

Resource Identification and Project Impacts

Pennsylvania Pipeline Project

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Sunoco Pipeline L.P.
Resource Identification and Project Impacts
Pennsylvania Pipeline Project

1.0 INTRODUCTION

Sunoco Pipeline L.P. (SPLP) has prepared this Resource Identification and Project Impacts report to identify the resources regulated under Chapter 105 and collectively and holistically address the primary, direct and secondary, indirect impacts to these resources across the entire Pennsylvania Pipeline Project (Project or PPP) area. Enclosures C and D within Attachment 11 of each county application provide an analysis and discussion of the resources and associated Project impacts within each individual county. The intent of this report is to consolidate the resource impacts into one report that evaluates the entire Project. Specifically, Section 2.0 identifies the resources crossed by the Project, Section 3.0 identifies the anticipated direct impacts to these resources, and Section 4.0 presents the secondary impacts to these resources that may occur due to Project construction, operation/maintenance, and Section 5.0 summarizes the cumulative impacts associated with the Project. The intention of this report is to be utilized in conjunction with the other project-wide reports: the Environmental Assessment, the Alternatives Analysis, the Impact Avoidance, Minimization, and Mitigation Procedures; the Cumulative Impact Analysis.

SPLP proposes to construct and operate the Project that would expand existing pipeline systems to provide natural gas liquid (NGL) transportation. The Project involves the installation of two parallel pipelines within an approximately 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook Industrial Complex (MHIC) in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline will be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the MHIC, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The following provides the details of the proposed Project facilities:

- Pipeline 1: Houston, Pennsylvania to Marcus Hook, Pennsylvania – This is an incremental expansion of the capacities of SPLP to transport NGLs to the MHIC. This Phase of the Project will include a 20 inch diameter steel pipeline, pump stations, and valve settings. The route of the pipeline is either inside or adjacent to the existing SPLP pipeline corridor for a majority of its length and is approximately 306.8 miles long.
- Pipeline 2: Delmont, Pennsylvania to Marcus Hook, Pennsylvania –The pipeline route for the second 16-inch pipeline will include 255.8 miles of pipeline that will parallel Pipeline 1.

Aboveground facilities associated with the Project include the following modifications:

- Houston, Pennsylvania has an existing facility which will connect to the pipeline. This Project will install meters on the outlets from existing storage, injection pumps, control valves, associated piping and accessory structures. New land disturbance will be required to accommodate the injection station component.

- Delmont, Pennsylvania has an existing facility and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance within the existing station site will be required to accommodate this modification.
- Ebensburg, Pennsylvania, SPLP will construct a new pump station with booster pumps, leak detection metering, associated piping and accessory structures adjacent to an existing station. Some new land disturbance within the existing station site will be required to accommodate this modification.
- Mount Union, Pennsylvania has an existing pump station and this Project will expand the pump station with added piping, pig traps and valves. Some new land disturbance will be required to accommodate this modification.
- Doylesburg, Pennsylvania has an existing pump station and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance will be required to accommodate this modification.
- Middletown, Pennsylvania has an existing pump station and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance will be required to accommodate this modification.
- Beckersville, Pennsylvania has an existing pump station and this Project will expand the pump station with added piping, pig traps and valves. Some new land disturbance will be required to accommodate this modification.
- Twin Oaks, Pennsylvania is an existing site and this Project will install custody transfer meters and control valves. Some new land disturbance within the existing facility will be required to accommodate this modification.
- There are 53 mainline block valve sets planned for this Project, of which 22 are sited at existing valve sites, and 5 are sited at existing pump stations. Block valves are installed for the purpose of shutting off sections of the pipeline to allow maintenance or to stop flow in the case of emergencies.

SPLP has filed Chapter 105 Water Obstruction & Encroachment Permit applications (Chapter 105 applications) with the Pennsylvania Department of Environmental Protection (Department) requesting authorization to construct and maintain water obstructions and encroachments associated with the Project, including wetland and stream crossings. To support an informed decision by the Department, SPLP has prepared a project-wide Comprehensive Environmental Evaluation that includes a compliance evaluation with Section 105.18a; resource identification and project impact assessment; alternatives analysis; impact avoidance, minimization, and mitigation procedures; antidegradation analysis; and, a cumulative impacts assessment (Attachment 11, Enclosure E).

2.0 RESOURCE IDENTIFICATION

In accordance with the Pennsylvania Department of Environmental Protection's (PADEP) Environmental Assessment Form (3150-PM-BWEW0017, 2/2013), this section identifies the existing resources located within the Project area. In addition, in response to comments received from PADEP this section identifies the agricultural areas crossed,

private and public well supplies located in the Project area, and an overview of the vegetation and wildlife resources within the Project area.

2.1 RECREATIONAL AND NATURAL AREAS

The Project does not cross any known specially designated natural, wild, or wilderness areas; designated national natural landmarks; or, national wildlife refuges.

The Project crosses a number of national, state, or local parks and recreation areas, as listed in Table 1. For all parks and recreation areas crossed by the Project, SPLP is working with the appropriate land administering agency to obtain the required land easements, licenses, and approvals for crossing these lands.

Table 1. National, State or Local Park, Forest, or Recreation Areas Crossed by the Pennsylvania Pipeline Project

County	Name of Area
Washington	Arnold Park
Washington	North Strabane Township Park
Westmoreland	Bushy Run Battlefield State Park
Westmoreland	Loyalhanna Lake Recreation Area
Westmoreland and Indiana	Federal-Owned Property at Conemaugh River Crossing
Indiana	Pine Ridge County Park
Indiana	Gallitzin State Forest
Cambria	Gallitzin State Forest
Huntingdon	Raystown Lake Recreation Area
Perry	Tuscarora State Forest
Cumberland	Appalachian Trail
Cumberland	Opossum Lake Park
York	Charles L. Roof Memorial Park
Dauphin	Lower Swatara Township – Greenfield Park
Berks	Shiloh Hills Park
Berks	Sovereign Sports Park
Chester	Marsh Creek State Park
Chester	Hickory Park
Chester	Meadowbrook Manor Park

Source: PADCNR and PNHP 2016, PASDA 2016a

The Project crosses 7 different State Game Lands a total of 11 times (Table 2) for a total distance of 9.39 miles. SPLP is coordinating with the Pennsylvania Game Commission (PGC) to obtain a license agreement to cross these lands. Regarding State Game Land 420, it is SPLP's understanding that the mapped portion of the State Game Land 420 that the Project traverses, coincides with land that is Federally-owned and administered by the U.S. Army Corps of Engineers as part of the Raystown Lake Recreational Area property (see Section 2.1.1 below). Therefore, SPLP acknowledges this area as Federal land instead of State land, and is seeking the appropriate legal easements from the U.S. Army Corps of Engineers (USACE) for this area. SPLP has worked with PGC for the review and issuance of all required license agreements for the Project where it crosses State Game Lands, and PGC has not indicated that SPLP is required to seek a license agreement for crossing State Game Lands 420. Therefore, SPLP is coordinating the crossing of this area under the purview of the USACE/Raystown Lake property.

Table 2. State Game Lands Crossed by the Project

County	Name of Area	Distance Traversed (miles)
Indiana	State Game Lands No. 276	0.77
Cambria	State Game Lands No. 198	0.54
Blair	State Game Lands No. 198	0.21
Blair	State Game Lands No. 118	0.56
Blair	State Game Lands No. 147	0.34
Blair	State Game Lands No. 198	1.42
Huntingdon	State Game Lands No. 118	0.13
Huntingdon	State Game Lands No. 71	2.53
Lebanon	State Game Lands No. 46	1.41
Lancaster	State Game Lands No. 46	1.30
Berks	State Game Lands No. 52	0.18

Source: PASDA 2016b

The Project crosses a number of designated hiking and water trails (Table 3). Similar to the parks/recreation areas crossed by the Project, SPLP is working with the appropriate land administering agency/landowner to obtain the required land easements, licenses, and/or approvals for crossing these designated trails.

Table 3. Hiking and Water Trails Crossed by the Pennsylvania Pipeline Project

County	Name of Trail
Washington	BicyclePA Route A
Washington	BicyclePA Route S
Westmoreland	Great Allegheny Passage
Westmoreland	Youghiogheny River Water Trail
Westmoreland	Kiski-Conemaugh River Water Trail
Indiana	Kiski-Conemaugh River Water Trail
Indiana	West Penn Trail
Indiana	Lodge Trail
Blair	Mid-State Trail
Blair	BicyclePA Route G
Blair	Juniata River Water Trail
Huntingdon	Mid-State Trail
Huntingdon	Allegrippis Trails at Raystown Lake
Huntingdon	Standing Stone Trail
Perry	Iron Horse Trail
Perry	Fowlers Hollow Trails
Perry	Tuscarora Trail
Cumberland	Appalachian Trail
Cumberland	BicyclePA Route J-2
Cumberland	Conodoguinet Creek Water Trail
Cumberland	Yellow Breeches Creek Water Trail
York	BicyclePA Route J
York	Yellow Breeches Creek Water Trail
Dauphin	BicyclePA Route J-1
Dauphin	Lower Susquehanna River Water Trail

County	Name of Trail
Dauphin	Swatara Creek Water Trail
Lebanon	Horse-Shoe Trail
Lebanon	Lebanon Valley Rail Trail
Berks	Horse-Shoe Trail
Berks	BicyclePA Route S
Chester	Chester Valley Trail
Chester	BicyclePA Route S
Chester	BicyclePA Route L
Delaware	Rocky Run Trail

Source: PASDA 2016c

Section 3.1 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to these recreational resources.

2.1.1 Federally-Owned Areas

A Draft Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) have been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969 as amended, to address the potential environmental impacts associated with the Project easement on these Federally-owned lands. The Project requires the USACE approval of SPLP's application for an easement allowing it to construct, install, and operate a portion (totaling approximately five [5] miles) of the Project, traversing five (5) land parcels within the Pittsburgh District (associated with Loyalhanna Lake, and the Conemaugh River Lake in Westmoreland and Indiana counties, respectively); and one (1) land parcel in the Baltimore District (associated with Raystown Lake) in Huntingdon County, Pennsylvania. In January-February 2014, SPLP submitted a right of entry/application request for permission to access properties to USACE for the Project.

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

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

the end of October. USACE Raystown Lake staff also identified the Allegrippis Trail (a mountain bike trail), which would be crossed by the Project ROW at several locations.

2.2 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations require federal agencies to take into account the effects of their undertakings on historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP). The NHPA and the regulations also require federal agencies to consult with the appropriate State Historic Preservation Officers (SHPOs) and federally recognized Native American tribes for undertakings with the potential to affect NRHP-listed or -eligible properties. The Project does not cross or impact any federally recognized Native American reservations or territories.

The Project is being permitted under the USACE for Obstruction and Encroachment of the Waters of the United States under Section 404 of the Clean Water Act and therefore qualifies as a federal undertaking for purposes of the NHPA; therefore, consultation pursuant to Section 106 of the NHPA is required. SPLP has coordinated with USACE and the Pennsylvania State Historic Preservation Office (PA SHPO) to address Section 106 requirements and meet their obligations under the NHPA. Consultation is ongoing and SPLP is awaiting permit authorization.

2.2.1 Archaeological Resources

Archaeological surveys were conducted for the Project from December 2013 through November 2016. Investigations were conducted in accordance with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register [FR] 44716-42, September 29, 1983) and 18 Code of Federal Regulations (CFR) Sections 380.3, 380.12, and 380.14 of the Federal Energy Regulatory Commission's regulations. Investigations were also conducted in accordance with the NHPA of 1966, as amended, Executive Order 11593 and the regulations of the Advisory Council on Historic Preservation (ACHP) (36 CFR 800). Research and survey methods were in conformance with guidelines outlined in the PA SHPO's *Guidelines for Archaeological Investigations in Pennsylvania* (2014).

The Project's Area of Potential Effect (APE) includes moderate to high probability areas within the construction ROW (which includes Additional Temporary Workspace (ATWS) and permanent and temporary access roads), USACE Permit Areas, FEMA delimited floodways, and previously identified archaeological sites per the PA SHPO's Cultural Resources Geographic Information System (CRGIS). Archaeological investigations included a Phase Ia reconnaissance survey to develop an archaeological assessment of probability for intact archaeological resources, and subsequent Phase Ib archaeological investigations consisting of pedestrian survey of the entire APE and systematic subsurface testing and surface inspection of the Project APE determined sensitive for the presence of archaeological resources.

A combined total of 78 newly identified and previously recorded archaeological sites were located within the proposed ROW. To date, the PA SHPO determined 10 of the sites not eligible for the NRHP. The PA SHPO also recommended no further investigations at 47 of the sites, either because field investigations did not identify the site within the APE or the identified portion of the site within the APE does not contribute to the site's potential eligibility. Sixteen sites will be avoided by either HDD construction or pipeline realignment. SPLP is in ongoing consultation with the PA SHPO to determine the status and eligibility for the remaining five sites. A summary of the archaeological sites identified by archaeological surveys for the Project is provided in Table 4 for each county crossed by the Project.

Table 4. Archaeological Sites Identified During Project Field Investigations

County	SHPO Determined Site Not NRHP Eligible	No Additional Investigations (SHPO Concurrence)	Site Will be Avoided	Waiting on SHPO Concurrence	Total Sites
Washington	5	3	1	1	10
Alleghany	3	1	1	0	5
Westmoreland	2	12	0	0	14
Indiana	0	2	0	0	2
Cambria	0	3	0	0	3
Blair	0	2	1	1	4
Huntington	0	2	0	0	2
Juanita	0	0	0	1	1
Perry	0	0	1	0	1
Cumberland	0	0	1	0	1
York	0	0	1	0	1
Dauphin	0	2	0	0	2
Lebanon	0	2	0	1	3
Lancaster	0	7	3	0	10
Berks	0	3	1	0	4
Chester	0	8	6	1	15
Delaware	0	0	0	0	0
TOTAL	10	47	16	5	78

2.2.2 Historic Resources

Site file research was conducted on the PA SHPO's CRGIS to identify all NRHP-listed historic sites located within the Project's APE for historic resources. A historic resources field reconnaissance survey was conducted for the proposed Project from April 2015 through May 2016. The APE for historic resources was developed in consultation with the PA SHPO. Table 5 presents NRHP-listed historic sites identified within the Project APE.

Table 5. National Historic Sites In or Adjacent To the Project APE

County	Name of Area / Type of Site
Washington	Mingo Presbyterian Church and Churchyard, Union Township (Key #097612) (NRHP-listed)
Westmoreland	National Historic Landmark and Historic Archaeological Site "Bushy Run Battlefield" (1700-1775, Military) (Key #001146; 36WM0598), Penn Township
Westmoreland	Bushy Run Battlefield, Penn Township (Key #001146) (National Historic Landmark)
Indiana	Western Division, Pennsylvania Canal, Burrell Township (Key #000808) (NRHP-listed)
Huntingdon	East Broad Top Railroad – Mount Union to Alvan, Shirley Township (Key #006531) (National Historic Landmark)
Cambria	Allegheny Portage Railroad of the Pennsylvania Canal, Cresson Township (Key #123985) (National Historic Landmark)
Dauphin	Prehistoric Archaeological Site (36DA0089), Swatara Township (NRHP-Listed)
Berks	Prehistoric Archaeological Site (36BK0588), Caernarvon Township (NRHP-Listed)
Berks	Historic Archaeological Site "Joanna Furnace Mansion" (1700-1925+, Domestic) (36BK0624), Robeson Township (NRHP-Listed)
Berks	Historic Archaeological Site "Joanna Furnace Industrial/Business and Charcoal Barn" (1700-1925+, Industrial) (36BK0625), Robeson Township (NRHP-Listed)
Chester	Lionville Historic District, Uwchlan Township (Key #001567) (NRHP-listed)

County	Name of Area / Type of Site
Chester	Benjamin Pennypacker House, West Whiteland (Key #064409) (NRHP-listed)
Chester	Prehistoric Archaeological Site (36CH0611), West Whiteland Township (NRHP-Listed)
Chester	Historic Archaeological Site "Jacob Zook House" (1700-1900, Farmstead) (36CH0694), West Whiteland Township (NRHP-Listed)
Chester	Historic Archaeological Site "George Massey House" (1700-1900, Farmstead) (36CH0695), West Whiteland Township (NRHP-Listed)
Chester	Historic District "Pleasant Hill Plantation," West Nantmeal Township (Key #079669) (NRHP-listed)
Chester	Historic Building "Exton Hotel," West Whiteland Township (Key #064335) (NRHP-Listed)
Chester	Historic Building "Greenwood School," West Whiteland Township (Key #050645) (NRHP-Listed)
Chester	Historic Building "William Everhart House," West Whiteland Township (Key #064476) (NRHP-Listed)

Section 3.2 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to these resources.

2.3 AGRICULTURAL AND CONSERVED/PRESERVED AREAS

The Project crosses a variety of agricultural areas including pasture, cropland, orchards, and fallow fields. As presented below, some of these areas are located on prime farmlands as defined by the Soil Conservation District and/or are considered preserved/conserved farmlands by various county and local programs.

- A total of 642 areas of mapped prime farmland will be crossed by the Project for a total distance of 75.09 miles (refer to Enclosure B mapping). However, these numbers reflect the total area of mapped prime farmland soil types/units and include areas that are not currently in agricultural use. For example, the distance traversed includes forested, developed, and open/non-agricultural areas that are underlain by mapped prime farmland soil types.
- The Commonwealth of Pennsylvania and numerous counties across the Commonwealth have implemented a number of different programs to conserve and protect farmlands. The criteria and intent of these programs, as well as the associated land restrictions/limitations, differ. One of the programs that SPLP has reviewed regarding the requirements of farmland preservation is the Clean and Green Program, which provides for reduced property tax rates for landowners of rural agricultural, timber or open space properties greater than 10 acres in size. Additionally, SPLP has reviewed the Agricultural Lands Preservation Program and Agriculture Security Area program established by the Agricultural Area Security Law, 3 P.S. § 914.2. Finally SPLP met with the Pennsylvania Bureau of Farmland Preservation, the Pennsylvania office of the United States Department of Agriculture, Natural Resources Conservation Service, and representatives of both of the Cumberland County and Lebanon County Agricultural Land Preservation Boards.

Section 3.3 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to agricultural resources and conserved/preserved properties crossed by the Project.

2.4 PUBLIC AND PRIVATE WATER SUPPLIES/WELLS

SPLP used PADEP's eMapPa system (PADEP 2016) to identify Public Water Supply (PWS) areas that utilized "Groundwater Wells" and "Surface Water Intakes" as their source. The PWS data was used to create a file of all known public water supply areas located within 1 mile of the Project workspace, and notification letters and maps were sent to these identified PWS authorities. In the letters, SPLP requested the locations of the authority's PWS groundwater wells and/or surface intakes. Based on the information received, a total of 50 PWS areas have been identified in the Project area.

SPLP used the DCNR's Pennsylvania Groundwater Information System (PAGWIS) well data (PADCNR 2016) to identify a total of 22 recorded private groundwater wells located within 150 feet of the proposed Project's HDD locations. The DCNR recommends that PAGWIS data not be used for mapping purposes; therefore, SPLP has conducted independent identification of private wells with landowners to determine the exact location(s) of their water well(s) prior to construction. SPLP's Water Supply Assessment, Preparedness, Prevention, and Contingency Plan (Attachment 12, Tab12B) provides a summary of well identification efforts completed to date as well as SPLP's mitigation plan.

Section 3.4 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to public and private wells.

2.5 VEGETATION

The following provides a brief description of the different dominant cover types and associated plant species composition located within the Project area. Major cover types within the Project area include upland forests, agricultural lands, open lands and developed lands. The Project is co-located with existing ROWs to the extent possible, and as such a significant portion of impacted vegetation is "open" vegetation (successional field, meadow or maintained cover types) associated with the areas of overlap with existing ROW. The Project crosses a variety of areas with different vegetative species composition; therefore, the following sections are intended to provide a brief description of each of the dominant cover types and the most common species associated with that type.

Section 3.5 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to vegetation crossed by the Project.

2.5.1 Existing Environment

The proposed Project crosses a number of upland and wetland vegetated communities. The information provided below is only intended to provide a brief description of the most common types crossed by the Project.

Wetlands

Wetlands are defined as "Those areas that are inundated or saturated by surface 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...". Wetlands are identified by having the three following characteristics: hydric soils, hydrophytic vegetation (plant adapted to live in wet areas), and hydrology (PADEP 2013).

Palustrine Forested Wetlands (PFO): Forested wetlands are characterized by the presence of large woody trees (over 20 feet in height; PADEP 2013). Common PFO species crossed by the Project include red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), and yellow birch (*Betula alleghaniensis*).

Palustrine Scrub-Shrub Wetlands (PSS): Small trees and shrubs that are less than 20 feet in height (PADEP 2013) dominate scrub-shrub wetlands. Highbush blueberry (*Vaccinium corymbosum*), silky dogwood (*Cornus amomum*), red osier dogwood (*Cornus sericea*) and buttonbush (*Cephalanthus occidentalis*) are common scrub-shrub species that are crossed by the Project ROW.

Palustrine Emergent Wetlands (PEM): Grasses, sedges, rushes, and other herbaceous/non-woody plants are the dominant species in emergent wetlands (PADEP 2013). Species that commonly occur in emergent wetlands crossed by the Project ROW include fringed sedge (*Carex crinita*), common rush (*Juncus effusus*), upright sedge (*Carex stricta*), fox sedge (*Carex vulpinoidea*), green bulrush (*Scirpus atrovirens*), spotted jewelweed (*Impatiens capensis*), and tearthumb (*Persicaria sagittata*).

Palustrine Unconsolidated Bottom Wetlands (PuB): These areas include all wetlands and deepwater habitats with greater than 25% cover of particles smaller than stones, and a vegetative cover of less than 30%.

Upland Forests

Upland forest typically defines lands dominated by trees at least 20 feet tall having at least 25 percent areal cover. According to the DCNR, most forested areas in Pennsylvania consist of second or third growth forest (PADCNR 2015a). Upland forest communities in the Project area are predominantly deciduous hardwoods, with lesser percentages of mixed and coniferous forests. In Pennsylvania, the DCNR explains that much of the conifer component in Pennsylvania's forests has been reduced as pine and hemlock trees were selectively cut, never regaining their pre-1800s levels of cover (DCNR 2015a).

