appropriate native seed mix, and all areas will be monitored to ensure successful revegetation and hydrology. Impacted PFO and PSS wetlands will be maintained in a PEM cover type within the permanent ROW. These conversions are being minimized to the extent practicable. The realistic, reasonable extent of future impacts resulting from this Project would predominantly focus on facility operation and maintenance activities. Such activities would be conducted in a manner similar to the construction period (i.e., avoiding and minimizing disturbances and implementing timing restrictions) and would thereby limit any future temporary water resource impacts. Mitigation and restoration plans for wetland impacts will be prepared and approved in accordance with federal and state requirements.

While this CIA has identified areas of permanent cumulative wetland and stream impact, given the regulatory oversight for large-scale projects regarding impacts on these resources, including the requirements for implementation of appropriate BMPs during construction and other mitigation measures to prevent degradation or loss of these features, SPLC does not believe that significant cumulative impacts will result from construction of these projects, whether construction occurs concurrently or the projects are separated by a short period of time. SPLC will implement mitigation measures during construction to prevent any indirect impacts on wetlands and waterbodies from Project activities. There will be no permanent loss of wetlands from construction of the Project. SPLC is proposing compensatory off-site mitigation for Project-related impacts to PFO and PSS wetlands and for their conversion to PEM within the permanent ROW, as well as temporary PFO/PSS impacts within the temporary construction workspace. These measures are described Chapter 105 JPA and Chapter 102 ESCP-2. Similarly, those FERC-regulated projects occurring in the area of the Project will be constructed in accordance with the FERC’s Upland Erosion Control, Revegetation and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) to avoid, minimize and mitigate impacts on wetlands and waterbodies. Other non-FERC-regulated projects would also need to comply with federal and state regulations and permit conditions relative to wetland and waterbody impacts, including implementation of BMPs to avoid and minimize potential impacts, as well as development of suitable mitigation plans for unavoidable impacts or losses of surface water resources.
5.3 Fisheries

Construction and operation of the proposed Project may include temporary impacts on waterbodies and fisheries crossed by the pipeline alignment or located within the associated workspace. Stream crossing methods have been determined by individual stream conditions and whether they will be open dry-cut, bored or HDDed. The ESCGP will be followed for both standard and special construction as well as operation techniques at stream crossings. Impact to fishery resources and habitat crossed by the proposed Project will be minimized by adhering to the waterbody crossing measures in the ESCGP. During construction SPLC has agreed to adhere to a May 1 through July 31 timing restriction within the Service Creek watershed to minimize disturbance to the southern redbelly dace during their spawning and rearing period. No significant long-term impacts to stream habitats are anticipated after restoration of stream bottoms and regrowth of stream bank and aquatic vegetation. Once construction is complete, streambeds and banks will be restored to pre-construction conditions to the fullest extent possible, thus minimizing long-term impacts on fisheries and their habitat and not posing a significant effect on the redbelly dace. Operation and maintenance activities of the pipeline and pertinent facilities will not affect fishery resources and habitat within the proposed Project area.

Given the regulatory oversight for the projects detailed in Table 3-1, regarding impacts on fisheries and habitat, including the enforcement of timing restrictions and the requirements for implementation of appropriate BMPs, and other mitigation measures to prevent degradation to sensitive fisheries, SPLC does not believe that cumulative impacts will result from construction of these projects, whether construction occurs concurrently or the projects are separated by a short period of time. Similarly other major, as well as minor, projects proposing to conduct work in or within the vicinity of regulated waterbodies would need to comply with federal and state regulations and permit conditions relative to the protection of surface waters, and implement BMPs to avoid and minimize potential impacts to sensitive fisheries.