Deciduous Hardwoods: Northern hardwood forests usually include dominant trees such as American beech (*Fagus grandifolia*), red maple, sugar maple (*Acer saccharum*), and wild black cherry (*Prunus serotina*). Trees that typically make up less than 40 percent of the cover include sweet birch (*Betula lenta*), yellow birch, paper birch (*B. papyrifera*), northern red oak (*Quercus rubra*), and white ash (*Fraxinus americana*). Some of the most common species located along the Project ROW include sugar maple, Eastern hemlock (*Tsuga canadensis*), and a variety of oak species (*Quercus alba*, *Q. rubra*, and *Q. bicolor*) among other species. Common shrubs crossed by the Project ROW includeighbush blueberry and silky dogwood. Other shrub species common in these forests may include rosebay (*Rhododendron maximum*), witch-hazel (*Hamamelis virginiana*), moose-wood (*Acer pensylvanicum*), witch-hobble (*Viburnum lantanoide*s), mountain holly (*Ilex montana*), shadbush (*Amelanchier arborea*), and hornbeam (*Carpinus caroliniana*). The herbaceous layer is typically sparse and can include Canada mayflower (*Maianthemum canadense*), starflower (*Trientalis borealis*), New York fern (*Thelypteris noveboracensis*), fancy fern (*Dryopteris carthusiana*), shining clubmoss (*Huperzia lucidula* = *Lycopodium lucidulum*), teaberry (*Gaultheria procumbens*), wild sarsaparilla (*Aralia nudicaulis*), and Indian cucumber-root (*Medeola virginiana*) (Fike 1999).

Mixed Conifer-Deciduous Hardwood Forests: Mixed conifer-deciduous hardwood forests occur typically on poor soils at higher elevations. This community is similar to the previously described Northern Hardwood Forest, except that Eastern hemlock and/or white pine (*Pinus strobus*) contribute more than 25 percent relative cover. Conifers may be scattered, locally abundant, may dominate the subcanopy, or may occur as a relict supracanopy or in large former canopy gaps. Hardwood species include American beech, sugar maple, red maple, black birch, and yellow birch. Conifers include Eastern white pine, or Eastern hemlock, or a combination of the two. Common shrubs include rosebay, witch-hazel, moose-wood, and viburnums (*Viburnum* spp.). The herbaceous layer typically is sparse and can include Canada mayflower, star-flower, New York fern, Indian

cucumber-root, shining clubmoss, partridge-berry (*Mitchella repens*), and bluebead lily (*Clintonia borealis*) (Fike 1999).

Conifer Forests: In general, coniferous forests in the Project area are limited to localized areas, typically on the lower elevations of steep hillside where the soils are poor and sunlight is more limited. This community has at least 75 percent cover by Eastern hemlock, Eastern white pine, or more often a combination of the two species. Associate species include a variety of northern hardwoods and oaks, including sweet birch, yellow birch, sugar maple, red maple, northern red oak, black oak (*Q. velutina*), and American beech. The shrub layer can include rosebay, witch-hobble, maple-leaved viburnum (*V. acerifolium*), and witch-hazel. Herbs and creeping shrubs include Canada mayflower, partridge-berry, ground pine (*Lycopodium* spp.), teaberry, New York fern, Indian cucumber-root, and Christmas fern (*Polystichum acrostichoides*) (Fike 1999).

Open Lands

This cover type category covers all non-forested vegetated areas that are not in agricultural production, landscaped, or developed. It includes grasslands, successional old fields and shrublands, and maintained utility ROWs. Open lands are typically disturbed lands that have been cleared for farming, utility construction or other developments and then abandoned. Grasslands are meadows dominated by grasses, such as reed canary grass (*Phalaris arundinacea*), poverty grass (*Danthonia spicata*), orchard grass (*Dactylis glomerata*), and switchgrass (*Panicum virgatum*). Old fields are meadows dominated by grasses and forbs, such as rough-stemmed goldenrod (*Solidago rugosa*), lance-leaved goldenrod (*Euthamia graminifolia* = *Solidago graminifolia*), Queen Anne's lace (*Daucus carota*), and ragweed (*Ambrosia artemisiifolia*). Shrublands have at least 50 percent cover of shrubs and saplings, such as gray birch, silky dogwood, multiflora rose (*Rosa multiflora*), meadowsweet (*Filipendula ulmaria*), and Autumn olive (*Elaeagnus* spp.). Dense areas of shrubby thickets are typically not found, except in localized areas (Fike 1999). The Project ROW is co-located with existing utility ROWs to the extent feasible. The ROWs for the existing lines are maintained in an herbaceous cover type by mowing activities.

Developed Lands

Developed areas consist of roads, railroads, parking lots, residential lawns, and commercial lawns as well as residential, industrial, and commercial complexes. Generally, vegetation present at these areas consists of mowed and maintained grasses and forbs, as well as ornamental trees/shrubs used in landscaping.

2.5.2 Vegetation Communities of Special Concern

Communities of special concern include sensitive or protected vegetation types, natural areas, and plant communities. The Pennsylvania Natural Areas Inventory (NAI) provides information by county of known outstanding natural features, including flora, fauna, and geological features of the landscape. The NAI describes locally significant sites that are representative of habitats considered relatively rare within the county, support an uncommon diversity of plant species, and/or provide valuable wildlife habitat. The Pennsylvania Natural Heritage Program (PNHP 2016) identifies those plants, natural communities, and habitats most at risk of extinction at the global or local level. The Statewide County Natural Heritage Inventory Maps include Core Habitats, Provisional Species of Concern Sites, Supporting Landscapes, Landscape Conservation Areas (LCA), and Important Bird Areas (IBA). Core habitats are areas that are closely associated with the habitat for a species of concern. Supporting Landscapes are the areas surrounding or adjacent to core habitat that are not considered the primary habitat of the species of concern or natural community. Supporting Landscapes represent the areas

necessary to maintain vital ecological processes or secondary habitat that could be impacted by certain types of disturbance

As presented below in Tables 6 and 7, the proposed Project crosses a total of 23 Core Habitats and 6 Landscape Conservation Areas.

Table 6. Core Habitats Crossed by the Pennsylvania Pipeline Project

County	Name of Core Habitat	Description
Westmoreland	Lowber Slopes Biological Diversity Area (BDA)	The Lowber Slopes BDA is composed of a woodland of red maple, sugar maple, black maple, and hackberry covers the mid to upper slope of this area. The lowber slope is an open pasture with dense patches of multiflora rose.
Westmoreland	Sewickley Creek Slopes BDA	The Sewickley Creek Slopes BDA encompasses a one-mile corridor along Little Sewickley Creek downstream of Herminie. The site is somewhat disturbed by a railroad grade that parallels the creek on the south side. Natural forest cover is restricted to the slopes and floodplain by residential development and agricultural land in the uplands.
Blair	Gromiller Cave BDA	Gromiller Cave BDA is a cave where the small-footed myotis (<i>Myotis leibii</i>), a bat of special concern, have been documented to hibernate. There have been relatively few individuals observed during monitoring by PGC.
Huntingdon	Blacklog Mountain BDA	Blacklog Mountain BDA is located along the crest of Blacklog Mountain, in an area that lies between two disjunct sections of the Tuscarora State Forest. The rugged, forested terrain provides habitat for the Allegheny woodrat (<i>Neotoma magister</i>).
Huntingdon	James Creek Inlet BDA	The James Creek Inlet BDA is composed of a red oak – mixed hardwood forest community and an old-field successional community in a utility ROW. The area provides habitat for small, scattered populations of thick-leave meadow rue (<i>Thalictrum coriaceum</i>).
Juniata	Tuscarora Creek below Blair Hollow	Tuscarora Creek below Blair Hollow exhibits a broad, shallow, and braided appearance with a very wide floodplain. This creates the necessary conditions for the marshy creek edges, oxbows, and back-channels present throughout this reach.
Perry	Bowers Mountain Site – West	Bowers Mountain Site – West is a southeast-facing forested mountain slope that supports the Allegheny woodrat (<i>Neotoma magister</i>). The canopy vegetation includes hemlock, black birch, and mixed oaks. The site is located within Tuscarora State Forest.
Perry	Conococheague Mountain Site	Conococheague Mountain Site is located within Tuscarora State Forest and provides habitat for the Allegheny woodrat (<i>Neotoma magister</i>).
Cumberland	Cactus Hill Site	Cactus Hill Site is a xeric site with shaly soil supporting a forest of chestnut oak, pignut hickory, Scot's pine, and Virginia pine. A population of prickly-pear cactus (<i>Opuntia humifusa</i>) is found on the powerline ROW that cuts through the site.
Cumberland	Doubling Gap Creek	Doubling Gap Creek supports a variety of aquatic species. The site is characterized by a shaded hard-bottomed stream with slow-moderate runs and a few small riffles. Associated species include creek chub, fantail darter, blacknose dace, and longnose dace.

County	Name of Core Habitat	Description
Cumberland	Locust Creek	Locust Creek is a well-shaded creek that supports a variety of aquatic species. The site consists of a narrow hard-bottomed stream with a cobble substrate with scattered areas of silt and bedrock. Associated species include creek chub, blacknose dace, longnose dace, and fantail darter.
York	Whittocks Wood	Whittocks Woods is a forested slope located above the Susquehanna River. This area supports a mature rich mesic woods which is dominated by sugar maple, ash, tulip poplar, hackberry, and beech. Pawpaw, spicebush, and bladdernut comprise the well-developed shrub layer.
York and Dauphin	Susquehanna River at Middletown	The Susquehanna River at Middletown has many disturbances along the river shore that include: railroads, lack of forested buffers, exotic species, and commercial, industrial, and residential development.
Lebanon	Izaak Walton League Area	The Izaak Walton League Area is composed of open wet meadow and uplands. Wet meadow areas consist of skunk cabbage and sedges, while the uplands are a mix of black walnut, red maple, red oak, black birch, chestnut oak, rattlesnake weed, Japanese barberry, scotch pine, Christmas fern, and trailing arbutus.
Lebanon	Penryn Park, Walnut Run	Penryn Park contains a small swamp dominated by pin oak, red maple, and black gum, tussock sedge, winterberry holly, and American burnet. Walnut Run area consists of mesic hardwoods in the lowlands and additional xeric species in the uplands.
Lebanon and Lancaster	Middle Creek Wildlife Management Area	Middle Creek Wildlife Management Area contains a wide diversity of habitat type, and includes large forested areas, man-made wetlands, and an agriculture dominated landscape containing wetland habitats.
Berks	Allegheny Creek Natural Heritage Area (NHA)	Allegheny Creek NHA contains portions of its namesake creek and several unnamed tributaries. The site is centered on the wide, braided, early successional creek floodplain and a series of man-made ponds within the riparian corridor of the stream system.
Berks	East Branch Conestoga River Headwaters NHA	East Branch Conestoga River Headwaters NHA encompasses a mosaic of agricultural lands and residential housing mixed with palustrine emergent and palustrine scrub/shrub wetlands interspersed between forested woodlots.
Berks	Goose Lane Seep NHA	Goose Lane Seep NHA is a small patch of habitat that contains an open sedge fen community. Dominant species at the site include swamp dewberry, sedges, marsh fern, jewelweed, and sphagnum.
Berks	Maple Grove Road Farm NHA	Maple Grove Road Farm NHA includes agricultural and grassland habitats.
Berks	Morgantown Road NHA	Morgantown Road NHA encompasses a mostly forested landscape surrounding Hay Creek and is bisected by a utility corridor. Residential housing and agricultural areas are present.
Chester	Great Marsh NHA	Great Marsh NHA is a large wetland complex along Marsh Creek that provides a unique habitat that supports a number of wetland species.
Chester	Marsh Creek Lake NHA	Marsh Creek Lake NHA is part of Marsh Creek State park, but also includes surrounding housing developments and agricultural fields. There are

County	Name of Core Habitat	Description
		numerous streams and wetlands within the area that provide habitat for a variety of plant and animal species.

Source: PADCNr and PANHP 2016

Table 7. Landscape Conservation Areas Crossed by the Pennsylvania Pipeline Project

County	Name of Landscape Conservation Area	Description
Blair	Loop Mountain LCA	The Loop Mountain LCA is a large block of fairly contiguous forest. The area occurs across a mountain ridge and contains an elevational gradation of different forest types, ranging from mesic type near the base of the slopes, to a dry acidic oak-health forest type along the ridgeline.
Blair	Lock Mountain LCA #3	Lock Mountain LCAs are transected at regular intervals by roads and ROWs, and thus areas of contiguous forested habitat are relatively small.
Huntingdon	Tussey Mountain LCA #4	The Huntingdon County Natural Heritage Inventory does not discuss Tussey Mountain LCA #4.
Huntingdon	Raystown Lake LCA	Raystown Lake LCA encompasses the numerous shale barrens and their associated endemic species, floodplain habitat, and contiguous upland forest areas surrounding Raystown Lake.
Huntingdon	Jacks Mountain LCA	Jacks Mountain LCA contains an extensive area of contiguous forest.
Huntingdon	Aughwick Creek LCA	Aughwick Creek LCA follows the watershed boundary of Aughwick Creek. The area captures numerous shale barrens, and the free-flowing character of the stream maintains habitat that is able to support a diverse aquatic community.

Source: PADCNr and PANHP 2016

The Project crosses one known plant sanctuary (plant: racemed milkwort) in Tuscarora State Forest, Perry County. SPLP has worked directly with DCNR, Bureau of Forestry to address this area in conjunction with the License Agreement for the Project on State Forest lands.

Section 3.5.2 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to these resources.

2.6 WILDLIFE

Game and non-game wildlife species are regulated and protected through various federal and state laws and regulations. Federal laws include the Fish and Wildlife Conservation Act of 1980 (16 U.S.C. §§ 2901-2911), the Fish and Wildlife Coordination Act of 1958 (16 U.S.C. §§ 661-667e), and the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§ 703-712, as amended). Applicable state laws include Title 34, the Pennsylvania Game and Wildlife Code, and Title 30, the Pennsylvania Fish and Boat Code.

2.6.1 Existing Environment

Vegetative cover is an important environmental component for defining wildlife habitat and wildlife species distribution. Wildlife species require adequate food, water, cover, and living space for the survival of individuals and maintenance of population viability. Significant wildlife habitats typically include state game refuges, wildlife management areas, National Wildlife Refuges, and other unique or sensitive areas. The various

habitats located within the Project area support a variety of mammals, birds, reptiles, amphibians, and invertebrates as described below.

Section 3.6 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to the wildlife resources located in the Project area.

Mammals

Wildlife habitats located within the Project ROW consist primarily of open land and forest, as well as developed and agricultural areas. Tracts of mid-successional and mature upland forests are distributed across mostly moderate sloping land. Wetland and stream habitats are also located throughout the Project area, and are described in more detail in Attachment 11, Enclosure A. Numerous wetland types were identified within the ROW and a number of perennial, intermittent, and ephemeral streams are also located in the Project ROW – refer to Sections 2.7 and 2.8 of this report.

Tree snags of varying diameter and species are commonly found throughout the forested habitat as are a variety of mast and berry producing trees/shrubs, all of which provide habitat and sources of food for a variety of wildlife. Common mammal species in the Project area include white-tailed deer (*Odocoileus virginianus*), American black bear (*Ursus americanus*), bobcat (*Lynx rufus*), porcupine (*Erethizon dorsatus*), eastern chipmunk (*Tamias striatus*), groundhog (*Marmota monax*), cottontail rabbit (*Sylvilagus floridanus*), mouse (*Peromyscus* sp.), and grey squirrel (*Sciurus carolinensis*). Other common mammalian species likely to occur within the forested habitat include raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), coyote (*Canis latrans*), and several rodent species, including, but not limited to, northern short-tailed shrew (*Blarina brevicauda*), and white-footed mouse (*Peromyscus leucopus*). The nocturnal southern flying squirrel (*Glaucomys volans*) is also found within the Project area and favors mixed forests with adequate tree cavities for nesting. Other mammal species that may occur in the Project area include the meadow vole (*Microtus pennsylvanicus*) (grasslands and meadows), fisher (*Martes pennanti*) (forest interiors), muskrat (*Ondatra zibethicus*) (wetlands and streams), and the American beaver (*Castor canadensis*) (wetlands and streams).

Bats are most often observed during the summer months foraging along streams and areas of open water. Bat species that may occur in the general vicinity of the Project area include the little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), Northern long-eared bat (*M. septentrionalis*), and tricolored bat (*Perimyotis subflavus*). These species spend the active summer months foraging along waterways and rearing young in forested areas within dead woody timber or man-made structures including attics, barns and sheds.

Birds

Birds common to the forest interior habitats of the Project area include, but are not limited to, a variety of neo-tropical migrant landbirds including wood warblers (subfamily Parulinae), vireos (*Vireo* spp.), thrushes (family Turdidae), tanagers (family Thraupidae), and flycatchers (family Tyrannidae). Neo-tropical migrant landbirds breed in temperate North America and spend the non-breeding season primarily in South and Central America, the Caribbean Islands, and extreme southern sections of the United States. Forest interior habitat is defined as unbroken forest at least 200–300 feet from habitat edges and usually is related to size of a patch of forests (large patch size, more forest interior). Migrant birds that inhabit forest interior habitats usually avoid forest edges during nesting, and usually avoid nesting in smaller fragmented landscapes.

Birds commonly associated with existing ROWs and/or open areas include a variety of grassland bird species and some gamebirds including wild turkey and ruffed grouse. These birds rely on areas dominated with herbaceous plants that provide food, cover, and nesting habitat. Birds that prefer grassland and edge habitats include, but are not limited to, a variety of hawks and sparrows.

Numerous wetland obligate species as well as species that use wetlands at points throughout their life cycles exist within the Project area. Wetland areas provide breeding and foraging habitat for a variety of bird species such as waterfowl, shorebirds, and wading birds.

Reptiles and Amphibians

Common reptiles and amphibian species that are associated with the variety of habitats located within the Project area include eastern garter snake (*Thamnophis sirtalis*), red-spotted newt (*Notophthalmus viridescens*), and common snapping turtle (*Chelydra serpentina*). Common terrestrial woodland salamander species that are dependent upon canopied forests with adequate amounts of leaf litter include red-backed salamander (*Plethodon cinereus*) and slimy salamander (*P. glutinosus*). Salamanders associated with waterways and small streams of the Project area include northern dusky salamander (*Desmognathus fuscus*), mountain dusky salamander (*D. ochrophaeus*), two-lined salamander (*Eurycea bislineata*), long-tailed salamander (*E. longicauda*), and northern spring salamander (*Gyrinophilus porphyriticus*).

Northern black racer (*Coluber constrictor*) and the black rat snake (*Elaphe obsoleta obsoleta*) are common in a variety of habitats, where they prey on small mammals, such as mice and squirrels. Milk snake (*Lampropeltis triangulum*) is also common in a variety of habitats, but is rarely seen due to its secretive nature. Northern water snake (*Nerodia sipedon*) is more widespread in the Project area, and can be found hunting for amphibians and small fish along open waterways. Smooth green snake (*Liochlorophis vernalis*) occurs in grassy areas but is also difficult to locate due to its camouflaging appearance. The red-bellied snake (*Storeria occipitomaculata*), northern brown snake (*S. dekayi*), and the ringneck snake (*Diadophis punctatus*) are secretive snake species that occur in the Project area, often observed under decaying wood. Eastern ribbon snake (*Thamnophis sauritus*) occurs in sedge and grassy areas along wetland edges.

Two species of venomous snakes are known to occur within the Project area: the timber rattlesnake (*Crotalus horridus*) and northern copperhead (*Agkistrodon contortrix*). The forested ridges associated with the Project area house populations of timber rattlesnake, which is a Pennsylvania state species of concern. Timber rattlesnakes occur in a wide range of forest habitats, but primarily occur on rocky slopes that contain refuges among boulders and sunny openings, as well as healthy populations of small mammals.

Hibernacula, or dens, are often found under canopy cover but are usually located within several hundred feet of an open basking site. Copperheads are able to use a wide range of habitats and may be encountered throughout the Project area and can be found from mountaintops to valley floors in both dry and wet settings.

2.6.2 Wildlife Communities of Special Concern

No National Wildlife Refuges or wildlife management areas, designated critical habitat, or significant habitats have been identified within the proposed Project area.

Important Bird Areas, or IBAs, are sites identified by the National Audubon Society that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres in size, but usually they are discrete sites that support unique areas/habitat that differ from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected. To qualify as an IBA, sites must satisfy at least one of the following criteria:

- Species of conservation concern (e.g. threatened and endangered species),
- Restricted-ranges species (species vulnerable because they are not widely distributed),
- Species that are vulnerable because their populations are concentrated in one general habitat type, and
- Species, or groups of similar species (such as waterfowl or shorebirds), that are vulnerable because they occur at high densities due to their congregatory behavior.

Desktop review of the IBAs located in the Commonwealth of Pennsylvania indicated that the Project would pass through portions of seven IBAs (Table 8).

Table 8. Important Bird Areas Crossed by the Project

Important Bird Area	County Crossed	Approximate Distance Crossed (miles)
Allegheny Front	Cambria, Blair	9.7
Greater Tussey Mountain	Blair, Huntingdon	1.7
Tuscarora Ridge - The Pulpit	Juniata, Perry	1.8
Kittatinny Ridge	Perry, Cumberland	12.7
Middle Creek Wildlife Management Area	Lebanon, Lancaster	2.5
Hay Creek / French Creek Forest Block	Berks	3.0
Upper Ridley-Crum Creek	Chester	2.2

Similar to the sensitive vegetative communities, the Pennsylvania NAI provides information of known outstanding natural features, including fauna. The NAI describes locally significant sites that are representative of habitats considered relatively rare within the county and that provide valuable wildlife habitat. The PANHP identifies those habitats most at risk of extinction at the global or local level. The Statewide County Natural Heritage Inventory Maps include Core Habitats, Provisional Species of Concern Sites, Supporting Landscapes, Landscape Conservation Areas, and Important Bird Areas. Tables 6 and 7 in Section 2.5.2 of this report identify the core habitat and landscape conservation areas crossed by the Project, and Section 3.6.2 of this report identifies potential impacts and mitigation measures that SPLP will implement to avoid/minimize impacts to these resources.

2.6.3 Migratory Birds

Based on the Project area habitat types and database information, a number of species of birds that are protected by the Migratory Bird Treaty Act (MBTA) occur in the Project area. Accordingly, SPLP prepared a Migratory Bird Habitat Conservation Plan (refer to Attachment 6 for a copy of the Plan) that provides a summary of habitat types of the Project area, the impacts to those habitats and migratory birds from construction of the Project, and measures that will allow for the conservation of bird species protected under the MBTA of 1918 ([USFWS 2011) as well as the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. §§ 668-668d). Birds protected by the MBTA typically nest and forage in the same general habitat types that are present within the Project area. Some species use the same habitat type for nesting and foraging while others forage in several types of habitats aside from where the nest is built. For example, many of the wood-warblers nest and forage only in forest habitat while some swallow species forage in a variety of habitats but nest only where suitable buildings or bank burrows exist.

Due to the range of habitats occupied by the variety of migratory bird species that potentially occur in the Project area, preconstruction efforts focused primarily on the reduction of the overall Project footprint, especially in sensitive areas known to provide habitat for migratory birds. Section 3.6.1 of this report identifies potential impacts and mitigation measures that SPLP has incorporated into their Migratory Bird Habitat Conservation Plan and will implement to avoid/minimize impacts to migratory birds in the Project area.