5.4 Wildlife and Threatened and Endangered Species

Construction disturbance related to clearing and grading of the Project and some of the other known projects will likely cause the temporary displacement of wildlife from the construction workspace and adjacent areas and other potential secondary effects such as increased population stress and predation. The effects of clearing would be greatest during and immediately following construction and would diminish after construction as areas are restored and displaced and wildlife is expected to return to post-construction ROW habitats. Forested areas that will be cleared permanently will result in a modification of habitat, and potential adverse impacts to summer roosting habitat for bats and breeding habitat for forest interior birds. Although timing restrictions on clearing will help to avoid impacts to individuals or their nests, the modification of habitat can have incremental, indirect, and or cumulative impacts if this type of habitat is not replaced elsewhere within the watershed. During construction, SPLC has agreed to adhere to a May 1 through July 31 timing restriction within the Service Creek watershed to minimize disturbance to the southern redbelly dace as well as limiting tree clearing to September 1 through April 14 to minimize impacts to North Harrier within specific areas of potential habitat identified by SPLC.

Mitigation plans will accommodate general and site-specific protective measures for any sensitive vegetation or wildlife habitat and species identified during the course of the Project. Seasonal timing restrictions to account for reproductive and migratory patterns will be coordinated with state and federal agencies.
Minor permanent impacts to fisheries, wildlife, and vegetation associated with the Project would be associated with the establishment of new ROW. More significant impacts to wildlife (forest interior species) and to vegetation (tree loss) will occur associated with forest removal and areas of fragmentation. However, any potential habitat fragmentation will be reduced to the maximum extent possible by coloctating with existing, previously disturbed, and maintained ROWs. By locating portions of the pipeline outside of sensitive habitats and adjacent to existing maintained ROWs, operation and maintenance impacts to fisheries, vegetation, and wildlife is expected to be minimized. Where the pipeline is co-located within or adjacent to existing cleared ROW, impacts to forest interior species will largely be limited to direct loss or modification of habitat (i.e., ROW habitat) that has already been modified.

The United States Fish and Wildlife Service (USFWS), and those state agencies linked to the Pennsylvania Natural Diversity Inventory (PNDI) have been consulted regarding the Project. The applicable agencies have identified known or potential habitat for federal and state-listed threatened and endangered species in the Project area. Surveys for federal- and state-listed species occurred and SPLC submitted survey reports to the applicable agencies. The summary of findings is detailed within the CEA. SPLC’s consultations and coordination and surveys and reporting have resulted in the identification of a suite of measures that will be implemented to avoid, minimize and/or mitigate impacts to wildlife resources. These measures primarily include first avoiding areas of habitat through alignment shifts where feasible, implementing timing restrictions, use of HDD construction method, and then ensuring successful restoration of vegetation and habitat within the construction workspace.

SPLC and the proponents for the other known projects are required to consult with the appropriate federal, state, and local agencies to identify special status species; evaluate the potential impacts of their proposed projects on any identified species; and implement measures to avoid, minimize, or mitigate impacts on special status species and their habitat. These measures can include shifting alignments, utilizing alternative construction methods (e.g. HDD), adhering to timing restrictions, restoring/improving areas of habitat, replanting, or even completing offtsite mitigation in order to receive agency clearance for the project. Because protection of threatened, endangered and other special status species is part of the federal and state permitting processes, cumulative impacts on such species would be reduced or eliminated through the aforementioned conservation and mitigation that would be applied to all projects. Therefore, cumulative impacts on endangered and threatened species are not anticipated to be significant as a result of Project construction or operation.

Regarding general wildlife, some minor cumulative impact will result related to tree removal and temporary displacement of wildlife on the Project and for those identified projects resulting in the same impact type or permanent removal of habitat for construction of permanent features (e.g. highways, commercial/industrial facilities). The more distant projects, and linear components constructed before the Project (e.g. Mariner West) that have been restored and revegetated would contribute less to the cumulative impacts on wildlife. However, the maintained ROWs associated with these linear utilities would contribute to the long-term cumulative loss and fragmentation of forestland and associated wildlife habitat. However, the actual cumulative impact of the permanent ROWs will be fairly minimal and will create some benefits such as edge habitat and transportation corridors, and therefore wildlife populations that utilize the Project area will not be permanently adversely affected by the cumulative impact.
5.5 Vegetation

Long-term impacts on successional habitats will be predominantly limited to forest and scrub-shrub areas during operation of the Project. Forested areas of temporary ROW that are affected during construction will be allowed to revert to forested habitat after construction.