2.7 STREAMS

Based on field surveys, the proposed Project crosses a total of 883 streams in the Commonwealth of Pennsylvania: 399 perennial streams, 250 intermittent streams, and 234 ephemeral streams (refer to Table 19 in Section 3.7). Resource Tables 2 and 3 included in Attachment 11 of each county Chapter 105 application provide details regarding the specific wetland/stream type, crossing distances, temporary and permanent impacts, and crossing methods for all the water resources impacted by that specific county. In addition, Enclosure A of this Attachment (Aquatic Resources Report and Supplementals) includes completed field data forms and specifics for each resource impacted; Enclosure E, Part 4 of this Attachment (Impact Avoidance, Minimization, and Mitigation Procedures) describes the proposed construction crossing methods and mitigation measures; and Attachment 12 (Erosion and Sediment Control Plan) provides details regarding the various soil erosion control measures that will be implemented at each resource crossing.

Of the 883 streams crossed by the Project, 399 (45%) are perennial streams and 486 (55%) are intermittent/ephemeral streams. A total of 670 streams (76%) have a bank-to-bank crossing width equal to or less than 10 feet. A total of 190 streams (21%) have a crossing width of 11-50 feet, 14 streams (2%) have a crossing width of 51-100 feet, and 9 streams (1%) have a crossing width of greater than 100 feet. The major river crossings include the following:

- Monongahela River in Washington/Allegheny County
- Youghiogheny River in Westmoreland County
- Conemaugh River in Westmoreland/Indiana County
- Susquehanna River in Dauphin County

Riparian areas, located within 150 feet of the HQ and EV streams (refer to Section 2.7.1) and 100 feet landward of the other streams, that are crossed by the Project consist of a variety of different cover types. In areas where the Project parallels existing ROW, these riparian areas primarily consist of herbaceous/emergent vegetation. Areas of new ROW, including the expansion of the existing ROW, may consist of agricultural areas, open

fields/pasture, and/or wetland and upland scrub-shrub and forested habitat. Section 3.7.9 describes the potential impacts to these areas as well as SPLP's proposed mitigation measures.

There are no stream relocations, enclosures, or waterway dredging/deepening activities proposed in conjunction with the proposed Project. The proposed pipelines cross two designated Pennsylvania Wild and Scenic Streams: LeTort Spring Run (Cumberland County) and Yellow Breeches Creek (boundary of Cumberland and York counties). The Project is located approximately 1.5 miles, at its nearest point, from the Delaware River, which is a Federal Scenic River (PADCNR 2015b).

The National Marine Fisheries Service (NMFS) lists Essential Fish Habitat (EFH), as required by the Magnuson-Stevens Fishery Conservation and Management Act (16 United States Code [U.S.C.] 1801 et seq.). The proposed Project will not affect offshore, nearshore or estuarine areas and is not located within an EFH-designated grid; therefore, the NMFS designated EFH does not exist within the Project area.

Section 3.7 presents the impacts and mitigation measures for streams crossed by the Project and Section 4.1 identifies and describes the potential secondary, indirect impacts to the aquatic wetland resources that may occur as a result of Project construction.

2.7.1 Designated/Existing Uses and High Quality/Exceptional Value Waters

Under Pennsylvania Code, Title 25, §93.3, surface waters are categorized into five protected use categories: aquatic life, water supply, recreation and fish consumption, special protection, and other (PADEP 2015). Surface waters classified under the aquatic life category are further divided into the following four subcategories:

- CWF – *Cold Water Fishes*—Maintenance and/or propagation of fish species including the family Salmonidae and additional flora and fauna which are indigenous to cold water habitat.
- WWF – *Warm Water Fishes*—Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
- MF – *Migratory Fishes*—Passage, maintenance, and propagation of anadromous and catadromous fishes and other fishes that move to or from flowing waters to complete their life cycle in other waters.
- TSF – *Trout Stocked Fishery*—Maintenance of stocked trout from February 15 to July 31, and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat. The PAFBC refers to TSF streams as Approved Trout Waters.

SPLP has identified the protected water uses for all the waterbodies within the Project area and has summarized them in Table 9 by county. Of the streams crossed by the Project, 243 are classified as High Quality (HQ) and 12 of the streams crossed are classified as Exceptional Value (EV). HQ waters are those surface waters with water quality that exceed levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water by satisfying Pennsylvania Code 025 §93.4b(a), and EV waters identify high quality surface waters that satisfy Pennsylvania Code 025 §93.4b(b). Per PADEP's antidegradation requirements, existing/designated water uses for all streams must be maintained and the water quality of all HQ and EV resources must be maintained and protected (Pennsylvania Code 025 §93.4a) (refer to Attachment 11, Enclosure E, Part 5 – Antidegradation Analysis).

Table 9. Summary of Stream Uses and HQ/EV Status Crossed by the Project

County	Designated Stream Uses ^{a,b}				Number of Streams ^b	
	CWF	WWF	MF	TSF	HQ	EV
Washington	0	26	0	22	26	0
Allegheny	0	27	0	0	0	0
Westmoreland	48	28	13	49	34	0
Indiana	67	2	0	3	13	0
Cambria	112	0	2	0	53	0
Blair	9	45	55	1	4	0
Huntingdon	37	28	94	29	18	0
Juniata	19	0	19	0	0	0
Perry	28	0	28	0	28	2
Cumberland	24	55	85	6	12	0
York	8	11	19	0	0	0
Dauphin	0	32	31	0	0	0
Lebanon	6	4	29	19	0	0
Lancaster	0	15	17	2	9	0
Berks	27	3	47	10	16	7
Chester	8	0	40	29	28	3
Delaware	2	5	32	25	2	0
Totals	395	281	511	195	243	12

a. An individual stream may fall into more than one of these categories.

b. Includes streams classified as "Drains to..."

Based on a review of eMapPA maintained by PADEP and a review of Drainage List A of Pennsylvania Code, Title 25, Chapter 93, §93.9h, the combined, multiple designated/protected uses and fisheries classifications for the streams crossed by the Project include:

- 129 streams have a designated use for CWF,
- 98 streams have a designated use for HQ-CWF,
- 103 streams have a designated use for CWF, MF,
- 65 streams have a designated use for HQ-CWF, MF,
- 55 streams have a designated use for WWF,
- 17 streams have a designated use for HQ-WWF,
- 200 streams have a designated use for WWF, MF,
- 9 streams have a designated use for HQ-WWF, MF,
- 60 streams have a designated use for TSF,
- 13 streams have a designated use for HQ-TSF,
- 81 streams have a designated use for TSF, MF,
- 41 streams have a designated use for HQ-TSF, MF,
- 12 streams have a designated use for EV, MF,
- 53 streams have a PAFBC classification of Approved Trout Water,
- 115 streams have a PAFBC classification of Trout Natural Reproduction,
- 137 streams have a PAFBC classification of both Approved Trout Water and Stocked Trout Stream,

- 24 streams have a PAFBC classification of both Class A and Trout Natural Reproduction,
- 36 streams have a PAFBC classification of both Approved Trout Water and Trout Natural Reproduction,
- 1 stream has PAFBC classification of both Trout Natural Reproduction and Wilderness Trout Stream,
- 14 streams have multiple PAFBC classifications of Approved Trout Water, Class A, and Trout Natural Reproduction,
- 13 streams have multiple PAFBC classifications of Approved Trout Water, Stocked Trout Stream, and Trout Natural Reproduction, and
- 1 stream has multiple PAFBC classifications of Approved Trout Water, Class A, Stocked Trout Stream, and Trout Natural Reproduction.

2.7.2 Aquatic Habitat

In accordance with the Environmental Assessment Form (3150-PM-BWEW0017, 2/2013), Enclosure C provided in Attachment 11 provides an analysis and discussion of the stream resources located in that county. Specifically, the aquatic stream habitats are described in terms of their food chain production and general habitat conditions (nesting, spawning, rearing, resting, migration, feeding, and escape cover); the water quantity and streamflow is discussed in terms of the streams natural drainage patterns, flushing characteristics, current patterns, groundwater discharge, natural recharge, and storm and floodwater storage/control; the water quality of the streams is described in relation to preventing pollution, sedimentation control and patterns, and natural water infiltration; and, the recreational use (game/non-game species and fishing) of the streams crossed by the Project are described.

2.7.3 Floodplains

One of the primary functions of floodplains is to store stormwater and attenuate floodwaters. Baseflow conditions of the majority of the streams crossed by the Project are much lower than their bankfull conditions; consequently, they have additional capacity for storm and floodwater storage and control. Given the number of wetlands and streams located within the Project area, storm and floodwater storage and control is considered to be moderate to high.

In accordance with PADEP Chapter 105, a stormwater management and floodplain analysis was completed to assess any potential short-term or long-term impacts to the floodways and floodplains and their capacity to either store or control storm and flood waters. The floodway of a stream is defined as “the channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood”. If the floodway is not identified on FEMA maps, it is assumed to be 50 feet landward from the top of each bank. Floodplains are defined by PADEP as “The lands adjoining a river or stream that have been or may be expected to be inundated by flood waters in a 100-year frequency flood.”

SPLP has identified and mapped all the FEMA floodplains and floodways of the streams crossed by the Project (refer to Attachment 7), and has coordinated with state and local municipalities regarding consistency with any existing stormwater management programs (refer to Attachment 14).

2.8 WETLANDS

The proposed Project will cross a total of 562 wetlands across the Commonwealth of Pennsylvania. Resource Tables 2 and 3 included in Attachment 11 of each county

Chapter 105 application provide details regarding the specific wetland/stream type, crossing distances, temporary and permanent impacts, and crossing methods for all the water resources impacted by that specific county. The wetland resources crossed represent a variety of different wetland types including PEM, PSS, PFO, and combinations of these cover types, as well as PuB areas more commonly referred to as ponds/open water.

Enclosure A of this Attachment (Aquatic Resources Report and Supplementals) includes completed field data forms and specifics for each wetland resource impacted; Enclosure E, Part 4 of this Attachment (Impact Avoidance, Minimization, and Mitigation Procedures) describes the proposed construction crossing methods and mitigation measures; and Attachment 12 (Erosion and Sediment Control Plan) provides details regarding the various soil erosion control measures that will be implemented at each resource crossing. In addition, Section 3.8 presents the wetland impacts and mitigation measures that SPLP will implement, and Section 4.2 below identifies and describes the potential secondary, indirect impacts to the aquatic wetland resources that may occur as a result of Project construction.

2.8.1 Exceptional Value Wetlands

In accordance with 25 Pa. Code § 105.17(1), each wetland crossed by the proposed Project was evaluated to determine whether or not the wetland area satisfies the requirements for classification as an EV wetland resource. Specifically, all wetlands were evaluated to determine if they exhibit one or more of the criteria identified below:

Section 105.17(1)(i)

Wetlands which serve as habitat for fauna or flora listed as “threatened” or “endangered” under the Endangered Species Act of 1973 (7 U.S.C.A. § 136; 16 U.S.C.A. §§ 4601-9, 460k-1, 668dd, 715j, 715a, 1362, 1371, 1372, 1402 and 1531—1543), the Wild Resource Conservation Act (32 P. S. §§ 5301—5314), 30 Pa.C.S. (relating to the Fish and Boat Code) or 34 Pa.C.S. (relating to the Game and Wildlife Code).

For this criteria, SPLP identified each wetland which had a presence of a protected species (i.e. state [PAFBC, PADCNR, and PGC] or federally [USFWS] listed as “threatened” or “endangered”), based on data supplied to SPLP from those agencies and results from surveys required by those agencies for the Project. For a wetland to be considered EV, the protected species identified must be a species that depends on wetlands as habitat, such as the bog turtle (*Glyptemys muhlenbergii*) or the northeastern bulrush (*Scirpus ancistrochaetus*). Wetlands in proximity of protected species that are not dependent on wetland habitats (e.g. Allegheny woodrat [*Neotoma magister*], Indiana bat [*Myotis sodalis*]) were not considered to meet this criteria and were not classified as EV.

Section 105.17(1)(ii)

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).

For this criteria, SPLP evaluated all the wetlands that supported wetland-dependent protected species in the Project area.

- For wetlands where bog turtles are known to be present, either from records from USFWS or PAFBC, any wetlands located within ½ mile of those wetlands that are bog turtle Phase I positive are considered EV. SPLP conducted a bog turtle assessment at each wetland delineated during the Project surveys, except in the cases of known bog turtle presence, or a lack of access, where presence was assumed. To determine the hydrologically connected criteria, each wetland in proximity to a wetland with bog turtle presence was evaluated

to determine the water flow direction and offsite connectivity. If the wetland with bog turtle presence was hydrologically dependent on an adjacent wetland, the adjacent wetland was considered EV.

- For the northeastern bulrush, species-specific surveys were completed at all areas of concern identified by USFWS, and only one wetland was identified with presence (criteria i). None of the wetlands within ½ mile of this wetland had appropriate habitat for the species, and the hydrologically connected wetlands did not have an identifiable role in maintaining the quality of the wetland the species was identified in.

Section 105.17(1)(iii)

Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) 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).

This criteria is how the majority of EV wetlands were identified in the Project area. Stream classifications were identified by both Geospatial Information System (GIS) shapefiles created by the PAFBC and PAFBC’s Project-specific determinations in correspondence with PADEP. All of this data was downloaded from the Pennsylvania Spatial Data Access (PSDA) (www.pasda.psu.edu), and was provided by PAFBC. The five shapefiles used were:

1. Stream Sections that support Wild Trout Production (previously identified as Trout Natural Reproduction waters) – waters with known naturally reproducing trout populations
2. Class A Wild Trout streams – a subset of the highest quality Trout Natural Reproduction streams
3. Stocked Trout Waters (previously identified as Approved Trout Waters) – streams with significant publically fishable waters and are stocked/have been stocked with trout and a modified fishing season
4. Trout Stocked Streams – streams that were stocked in the previous year.
5. Wilderness Trout Streams – streams that have naturally reproducing trout in an environment where anthropogenic development has not occurred

Additionally, PADEP’s Chapter 93 Designated and Existing Use classifications were added to the delineated streams in a similar manner, downloading the following shapefiles:

- Streams Chapter 93 Designated Use
- Streams Chapter 93 Existing Use

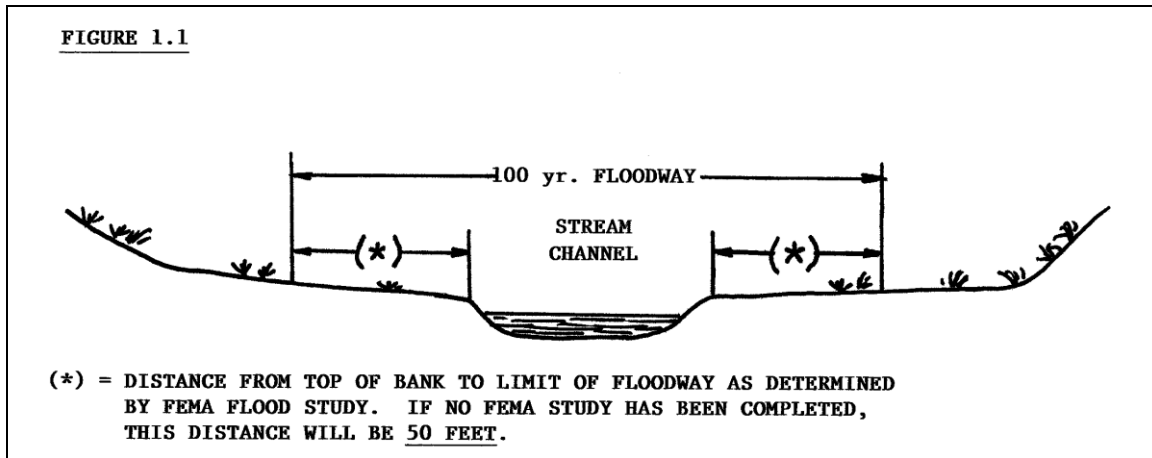
After streams were classified to both PAFBC and PADEP standards, a Chapter 105 Regulatory Area shapefile was created. This was done first by downloading all FEMA floodplain data (in the counties with Project impacts). All of the FEMA data was downloaded from the FEMA National Flood Hazard Layer (NFHL) Status page (FEMA 2016) and accessed on September 22, 2016. The date the FEMA data was published is presented below for all the counties.

- Washington 9/29/2015
- Allegheny 1/28/2015
- Westmoreland 2/3/2016

- Indiana 4/3/2012
- Cambria 6/9/2012
- Blair 11/25/2015
- Huntingdon 10/16/2012
- Juniata 10/2/2012
- Perry 6/16/2009
- Cumberland 11/1/2013
- York 12/18/2015
- Dauphin 9/8/2016
- Lebanon 6/16/2016
- Lancaster 4/5/2016
- Berks 2/11/2016
- Chester 4/25/2016
- Delaware 9/9/2016

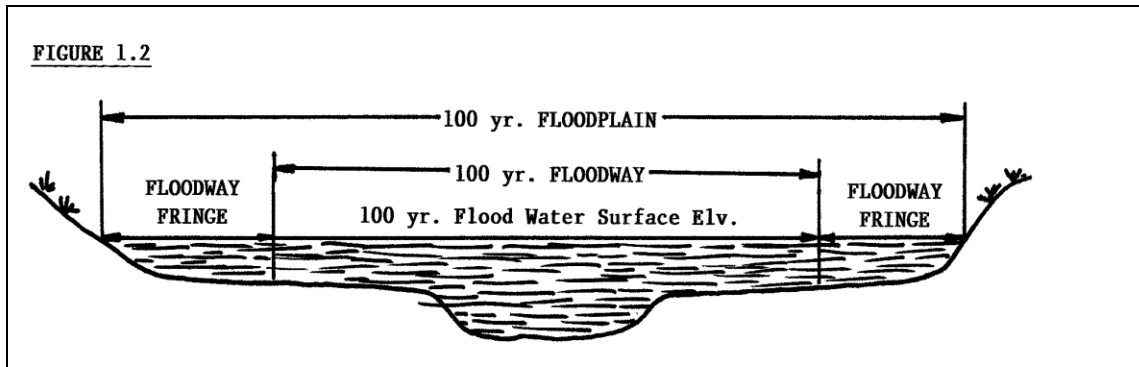
All FEMA “floodway” features were then extracted to a new layer. These floodway features are the only areas where a Chapter 105 floodway layer is identified. At all streams without a FEMA-defined floodway, the Chapter 105 regulatory area was created by buffering the remaining streams to 50 feet plus one-half the bank width of the stream. For example, a stream with a bank with of 10 feet would have been buffered 55 feet on each side of the stream, creating a polygon representing the extents of the Chapter 105 jurisdiction (50 feet landward from top of bank) at streams without FEMA delineated floodways. These features were then dissolved, preserving the PAFBC trout status and Chapter 93 (Designated and Existing Use) classification as attributes (i.e. non-spatial data associated with a spatial feature).

The FEMA floodways were merged into the buffered stream dataset. Streams that had both buffered polygons and FEMA floodways associated with them were manually vetted and edited so that the appropriate limits were used for the Chapter 105 regulatory boundary (i.e.. the 50 foot buffer areas were either removed or “clipped” to remove overlap with FEMA delineated areas, and to ensure that the FEMA areas superseded the buffered limits). This is how several streams can share one Chapter 105 regulated area polygon. The resulting, and final shapefile (called the Chapter 105 Floodway layer), matches the PADEP/USACE schematic of regulated areas provided in the Joint Permit Application Instructions, presented as Figure 1.1 below.



To create the Chapter 106 Floodplain layer all 100-year floodplains were extracted from the data. That includes FEMA zones A, AE, or AO. This subset of the FEMA dataset downloaded was erased with the Chapter 105 Floodway layer – meaning the areas regulated under Chapter 105 were clipped out of the Chapter 106 data. The

resulting layer is the Chapter 106 Floodplain Fringe and represents the PADEP/USACE schematic of Floodplain Fringe areas provided in the Joint Permit Application Instructions, presented as Figure 1.2 below.



Wetlands were then selected that intersected with a Chapter 105 Floodway polygon that had a PAFBC status of “Class A”, “drains to Class A”, “TNR”, “Drains to TNR”, “WTS”, or “drains to WTS”, and the wetlands that met that criteria were determined to be EV. Additionally, wetlands intersecting the PA-Floodway where either the Chapter 93 Existing or Designated Use is exceptional value (EV), were identified as EV.

For EV wetlands adjacent to streams designated as “wild” or “scenic”, Ms. Kelly Rossiter, Rivers Program Specialist, of the Pennsylvania Department of Conservation and Natural Resources was directly contacted in May 2015 to confirm crossings at streams in the State Scenic River System. Ms. Rossiter indicated that Yellow Breeches Creek and Letort Spring Run are crossed; however, the proposed Project is not crossing the portion of French Creek that is designated a State Scenic River. After the receipt of technical deficiency comments, Ms. Rossiter was again contacted to determine the status of the South Branch French Creek. She restated her determination that the Project does not impact the section of the South Branch French Creek that is part of the Scenic Rivers program. Ms. Rossiter also verified the PADEP technical deficiency comment that both Yellow Breeches Creek and LeTort Spring Run are within the Scenic Rivers program, but the crossing locations are not in “wild” or “scenic” areas of the stream, but rather “pastoral” or “recreational”; therefore, the wetlands associated with these crossings are not considered EV for this reason.

Section 105.17(1)(iv)

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.

For this criteria, SPLP evaluated all available water supply files obtained from the PADEP’s eMapPA mapping platform (PADEP 2016). The data analyzed included, PWS areas that were queried to include both “Groundwater Wells” and “Surface Water Intakes”; “Ground Water Withdrawal – WR” and “Surface Water Withdrawal-WR” points; PA DCNR PAGWIS water well data; and any water supply data acquired from landowners during the ROW easement negotiations. The data was used to create a file of all known public and private drinking water supplies within 1 mile of the Project workspace. The file included any PWS surface intake or groundwater data that was provided to SPLP during consultation with the PWS authorities. Wetlands that were within or contiguous to, a project impacted waterbody that flows to the drinking water supply, were deemed EV. Additionally, letters including project descriptions and mapping were sent out to 50 public water authorities located within one mile of the Project workspaces requesting analysis regarding potential impacts to water sources from the Project construction and maintenance. The list of the municipal water authorities contacted and the status of the coordination are

presented SPLP’s Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Attachment 2, Tab12B). Wherever a water supply intake was identified, all wetlands in the stream’s watershed within one mile of the identified intake were designated EV.

Section 105.17(1)(v)

Wetlands located in areas designated by the Department 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).

For this criteria, SPLP used publically available data from the PADCNr to identify if the Project crosses through any natural or wild areas within State Forest or Park lands. SPLP does not cross any of the lands described in criteria (v) of PA Code §105.17.1.

Based on this evaluation, 139 wetlands (25% of the total 562 wetlands crossed) crossed by the Project are considered EV wetlands (Table 10). Per PADEP’s antidegradation requirements, EV wetlands are considered to have “exceptional ecological significance” and are classified EV waters of the Commonwealth; therefore, they must be included in the Project’s antidegradation analysis. Specifically, the water quality of all EV wetlands must be maintained and protected (Pennsylvania Code 025 §93.4a) (refer to Enclosure E, Part 5). SPLP will cross 35 of these EV resources using the HDD or bore method to avoid surface disturbance/impacts – refer to Section 3.8.1 for a detailed discussion of potential impacts and mitigation measures for EV wetlands.

Table 10. Summary of EV Wetland Resources Crossed by the Proposed Project

County	Total Number Crossed	Number of Crossings		
		Open Cut ^a	HDD /Bore	Other ^b
Washington	0	0	0	0
Allegheny	0	0	0	0
Westmoreland	0	0	0	0
Indiana	13	12	1	0
Cambria	20	17	3	0
Blair	29	17	11	1
Huntingdon	0	0	0	0
Juniata	0	0	0	0
Perry	14	12	2	0
Cumberland	11	5	4	2
York	0	0	0	0
Dauphin	0	0	0	0
Lebanon	4	3	1	0
Lancaster	5	1	4	0
Berks	30	24	6	0
Chester	10	9	1	0
Delaware	3	1	2	0
Totals	139	101	35	3

a. Includes open cut / bore, open cut / HDD, and HDD / Open Cut

b. Includes all crossing methods other than dry crossing, bore, or HDD; including but not limited to temporary bridge and travel lane.

2.8.2 Functions and Values

SPLP evaluated the functions and values of all the wetland areas crossed by the proposed Project using the USACE Highway Methodology (USACE 1993) assessment method as it is generally acceptable to the PADEP and the USACE. In addition to the standard functions and values assessment, a Wetland Function-Value Evaluation Form was used to assess the functions/values of the impacted EV wetlands. In accordance with the method, eight functions (groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, and wildlife habitat), and five values (recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened/endangered species habitat) were assessed for each impacted wetland. Each counties' Attachment 11 Enclosure C within the Chapter 105 applications provides a function and values assessment of all the wetlands crossed by the Project in that specific county.

2.8.3 Aquatic Habitat

In accordance with the Environmental Assessment Form (3150-PM-BWEW0017, 2/2013), Attachment 11 Enclosure C of each county's Chapter 105 application provides an analysis and discussion of the wetland resources located in the Project area. Specifically, the aquatic wetland habitats are described in terms of their food chain production and general habitat conditions (nesting, spawning, rearing, resting, migration, feeding, and escape cover); the water quantity and streamflow is discussed in terms of the streams natural drainage patterns, flushing characteristics, current patterns, groundwater discharge, natural recharge, and storm and floodwater storage/control; the water quality of the streams is described in relation to preventing pollution, sedimentation control and patterns, and natural water infiltration; and, the recreational use (game/non-game species and fishing) of the wetlands crossed by the Project are described.

2.9 THREATENED AND ENDANGERED SPECIES

As presented in Attachment 6 (PNDI and Agency Coordination) and Attachment 9 (Project Description) of the Chapter 105 applications, SPLP has coordinated extensively with the PADCNR, PGC, PAFBC, and USFWS throughout the entire Project planning process. Based on this coordination a number of species of concern have been identified in the Project area: Table 11 identifies the 7 plant and 13 animal species of concern that have been identified in the Project area.

Table 11. Summary of Species of Concern Identified in the Project Area

Species of Concern	County	Clearance Letter	General Habitat Requirements	Conservation Plan
Plants				
<i>Andropogon glomeratus</i>	Cambria	11/15/15	Damp to wet open places, clearings, and occasionally human-created disturbed ground.	Conservation Plan for Identified Species [Plants] of Special Concern
<i>Actaea podocarpa</i>	Cambria	11/15/15	Rich hardwood forests, on north-facing mountainsides or wooded corridors that follow mountain streams.	Conservation Plan for Identified Species [Plants] of Special Concern
<i>Viola appalachensis</i>	Cambria	11/15/15	Serpentine barrens and rich forests	Conservation Plan for Identified Species [Plants] of Special Concern
<i>Scirpus ancistrochaetus</i>	Cambria	11/15/15 10/31/16	Grows on edges of seasonal pools, wet depressions,	Conservation Plan for Identified Species

Species of Concern	County	Clearance Letter	General Habitat Requirements	Conservation Plan
			beaver ponds, wetlands, and small ponds.	[Plants] of Special Concern Northeastern Bulrush Conservation Plan
<i>Antennaria virginica</i>	Blair	11/15/15	In full sun on banks of calcareous shales.	Conservation Plan for Identified Species [Plants] of Special Concern
<i>Carex shortiana</i>	Juniata	11/15/15	Wet meadows, bottomlands, swamps, or in moist woods, especially on calcareous substrate.	Conservation Plan for Identified Species [Plants] of Special Concern
<i>Polygala polygama</i>	Perry	11/15/15	Found in a variety of habitats including forest, woodland (conifer, hardwood, and mixed), grassland, sad/dunes, dry woods, and openings.	Conservation Plan for Identified Species [Plants] of Special Concern
Animals				
Timber Rattlesnake	Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, Cumberland	9/22/15	Deciduous forests and rocky outcrops. Hibernacula usually found on south-facing rocky slopes with adequate crevices.	Timber Rattlesnake Conservation Plan
Rainbow Mussel	Huntingdon Juniata Cumberland	10/26/15	Within or directly below riffles in small streams with moderate to strong currents. Preferred substrates include coarse sand, gravel, and mud.	Not Required
Yellow Lampmussel	Huntingdon Juniata Cumberland	10/26/15	Inhabits medium to large rivers. Occurs in variety of substrate types including sand, silt, cobble, and gravel.	Not Required
Elktoe	Huntingdon Juniata Cumberland	10/26/15	Found in medium to large streams, but most common in smaller streams. Present in greatest abundance in small shallow rivers with moderately fast current and riffles. Preferred substrate is fine gravel mixed with sand.	Not Required
Triangle Floater	Huntingdon Juniata Cumberland	10/26/15	Occurs in coarse to fine gravel with sand and mud in smaller streams with slow current.	Not Required
Ghost Shiner	Allegheny Westmoreland	10/26/15	Low-gradient sections of large creeks and small to large rivers having moderate flow and moderately clear to turbid water. Bottom may vary from silt/detritus to clean gravel.	Not Required
Brook Stickleback	Allegheny Westmoreland		Prefers cool, clear, heavily weeded, spring-fed creeks,	Not Required

Species of Concern	County	Clearance Letter	General Habitat Requirements	Conservation Plan
			small rivers, lakes, and ponds.	
Eastern redbelly turtle	Chester Delaware	10/26/15	Lakes, streams, ponds, rivers, marshes.	Not Required
Allegheny Woodrat	Huntingdon Perry	06/08/16	Extensive expanses of abundant, closely-spaced surface rock surrounded by unfragmented forest. Outcrops, cliffs, ledges, boulder fields, and caves are essential.	Allegheny Woodrat Conservation Plan
Eastern Small-footed bat	Blair Cambria Huntingdon Perry	06/08/16	Caves and mines are key winter habitat and smaller caves may be important. Summer roosts include caves and mines, hollow trees and under bark, cracks and crevices in rock walls, and ridge-to talus fields.	Eastern Small-footed Bat Conservation Plan
Bog turtle	Cumberland York Dauphin Lebanon Lancaster Berks Chester Delaware	10/31/16	Occur in wet meadows and bogs where tussock sedge and grasses dominate the wetlands. Require open conditions associated with early-successional wetland habitat. Substrate must consist of deep mucky soils fed by groundwater seeps, with only modest amounts of open water.	Bog Turtle Conservation Plan
Indiana Bat	Allegheny Westmoreland Cambria Blair Huntingdon	10/31/16	Primary maternity roosts are trees (often large dead trees) with exfoliating bark and sun exposure that results in high temperatures.	Myotis Conservation Plan
Northern long-eared bat	Allegheny Westmoreland Cambria Blair Huntingdon	10/31/16	Associated with boreal forests. Uses caves and underground mines for hibernation. Maternity roosts are located in tree cavities, under exfoliating tree bark, and in buildings.	Myotis Conservation Plan

3.0 PROJECT IMPACTS

The Project would result in temporary access during construction of the proposed facilities. In general, construction of a new pipeline would typically require a construction ROW width of about 100 feet to accommodate a 20-inch diameter installation. However, 75 feet was chosen by SPLP to minimize landscape impacts from initial Project planning. The 75-foot would consist of a 50-foot-wide post-construction permanent ROW and 25-foot-wide temporary workspace through upland areas. These two workspace types make up the majority of the proposed land disturbance. The 25-feet would be restored and allowed to revert back to its pre-construction condition unless it is co-located with an existing permanently maintained ROW. In areas previously vegetated, the 50-foot-wide ROW would also be restored to a vegetated state where impacted during construction. Several areas within the permanent ROW will not be impacted by construction due to avoidance of sensitive environmental or densely populated areas. Additional temporary work space

(ATWS) would be needed at some areas to facilitate construction and would depend on site-specific requirements. In the post-construction phase, ATWS's will be restored to and allowed to revert back to pre-construction conditions. All workspaces are clearly defined within Project mapping (Attachment 12) and have been included in the resource impacts (Resource Tables, Attachment 11).

Construction of the Project's aboveground facilities and the use of non-public access roads would have land requirements. Typically, new pump stations require approximately 3-4 acres of land and modifications to existing pump stations may require 2-3 acres of additional land. Support sites, such as pipe/contractor yards, will be sited on previously disturbed areas and typically range from 5-25 acres in size. Temporary use would primarily be limited to existing non-public roads, driveways, and farm lanes that would require nothing or minor improvements. Permanent access roads to stations or valve settings will also be required. All proposed temporary and permanent access roads are clearly defined within Project mapping (Attachment 12) and have been included in the resource impacts (Resource Tables, Attachment 11).

The Project will be designed, constructed, tested, owned, operated, inspected, and maintained by SPLP to conform to all applicable federal, state, and local requirements. As a natural gas liquids pipeline, SPLP's design, construction, maintenance and operation functions are regulated by the U.S. Department of Transportation (DOT) in Title 49 CFR Part 195 – Transportation of Hazardous Liquids by Pipeline. As such, oversight of the regulations is controlled by the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) pursuant to the Hazardous Liquid Pipeline Safety Act, 49 U.S.C. 2001 et seq.

In addition to the PHMSA oversight, regulations set forth in the PADEP's approved Chapter 105, Chapter 106, and Chapter 102 permits for the construction, operation, and maintenance of the Project will be adhered to during all phases of the Project. These permits detail the authorized impacts to waters of the Commonwealth, as well as upland areas, through establishment of approved workspaces (i.e., the limits of disturbance) and construction methods. The Project has been designed to meet the purpose and need while minimizing the impact on environmental resources to the maximum extent practicable and allowing safe installation of the facilities. Implementation of the following plans will ensure Chapter 105, 106, and 102 permit compliance:

- Sensitive Species Conservation plans (included in Attachment 6);
- Alternatives Analysis (Attachment 11, Enclosure E, Part 3);
- Antidegradation Analysis (Attachment 11, Enclosure E, Part 5);
- Cumulative Impacts Assessment (Attachment 11, Enclosure E, Part 6);
- Compensatory Mitigation Plan (Attachment 11, Enclosure F);
- Preparedness, Prevention, and Contingency Plan (Attachment 12, Tab 12A);
- Water Supply Assessment, Preparedness, Prevention, and Contingency Plan (Attachment 12, Tab 12B);
- Inadvertent Return Assessment, Preparedness, Prevention, and Contingency Plan (Attachment 12, Tab 12C);
- Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 12, Tab 12D);
- Hydrologic and Hydraulic Analysis (Attachment 13);
- Stormwater and Floodplain Management Analysis (Attachment 14); and,
- Risk Assessment (Attachment 15).

The construction methods, including specialized construction (i.e., steep slopes, karst geology) and erosion and sedimentation control measures, designed under the criteria

and guidance of existing PADEP regulations, the permit authorizations, and through agency consultation and coordination are summarized in the following reports:

- Project Description (Attachment 9);
- Erosion and Sediment Control plans (Attachment 12);
- Post-Construction Stormwater Management plans (ESCGP-2 applications); and,
- Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4).

The following sections provide a description of the anticipated Project impacts and mitigation measures to the resources identified in Section 2.0.

3.1 RECREATIONAL AND NATURAL AREAS

The Project crosses 18 parks/recreation areas for a total distance of 19.88 miles (Table 12). Impacts to the recreational use/activity associated with these areas is expected to be minor, temporary and localized. Specifically, SPLP has coordinated with the various property owners/managers to obtain the necessary land easements/agreements and to identify the construction method, schedule, and route that will result in the least amount of impacts:

- SPLP will cross 4 of these areas (0.46 mile) using the HDD construction method and recreational use/activities will not be interrupted; and,
- The 3 federally-owned/administered parks (Loyalhanna, Conemaugh, and Raystown) will involve another 2.14 miles of HDD crossings in which there will be no interruption to the recreational use/activity in these areas (refer to Section 3.1.1 for a more detailed discussion of impacts and mitigation for these areas).

Six of the park areas crossed have no impacts to aquatic resources associated with the Project (Table 12). A total of 86 streams of the Commonwealth are crossed in these areas, of which 56 are considered High Quality or Exceptional Value and 18 will be crossed by HDD or bore methods. The Project will involve a total of 1.111 acres of impacts, located within the 50-foot wide permanent ROW, and an additional 0.136 acre of impact in the temporary workspaces to these stream resources. In addition, a total of 35 wetlands will be impacted in these parks, forests, and recreation areas, of which 12 will be crossed by HDD or bore methods and 16 area considered to be Exceptional Value. The Project proposes to impact a total of 1.896 acres of wetlands within the 50-foot permanent ROW, with an additional 0.202 acre of impact in temporary workspaces. All these resources will be restored to their pre-construction condition, except for a 0.012 acre PFO to PEM permanent habitat conversion in Gallitzin State Forest in Cambria County. Sections 3.7

Table 12. Summary of Impacts to National, State or Local Park, Forest, or Recreation Areas Crossed by the Pennsylvania Pipeline Project

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d,e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d,e}	PADEP Temporary	Conversion		
Arnold Park	Washington	0.32	0	0	0	0.000	0.000	0	0	0	0	0	0		
North Strabane Township Park	Washington	0.28	0	0	0	0.000	0.000	0	0	0	0	0	0		
Bushy Run Battlefield State Park	Westmoreland	1.08	0	0	0	0.000	0.000	0	0	0	0	0	0		
Loyalhanna Lake National Recreation Area	Westmoreland	0.46	0	3	0	0.048	0.055	1	0	0	0.025	0.05	0	S-P29, S-P31, S-P32	P22
Federal-Owned Property at Conemaugh River Crossing	Westmoreland and Indiana	0.7	5	1	3	0.122	0.000	4	0	3	0.084	0.146	0	S-J56, S-J57, S-N96, S-N44, S-O61, S-Q100	J52, N28, O45, Q92
Pine Ridge County Park	Indiana	1.32	3	0	0	0.049	0.000	0	0	0	0	0	0	S-N87, S-N88, S-N89	
Gallitzin State Forest	Indiana	0.04	0	1	0	0.016	0.000	0	0	0	0	0	0	S-O74	
Gallitzin State Forest	Cambria	Parcel 1: 0.90 Parcel 2: 1.14	0	14	0	0.126	0.000	1	5	0	0.228	0	0.012	S-BB61, S-N45, S-N46, S-N48, S-N49, S-N50, S-N51, S-N52, S-N53, S-N54, S-N59, S-N62, S-N63, S-N64	N29, N30, N31, N33, W139, W140
Raystown Lake National Recreation Area	Huntingdon	4.07	16	0	4	0.143	0.007	6	0	4	0.667	0	0	S-BB84, S-JH2, S-L57, S-M48, S-M52, S-Y1, S-Y14, S-Y15, S-Y16, S-Y17, S-Y18, S-Y19, S-Y2, S-Y20, S-Y3, S-Y5	L36, Y1, Y12, Y2, Y3, Y4
Tuscarora State Forest	Perry	Parcel 1: 7.34; Parcel 2: 1.04	0	25	1	0.343	0.047	2	10	1	0.658	0.006	0	S-CJ2, S-CJ4, S-J60, S-J61, S-J62, S-J63, S-J64, S-J65, S-J68, S-J69, S-J70, S-J72, S-J74, S-J75, S-J76, S-K48, S-K50, S-K51, S-K52, S-L1, S-L3, S-L4, S-L6, S-Q63, S-Q64	J56, J57, J69, K49, K50, K52, K53, K54, K55, L1, Q63, W36d
Appalachian Trail	Cumberland	0.02	0	0	0	0.000	0.000	0	0	0	0	0	0		
Opossum Lake Park	Cumberland	0.02	0	1	0	0.022	0.000	1	0	0	0.049	0	0	S-I69	I41
Charles L. Roof Memorial Park	York	0.17	0	0	0	0.000	0.000	0	0	0	0	0	0		
Lower Swatara Township – Greenfield Park	Dauphin	0.01	0	0	0	0	0	0	0	0	0	0	0		
Shiloh Hills Park	Berks	0.39	6	0	0	0.185	0.000	1	0	0	0.047	0	0	S-B42, S-B43, S-B45, S-B46, S-K76, S-K77	B40

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d,e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d,e}	PADEP Temporary	Conversion		
Sovereign Sports Park	Berks	0.15	0	3	3	0.000	0.000	0	1	1	0.008	0	0	S-C10, S-C8, S-C9	C6
Marsh Creek State Park	Chester	0.09	0	3	2	0.054	0.027	2	0	2	0.02	0	0	S-H52, S-Q83, S-Q86	Q75, Q77
Hickory Park	Chester	0.19	0	5	5	0.002	0.000	1	0	1	0.11	0	0	S-C87, S-C89, S-C90, S-C91, S-C92	C43
Meadowbrook Manor Park	Chester	0.16	0	0	0	0.000	0.000	0	0	0	0	0	0		
Total			30	56	18	1.111	0.136	19	16	12	1.896	0.202	0.012		

Source: PADCNr and PNHP 2016, PASDA 2016a

^a The Project will have minor temporary impacts associated with construction.

^b Disturbed areas will be restored in accordance with the E&S Plan located in Attachment 12.

^c Attachment 11, Enclosure E, Part 4 provides a more detailed discussion of impacts to streams and wetlands, impact avoidance and minimization measures, and a description of the crossing construction measures that will be used.

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

^e Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands and streams affected by the Project will be restored to pre-construction conditions.

Notes:

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

and 3.8 of this report describe the potential impacts, construction methods, and mitigation measures that SPLP will implement through these resources.

To minimize recreational impacts to the remaining areas, SPLP will continue to coordinate with the property owners/managers regarding potential temporary closures or rerouting that may be required during construction, as well as signage, scheduling and standard security and safety provisions that may be required for the Project. As required, SPLP will provide proper notice/written notification of when work is expected to commence in these areas, periodic updates on project progress, a copy of current construction schedules, and notices of temporary changes and closures of trails and roads. The areas will be restored and revegetated following construction and the areas will be allowed to return to their pre-construction uses. There will be no permanent impacts to the recreational benefits/uses of these parks.

As presented in Table 13 below, there are 7 different State Game Lands located in 7 counties that will be crossed by the proposed Project for 9.39 miles. A total of 17 streams are crossed in these areas, of which 5 are considered to be HQ/EV and 3 will be crossed by HDD or bore methods. The Project will involve a total of 0.297 acre of permanent stream impacts and no additional temporary impacts. A total of 20 wetlands will be crossed in these State Game Lands, of which 4 will be crossed by HDD or bore methods. Six of the 20 wetlands crossed in State Game lands are considered to be EV. The Project proposes to impact 0.538 acre of wetland within the 50-foot permanent ROW, and an additional 0.255 acre of impact in temporary workspaces. All these resources will be restored to their pre-construction condition, except for a 0.087 acre PFO to PEM permanent habitat conversion in State Game Land 198 within Blair and Cambria counties. Sections 3.7 and 3.8 of this report describe the potential impacts, construction methods, and mitigation measures that SPLP will implement through these resources.

SPLP will cross these lands and all associated wetlands/streams in accordance with construction and restoration measures presented in their Chapter 105 (Sections 3.7 and 3.8 below) and 102 permit applications, and will continue to coordinate with the PGC to obtain the necessary land easements/agreements for crossing these areas. SPLP will restore/revegetate all state game lands such that there will be no long term impact to the overall vegetative communities (species composition) and wildlife habitat; therefore, the Project will not adversely impact the recreational opportunities provided by these areas. Sections 3.7 and 3.8 of this report describe the potential impacts, construction methods, and mitigation measures that SPLP will implement through these resources.

As identified in the Table 14 (below), Lodge Trail in Indiana County is the only hiking trail crossed that is associated with an aquatic resource crossing (stream) that involves an open cut crossing: all other trails will be crossed via the HDD/bore method. SPLP is working with Indiana County to post signage and temporarily close Lodge Trail, or post signage and provide a temporary bridge with safety fencing to provide an alternate route during construction.

There will be no anticipated interruption to recreational activities along any of the 9 BicyclePA Routes crossed by the Project as all the roads they are associated with are being bored under. Similarly, all 9 Water Trails will be crossed by the Project using HDD methods and no interruption to recreational activities are anticipated. SPLP has coordinated with PAFBC regarding the requirements for crossing these rivers/streams, and has prepared the necessary Aid to Navigation (ATON) permits for the river/streams identified by PAFBC: ATON plans are provided in Attachment 7B.

Table 13. Summary of Impacts to State Game Lands Crossed by the Project

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Conversion		
SGL #276	Indiana	0.77	3	0	0	0.095	0.000	0	1	0	0.007	0	0	S-N90, S-N91, S-O111	O74
SGL #198	Cambria	0.54	2	0	0	0.033	0.000	5	3	1	0.247	0.255	0.074	S-L94, S-Q71	BB111, L64, L70A, M59, Q49, Q50, Q51, Q65
SGL #118	Blair	0.56	0	0	0	0.000	0.000	0	0	0	0	0	0		
SGL #147	Blair	0.34	0	1	0	0.028	0.000	0	0	0	0	0	0	S-M35	
SGL #198 ^f	Blair	1.63	3	0	0	0.093	0.000	0	1	0	0.019	0	0.013	S-L96, S-L97, S-L98	L70B
SGL #118	Huntingdon	0.13	0	0	0	0.000	0.000	0	0	0	0	0	0		
SGL #71	Huntingdon	2.53	3	2	0	0.046	0.000	7	0	0	0.146	0	0	S-L31, S-L33, S-L35, S-L38, S-M15	L16, L17, L18, L20, L21, L33, M13
SGL #46	Lebanon	1.41	1	0	1	0.001	0.000	2	0	2	0.076	0	0	S-C86	H13, H14
SGL# 46	Lancaster	1.3	0	2	2	0.001	0.000	0	1	1	0.043	0	0	S-K34, S-K35	K32
SGL #52	Berks	0.18	0	0	0	0.000	0.000	0	0	0	0	0	0		
Total			12	5	3	0.297	0.000	14	6	4	0.538	0.255	0.087		

Source: PASDA 2016b

^a The Project will have minor temporary impacts associated with construction.

^b Disturbed areas will be restored in accordance with the E&S Plan located in Attachment 12.

^c Attachment 11, Enclosure E, Part 4 provides a more detailed discussion of impacts to streams and wetlands, impact avoidance and minimization measures, and a description of the crossing construction measures that will be used.

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

^e Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands and streams affected by the Project will be restored to pre-construction conditions.