Areas that are currently vegetated with grasses or early successional species will be restored at the conclusion of construction activities, and open land and agricultural areas that are disturbed during construction also will be allowed to revert to preconstruction conditions. Minor acreage will be permanently disturbed for construction of access roads.

While the Project may change the vegetation in certain areas from forest to scrub-shrub or herbaceous vegetation, vegetated areas permanently lost because of the Project will be minimal and associated with construction of aboveground facilities (e.g. mainline valves, access roads). Habitat fragmentation of forested lands will occur as a result of the Project, as well as the other projects identified, that involve forested land clearing due to the accumulating footprint of these projects. However, SPLC has sought to avoid and minimize forest clearing to the extent practicable through co-location with other utility corridors, where possible, reduced construction ROW workspace widths within wetlands and stream crossings, and implementation of SPLC’s BMPs. In addition, within areas avoided by HDD the limits of the 50-foot permanent ROW will not be cleared or maintained, therefore vegetation impacts within the entry and exit point of proposed HDDs will be avoided. Restoration of vegetation within Project construction areas will be ensured by adherence to applicable federal and state permit conditions (e.g. monitoring reporting), including topsoil handling, reseeding with the appropriate native seed mix, and potentially 3 to 5 years of restoration monitoring in wetland areas to ensure successful revegetation. SPLC will also complete offsite compensatory wetland mitigation to address the forest and shrub habitat loss within the permanent ROW.

Project construction will result in the clearing of vegetated riparian buffers located within the construction corridor and 100 feet landward of streams and 150 feet landward of those identified HQ streams, but impacts have been minimized to the maximum extent possible while allowing safe installation of the pipeline. Specifically, SPLC has implemented the following measures to reduce long-term impacts to riparian buffers:

- The Project has been co-located with existing ROWs, where feasible to minimize tree clearing at stream crossings. This measure results in a reduction in the area of vegetation that will be cleared and avoids cutting a new ROW through undisturbed forested areas.
- The construction ROW width has been reduced at stream crossings from 100 feet to 75 feet;
- During construction use of equipment operating within waterbodies will be limited to those required to construct the crossing;
- During construction crossing non-essential construction equipment over an equipment bridge;
- Crossing waterbodies perpendicular to the waterbody as engineering and routing conditions permit;
- Restoring the stream channel and banks to preconstruction contours;
- Removing all construction equipment and materials from within the waterbody as soon as practical; and
Permanently stabilizing stream banks immediately following the pipe installation and seeding with an appropriate native riparian seed mix to facilitate vegetative growth along the stream channel.

Those FERC-jurisdictional projects that were or would be constructed in accordance with the FERC’s Plan and Procedures requiring that proponents avoid, minimize, and mitigate potential impacts on vegetation, especially forested lands. Other projects subject to federal, state, and local land use permitting regulatory frameworks would similarly be required to avoid, minimize, and mitigate impacts on vegetation, including co-location with existing facilities to the extent practicable, reduced ROW widths, and implementation of BMPs during construction as well as after construction during maintenance activities. Cumulative adverse impacts on vegetation resources from the implementation of the Project with other known planned developments are not anticipated to be significant; however, the conversion loss of forested habitat can be a cumulative impact though projects work to minimize this by the use of smaller ROWs at wetland and stream crossings and co-locating with existing utilities. Due to the linear nature of utility projects and the siting constraints on the landscape it is infeasible to avoid all forested habitat.

5.6 Cultural Resources

SPLC has consulted with the Pennsylvania Historical and Museum Commission Bureau of Historic Preservation (PHMC) regarding potential impacts resulting from the Project on cultural resources listed in the National Register of Historic Places (NRHP) and those potentially eligible or evaluated as eligible for listing in the NRHP. Through avoidance and/or minimizing Project impacts, SPLC has received clearance for the proposed Project, as detailed within the JPA applications.

Where practical, the identified sensitive cultural resources will be avoided during construction of the Project and no additional Phase II efforts were required. SPLC submitted and PHMC accepted an “Avoidance and Protection Plan” that will be utilized during construction to ensure avoidance of identified resources. Because the Project will avoid all cultural resources currently listed or eligible for listing on the NRHP and it’s expected that other projects would require similar review and clearance, therefore no cumulative impacts on cultural resources are anticipated as a result of the Project when combined with other area projects.

5.7 Geological Resources and Soils

SPLC does not anticipate cumulative impacts on geological or soil resources to be significant from implementation of the proposed Project in combination with other known planned developments.

The Project will not impact mineral resources directly. Temporary disturbances to geological resources would include disturbances to steep topographic features found along the construction ROW. These and other impacts to geologic resources would be mitigated through SPLC’s use of BMPs during construction to allow for safe practices and prevent erosion. In addition, unforeseen impacts should be minimized by the use of proper construction techniques, including proper monitoring by qualified and trained EIs. Completed studies undertaken during the Project design phase include a mining condition study, landslide study, rock rippability study, and geotechnical HDD feasibility study. SPLC does not expect that blasting will be required for installation of the proposed pipeline.
Any impacts to soils from the Project will generally be localized and temporary. Soil impacts will occur only during the construction period and post-construction monitoring period. Specialized construction methods will be used to avoid or mitigate for soil impacts along the pipeline ROW. Temporary soil impacts will be mitigated through implementation of SPLC’s Chapter 102 ESCGP-2 and required BMPs. These plans emphasize the use of standard erosion control techniques designed to reduce potential short-term and long-term impacts on soil and water resources including installing slope breakers, temporary sediment barriers, and permanent trench breakers and topsoil segregation in wetlands, agricultural areas, and residential lands. To the extent feasible, SPLC has designed the Project to reduce the amount of side-slope construction, thus minimizing the potential for impacts to soil and water resources in locations with high erosion potential, and reducing the extent of potential management issues associated with the establishment of a ROW within areas of steep terrain. Additionally, SPLC prescribes the use of erosion control devices and construction practices that will minimize erosion during and after construction. Following restoration and clean up, SPLC will monitor the disturbed areas to maintain erosion control structures and to repair any developing erosion.

SPLC anticipates that the other major projects in the Project area are expected to be subject to similar requirements to obtain the necessary permits and approvals to conduct surface disturbance activities and that these projects would not commence construction without an approved E&S Plan reviewed and granted to them by the state. Therefore, given the mitigation measures proposed for the Project, SPLC does not believe that construction or operation of the pipeline will contribute to significant cumulative or long-term impacts on geology and soil resources.

5.8 Land Use, Recreation and Aesthetics

The construction workspace will be restored in accordance with the state requirements as well as additional mitigation measures that have been incorporated into SPLC’s ESCGP-2 and BMPs. The 100-foot temporary construction ROW utilized during construction in upland areas and 75-foot in wetlands and at stream crossings will be allowed to revert to the original land use following construction, leaving 50-feet of new permanent ROW to allow for operation of the new pipeline. Additionally, SPLC will adhere to any specific agreements made with individual landowners during easement negotiations. Overall, construction and operation of the Project will result in only minor, temporary impacts on existing and future land use. Minor changes to land use acreage will be required for construction of the other appurtenant aboveground facilities. The only land use changes associated with the permanent ROW for the pipeline facilities will be restrictions on planting trees and installing permanent structures. Current land use on non-forested and agricultural land will not be impacted. Similar impacts (or lack thereof) on land use would result from the gathering line projects, and FERC-jurisdictional projects identified as currently, proposed, or reasonably foreseeable within the vicinity of the Project.