^f SGL # 198 is crossed twice within Blair County. The distance crossed and all impacts were combined in this table rather than separated out by crossing.

Notes:

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

Table 14. Hiking and Water Trails Crossed by the Pennsylvania Pipeline Project

County	Name of Trail	Aquatic Resources Present
Washington	BicyclePA Route A	No
Washington	BicyclePA Route S	No
Westmoreland	Great Allegheny Passage	No
Westmoreland	Kiski-Conemaugh River Water Trail	Yes
Indiana	Kiski-Conemaugh River Water Trail	Yes
Indiana	West Penn Trail	No
Indiana	Lodge Trail	Yes
Blair	Mid-State Trail	No
Blair	BicyclePA Route G	No
Blair	Juniata River Water Trail	Yes
Huntingdon	Mid-State Trail	No
Huntingdon	Allegrippis Trails at Raystown Lake	No
Huntingdon	Standing Stone Trail	No
Perry	Iron Horse Trail	No
Perry	Fowlers Hollow Trails	No
Perry	Tuscarora Trail	No
Cumberland	Appalachian Trail	No
Cumberland	BicyclePA Route J-2	No
Cumberland	Conodoguinet Creek Water Trail	Yes
Cumberland	Yellow Breeches Creek Water Trail	Yes
York	BicyclePA Route J	Yes
York	Yellow Breeches Creek Water Trail	Yes
Dauphin	BicyclePA Route J-1	No
Dauphin	Lower Susquehanna River Water Trail	Yes
Dauphin	Swatara Creek Water Trail	Yes
Lebanon	Horse-Shoe Trail	No
Lebanon	Lebanon Valley Rail Trail	No
Berks	Horse-Shoe Trail	No
Berks	BicyclePA Route S	No
Chester	Chester Valley Trail	No
Chester	BicyclePA Route S	No
Chester	BicyclePA Route L	No
Delaware	Rocky Run Trail	No

Source: PASDA 2016c

3.1.1 Federally-Owned Parks

Construction of the proposed Project may result in minor, short-term impacts to recreational uses in/near USACE owned/administered properties including fishing, hiking, biking, camping, and other recreational activities should construction occur during the busy summer recreation season. However, SPLP has committed to work with the USACE to minimize impacts during the busy summer recreation season. SPLP has agreed to work with the USACE to minimize impact and disruption of recreation at their facilities. In addition, the Project would intersect the Allegrippis Trail at several locations, and would require temporary closure/detours of the trail during construction of the Project. Other potential recreational impacts may include, but are not be limited to, restricted access to areas of the park or longer travel time (around construction areas), reduced wildlife/bird

sightings due to temporarily displaced wildlife, detours on walking trails, and disruption of the natural viewsheds from the river/lakes.

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

Per USACE's request, SPLP will also implement timing restrictions on tree clearing to avoid the busy recreational season (summer) at USACE owned/administered properties. SPLP also proposes to use the HDD construction method at major waterbody crossings to avoid recreational impacts on USACE properties. Furthermore, SPLP will HDD underneath Ridge Camp at Raystown Lake, and at the Bush Recreational Camp Area at Loyalhanna Lake to minimize/avoid potential Project impacts to recreational uses.

After construction and restoration, no adverse impacts on recreational uses are anticipated. With adherence to these guidelines, potential impacts to recreational uses during Project construction would be minimized and temporary during construction. It is anticipated that future recreational activities would resume to normal operations. As such, no long-term impacts to recreational sites and opportunities are anticipated as a result of Project operations.

The Draft EA/FONSI was published for a 30-day public review and comment period beginning on October 11, 2016. No comments were received on the Draft EA/FONSI. At this time, SPLP is awaiting USACE signature of the FONSI and finalization of granting permission for the alteration of USACE Civil Works Projects pursuant to Section 14 of the Rivers and Harbors Act (33 USC 408).

3.2 CULTURAL RESOURCES

Cultural resource surveys completed for the Project included a Phase I archaeological survey, Phase II archaeological testing and NRHP evaluations, and a historic resource evaluation of above-ground historic properties. The Project does not cross or impact any federally recognized Native American reservations or territories. A total of 78 archaeological sites and 19 national historic sites were identified (refer to Section 2.2).

3.2.1 Archaeological Resources

A combined total of 78 newly identified and previously recorded archaeological sites were identified within the proposed ROW. Specifically, in addition to 43 previously identified archaeological sites, results of the Phase I archaeological investigation resulted in the identification of another 35 archaeological sites. SPLP conducted Phase I archaeological surveys simultaneously with Phase II archaeological testing and NRHP evaluations. In consultation with the PA SHPO, Phase II archaeological evaluations were deemed necessary and conducted at 21 sites. As a result, two sites were determined to be eligible for listing in the NRHP; however, both sites are no longer within the Project's APE due to route modifications. The PA SHPO concurred with the results and recommendations of the Phase II investigations.

To date, the PA SHPO has determined the following regarding the 78 identified archaeological sites:

- 10 of the sites are not eligible for the NRHP;
- 47 of the sites require no further investigation, either because field investigations did not identify the site within the APE or the identified portion of the site within the APE does not contribute to the site’s potential eligibility;
- 16 sites will be avoided by either HDD construction or pipeline realignment;
- SPLP is in ongoing consultation with the PA SHPO to determine the status and eligibility of the five remaining sites.

An unanticipated discovery plan will be in place during construction and archaeological site monitors present during ground disturbing activities at areas recommended by the PA SHPO. No impacts to archaeological resources are anticipated by the construction, operation, and maintenance of the Project.

3.2.2 Historic Resources

Results of the site file review and historic resources field reconnaissance survey, described in Section 2.2, were submitted to the PA SHPO in May 2016. After addressing all of the PA SHPO’s comments, concurrence with SPLP’s recommendations for historic resources was received in July 2016. Table 15 summarizes recommendations for all NRHP-listed historic resources within the Project APE.

Table 15. National Historic Sites In or Adjacent To Study Area for Project

County	Name of Area / Type of Site	Impact
Washington	Mingo Presbyterian Church and Churchyard, Union Township (Key #097612) (NRHP-listed)	HDD crossing, no impact or adverse effects anticipated; received PHMC concurrence.
Westmoreland	National Historic Landmark and Historic Archaeological Site “Bushy Run Battlefield” (1700-1775, Military) (36WM0598), Penn Township	Project route is entirely within an existing ROW easement that was previously approved by PHMC. SPLP is coordinating with the PHMC to gain approval of the pipelines along SPLP’s existing pipeline easement on this land. Site 36WM0598 is located approximately 2,000 feet east of the survey corridor.
Westmoreland	Bushy Run Battlefield, Penn Township (Key #001146) (National Historic Landmark)	No tree clearing anticipated in this area, workspace located within existing ROW. No impacts or adverse effects anticipated. Waiting on USACE concurrence.
Indiana	Western Division, Pennsylvania Canal, Burrell Township (Key #000808) (NRHP-listed)	HDD crossing, no impact or adverse effects anticipated; received PHMC concurrence.
Cambria	Allegheny Portage Railroad of the Pennsylvania Canal, Cresson Township (Key #123985) (National Historic Landmark)	HDD crossing, no adverse effects anticipated. Waiting on USACE concurrence.
Huntingdon	East Broad Top Railroad (Mount Union to Alvan), Shirley Township (Key #006531) (National Historic Landmark)	Proposed workspace crosses former railway, however tracks are no longer present, only some of the former railroad grade remains. No other historic resources associated with the railroad are present in the vicinity. No impacts or adverse effects

County	Name of Area / Type of Site	Impact
		anticipated. Waiting on USACE concurrence.
Dauphin	Prehistoric Archaeological Site (36DA0089), Swatara Township (NRHP-Listed)	Site 36DA0089 is located approximately 2,786 feet north of the survey corridor.
Berks	Prehistoric Archaeological Site (36BK0588), Caernarvon Township (NRHP-Listed)	Site 36BK0588 is located approximately 4,338 feet southwest of the survey corridor.
Berks	Historic Archaeological Site "Joanna Furnace Mansion" (1700-1925+, Domestic) (36BK0624), Robeson Township (NRHP-Listed)	Site 36BK0624 is located approximately 1,632 feet northeast of the survey corridor.
Berks	Historic Archaeological Site "Joanna Furnace Industrial/Business and Charcoal Barn" (1700-1925+, Industrial) (36BK0625), Robeson Township (NRHP-Listed)	Site 36BK0625 is located approximately 1,196 feet northeast of the survey corridor.
Chester	Lionville Historic District, Uwchlan Township (Key #001567) (NRHP-listed)	HDD crossing, no adverse effects anticipated; received PHMC concurrence.
Chester	Benjamin Pennypacker House, West Whiteland (Key #064409) (NRHP-listed)	HDD crossing; vibration as a result of HDD will not be a structural concern, the method actually produces less vibration than open trench construction. SPLP will use best practices during construction, including the use of safety fence, keeping a minimum 25 feet distance from all structures, no mature trees or landscaping will be removed. Received PHMC concurrence.
Chester	Prehistoric Archaeological Site (36CH0611), West Whiteland Township (NRHP-Listed)	Site 36CH0611 is located approximately 3,970 feet southwest of the survey corridor.
Chester	Historic Archaeological Site "Jacob Zook House" (1700-1900, Farmstead) (36CH0694), West Whiteland Township (NRHP-Listed)	Site 36CH0694 is located approximately 1,520 feet southwest of the survey corridor.
Chester	Historic Archaeological Site "George Massey House" (1700-1900, Farmstead) (36CH0695), West Whiteland Township (NRHP-Listed)	Site 36CH0695 is located approximately 2,393 feet west of the survey corridor.
Chester	Historic District "Pleasant Hill Plantation," West Nantmeal Township (Key #079669) (NRHP-listed)	NHLD is across the road from the permanent ROW but is within the 200-ft survey corridor. No tree clearing in this location. No adverse effects anticipated; received PHMC concurrence.
Chester	Historic Building "Exton Hotel," West Whiteland Township (Key #064335) (NRHP-Listed)	Adjacent to pipelines and within permit area of stream crossing but avoided by HDD. No adverse effects anticipated; received PHMC concurrence.
Chester	Historic Building "Greenwood School," West Whiteland Township (Key #050645) (NRHP-Listed)	Adjacent to pipelines but avoided by HDD. No adverse effects anticipated; received PHMC concurrence.
Chester	Historic Building "William Everhart House," West Whiteland Township (Key #064476) (NRHP-Listed)	Outside/adjacent to study corridor and avoided by HDD. No adverse effects anticipated; received PHMC concurrence.

3.3 AGRICULTURAL AREAS

Special construction measures are implemented when a pipeline crosses agricultural lands to minimize impacts to the resource. Impacts are minor and temporary in nature as the land will revert to preconstruction conditions and should have no long term impact on agricultural activities. Potential impacts to agricultural areas that can occur as a result of Project construction include compaction of soils along the construction ROW by heavy equipment, nutrient leaching and deterioration of soil structure, soil settling or slumping, mixing of topsoil and subsoil, and the introduction of stones to surface soil layers. These potential impacts may interfere with agricultural practices and decrease productivity.

Mitigation measures used to minimize impacts to agricultural soils include minimizing the mixing of topsoil and subsoil and reversing compaction and other construction-related effects. In cultivated fields, SPLP will strip and stockpile the topsoil separate from the subsoil along the trench. Topsoil depth varies considerably from site to site and across the Project corridor. Experienced construction contractors and/or environmental inspectors will evaluate soil conditions and profiles at each location to ensure the topsoil is segregated properly and to the appropriate depth.

The degree of compaction, rutting, and loss of organic matter depend upon type of construction equipment, construction technique, and soil properties. If compaction occurs, SPLP will scarify the soil or provide additional roughening such as deep ripping or chisel ripping to restore the area to a minimal compacted state.

Pre-construction planning and final design has reduced the limit of disturbance (LOD), and therefore the area subjected to compaction, to the maximum extent while allowing safe installation of the pipeline. In agricultural areas, top soil segregation and restoration BMPs offer significant protection to the layer most vulnerable to compaction. Upon completion of pipeline installation and trench backfill, segregated topsoil will be replaced to pre-construction grades and precautions will be taken to minimize compaction during placement of topsoil. Severely compacted areas are to be plowed with a harrow, paraplow, paratill or other equipment before subsoil replacement. In wetlands and other sensitive areas, the installation of timber mats (or equivalent), topsoil segregation, and limiting equipment and vehicle travel, ensures compaction is minimized. Any area where stone and/or timber mats are used for temporary stabilization, soil will be decompacted through multiple passes using tracked equipment to roughen the surface. The tracking method can be used elsewhere to aid in the decompaction of soils as deemed necessary to facilitate successful restoration. Vehicular traffic is to be restricted from areas that are ready to be seeded.

Rock will be removed from the topsoil layer during initial clean-up such that the construction ROW is similar to surrounding areas. During the backfilling and restoration phases, topsoil will be replaced, and any stones removed from the topsoil layer will be handled in accordance with the Project's permit requirements or in accordance with individual landowner agreements/requests. Any drain tiles damaged during construction will be repaired or replaced and the landowner may be compensated for any temporary cessation of crop production during the construction period.

Soil impacted from spills or releases of lubricants and fuels used during construction may potentially occur. However, SPLP has prepared a Preparedness, Prevention and Contingency Plan for the Project (Attachment 12, TabA) that will be implemented to avoid/minimize these potential incidents and to immediately commence corrective measures. Spills of fuels or lubricants during construction will be cleaned up immediately, and the soil will be removed and disposed of properly. Equipment maintenance will be restricted to contractor yard areas, which will further reduce the potential impact of releases.

3.3.1 Prime Farmlands

As shown on the maps in Enclosure B, the proposed pipelines will cross soils classified as prime farmland. Potential short-term impacts to prime farmland soils associated with construction of the proposed Project may include increased soil erosion and sedimentation, compaction of soils caused by construction vehicles and equipment, inclusion of rock fragments in the topsoil caused by blasting, and poor revegetation of the soil types impacted by the proposed Project. SPLP will implement all the construction and mitigation measures identified above (Section 3.3) in areas of prime farmland, as well as non-prime farmlands, that are in active agricultural use at the time of construction.

- Based on the mapped prime farmlands presented in Enclosure B:
 - The Project will temporarily impact approximately 820 acres of mapped prime farmland during Project construction activities,
 - Approximately 14.85 acres of mapped prime farmland will be permanently impacted by block valves, permanent access roads, and station upgrades/modifications associated with the proposed Project, and
 - As previously mentioned in Section 2.3, not all the mapped prime farmland areas are being actively used for agriculture purposes and some areas currently support forested areas, developed areas, or other non-agricultural uses.
- There are approximately 1,754,231 acres of mapped prime farmland soils located in the 17 counties crossed by the Project.
 - The Project will temporarily disturb 0.05% and permanently impact 0.0008% of these mapped soils when compared to the county totals.

Based on this analysis, the impacts to mapped prime farmlands crossed by the Project is considered a minor, negligible amount. As such, the proposed Project is not anticipated to have any long-term adverse impacts to prime farmlands across the Project area.

3.3.2 Agricultural Preserved/Conservation Areas

SPLP has reviewed the requirements of farmland preservation within the Commonwealth of Pennsylvania, such as Clean and Green Program, which provides for reduced property tax rates for landowners of rural agricultural, timber or open space properties greater than 10 acres in size. The Clean and Green Program is implemented at the county level in Pennsylvania. In order to provide clarity on a state-wide level, the Pennsylvania Legislature amended the Clean and Green Program implementing legislation in 2010 to include a provision that excludes land devoted to subsurface transmission or gathering lines from being assessed any roll back taxes under the Clean and Green Program (refer to Act 88, Pennsylvania Farmland and Forest Land Assessment Act – Responsibilities of County Assessors, Split-off, Separation or Transfer and Roll-back taxes and Special Circumstances, Act of October 27, 2010, No. 88 Cl.53). As such, SPLP does not anticipate that the Project would affect a property's eligibility for the Clean and Green Program. However, in the event the Project would result in a disqualification or modification of a property from the Clean and Green Program, SPLP will mitigate and/or compensate the affected landowner for the financial impact resulting from any such disqualification/modification.

In addition to the Clean and Green Program, there are a number of other state and county programs that require special land considerations when crossing by the proposed Project. Several properties on the Project are subjected to easements under an agriculture land preservation program. The vast majority of these locations are co-located with existing utility corridors that pre-date the agricultural land preservation program. SPLP representatives met with representatives of the PA Department of Agriculture, Bureau of Farmland Preservation, the US Department of Agriculture, Natural Resource Conservation Service, and the Cumberland and Lebanon County Agricultural Land

Preservation Boards, to discuss specific concerns relating to the Project impacts on preserved agriculture land, and developed the plan set forth in 3.3 above to mitigate compaction and segregate and restore topsoil in all agriculture land locations. Through this consultation SPLP has developed and will implement the plan to minimize impacts to preserved agricultural land. SPLP has identified properties that will be crossed by the proposed Project and that are currently/actively involved in a conservation/preservation program that limits the use and management of their properties.

SPLP will continue to work with the affected landowners to ensure that any potential impacts to these special areas/properties are avoided or minimized to the extent possible, and/or is compensated for any financial impacts resulting from the Project.

3.4 PUBLIC AND PRIVATE WATER SUPPLIES/WELLS

SPLP has identified 50 PWS areas within 1 mile of the Project LOD, and a number of private groundwater wells have been identified within 150 feet of the Project LOD. Potential impacts to these resources may include hazardous material spills during Project construction including open trenching, HDD and auger bore installation, block valve and pump station construction and installation, and hydrostatic testing. Open trenching and grading activities have the potential to encounter karst areas/openings that may lead to groundwater sources. Unanticipated encounters with impacted soil may also threaten water resources and supplies. Additional risks to private and public water supplies may result from the activities associated with the HDD method of pipeline installation; specifically, the use of drilling fluids during the drill process.

In order to ensure the protection of these resources/supplies, SPLP has developed four plans that assess the potential impacts and provide for the protection of surface and groundwater resources related to Project activities. The overarching Preparedness, Prevention, and Contingency (PPC) Plan (Attachment 2, Tab12A) is designed to address spill prevention, countermeasures, and response in general. Potential impacts to surface waters and public and private water supplies in particular have been analyzed and addressed within two supplemental plans to the PPC Plan: the Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Attachment 2, Tab12B); and an Inadvertent Return Assessment, Prevention, Preparedness, and Contingency Plan (Attachment 2, Tab12C). The Water Supply Plan provides for the identification and assessment of existing public and private water supplies in or along the Project, as well as identifies prevention and preparedness measures to be implemented to protect those supplies. The Inadvertent Return Plan outlines the preconstruction activities implemented to ensure sound geological features are included in the HDD profile, the measures to prevent potential impacts, and the measures to be implemented if an impact were to occur. In addition, SPLP has prepared a Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 2, Tab12D) that assesses potential impacts as well as avoidance and mitigation measures during open-cut and drilling procedures. The primary purpose of these plans is to protect surface and groundwater resources Project-wide.

3.5 VEGETATION

To avoid and minimize vegetation clearing and habitat fragmentation, SPLP co-located the alignment of the pipeline with existing SPLP owned and operated ROWs to the maximum extent practicable. When co-location with existing SPLP ROWs was not possible, other utility corridors were paralleled to the maximum extent practicable. Over 80 percent of the Project ROW length parallels existing utility line ROWs. In addition, SPLP limited the construction workspace to 75 feet in width, inclusive of a minimal 50-foot-wide Permanent ROW and a 25-foot wide temporary construction ROW. To avoid and minimize vegetation clearing in wetlands and at stream crossings, SPLP further reduced the construction workspace to 50 feet in width. SPLP has also incorporated HDD

construction methods such that vegetation between the exit and entry points will remain undisturbed throughout construction and operation of the Project, to the extent possible.

3.5.1 Temporary and Permanent ROW

The Project will affect vegetation in upland forests, upland shrub lands, open lands (meadows and old fields), agricultural areas (farmed croplands, hay fields, pastures, orchards, and vineyards), and wetlands. Upland vegetation will be altered within permanent impact areas, including Permanent ROW, Permanent Access Roads, and Permanent Aboveground Facilities (refer to Attachment 9 – Project Description, for definitions of all potential impact areas) such that it will be permanently maintained in an open condition (herbaceous species with limited shrubs) by routine mowing. Upland vegetation in the temporary impact areas, including Temporary ROW, Additional Temporary Workspace (ATWS), and Temporary Access Road (refer to Attachment 9 – Project Description, for definitions of all potential impact areas) will be allowed to revert to its pre-construction cover type. With the exception of aboveground facilities (e.g., permanent access roads, valve stations, pump stations) and existing developed lands, all areas disturbed during construction will be revegetated and maintained in accordance with the Project E&S Plan provided in Attachment 12. The BMPs for restoration and maintenance of these areas are discussed within the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4). Impacts to the wetland areas are described in Section 3.8 (below).

To significantly minimize impacts to vegetation, the majority of the Project (80 percent) is co-located with existing utility corridors where the majority of Project impacts are only to herbaceous vegetation which will be restored to pre-construction conditions. The Temporary ROW, ATWS, and Temporary Access Roads will be allowed to revert to pre-construction vegetative conditions, including forest and shrubs. In areas where the Project does not parallel existing ROW, there will be a greater conversion of pre-construction vegetation type in forested and scrub-shrub areas to permanent, maintained ROW following construction as there is no overlap with existing ROW. However, the 25-foot of temporary construction ROW will be allowed to revert to its pre-construction cover type/use following construction. The remaining 50-foot will be maintained in an open condition (herbaceous species with limited shrubs) by routine mowing.

Through co-locating the majority of the Project with existing utility corridors, impacts on forested land, have been minimized to the greatest extent practicable, resulting in minimized impairment of forested ecosystem functions and values; greater availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act; and, minimized impacts to the associated watershed/water quality values these forested areas provide. The Project will result in an expansion of the existing ROW vegetation and creation of new ROW in some areas; however, through co-locating the majority of the ROW and revegetation/restoration of the areas, there will be no adverse long-term impact to vegetative communities.

3.5.2 Vegetation Communities of Special Concern

The proposed Project crosses a total of 23 different mapped Core Habitat areas (Table 16) and 6 Landscape Conservation Areas (Table 17). Impacts to these areas will be similar to the vegetative impacts described in Section 2.5.1. Specifically, the Project will result in an expansion of the existing ROW vegetation and creation of new ROW in some areas; however, through co-locating the majority of the ROW and revegetation/restoration of the areas, there will be no long-term adverse impact to the overall purpose/function of these vegetative communities as they will continue to provide essential habitat for the species using the habitat.