Clearing and construction activities will occur simultaneously throughout the Project. The majority of clearing activities are proposed to occur from October-March to avoid migratory bird impacts associated with forest clearing. This time frame represents the highest potential impact to hunters during the winter months when the popular game animal such as white-tailed deer and wild turkey occur. Hunting on private land within the vicinity of the Project may be temporarily disrupted during construction. It is currently not feasible to predict when a construction-related activity may occur on a specific property. However, SPLC will ensure that the landowner is kept apprised of the clearing and construction schedules and it is the landowners’ responsibility to communicate the non-hunting schedules with the lessees.
In Pennsylvania the Project is not located in or within 100-feet of a national or, state, park or, forest, or any recreation area, national natural landmark, national wildlife refuge, or federal, state, local or private wildlife or plant sanctuaries, or any state game lands. The Project is also not located in or within 100-feet of a national wild or scenic river, the Commonwealth’s Scenic Rivers System, or any areas designated as a Federal Wilderness Area. The Project will traverse one local environmental center run by the Beaver County Conservation District one local park consisting of a ballfield owned by Raccoon Township as well as two paved trails consisting of the Montour and Panhandle Trails. SPLC has obtained from these entities permission to traverse these local resources and has reached an agreement of placement of the alignment such that it will not impact the use of these recreational facilities. Therefore, the Project is not anticipated to have any significant permanent visual impacts on any federal or state listed visually sensitive areas, such as scenic roads, rivers, or natural landmarks as these features are not present in the Project area or adverse impact to local recreational parks. Due to the avoidance of federal and state lands, recreation and special interest areas, and engagement with the landowners of the local resources traversed, SPLC does not believe that any significant long-term impacts on recreational activities and special interest areas will occur as a result of the Project.

While temporary visual impacts on the landscape will occur during Project construction due to clearing, grading, and construction activities, SPLC will restore disturbed areas in accordance with the Chapter 105 permit conditions and Chapter 102 ESCGP-2 BMPs. To avoid and minimize potential visual impacts associated with vegetation clearing, especially forested areas, SPLC has strived to locate the proposed route within previously disturbed ROWs (e.g., co-location with other utilities), and avoidance of public recreation and forest lands where possible. Additionally, SPLC will continue to consult with other permitting agencies relative to any specific measures that would promote revegetation of the construction workspaces to limit permanent visual impacts resulting from conversion of forested lands to scrub-shrub and herbaceous areas, while allowing for long-term pipeline maintenance and inspection and other safety considerations and requirements. Those projects identified in the same area as the proposed Project, are situated on private land that does not entail special interest areas or visual resources linked to recreational resources such as national landmarks or federal or state wild and scenic rivers. Therefore, based on the above mitigation measures, SPLC does not believe that construction and operation of the Project in concert with the other identified projects will contribute to significant cumulative or long-term impacts on land use, recreation, special interest areas, and visual resources within the region.

5.9 Air Quality

Construction of the Project will result in temporary increases in emissions of the following air pollutants due to the use of construction equipment powered by diesel or gasoline engines: particulate matter with a nominal aerodynamic diameter of 10 microns or less (PM10), particulate matter with a nominal aerodynamic diameter of 2.5 microns or less (PM2.5), nitrogen oxides, carbon monoxide, sulfur dioxide, volatile organic matter, greenhouse gases, and hazardous air pollutants. Construction activities will also result in the temporary generation of fugitive dust (PM10/PM2.5).

These air emissions will occur only as a result of construction activities, and will therefore, be temporary and of limited duration. The operation of heavy construction equipment and its associated exhaust would increase diesel exhaust emissions and would suspend fugitive dust and other construction related particles in the air. The volume of dust emitted will vary depending on the level of activity, specific construction techniques, soil characterizations, and weather conditions. These temporary impacts will be minimized by requirements that the contractor keep machinery adequately maintained and operating. Construction dust
and particles would be reduced by implementing fugitive dust control measures (water suppression). In addition, as it relates to the three proposed meter stations required for the Project, SPLC has submitted a Request for Determination of Sources of Minor Significance and Exemption from Plan Approval under Pa Code § 127.14 to PADEP for review for these minor aboveground facilities. Therefore, SPLC does not anticipate any significant cumulative impacts to air quality to occur as a result of the Project.

5.10 Noise

For federal projects under the regulatory purview of FERC, FERC has adopted the United States Environmental Protection Agency (USEPA) criterion of 55 dBA Ldn (maximum sound level that will not adversely affect public health and welfare by interfering with speech or other activities in outdoor areas) as the noise level not to be exceeded at the nearest existing noise sensitive area. This criterion applies to FERC transmission pipeline Projects but would not apply to the Marcellus Shale well development or gathering line construction activities, the transportation improvement projects, or the other residential/commercial developments identified in Table 3-1, unless imposed by the agencies regulating those projects. However, all projects within those Counties that have a noise ordinance per any applicable Commercial and Industrial Land Development Ordinance enforced by the County Planning Commission, would have to adhere to those requirements.

As mentioned above, the 55 dBA criterion does not apply to most pipeline construction activities, unless those activities are to be stationary for long periods. Noise in a given area along the Project alignment from construction equipment will be short-term and will be reduced to acceptable levels by noise attenuating equipment (e.g., mufflers). For the proposed HDDs present along the alignment, SPLC completed a noise study in regards to the temporary noise levels created by HDDs and will implement those sound attenuation measures recommended from these studies. In addition, the Project itself will not incur operational noise as a result of construction permanent sources.

For past linear utility projects currently in-service, these entities are not contributing noise to the surrounding environment and their temporary short-term impact from construction have since terminated. Those projects that may be under construction at the same time as the SPLC Project will contribute to the overall surrounding noise levels and may pose a cumulative impact, but due to the short-term nature of construction it does not pose a significant impact. For those facility projects identified, such as the compressor station or PA Turnpike, SPLC assumes these entities would have addressed noise impacts during the permitting of these facilities through either PADEP or adherence to local noise ordinances, where applicable, and could have potentially cumulatively contributed or will contribute to the current noise levels in the immediate area.
6.0 Conclusion

SPLC has routed the proposed pipeline facilities and work areas of the Project to avoid, minimize and/or mitigate effects on wetlands and waterbodies to the greatest extent practicable while maintaining engineering standards and safety. The routing process has allowed SPLC to identify a constructible pipeline alignment that will minimize disturbances on the environment while maintaining engineering standards and safety. With permanent impacts to wetlands and their functions and values mitigated, the proper installation and maintenance of the Project’s BMPs and other impacts to wetlands and streams will be minor and mostly temporary, thereby resulting in no more than minimal individual and cumulative adverse environmental effects.

Permanent modification of vegetative cover type of PFO wetlands and PSS wetlands to PEM wetlands is anticipated in establishing a new ROW for the Project. These conversions are being minimized to the extent practicable and will be mitigated for accordingly through offsite compensatory mitigation at an approved mitigation bank that will be reviewed and approved by the federal and state permitting agencies.

The Project will impact approximately 2.45 acres of wetlands from operation of the permanent ROW, which includes a limited PFO and PSS permanent wetland cover type conversion of 0.17 acres across 7 wetlands due to maintenance of the 50-foot permanent ROW. In consideration of interrelated wetland areas, the Project will impact approximately 7,254.23 linear feet and 0.88 acres of waterbodies from operation of the 50-foot permanent ROW, but will not result in any permanent stream fill.

Based on the results of this CIA, implementation of the Project and other potential or existing projects evaluated within the CIAA will result in the aggregate cumulative areal extent of permanent wetland impact of approximately 0.01 acres, and the cumulative permanent waterbody impact of approximately 410.12 linear feet. Additionally, within the CIAA, these permanent impacts will result in limited PFO and PSS wetland cover type conversion of 0.01 acres across one wetland associated with the Project. With the implementation of each potential or existing project in compliance with BMPs and federal and state permit conditions, all of the remaining disturbances to wetlands and streams are or are anticipated to be minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

Based on these aggregate (i.e., cumulative) impacts of the Project and other potential or existing projects evaluated within the CIAA, the wetland impacts associated with all the Chapter 105 applications related to this Project, in consideration of interrelated wetland areas (inclusive of adjacent streams), will not result in the impairment of the Commonwealth’s EV wetland resources or a major impairment of the Commonwealth’s other wetland resources.