There are 25 Core habitat areas across 12 counties that will be impacted by the proposed Project (Table 16). There are a total of 61 streams crossed in these areas, of which 21 are considered HQ/EV and another 27 will be crossed with either HDD or bore methods. The Project will involve a total of 1.070 acres of impact to the bed and banks of these 61 streams within the approximately 50-foot wide permanent ROW, and an additional 0.122 acre of impact to these streams in the temporary workspaces. In addition, a total of 52 wetlands will be impacted in these Core Habitat areas, of which 27 will be crossed using HDD or bore methods and another 20 are considered to be EV. Impacts to these wetlands include 2.938 acres of permanent impact and 0.407 acre of temporary impacts, as defined by PADEP (refer to Section 3.8). The All these resources will be restored to their pre-construction condition, except for a 0.016 acre PFO to PEM permanent habitat conversion in Middle Creek Wildlife Core Habitat. Sections 3.7 and 3.8 of this report describe the construction methods, potential impacts, and mitigation measures that SPLP will implement through these resources.

There are 6 Landscape Conservation Areas located in two counties crossed by the Project (Table 17). A total of 38 streams are crossed in these areas, of which 4 are considered HQ/EV and 6 will be crossed with either HDD or bore methods. The Project will involve 0.269 acre of permanent and 0.018 acre of temporary impacts to these stream resources. In addition, the Project will cross 17 including 1 EV wetland and will result in 0.878 acre of permanent impact, as defined by PADEP (refer to Section 8.5). All these resources will be restored to their pre-construction condition following construction. Sections 3.7 and 3.8 of this report describe the construction methods, potential impacts, and mitigation measures that SPLP will implement through these resources.

3.6 WILDLIFE

To significantly minimize impacts to wildlife, the majority of the permanent ROW (80 percent) is co-located with existing utility corridors to avoid new edge effect and habitat fragmentation on wildlife habitat. This routing maximizes the availability of contiguous habitat for wildlife species and thereby minimizes adverse effects or disturbance to wildlife species in the area. Although co-located, the Project will involve earth disturbance and vegetation removal activities that may result in the loss/mortality of some less mobile species such as small amphibians, reptiles, and mammals or insects; however, this would not adversely impact the overall population or viability of these species along the Project corridor.

During operation of the pipeline, disturbances to the surrounding areas and therefore impacts on wildlife, are anticipated to be minimal in nature and of short duration such that they are negligible. Maintenance and operation activities that could result in disturbance to wildlife include mowing of ROW and slow-speed vehicle use during pipeline integrity inspections. Mowing and vehicular use could result in short-term disturbances that cause temporary displacement of wildlife from adjacent habitat. Given the short-duration of mowing and vehicular use in the ROW, these disturbance will be temporary and negligible as wildlife will return and continue to use the habitat once these activities cease. No mowing of ROW will occur in wetlands, thereby avoiding impacts to wildlife in wetland habitat. Mowing and vehicular use along the ROW may result in the loss/mortality of some less mobile species such as small amphibians, reptiles, and mammals or insects; however, this would not adversely impact the overall population of these species in habitat along the Project corridor.

3.6.1 Migratory Birds

Due to the range of habitats occupied by the variety of migratory bird species that could potentially occur in the Project area, preconstruction efforts focused primarily on the reduction of the overall Project footprint, especially in sensitive areas known to provide habitat for migratory birds. The Project Migratory Bird Habitat Conservation Plan (refer to

Attachment 6 for a copy of the Plan) identifies potential impacts and mitigation measures that SPLP will implement to avoid and minimize impacts to migratory birds in the Project area to the maximum extent practicable. Specifically, SPLP's Migratory Bird Habitat Conservation Plan adheres to the general recommendations in the USFWS's *Adaptive Management Practices for Conserving Migratory Birds* including:

USFWS Recommendation #1 – *Restrict clearing of natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, fencerows, shrubby areas) to the period of September 1 to March 31, which is outside the nesting period for most migratory birds.*

- SPLP has already cleared approximately 53 miles of natural and semi-natural habitats of the Project during the winter of 2015/2016 between September 1, 2015 and March 31, 2016.
- The current Project schedule includes clearing the remaining areas between September 1, 2016 and March 31, 2017.
- The first 51 miles of the Project in Washington, Allegheny, and Westmoreland counties will involve very limited clearing as almost all workspaces have been sighted in those recently used for installation of SPLPs 12-inch Houston to Delmont Project.

USFWS Recommendation #2 – *Avoid permanent habitat alterations in areas where birds are highly concentrated.*

- Sections of ROW that pass through IBAs are co-located within or adjacent to existing utility corridors to minimize permanent habitat alterations to the maximum extent practicable.
- In areas where IBAs are large and span several counties limiting alternatives primarily to the reduction of overall workspaces and design alternatives.
- Large reroutes at Marsh Creek State Park and at Middle Creek Wildlife Management Area minimized permanent habitat alterations at these areas.
- None of the pump stations that require permanent land disturbances are sited in IBAs.
- Temporary workspaces through IBAs will be restored and allowed to revegetate to the pre-construction conditions. In many cases, where special land uses are crossed such as the Tuscarora State Forest, specific reforestation or plantings are

Table 16. Summary of Impacts to Core Habitats Crossed by the Pennsylvania Pipeline Project

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b, c}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b, c}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Conversion		
Lowber Slopes BDA	Westmoreland	0.05	0	0	0	0.000	0.000	0	0	0	0	0	0		
Sewickley Creek Slopes BDA	Westmoreland	0.3	2	0	1	0.022	0.009	0	0	0	0	0	0	S172, S225	
Gromiller Cave BDA	Blair	0.2	1	0	1	0.010	0.000	0	2	2	0.028	0	0	S-M31	M24, M29
Blacklog Mountain BDA	Huntingdon	0.8	1	1	1	0.055	0.000	0	0	0	0	0	0	S-M3, S-M4	
James Creek Inlet BDA	Huntingdon	0.2	1	0	1	0.001	0.000	3	0	3	0.026	0	0	S-Y1	Y1, Y2, Y3
Tuscarora Creek below Blair Hollow	Juniata	0.2	2	0	1	0.005	0.000	2	0	2	0.005	0	0	S-K73, S-K74	K59, K60
Bowers Mountain Site – West	Perry	0.3	0	1	0	0.034	0.000	0	0	0	0	0	0	S-J70	
Conococheague Mountain Site	Perry	0.4	0	0	0	0.000	0.000	0	0	0	0	0	0		
Cactus Hill Site	Cumberland	0.5	3	0	0	0.036	0.000	0	0	0	0	0	0	S-I55, SI56, S-I57	
Doubling Gap Creek	Cumberland	1.4	5	4	1	0.079	0.000	8	0	2	0.278	0	0	S-I87, S-I89, S-I90, S-K10, S-K11, S-K12, S-K13, S-K14, S-K16	I62, I63, I64, J40, K14, K15, K16, W33d
Locust Creek	Cumberland	1	6	0	6	0.004	0.004	3	0	2	0.282	0.198	0	S-J34, S-J35, S-J36, S-J37A, S-J37B, S-J41	J31, J32, J35
Whittocks Wood	York	0.1	1	0	0	0.059	0.000	1	0	0	0	0	0	S-H56	
Susquehanna River at Middletown	York	0.1	0	0	0	0.000	0.000	0	0	1	0.002	0	0		BB1
Susquehanna River at Middletown	Dauphin	1	2	0	1	0.268	0.076	1	0	1	0.006	0	0	S-A22, S-CJ1	A18
Izaak Walton League Area	Lebanon	0.3	0	0	0	0.000	0.000	0	0	0	0	0	0		
Penryn Park, Walnut Run	Lebanon	0.5	1	0	0	0.013	0.000	0	1	0	0.028	0	0	S-A23	A19
Middle Creek Wildlife Management Area	Lebanon	2.4	2	0	1	0.011	0.000	4	0	2	0.379	0	0.016	S-C37, S-C86	C16, C17, H13, H14
Middle Creek Wildlife Management Area	Lancaster	5.2	6	8	10	0.266	0.006	6	5	6	1.075	0.209	0	S-A76, S-A77, S-A78, S-A79, S-A82, S-A85, S-A87, S-A88, S-B8, S-B82, S-B83, S-J59, S-K34, S-K35	A52, A54, A55, A56, B5, B72, B74, H28, J54, K32, W8c
Allegheny Creek NHA	Berks	0.8	3	0	0	0.063	0.000	0	6	1	0.33	0	0	S-B27, S-B28, S-B29	B27, B28, B29, B30, B31, W302

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b, c}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b, c}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Conversion		
East Branch Conestoga River Headwaters NHA	Berks	0.5	2	0	2	0.001	0.000	1	0	1	0.005	0	0	S-A57, S-A58	A37
Goose Lane Seep NHA	Berks	0.1	0	0	0	0.000	0.000	0	0	0	0	0	0		
Maple Grove Road Farm NHA	Berks	0.7	2	0	1	0.012	0.000	0	3	1	0.179	0	0	S-B30, S-C7	B32, B33, C5
Morgantown Road NHA	Berks	0.1	0	2	0	0.024	0.000	0	1	0	0.02	0	0	S-H13, S-H15	W301
Great Marsh NHA	Chester	0.02	0	0	0	0.000	0.000	0	0	0	0	0	0		
Marsh Creek Lake NHA	Chester	0.8	0	5	2	0.107	0.027	3	2	3	0.295	0	0	S-C72, S-C73, S-C87, S-G52, S-Q83	C38, C40, C43, Q75, Q76
Total			40	21	27	1.070	0.122	32	20	27	2.938	0.407	0.016		

Source: PADCNR and PNHP 2016

^a The Project will have minor temporary impacts associated with construction.

^b Disturbed areas will be restored in accordance with the E&S Plan located in Attachment 12.

^c Attachment 11, Enclosure E, Part 4 provides a more detailed discussion of impacts to streams and wetlands, impact avoidance and minimization measures, and a description of the crossing construction measures that will be used.

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

^e Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands and streams affected by the Project will be restored to pre-construction conditions.

Notes:

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

Table 17. Summary of Impacts to Landscape Conservation Areas Crossed by the Pennsylvania Pipeline Project

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b, c}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b, c}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent ^{d, e}	PADEP Temporary	Conversion		
Loop Mountain LCA	Blair	0.4	0	0	0	0.000	0.000	0	0	0	0	0	0		
Lock Mountain LCA #3	Blair	1.6	9	1	1	0.028	0.018	0	1	1	0.008	0	0	S-BB72, S-BB74, S-BB75, S-BB76, S-BB78, S-M35, S-M38, S-STV2, S-STV3, S-STV4	M29
Greater Tussey Mountain LCA #4	Huntingdon	0.4	0	0	0	0.000	0.000	0	0	0	0	0	0		
Raystown Lake LCA	Huntingdon	3.4	13	0	3	0.140	0.000	5	0	4	0.637	0	0	S-JH2, S-M48, S-M52, S-Y1, S-Y14, S-Y15, S-Y16, S-Y17, S-Y18, S-Y19, S-Y2, S-Y20, S-Y3	Y1, Y12, Y2, Y3, Y4
Jacks Mountain LCA	Huntingdon	3.6	3	3	0	0.048	0.000	7	0	0	0.146	0	0	S-L31, S-L33, S-L35, S-L38, S-L39, S-M15	L16, L17, L18, L20, L21, L33, M13
Aughwick Creek LCA	Huntingdon	2	9	0	2	0.054	0.000	4	0	0	0.087	0	0	S-CC10, S-L28, S-L29, S-L30, S-M11, S-M12, S-M13, S-M14, S-M9	CC27, L15, M10, M12
Total			34	4	6	0.269	0.018	16	1	5	0.878	0	0		

Source: PADCNR and PNHP 2016 [Note: This data is from a depreciated dataset no longer in use.]

^a The Project will have minor temporary impacts associated with construction.

^b Disturbed areas will be restored in accordance with the E&S Plan located in Attachment 12.

^c Attachment 11, Enclosure E, Part 4 provides a more detailed discussion of impacts to streams and wetlands, impact avoidance and minimization measures, and a description of the crossing construction measures that will be used.

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

^e Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands and streams affected by the Project will be restored to pre-construction conditions.

Notes:

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

required and will ensure that temporary impacts are of the shortest duration practicable.

- During construction, all of the IBAs have been or are anticipated to be cleared of vegetation between September 1 and March 31 to further protect migratory birds.
- Wetlands and waterbodies also concentrate birds and often harbor many sensitive species due to limited habitat availability. SPLP has reduced its construction ROW to 50 feet-wide when crossing streams and wetlands and has almost eliminated all temporary/extra workspaces in these areas. In addition, the reductions of the construction width occurs 10-feet on either side of the wetland or stream offering further protection to important upland stream bank and wetland edge buffers.

USFWS Recommendation #3 – *Avoid fragmentation of large, contiguous tracts of wildlife habitat, maintaining contiguous habitat corridors to facilitate wildlife dispersal, and locating projects on lands already altered, cultivated, or degraded.*

Over 80 percent of the Project will be co-located adjacent to existing utility corridors.

USFWS Recommendation #4 – *Include measures to reduce habitat fragmentation by co-locating infrastructure in or immediately adjacent to already disturbed areas.*

See comment for Recommendation #3.

USFWS Recommendation #5 – *Avoid and minimize negative impacts on vulnerable wildlife, developing a habitat restoration plan, and using only plant species that are native to the local area for revegetation of the Project.*

- Impacts in sensitive resource areas such as wetlands and waterbodies have been minimized by:
 - leaving wetland vegetation root stock in place;
 - using protective matting to minimize surface impacts;
 - segregating topsoil from subsoil over the trench line during construction, restoring topsoil (containing wetland plant rhizomes and seed) on top following pipeline installation;
 - using erosion and sediment control devices to minimize site erosion and sedimentation; and
 - stabilizing wetland areas immediately following construction activities and allowing them to revert to native vegetative cover.
- Stream crossings will be completed as quickly as possible, stream banks and bottom will be restored and stabilized, and SPLP will use construction BMPs to minimize sedimentation, turbidity, and other impacts that may temporarily affect stream habitats and wildlife. Many of these BMPs will also be implemented within upland areas as well, such as segregation and restoration of topsoil.
- All areas will be revegetated using PADEP approved plantings and plans that avoid the use of non-native species and encourage establishment of species that provide erosion control while not jeopardizing adjacent areas with the introduction of non-native/invasive species.
- Specific areas such as state forests, game lands, and USACE properties have site-specific planting plans that call for rapid restoration of all disturbed areas and in many areas accelerated reforestation of temporary workspaces. These plans call-

out specific species to be used and also call for invasive species BMPs to be followed along with post-construction monitoring.

3.6.2 Wildlife Communities of Special Concern

As presented in Section 2.6.2, no National Wildlife Refuges or wildlife management areas, designated critical habitat, or significant habitats have been identified within the proposed Project area. The proposed Project does cross a total of 7 IBAs at 12 different locations (Table 18) for a total distance of 30.4 miles. In addition, the Project crosses 23 different mapped Core Habitat areas (Table 16) and 6 Landscape Conservation Areas (Table 17). As previously stated in Section 3.5.2, impacts to these areas will be similar to the vegetative impacts described in Section 3.5.1. Specifically, the Project will result in an expansion of the existing ROW vegetation and creation of new ROW in some areas; however, through co-locating the majority of the ROW and revegetation/restoration of the areas, there will be no long-term adverse impact to the wildlife associated with these communities. In addition, SPLP will implement their Migratory Bird Habitat Conservation Plan (refer to Attachment 6 for a copy of the Plan) to further avoid and minimize impacts on IBAs. Implementation of these conservation measures will ensure impacts to the core habitat, landscape conservation areas, and IBAs are minor and result in no long-term adverse impact to the overall purpose/function of these wildlife communities.

As presented in Table 18, a total of 98 streams will be crossed in the IBAs, of which 38 are considered HQ/EV and 8 will be crossed by HDD or bore methods. The Project will involve 1.780 acres of permanent and 0.002 acre of temporary impacts to these stream resources, as defined by PADEP (refer to Section 3.8). In addition, the Project will cross a total of 66 wetlands in these areas, of which 22 are classified as EV and a total of 12 will be crossed using either HDD or bore methods. Approximately 2.558 acres of permanent and 0.352 acre of temporary impacts will occur as a result of the proposed Project, as defined by PADEP (refer to Section 3.8). All these resources will be restored to their pre-construction condition, except for a 0.352 acre PFO to PEM permanent habitat conversion in the Allegheny Front IBA (0.123 acre) and the Kittatinny Ridge IBA (0.034 acre). Sections 3.7 and 3.8 of this report describe the construction methods, potential impacts, and mitigation measures that SPLP will implement through these resources.

3.7 STREAMS

Excluding floodway only crossings, the proposed Project will cross a total of 883 streams across 17 counties in the Commonwealth of Pennsylvania: 399 perennial streams, and 484 intermittent and ephemeral streams (Table 19). These streams represent a number of different existing/designated stream uses and/or combinations of uses: 281 WWF, 395 CWF, 195 TSF, and 511 MF uses. In addition, a total of 243 stream are classified as HQ and 12 are classified as EV streams.

Stream impacts have been calculated based on the entire area of disturbance (i.e., limit of disturbance) and reflect the existing cover types within this entire area regardless of where the Project ROW co-locates/overlaps an existing utility ROW. Permanent and temporary impacts are based on the following PADEP definitions:

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

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and

flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

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

SPLP will cross a total of 166 streams using the Horizontal Directional Drill (HDD) construction method. Although the HDD method eliminates all temporary surface impacts associated with the typical open cut method, there is a potential for an inadvertent return of the drilling fluids into the stream (refer to Section 3.7.6 of this report).

The Project does not propose permanent fill in any waterbodies and all stream channels and stream banks will be restored to their pre-existing condition. However, construction of the proposed Project would result in minor, short-term impacts to the stream resources crossed: a total of 12.031 acres of permanent and 0.791 acre of temporary disturbance, as defined by PADEP (Table 19).

The following sections describe the stream construction and impact mitigation measures that SPLP will implement and identifies the designated/existing uses and high quality/exceptional value of the water resources crossed. In addition, a description of the potential impacts and mitigation for aquatic resources, floodplains, inadvertent returns, water withdrawals and discharges, and riparian areas are presented.

3.7.1 Construction and Impact Minimization

For initial siting of the proposed Project, SPLP was prudent in siting potential worksites to minimize impacts to waterbodies in general, to the extent practicable for the entire Project (refer to Alternatives Analysis – Attachment 11, Enclosure E, Part 3). However, because this is a linear project, total avoidance of all streams was not possible or practicable. The Project will result in temporary disturbance of stream resources during construction. In general, during construction of the new pipelines, the width of the construction ROW would typically be 75 feet: 50-foot-wide would be the post-construction permanent ROW and 25-foot-wide temporary workspace. However, to avoid and minimize impacts to stream resources, SPLP has reduced the construction ROW to 50 feet, extending 10 feet landward from the top of each stream bank. The crossing and restoration of all streams located within the Project ROW will use temporary equipment bridge installation and dry crossing trenching methods as outlined and described within the E&S Plan (Attachment 12) and the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4). These methods are designed in accordance with the PADEP E&S Manual to maintain flow, protect sources/headwaters, and minimize direct and secondary impacts to on-site and offsite resources.

SPLP will utilize one or more of the following methods to facilitate the crossing of streams with vehicles, equipment, and haul trucks (details for all methods are provided in the E&S Plans):

- **Timber Mat Bridge** – A temporary bridge assembled of timber mats. Typical installed at ephemeral and minor stream crossings.
- **Culvert Bridge** – A temporary bridge installed with the use of culverts. Rock fill is used to form the road surface, which may be covered with timber mats.

Table 18. Summary of Impacts to Important Bird Areas Crossed by the Project

Resource	County	Distance Crossed	Stream Resources (number)			Stream Impacts (acres) ^{a, b}		Wetland Resources (number)			Wetland Impacts (acres) ^{a, b}			List of Streams Crossed ^c	List of Wetlands Crossed ^c
			Other	HQ/EV	HDD/Bore	PADEP Permanent	PADEP Temporary	Other	EV	HDD/Bore	PADEP Permanent	PADEP Temporary	Conversion		
Allegheny Front	Cambria	4.4	15	0	1	0.150	0.000	19	4	5	0.629	0.352	0.11	S-BB112, S-BB114, S-BB116, S-BB117, S-BB54, S-L90, S-L92, S-L94, S-M83, S-M86, S-M90, S-M92, S-M94, S-Q57, S-Q71	BB111, BB141, BB142, BB144, BB145, BB146, BB147, BB148, BB67, K31, L62, L63, L64, L65, L66, L70, AM59, M60, M61, Q49, Q50, Q51, Q65
Allegheny Front	Blair	5.3	15	0	1	0.165	0.000	0	6	0	0.232	0	0.013	S-L83, S-L84, S-L96, S-L97, S-L98, S-M73, S-M74, S-M75, S-M76, S-M77, S-M78, S-M79, S-M80, S-Q58, S-Q59	L61, L70B, M55, M56, M57, Q52
Greater Tussey Mountain	Blair	0.9	0	0	0	0.000	0.000	0	0	0	0	0	0		
Greater Tussey Mountain	Huntingdon	0.8	3	0	0	0.063	0.000	2	0	0	0.095	0	0	S-L51, S-L52, S-L53	L31, L32
Tuscarora Ridge, The Pulpit	Juniata	1.3	12	0	0	0.361	0.000	0	0	0	0	0	0	S-K55, S-K56, S-K57, S-K58, S-K59, S-K61, S-K62, S-K63, S-K65, S-K67, S-K69, S-K70	
Tuscarora Ridge, The Pulpit	Perry	0.5	0	0	0	0.000	0.000	0	0	0	0	0	0		
Kittatinny Ridge	Perry	7.7	0	22	0	0.467	0.001	2	8	0	0.92	0	0.034	S-CJ2, S-CJ4, S-J60, S-J61, S-J62, S-J63, S-J64, S-J65, S-J68, S-J69, S-J70, S-J72, S-J74, S-J75, S-J76, S-K48, S-K50, S-Q63, S-Q64, S-Q65, S-Q66, S-Q67	J56, J57, J69, K50, K52, Q63, W25e, W26e, W338, W36d
Kittatinny Ridge	Cumberland	5	14	6	1	0.473	0.000	19	0	3	0.508	0	0	S-I81, S-I83, S-I84, S-I85, S-I87, S-I89, S-I90, S-J43, S-J44, S-K10, S-K11, S-K12, S-K13, S-K14, S-K16, S-K4, S-K5, S-K6, S-K7, S-K8	I54, I55, I56, I58, I60, I61, I62, I63, I64, J40, K12, K13, K14, K15, K6, K7, K9, W22d, W33d
Middle Creek Wildlife Management Area	Lebanon	1.2	1	0	1	0.001	0.000	2	0	2	0.076	0	0	S-C86	H13, H14
Middle Creek Wildlife Management Area	Lancaster	1.3	0	2	2	0.001	0.000	0	1	1	0.043	0	0	S-K34, S-K35	K32
Hay Creek – French Creek Forest Block	Berks	3	0	7	1	0.099	0.000	0	3	1	0.055	0	0	S-H13, S-H15, S-H16, S-H17, S-H18, S-Q89, S-Q90	H21, Q80, W301
Upper Ridley/Crum	Chester	2.2	0	1	1	0.000	0.000	0	0	0	0	0	0	S-B35	
Total			60	38	8	1.780	0.002	44	22	12	2.558	0.352	0.157		

Source: Audubon Society 2016

^a The Project will have minor temporary impacts associated with construction.

^b Disturbed areas will be restored in accordance with the E&S Plan located in Attachment 12.

^c Attachment 11, Enclosure E, Part 4 provides a more detailed discussion of impacts to streams and wetlands, impact avoidance and minimization measures, and a description of the crossing construction measures that will be used.

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

^e Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands and streams affected by the Project will be restored to pre-construction conditions.

Notes:

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project.

Table 19. Stream Resources Crossed by the Pennsylvania Pipeline Project

County / Stream Type	Number of Streams Crossed ^a	Special Protection Status		Crossing Method			Stream Impact (acres)		Stream Designated Or Existing Uses (most protective presented) ^{c,d}			
		HQ	EV	Dry Crossing	HDD/Bore	Other ^b	PADEP Permanent ^e	PADEP Temporary	WWF	CWF	TSF	MF
Washington County												
Perennial	13	3	0	9	4	0	0.225	0.024	9	0	4	0
Intermittent	22	18	0	18	4	0	0.440	0.012	12	0	10	0
Ephemeral	13	5	0	8	4	1	0.036	0.001	5	0	8	0
County Totals	48	26	0	35	12	1	0.701	0.037	26	0	22	0
Allegheny County												
Perennial	6	0	0	5	1	0	0.136	0.000	6	0	0	0
Intermittent	5	0	0	5	0	0	0.061	0.000	5	0	0	0
Ephemeral	16	0	0	12	4	0	0.049	0.001	16	0	0	0
County Totals	27	0	0	22	5	0	0.246	0.001	27	0	0	0
Westmoreland County												
Perennial	43	16	0	29	10	4	0.667	0.192	15	19	9	4
Intermittent	35	10	0	24	10	1	0.160	0.021	6	15	14	4
Ephemeral	47	8	0	34	10	3	0.158	0.004	7	14	26	5
County Totals	125	34	0	87	30	8	0.985	0.217	28	48	49	13
Indiana County												
Perennial	32	6	0	24	7	1	0.538	0.032	1	30	1	0
Intermittent	27	5	0	23	4	0	0.177	0.000	1	24	2	0
Ephemeral	13	2	0	11	0	2	0.056	0.009	0	13	0	0
County Totals	72	13	0	58	11	3	0.771	0.041	2	67	3	0
Cambria County												
Perennial	48	22	0	39	8	1	0.883	0.054	0	48	0	0
Intermittent	28	15	0	22	5	1	0.156	0.007	0	28	0	1
Ephemeral	36	16	0	32	3	1	0.135	0.002	0	36	0	1
County Totals	112	53	0	93	16	3	1.174	0.063	0	112	0	2

County / Stream Type	Number of Streams Crossed ^a	Special Protection Status		Crossing Method			Stream Impact (acres)		Stream Designated Or Existing Uses (most protective presented) ^{c,d}			
		HQ	EV	Dry Crossing	HDD/Bore	Other ^b	PADEP Permanent ^e	PADEP Temporary	WWF	CWF	TSF	MF
Blair County												
Perennial	21	3	0	9	7	5	0.250	0.017	15	6	0	21
Intermittent	18	1	0	7	4	7	0.071	0.011	17	1	0	18
Ephemeral	16	0	0	12	3	1	0.126	0.004	13	2	1	16
County Totals	55	4	0	28	14	13	0.447	0.032	45	9	1	55
Huntingdon County												
Perennial	42	10	0	31	10	1	0.993	0.078	12	18	12	42
Intermittent	27	6	0	22	5	0	0.237	0.001	6	12	9	27
Ephemeral	25	2	0	23	2	0	0.433	0.003	10	7	8	25
County Totals	94	18	0	76	17	1	1.663	0.082	28	37	29	94
Juniata County												
Perennial	9	0	0	8	1	0	0.307	0.009	0	9	0	9
Intermittent	4	0	0	4	0	0	0.039	0.000	0	4	0	4
Ephemeral	6	0	0	6	0	0	0.170	0.011	0	6	0	6
County Totals	19	0	0	18	1	0	0.516	0.020	0	19	0	19
Perry County												
Perennial	14	12	2	12	1	1	0.334	0.023	0	12	0	14
Intermittent	11	11	0	9	0	2	0.156	0.026	0	11	0	9
Ephemeral	5	5	0	4	0	1	0.020	0.000	0	5	0	5
County Totals	30	28	2	25	1	4	0.510	0.049	0	28	0	28
Cumberland County												
Perennial	50	8	0	37	12	1	1.107	0.013	32	16	2	50
Intermittent	19	3	0	13	5	1	0.081	0.007	13	3	3	19
Ephemeral	16	1	0	13	3	0	0.043	0.000	10	5	1	16
County Totals	85	12	0	63	20	2	1.231	0.020	55	24	6	85
York County												
Perennial	12	0	0	9	3	0	0.232	0.047	8	4	0	12

County / Stream Type	Number of Streams Crossed ^a	Special Protection Status		Crossing Method			Stream Impact (acres)		Stream Designated Or Existing Uses (most protective presented) ^{c,d}			
		HQ	EV	Dry Crossing	HDD/Bore	Other ^b	PADEP Permanent ^e	PADEP Temporary	WWF	CWF	TSF	MF
Intermittent	3	0	0	2	1	0	0.012	0.001	1	2	0	3
Ephemeral	4	0	0	3	1	0	0.022	0.000	2	2	0	4
County Totals	19	0	0	14	5	0	0.266	0.048	11	8	0	19
Dauphin County												
Perennial	20	0	0	13	6	1	0.547	0.089	20	0	0	19
Intermittent	10	0	0	6	3	1	0.274	0.033	10	0	0	10
Ephemeral	2	0	0	2	0	0	0.006	0.000	2	0	0	2
County Totals	32	0	0	21	9	2	0.827	0.122	32	0	0	31
Lebanon County												
Perennial	20	0	0	15	5	0	0.718	0.007	3	6	11	20
Intermittent	5	0	0	5	0	0	0.059	0.000	0	0	5	5
Ephemeral	4	0	0	3	1	0	0.106	0.000	1	0	3	4
County Totals	29	0	0	23	6	0	0.883	0.007	4	6	19	29
Lancaster County												
Perennial	6	3	0	1	5	0	0.020	0.006	5	0	1	6
Intermittent	9	5	0	5	4	0	0.265	0.000	8	0	1	9
Ephemeral	2	1	0	0	2	0	0.000	0.000	2	0	0	2
County Totals	17	9	0	6	11	0	0.285	0.006	15	0	2	17
Berks County												
Perennial	27	9	5	21	5	1	0.474	0.004	2	15	5	27
Intermittent	14	6	0	9	3	2	0.178	0.003	1	8	5	14
Ephemeral	6	1	2	5	1	0	0.035	0.000	0	4	0	6
County Totals	47	16	7	35	9	3	0.687	0.007	3	27	10	47
Chester County												
Perennial	22	12	3	9	13	0	0.223	0.027	0	6	13	22
Intermittent	7	7	0	2	5	0	0.005	0.001	0	0	7	7
Ephemeral	11	9	0	3	8	0	0.015	0.000	0	2	9	11

County / Stream Type	Number of Streams Crossed ^a	Special Protection Status		Crossing Method			Stream Impact (acres)		Stream Designated Or Existing Uses (most protective presented) ^{c,d}			
		HQ	EV	Dry Crossing	HDD/Bore	Other ^b	PADEP Permanent ^e	PADEP Temporary	WWF	CWF	TSF	MF
County Totals	40	28	3	14	26	0	0.243	0.028	0	8	29	40
Delaware County												
Perennial	14	1	0	7	7	0	0.195	0.000	3	1	10	14
Intermittent	6	0	0	3	3	0	0.043	0.011	0	0	6	6
Ephemeral	12	1	0	4	6	2	0.358	0.000	2	1	9	12
County Totals	32	2	0	14	16	2	0.596	0.011	5	2	25	32
Project Totals												
Perennial	399	105	10	278	105	16	7.849	0.622	131	190	68	260
Intermittent	250	87	0	179	56	15	2.414	0.134	80	108	62	136
Ephemeral	234	51	2	175	48	11	1.768	0.035	70	97	65	115
Totals	883	243	12	632	219	42	12.031	0.791	281	395	195	511

a. Only includes streams actually crossed by the Project. Does not include streams with a crossing method of avoid, floodway crossing, floodway only, HDD floodway, bore floodway, or open cut floodway.

b. Includes all crossing methods other than dry crossing, bore, or HDD; including but not limited to temporary bridge and travel lane.

c. An individual stream may fall into more than one of these categories.

d. Includes streams classified as "Drains to..."

e. Although PADEP defines operation and maintenance activities as permanent impacts, all streams affected by the Project will be restored to pre-construction conditions including the elevation/contours, channel substrate, stream banks, and flow conditions/patterns. In addition, the Project does not involve any permanent fill and there will be no permanent loss of stream area associated with the Project

Utilized at medium and large stream crossings.

- **Rail Car Bridge** – A temporary bridge assemble from a rail car. Utilized at medium and large stream crossings.

SPLP will utilize one or more of the following methods for installing the pipelines across streams with an open-trench (standard typical details for all methods are provided in the E&S Plans):

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

All streams will be crossed using dry construction methods that will isolate the trench/pipelines such that there is no water flowing through the construction area. Construction activities within the waterbody crossing area typically consist of trench excavation for installation of the pipelines, and installation of temporary equipment bridges over the waterbody. These techniques involve the use of a temporary dam and flow bypass method, which allows for trenching, pipe installation at a minimum depth of 5 feet (to top of pipe) below the streambed, and initial restoration to occur in a dry streambed while maintaining a continuous downstream flow around the dry work area. A dry stream crossing significantly reduces the amount of sediment and turbidity that would be created compared to a wet open cut crossing (without dams and flow diversions). Although the ROW workspace at waterbody crossings will be 50 feet wide, the actual area of in-stream excavation and disturbance is generally limited to the width of the trench, which is approximately eight (8) to 10 feet for a 20-inch-diameter pipe, plus dam and equipment crossing/bridge construction area. Most crossings of streams 10 feet wide or less will be completed in one (1) work day. In the event the stream has no water or perceptible flow at the time of construction, an open cut crossing method will likely be used.

Stream impacts would occur as a result of in-stream activities (i.e., installation and removal of temporary dams) or construction on slopes adjacent to stream channels and would result in a temporary localized increase in turbidity levels and downstream sediment deposition. Sediments that become suspended during the short period of in-stream disturbance are expected to settle out of the water column relatively quickly. SPLP has designed the Project to avoid and minimize impacts to stream resources to the greatest extent possible. SPLP will conduct all activities in accordance with their Chapter 102 Permit requirements and will implement erosion and sediment control best management practices (BMPs), including appropriate anti-degradation best available combination of

technologies (ABACT) measures for HQ/EV stream resources, as presented below and in Enclosure E, Part 5 (Antidegradation Analysis) as well as the E&S Plans (Attachment 12). Enclosure E, Part 4 of this Attachment (Impact Avoidance, Minimization, and Mitigation Procedures) 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 SPLP has and/or will implement.

Native stream bed material will be separated from other spoil for reinstallation after restoration (see the E&S Plan provided in Attachment 12). In accordance with the PADEP E&S Manual, an evaluation was completed for sheer stress of stream flow against restored native stream bed material. If the evaluation indicated that the stream would not be stable with native material post-construction, then rip rap will be used per the E&S requirements. Site specific waterbody crossing and restoration plans providing direction for the installation of rip rap at these streams are included within the E&S Plans (Attachment 12). In these cases where rip rap is used and the stream bed is composed of rock, cobble, or gravel, then the native stone will be used for the top six inches of rip rap. Every effort will be made to segregate the entire top layer of native stone in streams with less than six inches of native stone where rip rap is proposed. Rip rap will be used to the minimum extent necessary to stabilize the stream bank, which is typically no more than 12 inches above the normal flow depth often evidenced by a lack of vegetation or a water line. Stream banks above this elevation will be stabilized with erosion control blanket and revegetated.

Overall, all stream impacts are considered to be minor and temporary, or completely avoided utilizing HDD or conventional bore crossing methods. Waterbody crossings will be restored in accordance with the E&S Plan (Attachment 12) that dictates the restoration of the existing condition including topography, stream bed substrate, and flow patterns. Table 2 included in Attachment 11 of each of the county Chapter 105 applications provides specific details regarding the stream type, crossing distances, temporary and permanent impacts, and crossing methods for all the water resources impacted in that specific county.

3.7.2 Designated/Existing Uses

The proposed Project will temporarily impact a total of 883 streams that represent a number of different existing/designated stream uses and/or combinations of uses, as previously discussed in Section 2.7.1 above:

- 281 streams crossed have a designated use of WWF,
- 395 streams crossed have a existing/designated use of CWF,
- 195 streams crossed have a designated use of TSF, and
- 511 streams crossed have a existing/designated use of MF uses.

As demonstrated in SPLP's Antidegradation Analysis (Attachment 11, Enclosure E, Part 5), construction and operation of the Project will not alter the designated uses of the streams crossed or impair the ability of these streams to continue to provide habitat for aquatic species. Specifically, SPLP has reduced the construction right-of-way (ROW) to 50 feet across all streams starting 10 feet landward of the banks; limited the land disturbance to the excavated trench lines, and temporary minor grading of the stream banks at the travel lane crossing, as required; limited the time/duration of in-stream construction (typically less than 2 days); implemented the HDD crossing method where possible, and will implement a dry construction method for all stream crossings not bored or drilled; designed all crossings such that the pipelines will be a minimum of 5 feet (to top of pipe) under all streams, as compared to the PADEP 3 foot depth requirement; and, implemented erosion and sediment control measures for all land disturbances in accordance with PADEP's Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project's ESCGP Permit applications. With the proper implementation and maintenance of these protective measures,

construction-related Project impacts to water quality such as increased turbidity related to sedimentation and in-stream construction will be minor, temporary, and localized and will not adversely impact or degrade the water resources. Specifically, the water quality and designated/existing uses of the water resources crossed by the Project will be maintained and protected post-construction.

To prevent surface water pollution, SPLP will implement pollution prevention procedures outlined in the Project's E&S Plan and supporting documents (Attachment 12) for protection of both surface and groundwater quality during Project construction. Specifically, SPLP will implement their Preparedness, Prevention, and Contingency Plan (PPC) (Attachment 12, TabA) and Inadvertent Return Assessment, Preparedness, Prevention and Contingency Plan (Attachment 12, TabC). The PPC Plan is designed to address spill prevention, countermeasures, and response in general. The Inadvertent Return Plan outlines the preconstruction activities that will be implemented to ensure sound geological features are included in the HDD profile, the measures to prevent potential impacts, and the measures to be implemented if an impact were to occur. In addition, SPLP has prepared a Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 2, Tab12D) that assesses potential impacts as well as avoidance and mitigation measures during open-cut and drilling procedures. The primary purpose of these plans is to prevent and address potential spills of materials/fluids during construction. Implementation of these plans will further protect and maintain the surface water resources and contain/control any potential spills/returns such that there are no anticipated adverse long-term impacts to the water resources and their designated/existing uses.

SPLP will also construct stream crossings in accordance with the PADEP and PAFBC's restrictions on construction timing in trout streams. In general, these restrictions prohibit construction in wild trout streams between October 1 and December 31, and prohibit construction in stocked trout streams between March 1 and June 15. SPLP anticipates any other required restrictions will be written into the Chapter 105 permits on a stream-specific basis.

The proposed Project cross two designated Pennsylvania Wild and Scenic Streams: LeTort Spring Run (Cumberland County) and Yellow Breeches Creek (boundary of Cumberland and York counties). Both of these streams will be crossed using the horizontal directional drill (HDD) crossing method, leaving the stream bed and banks uncleared and undisturbed for construction and operation. Clearing for construction workspaces would be set back more than 200 feet (and up to 1,230 feet) from the stream banks and clearing would not be required along the stream banks. As there will be no impact/change to the riparian corridor along these streams, the Project would not result in adverse visual/scenic impacts to these designated scenic streams. SPLP has coordinated directly with Ms. Kelly Rossiter (Conservation & Scenic Rivers Program Specialist, Pennsylvania Department of Conservation and Recreation, Bureau of Recreation and Conservation) and obtained the necessary clearances regarding the Project and these Pennsylvania Scenic Streams (refer to Attachment 6C).

Through implementation of the selected alternative (refer to Enclosure E, Part 3 – Alternatives Analysis); erosion and sediment control measures (refer to Attachment 12); and, the Project's avoidance, minimization, and mitigation procedures (refer to Enclosure E, Part 4) the Project will protect and maintain existing/designated stream uses and water quality.

3.7.3 High Quality and Exceptional Value Waters

The proposed Project will cross a total of 243 streams that are classified as HQ and 12 that are classified as EV streams. As part of the Commonwealth's antidegradation requirements, the Project must maintain and protect the water quality of these special protection waters (refer to Enclosure E, Part 5). Accordingly, SPLP has reduced the construction ROW to 50 feet across all streams starting 10 feet landward of the banks; limited the land disturbance to the excavated trench line and minor grading of the stream banks at the travel lane crossing, as required; limited the time/duration of in-stream construction (typically less than 2 days); implemented the HDD crossing method where possible, and will implement a dry construction method for all stream crossings not drilled or bored; designed all crossings such that the pipelines will be a minimum of 5 feet (to top of pipe) under all streams, as compared to the PADEP 3 foot depth requirement; and, implemented erosion and sediment control measures for all land disturbances in accordance with PADEP's Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project's ESCGP Permit Applications.

In addition, SPLP has incorporated ABACT BMPs into their E&S Plan to further reduce potential erosion and sediment impacts to HQ streams crossed by the Project or located within the limits of disturbance. Specifically, standard and ABACT BMPs that SPLP will implement to control/manage erosion and sedimentation within the Project area include:

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

The Project does involve the collection and management of stormwater at the new/modified pump stations and block valves. However, SPLP has developed a non-discharge alternative for managing the stormwater runoff associated with these areas that will have no net increase in post-construction runoff, and there will be no direct discharge to an HQ or EV water resource. Specifically, stormwater will be collected and conveyed through a pipe to a well-vegetated upland area where it will discharge into a constructed infiltration berm. Filtration through the existing vegetation and soil is an efficient way to remove suspended stormwater pollutants such as sediment, as the suspended particles are physically filtered from the stormwater as it flows through the vegetation and percolates into the soil. Similarly, SPLP will manage stormwater runoff associated with the construction ROW such that there is no direct discharge to HQ and EV water resources in the Project area and no net increase in post-construction runoff. Therefore, the proposed Project does not include the direct discharge of pollutants into HQ/EV water resources.

Project impacts to streams, including the HQ/EV resources, will be minor, temporary, and localized. However, as demonstrated through implementation of the selected alternative (refer to Enclosure E, Part 3 – Alternatives Analysis); PADEP-approved ABACT BMPs identified above and in the Project ESCGP-2 Applications, Attachments 4 (E&S Narrative) and 3 (PCSM Narrative); the PPC, Inadvertent Return, and Void Mitigation Plans (Attachment 12); and, the Project avoidance, minimization, and mitigation procedures (refer to Enclosure E, Part 4) the Project will maintain and protect the overall water quality

of the HQ and EV streams by reducing/controlling turbidity associated with sedimentation and in-stream construction activities (refer to Enclosure E, Part 5).

3.7.4 Aquatic Habitat

Although the Project crosses a number of streams with fisheries designations, construction and operation of the Project will not impair the ability of these streams to continue to provide habitat for aquatic species. SPLP will construct stream crossings in accordance with the PADEP and PAFBC's restrictions on construction timing in trout streams. In general, these restrictions prohibit construction in wild trout streams between October 1 and December 31, and prohibit construction in stocked trout streams between March 1 and June 15. SPLP anticipates any required restrictions will be written into the permit on a stream-specific basis.

In accordance with the Environmental Assessment Form (3150-PM-BWEW0017, 2/2013), Enclosure D provided in Attachment 11 describes the potential impacts of the aquatic resources crossed by the Project for that county. Specifically, the aquatic stream impacts are described in terms of their food chain production and general habitat conditions (nesting, spawning, rearing, resting, migration, feeding, and escape cover); the water quantity and streamflow is discussed in terms of the streams natural drainage patterns, flushing characteristics, current patterns, groundwater discharge, natural recharge, and storm and floodwater storage/control; the water quality of the streams is described in relation to preventing pollution, sedimentation control and patterns, and natural water infiltration; and, the recreational use (game/non-game species and fishing) of the streams crossed by the Project are described.

3.7.5 Floodplain and Stormwater Management

As presented in Section 2.7.3, SPLP has identified and mapped all the FEMA floodplains and 50-foot floodways of the streams crossed by the Project (refer to Attachment 7), and has coordinated with state and local municipalities regarding consistency with any existing stormwater management programs (refer to Attachment 14). The Project ROW crosses numerous FEMA mapped floodplains and 50-foot floodplains associated with the 883 stream crossings. A number of these areas will be crossed using HDD or boring techniques, reducing surface disturbance and Project impacts. In addition, the pipelines will be buried a minimum of 5 feet (to top of pipe) below grade in these locations, and preconstruction contours and elevations will be restored following installation. However, the proposed Project does involve the construction of some aboveground block valves and pump stations, some of which will be partially located in floodways and floodplains:

- A portion of the proposed Twin Oak Station modification in Delaware County would be located within the 50-foot floodway. However, this floodway is considered waived from PADEP Chapter 105 permit requirements as it drains less than 100 acres. Impacts to this floodway are included in the resource impact tables (Attachment 11) and SPLP will implement their Post Construction Stormwater Management (PCSM) Plan (Attachment 12) to ensure that increases in runoff or changes in stormwater flows do not occur.
- A portion of the proposed Middletown Pump Station in Dauphin County would be located within the 50-foot floodway. However, this floodway is considered waived from PADEP Chapter 105 permit requirements as it drains less than 100 acres. Impacts to this floodway are included in the resource impact tables (Attachment 11) and SPLP will implement their Post Construction Stormwater Management (PCSM) Plan (Attachment 12) to ensure that increases in runoff or changes in stormwater flows do not occur.

- A portion of the proposed Old York Road Block Valve in York County would be located within the 50-foot floodway. However, SPLP will implement their Post Construction Stormwater Plan (Attachment 12) to ensure that increases in runoff or changes in stormwater flows do not occur.
- The Houston Injection Station in Washington County would be located within a 100-year floodplain. A Hydrology and Hydraulics Study (Attachment 13) was conducted to determine project impacts on the flood capacity for Chartiers Run and Westland Run. Results of the study indicate that the Project construction would not exceed 100-year peak flow rates or increase flood velocity on-site or off-site. Therefore, the proposed grading will not increase the risk of flooding within the limits of this study for the 100-year storm even along Westland Run and Chartiers Run. A summary of the stormwater and floodplain management correspondence is included in Attachment 14. A Post Construction Stormwater Plan has been prepared and is currently being reviewed by Chartiers Township.
- The Conemaugh River Block Valve in Westmoreland County will be partially located in a 100-year floodplain. However, the portion of the block valve station located in the floodplain includes the corner of the gravel pad that will be built to grade and not result in any change in surface contours/elevations; therefore, no alteration of floodwater storage or control is anticipated. In addition, SPLP is working with the County to ensure that the Project complies with their floodplain management requirements.
- The new Juniata River West River Block Valve Station in Blair County would require temporary disturbance in the 100-year floodplain. However, there would be no aboveground permanent structures/facilities located in the floodplain, and the floodplain area would be restored to existing grades and contours following construction such that there is no change to the flood elevation or capacity of the floodplain to store floodwater.