As it relates to the additional environmental resources under the purview of the Environmental Rights Amendment, through avoidance, minimization, installation of BMPs and mitigation of impacts as approved through the PADEP Chapter 105 and 102 reviews and approval process, of which the same process will occur with all other projects in the area, cumulative impacts will be insignificant.
7.0 References


Appendix A

Cumulative Impact Analysis Figure
FIGURE 2-4

SHELL FALCON CUMULATIVE PROJECTS
PA-4

REFERENCE:
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
FOOT TRANSVERSE MERCATOR

Aerial Photo: PASDA; USDA NAIP 2017
Figure 2-8_C

SheLL falcon cumulative projects
pa-8

reference:
coordinate system: NAD 1983 UTM ZONE 17N FOOTTRANSVERSE MERCATOR
aerial photo: PASDA; USDA NAP 2017
FIGURE 2-9

SHELL FALCON CUMULATIVE PROJECTS
PA-9, PA-14 & PA-15

REFERENCE:
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FOOTTRANSVERSE MERCATOR
Aerial Photo: PASDA; USDA NAP 2017

PROJECT LOCATION

LEGEND
- PA-9
- PA-14
- PA-15
- West Penn T-line
- Turnpike Alignment
- Stream
- Easement
- LOD
- Wetland
- Falcon Centerline

±
0 600 300 1,200 600 Feet

- Beaver
- Hancock
- Allegheny
- Brooke
- Washington

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

AECOM

DATE: 7/5/2018
PROJECT #: 60536988
APPROVED MB

S:\Projects\ENV\60536988\Falcon\000\CAD\GIS\002\929_Gis\Graphics\Cumulative resource impact_8x11\detailed_Pa14_Pa15.mxd
REFERENCE:
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FOOTTRANSVERSE MERCATOR
Aerial Photo: PASDA; USDA NAIP 2017

FIGURE 2-13-B
SHELL FALCON CUMULATIVE PROJECTS
PA-13

SHELL PIPELINE COMPANY LP
HOUSTON, TX 77079

SHELL PIPELINE COMPANY LP
FALCON ETHANE PIPELINE SYSTEM

AERIAL PHOTO: PASDA; USDA NAIP 2017

PROJECT LOCATION

LEGEND
PA-13
Falcon Centerline
Air Liquide
Easement
LOO
Stream

0 130 260 520 Feet

±

DATE: 7/25/2018
PROJECT #: 60536988
APPROVED #: 60536988

T|B

S:\Projects\EN\00030698\Falcon\001\CAD\GIS\2002_2019\GIS Graphics\Cumulative resource impact_8x11rated_PA13.mxd
SHELL FALCON CUMULATIVE PROJECTS
PA-16

LEGEND
- PA-16
- Maronda Farms (white)
- Falcon Centerline
- Access Road
- Easement
- LOD

REFERENCE:
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N FOOTTRANSVERSE MERCATOR
Aerial Photo: PASDA; USDA NAP 2017

DATE: 7/25/2018
APPROVED: HB
PROJECT #: 600360843
Appendix B

Cumulative Wetland and Stream Impact Tables
### Table B-1 Potential Cumulative Wetland Impacts within the Cumulative Impact Assessment Area (CIAA) of the Falcon Ethane Pipeline System

| Wetland Type | Wetland Impacts (acres) | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm | Perm |
|--------------|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| W-PA-161205-WRA-001 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-161205-WRA-003 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-160307-MRK-003 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-160307-MRK-004 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-160307-MRK-006 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-161122-WRA-002 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00/Not Impacting | 0.00 |
| W-PA-151216-MRK-002 | PEM No conversion | -- | 0.01 PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.01 |
| W-PA-151209-MRK-005 | PEM 0.00% Not Impacting | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-151209-MRK-004 | PEM 0.00% Not Impacting | -- | -- | -- | -- | 0.06/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-152115-MRK-001 | PEM No conversion | -- | 0.03/PEM | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-151123-JLK-003 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-160425-MRK-001 | PEM No conversion | -- | <0.01 PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <0.01 |
| W-PA-160407-JLK-002 | PEM 0.00% Not Impacting | -- | 0.11/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-151203-MRK-006 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-151203-MRK-005 | PEM No conversion | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-160406-MRK-006 | PEM No conversion | -- | 0.04/PFO | 0.04/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-160406-MRK-007 | PEM 0.00%Not Impacting | -- | 0.04/PFO | 0.11/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-160406-JLK-001 | PEM 0.00%Not Impacting | -- | <0.02/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| W-PA-160406-JLK-005 | PEM 0.00%Not Impacting | -- | <0.04/PFO | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 |
| **TOTAL** | | 0.00 | 0.11 | 0.00 | 0.00 | 0.63 | 0.15 | 0.00 | 0.76 | 0.00 | 0.00 | 0.00 | 0.01 |

**Notes:**

- Straits type of PFO, PSS, and PEM determination for wetland impacts tied on past projects already constructed, was determined based on AECOM wetland data and review of historical aerials, to determine the wetland strata prior to being impacted by construction of the project.
- For all operational and proposed linear pipelines a 50-foot permanent ROW was assumed.
- Permanent conversion impacts consists of those wetland impacts that consist of a permanent conversion in wetland type PFO/PSS to PEM.
- Permanent conversion impacts include only "permanent" wetland impacts since according to the PADEP’s Technical Guidance entitled Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number 310-2137-006 where a temporary impact is proposed to be properly restored, the applicant does not need to identify the temporary impact as an adverse cumulative impact on the wetland resource. For this Project the only permanent wetland impact consists of wetland conversion from PFO/PSS to PEM.
- This wetland has been listed as it is impacted at a different location by the Shell Falcon Project compared to the identified project, and therefore does not share an overlapping impact. Due to the immediate adjacency of this identified project the wetland has been identified here, but has not been accounted for within the total permanent cumulative impact total since it does not constitute an overlapping/shared permanent impact.
<table>
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<tr>
<th>Falcon Stream ID (identified as overlapping or immediately adjacent)</th>
<th>Stream Impacts (linear feet)</th>
<th>TOTAL PERMANENT CUMULATIVE IMPACTS*</th>
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<td>PA-160408-MRK-001</td>
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<td>Perm</td>
</tr>
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</table>

**TOTAL**: 2,210.78

**Washington County**: 0.00

**Allegheny County**: 0.00

**Beaver County**: 0.00

**Total**: 410.12
Notes:

a. Cumulative waterbody impacts include only "permanent" impacts since according to the PADEP’s Technical Guidance entitled Comprehensive Environmental Assessment of Proposed Project Impacts for Chapter 105 Water Obstruction and Encroachment Permit Applications Technical Guidance Number J-16-310-310-006 where a temporary impact is proposed to be properly restored, the applicant does not need to identify the temporary impact as an adverse cumulative impact on the resource. For this table a cumulative impact is that linear footage of stream crossing within the Falcon 50-foot permanent ROW and any overlap with a permanent impact or permanent ROW for other identified projects.

b. Permanent linear feet impacts consists of that portion of stream that is within the limits of the 50-foot permanent pipeline easement.

c. This stream has been listed as it is impacted at a different location by the Shell Falcon Project compared to the identified project; and therefore does not share an overlapping impact. Due to the immediate adjacency of this identified project the stream has been identified here, but has not been accounted for within the total permanent cumulative impact total since it does not constitute an overlapping/shared permanent impact.