The Project will cross 798 floodways for a total disturbance of 195.8 acres and 135 floodplains for a total disturbance of 50.4 acres. However, construction of the Project in accordance with SPLP's Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4) and Chapter 102 permits will not negatively impact the ability of floodplains/floodways to either store or control storm and flood waters. Specifically, Project impacts would be negligible and will not result in any long-term adverse impacts to floodways or floodplains. No changes to the flood elevation or flow patterns are anticipated, and there would be no increased flood risks to structures, human health, safety, or welfare.

3.7.6 Inadvertent Returns

In order to avoid direct impacts to streams, SPLP proposes to HDD/bore a total of 209 streams (Table 19). HDD is a widely used trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the ground surface, including streams and wetlands. The primary potential environmental impact associated with HDD revolves around the use of drilling fluids. An inadvertent return of drilling lubricant is a potential concern when the HDD method is used in or near sensitive resources. Therefore, in those areas where HDD has been identified the HDD profile has been designed to minimize the potential for the release of drilling fluids in sensitive areas. As such, SPLP does not anticipate that the use of HDD will adversely alter, disturb, or otherwise impact subsurface hydrology of associated streams and wetlands, including subsurface pressurized waters, and the surfacing of groundwater is not expected.

However, SPLP has prepared an Inadvertent Return Assessment, Preparedness, Prevention and Contingency Plan for the Project (Attachment 12, TabC). This plan details the impact minimization measures and response protocol in the event of an inadvertent return. An inadvertent return risk assessment of the final design of each HDD is provided within the Inadvertent Return Plan. An evaluation of baseline geology as well as site-specific geotechnical soil borings was completed at each HDD location to aid in the planning and design of each HDD. SPLP will adhere to the Inadvertent Return Plan during all construction activities where the HDD construction method is planned. Furthermore, on-site monitors will closely monitor fluid circulation to detect potential inadvertent returns at the earliest possible time.

In addition, SPLP has developed a Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 12, Tab12D) that provides an assessment of potential impacts and avoidance and mitigation measures during open-cut and drilling procedures. The Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Attachment 12, Tab 12B) and Inadvertent Return Plan also provide an assessment of the geology in terms of potential risks to groundwater supplies from below surface inadvertent returns.

3.7.7 Water Withdrawals and Discharges

Hydrostatic tests are used to ensure that a pipeline is suitable for service prior to commissioning. For example, SPLP utilizes hydrostatic tests for a variety of applications such as strength testing prior to commissioning a newly constructed pipeline, testing pipeline replacement sections before being tied into the main pipeline, as a periodic pipeline reassessment method after a pipeline has been in operation, or to establish a new maximum operating pressure.

Hydrostatic testing involves filling the pipeline segments with water and performing a pressure test. A combination of approved surface water sources (SWSs) and public water sources (PWSs) will be used to provide the water required for HDDs, hydrostatic testing of pipeline segments installed by HDD, and hydrostatic testing of the main pipelines. The pipelines will be hydrostatically tested in accordance with DOT regulations, 49 C.F.R. Part 195. The pipelines will be filled with water and maintained at a test pressure and duration in compliance with SPLP's engineering standards and applicable federal regulations. After completion of a satisfactory test, the water will be discharged to the ground in accordance with the E&S Plan (Attachment 12) and obtained discharge permits, or trucked to a permitted offsite facility. HDD segments will be hydrostatically tested individually after the installation process is completed. Subsequently, once the entire pipeline has been installed within a construction spread, the full pipeline will be hydrostatically tested. Additional details regarding the hydrostatic testing procedure are provided in the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4).

SPLP has identified 16 surface water withdrawal sources in 9 different counties along the Project (Table 20): the water withdrawal locations are provided on the aerial site plans (Attachment 7, Tab7A). The Chapter 102 E&S drawing details identify the specific equipment configurations for each water withdrawal source/location. All withdrawals will use temporary and above-ground equipment (e.g., pump pad) that are included within the limit of disturbance and are identified on the E&S drawings (Attachment 12).

Table 20. Surface Water Withdrawal Sources

Source	County	Comment
Chartiers Creek	Washington	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Monongahela River	Allegheny	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Youghiogheny River	Westmoreland	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Sewickley Creek	Westmoreland	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Little Sewickley Creek	Westmoreland	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Turtle Creek	Westmoreland	Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Frankstown Branch, Juniata River 2	Blair	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Below SRBC thresholds; Passby flow requirement
Frankstown Branch, Juniata River 3	Blair	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Aughwick Creek	Huntingdon	Intake screen designed to minimize impingement, entrainment, entrapment; Below SRBC thresholds; Passby flow requirement
Tuscarora Creek	Juniata	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Locust Creek	Cumberland	Intake screen designed to minimize impingement, entrainment, entrapment; Below SRBC thresholds; Passby flow requirement
Conodoguinet Creek	Cumberland	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Letort Spring Run	Cumberland	Intake screen designed to minimize impingement, entrainment, entrapment; Below SRBC thresholds; PAFBC restrictions; Passby flow requirement
Susquehanna River	Dauphin	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Swatara Creek	Dauphin	SRBC - Intake screen designed to minimize impingement, entrainment, entrapment; Passby flow requirement
Snitz Creek	Lebanon	Intake screen designed to minimize impingement, entrainment, entrapment; Below SRBC thresholds; Passby flow requirement

Water withdrawals from five of the sources are regulated by the Susquehanna River Basin Commission (SRBC) and will be implemented at rates that require SRBC dockets. The Public Hearing for docket applications was held on November 3, 2016 and the Commissioner Meeting to vote on the dockets is scheduled for December 8, 2016. Dockets should be received by end of December 2016. Withdrawals from other sources in SRBC territory will be at rates below docket thresholds. No water withdrawals will be made from any surface or groundwater sources regulated by the Delaware River Basin Commission, but will be discharged through a publicly owned treatment works (POTW) in conformance with its discharge permit. The DRBC docket approval was received December 2015.

SPLP has prepared PADEP PAG-10, National Pollutant Discharge Elimination System (NPDES) Discharge Permits to allow discharge of hydrostatic test waters. In general, the discharge locations are located outside of floodways and wetlands per PAG-10 requirements. The locations of all proposed discharge outfall locations, typical discharge BMP structure details, and the associated flow directions and receiving streams of the discharged water, have been incorporated into the Chapter 102 and 105 drawings (Attachments 7 and 12). These drawings currently show the locations of all wetlands, streams, floodways, and floodplains in the vicinity of the test discharges.

All proposed discharge locations were submitted to PADEP as part of PAG-10 Discharge Permit Notice of Intent (NOI) Applications. The PAG-10 applications captured the details of the mainline and HDD testing discharges including discharge capacity, methods, and structures. All discharge structures are located within the limit of disturbance and presented in the impacts tables (Attachment 11, Tables 2 and 3 of the Chapter 105 applications). The length of time the structures will be used is also captured in the PAG10 permit application. PADEP, Southwest Regional Office has approved and issued a PAG-10 permit for the discharge locations under their jurisdiction (NPDES Permit No PAG106192). PADEP, Southcentral Regional Office has approved and issued a PAG-10 application for discharge locations under their jurisdiction (NPDES Permit PAG103570). There are no discharge locations proposed in PADEP's Southeast region.

3.7.8 Riparian Areas

Project construction will result in the clearing of areas located within the construction corridor and 100 feet landward of streams, 150 feet landward of HQ/EV streams, (i.e., riparian areas) but the impacts have been minimized to the maximum extent possible while allowing safe installation of the pipelines. Specifically, SPLP 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/wetland crossings. This measure results in a significant reduction in the area of trees that will be cleared and avoids having to cut a new ROW through undisturbed forested areas.
- As set forth in Table 19 above, numerous HQ and EV water resources will be crossed using the HDD method resulting in no earth disturbance and minimal vegetation disturbance.
- The construction ROW width has been reduced from 75 to 50 feet wide, starting 10 feet landward from all stream banks, for all stream/wetland crossings. In addition, the amount of additional temporary workspaces at stream/wetland crossings has been minimized to the extent practicable (refer to E&S drawings in Attachment 12).
- Earth disturbance will be limited to excavation of the trench and some limited grading at the travel lanes. Tree stumps will be left in place, except over the trench line, to promote natural revegetation following construction, unless the stumps cause an unsafe working condition.
- The riparian buffer area will be revegetated following construction in accordance with the E&S Plan (Attachment 12). The stream banks will be seeded/planted as soon as practicable to facilitate vegetative growth along the stream channel in accordance the E&S Plan (Attachment 12) and the Project's Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4).
- Scrub-shrub wetlands associated with a riparian area and located in the construction ROW will be restored to pre-construction conditions. Similarly, all

forested wetlands associated with a riparian area and located in the construction ROW will be restored to pre-construction conditions, except for a few areas where there will be a permanent conversion to emergent (refer to Section 3.8).

3.8 WETLANDS

Wetland impacts have been calculated based on the entire area of disturbance during construction (i.e., limit of disturbance) and reflect the existing cover types within this entire area regardless of where the Project ROW co-locates/overlaps an existing utility ROW. Permanent and temporary wetland impacts are based on the following PADEP definitions:

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

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland. When SPLP submitted its original Chapter 105 applications, it conservatively estimated for purposes of calculating the application fee due to the Commonwealth that the area of all disturbed wetlands would be permanently impacted, and paid the application fee accordingly. It must be noted that only 0.405 acre of wetlands will be permanently converted, and payment of the prior fee should not be construed to indicate that SPLP considers the remaining temporary incursions into wetlands to be permanent. In fact, all such areas will be restored to original function and values, and replanted to pre-construction conditions, excepting for the 0.405 acre of forested wetlands, which will be converted to palustrine emergent wetlands.

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

As presented in Table 21, the Project crosses a total of 562 wetlands, including 139 EV wetlands.

Table 21. Summary of Wetland Resources Crossed by the Proposed Project

County	Total Number Crossed	Number of Crossings		
		Open Cut ^a	HDD /Bore	Other ^b
Washington				
EV	0	0	0	0
Other	16	13	1	2
Total	16	13	1	2

County	Total Number Crossed	Number of Crossings		
		Open Cut ^a	HDD /Bore	Other ^b
Allegheny				
EV	0	0	0	0
Other	3	3	0	0
Total	3	3	0	0
Westmoreland				
EV	0	0	0	0
Other	67	43	15	9
Total	67	43	15	9
Indiana				
EV	13	12	1	0
Other	39	29	10	0
Total	52	41	11	0
Cambria				
EV	20	17	3	0
Other	67	48	13	6
Total	87	65	16	6
Blair				
EV	29	17	11	1
Other	9	7	1	1
Total	38	24	12	2
Huntingdon				
EV	0	0	0	0
Other	61	46	14	1
Total	61	46	14	1
Juniata				
EV	0	0	0	0
Other	5	3	2	0
Total	5	3	2	0
Perry				
EV	14	12	2	0
Other	2	2	0	0
Total	16	14	2	0
Cumberland				
EV	11	5	4	2
Other	65	51	12	2
Total	76	56	16	4
York				
EV	0	0	0	0
Other	10	7	3	0
Total	10	7	3	0
Dauphin				
EV	0	0	0	0

County	Total Number Crossed	Number of Crossings		
		Open Cut ^a	HDD /Bore	Other ^b
Other	25	15	6	4
Total	25	15	6	4
Lebanon				
EV	4	3	1	0
Other	13	11	2	0
Total	17	14	3	0
Lancaster				
EV	5	1	4	0
Other	9	7	2	0
Total	14	8	6	0
Berks				
EV	30	24	6	0
Other	11	8	3	0
Total	41	32	9	0
Chester				
EV	10	9	1	0
Other	15	7	8	0
Total	25	16	9	0
Delaware				
EV	3	1	2	0
Other	6	2	4	0
Total	9	3	6	0
Project Total				
EV	139	101	35	3
Other	423	302	96	25
Total	562	403	131	28

a. Includes open cut / bore, open cut / HDD, and HDD / Open Cut

b. Includes all crossing methods other than dry crossing, bore, or HDD; including but not limited to temporary bridge and travel lane.

The proposed Project will result in a total of 30.561 permanent and 6.147 temporary acres of wetland impact, as defined by PADEP. As presented in Attachment 11, Table 2 (for all counties) and Table 22 below, impacts to these wetland resources include the following:

- All wetlands will be restored to meet wetland criteria, there will be no permanent loss of wetland area/acreage;
- A total of 33.614 acres of PEM including 27.919 acres of permanent (that will be restored) and 5.695 acres of temporary impact;
- A total of 1.224 acres of PSS including 0.783 acre of permanent (that will be restored) and 0.441 acre of temporary impact;
- A total of 1.579 acres of PFO including 1.568 acres of permanent and 0.011 acre of temporary impact;
- A total of 0.291 acre of PuB including 0.291 acre of permanent (that will be restored) and 0 acre of temporary impact;

- All PEM, PSS, and PuB areas will be restored to their pre-existing conditions;
- A total of 0.405 acre of permanent conversion of PFO to PEM;
- A total of 1.174 acres of PFO areas will be restored to PFO;
- SPLP has developed a Compensatory Mitigation Plan to mitigate for the permanent impacts to wetland resources for the entire Project (refer to Enclosure F of this Attachment); and,
- Refer to the Project's Impact Avoidance, Minimization, and Mitigation Procedures provided in Attachment 11, Enclosure E, Part 4 for details regarding wetland restoration and monitoring.

Table 22. Summary of Wetland Impacts Crossed by the Proposed Project

County	Impacts (acres)		
	PADEP Permanent ^{1,4,5}	PADEP Temporary ²	Conversion ³
Washington			
PEM	0.431	0.143	0.000
PSS	0.000	0.000	0.000
PFO	0.000	0.000	0.000
PuB	0.000	0.000	0.000
Total	0.431	0.143	0.000
Allegheny			
PEM	0.361	0.000	0.000
PSS	0.000	0.000	0.000
PFO	0.000	0.000	0.000
PuB	0.000	0.000	0.000
Total	0.361	0.000	0.000
Westmoreland			
PEM	2.532	0.788	0.000
PSS	0.018	0.005	0.000
PFO	0.096	0.000	0.007
PuB	0.109	0.000	0.000
Total	2.755	0.793	0.007
Indiana			
PEM	1.036	0.268	0.000
PSS	0.059	0.001	0.000
PFO	0.040	0.000	0.000
PuB	0.016	0.000	0.000
Total	1.151	0.269	0.000
Cambria			
PEM	2.986	1.186	0.000
PSS	0.266	0.007	0.000
PFO	0.355	0.000	0.152
PuB	0.000	0.000	0.000
Total	3.607	1.193	0.152

County	Impacts (acres)		
	PADEP Permanent ^{1,4,5}	PADEP Temporary ²	Conversion ³
Blair			
PEM	2.260	0.382	0.000
PSS	0.065	0.428	0.000
PFO	0.090	0.000	0.019
PuB	0.000	0.000	0.000
Total	2.415	0.810	0.019
Huntingdon			
PEM	2.415	0.670	0.000
PSS	0.148	0.000	0.000
PFO	0.145	0.011	0.046
PuB	0.147	0.000	0.000
Total	2.855	0.681	0.046
Juniata			
PEM	0.148	0.100	0.000
PSS	0.000	0.000	0.000
PFO	0.004	0.000	0.000
PuB	0.000	0.000	0.000
Total	0.152	0.100	0.000
Perry			
PEM	0.992	0.006	0.000
PSS	0.084	0.000	0.000
PFO	0.112	0.000	0.034
PuB	0.000	0.000	0.000
Total	1.188	0.006	0.034
Cumberland			
PEM	4.803	0.548	0.000
PSS	0.020	0.000	0.000
PFO	0.242	0.000	0.070
PuB	0.003	0.000	0.000
Total	5.068	0.548	0.070
York			
PEM	0.239	0.148	0.000
PSS	0.000	0.000	0.000
PFO	0.016	0.000	0.004
PuB	0.000	0.000	0.000
Total	0.255	0.148	0.004
Dauphin			
PEM	1.207	0.366	0.000
PSS	0.090	0.000	0.000
PFO	0.217	0.000	0.029
PuB	0.000	0.000	0.000
Total	1.514	0.366	0.029

County	Impacts (acres)		
	PADEP Permanent ^{1,4,5}	PADEP Temporary ²	Conversion ³
Lebanon			
PEM	1.084	0.020	0.000
PSS	0.000	0.000	0.000
PFO	0.065	0.000	0.016
PuB	0.000	0.000	0.000
Total	1.149	0.020	0.016
Lancaster			
PEM	1.324	0.209	0.000
PSS	0.000	0.000	0.000
PFO	0.017	0.000	0.000
PuB	0.000	0.000	0.000
Total	1.341	0.209	0.000
Berks			
PEM	2.086	0.030	0.000
PSS	0.026	0.000	0.000
PFO	0.023	0.000	0.000
PuB	0.016	0.000	0.000
Total	2.151	0.030	0.000
Chester			
PEM	3.587	0.001	0.000
PSS	0.004	0.000	0.000
PFO	0.122	0.000	0.029
PuB	0.000	0.000	0.000
Total	3.713	0.001	0.029
Delaware			
PEM	0.428	0.830	0.000
PSS	0.003	0.000	0.000
PFO	0.024	0.000	0.000
PuB	0.000	0.000	0.000
Total	0.455	0.830	0.000
Project Total			
PEM	27.919	5.695	0.000
PSS	0.783	0.441	0.000
PFO	1.568	0.011	0.405
PuB	0.291	0.000	0.000
Total	30.561	6.147	0.405

1. Permanent impacts are those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the wetland. Permanent disturbance impacts at HDD crossings are calculated on the width of the pipes multiplied by the length of the wetland crossing.

2. Temporary impacts are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not

include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the wetland. These areas consist of additional temporary workspaces and temporary access roads.

3. For PSS located in the permanent and temporary disturbance areas, these areas will be replanted with wetland shrubs in accordance with the wetland restoration and mitigation plan (Attachment 18). PFO located in temporary disturbance areas will be replanted with wetland tree species in accordance with the wetland restoration and mitigation plan (Attachment 18). PFO located in the permanent ROW will be restored to the wetland condition, however PFO habitat is expected to be permanently converted to PEM habitat in these areas.

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

Although PADEP defines operation and maintenance activities as permanent impacts, all wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. In addition, the Project does not involve any permanent fill and there will be no permanent loss of wetland area associated with the Project. SPLP will not maintain the ROW through wetland areas (i.e., no mowing); therefore, the pre- and post-construction conditions of the Project-wide wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be converted to emergent wetland.

As demonstrated in this Project Impact analysis (Section 3.8.1), with the implementation of the Project and BMPs as proposed, impacts to wetlands will be minor and temporary. The following sections describe the construction and impact mitigation measures that SPLP will implement, and identifies the exceptional value wetland resources crossed. In addition, a description of how the Project will mitigate impacts to wetland functions and values, hydrology, and inadvertent returns is presented.

3.8.1 Construction and Impact Minimization

For initial siting of the proposed Project, SPLP was prudent in locating potential worksites to minimize impacts to wetlands for the entire Project (refer to Alternatives Analysis – Attachment 11, Enclosure E, Part 3). However, because this is a linear project, total avoidance of all wetlands was not possible and the Project will result in temporary disturbance of wetland resources during construction. During construction of the new pipelines, the width of the construction ROW would typically be 75 feet: 50-feet would be the post-construction permanent ROW and 25-feet would be the temporary workspace. However, to avoid and minimize impacts to wetland resources, SPLP has reduced the construction ROW in stream and wetland areas to a total width of 50 feet and will utilize timber mats to facilitate the crossing of wetlands with vehicles, equipment, and haul trucks (refer to the E&S Plan standard typical detail drawing). The crossing and restoration of all wetlands located within the Project ROW will use temporary equipment bridge installation and trenching methods as outlined and described within the E&S Plan (Attachment 12) and the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4). SPLP will utilize one or more of the following methods for installing the pipelines across wetlands where open trench construction is used:

- **Drag Section Technique** – This technique involves carrying a prefabricated section of pipe into the wetland for placement into the excavated trench, if soil conditions permit. This technique requires the installation of equipment support along the working side of the trench to provide a stable work surface and minimize soil disturbance and rutting.
- **Push/Pull Technique** – This technique is generally used only in wetlands with standing water or soils that are saturated to the surface. The trench may be excavated using either a backhoe (working on equipment support in the wetland) or a dragline or clamshell dredge (working either in the wetland or from the edge of the wetland,

depending on wetland size and extent of soil saturation). A prefabricated pipe is pushed from the edge of the wetland and/or pulled (e.g., with a winch) from the opposite bank of the wetland into the excavated trench. Floats may be attached to the pipe to give it positive buoyancy, allowing it to be “floated” into place over the excavated trench. Once the pipe is positioned, these floats will be removed and the pipe will settle to the bottom of the trench and the trench will then be backfilled. The push/pull technique enables the pipelines to be installed with minimal equipment operating in the wetland.

The proposed Project will directly impact 562 wetlands. Although PADEP defines operation and maintenance activities as permanent impacts, impacts to wetland vegetation resulting from the proposed Project include temporary disturbance to vegetation, soils, and hydrology and will be minimal and temporary in nature. All wetlands affected by the Project will be restored to pre-construction conditions including the presence of wetland soils, hydrology, and hydrophytic vegetation. To ensure that impacts to wetlands during Project construction and restoration are avoided/minimized, all wetland crossings will be restored in accordance with the E&S Plan (Attachment 12) and the Project will implement the following construction and mitigation procedures at wetland crossings:

- Vegetation will be cut off at ground level, leaving existing root systems intact, and the cut vegetation will be removed from the wetlands for disposal. Vegetation disturbance will be kept to the minimum practicable.
- Sediment barriers will be installed and maintained at the edge of wetlands as necessary until upslope ROW revegetation is restored.
- Pulling of tree stumps and grading activities will be limited to that area directly over the trench, and to a lesser extent, to the work or travel area. Where, in the judgment of the Chief Inspector, construction safety would be compromised, stumps will be pulled in the workspace outside of the trench line.
- In wetlands where equipment must be supported to avoid deep rutting and soil compaction, SPLP will use prefabricated timber mats within the work area to stabilize the ROW. All timber mats and prefabricated equipment pads will be removed upon completion of construction.
- The topsoil from the trench will be segregated from the subsoil and stored in separate piles during construction. During backfilling, subsoil will be returned to the trench first and then topsoil on top (except in areas where tree roots and stumps, standing water, or saturated soils prevent effective soil segregation).
- Permanent trench breakers will be installed at the point where the trench enters and exits the wetland to help preserve the wetland's hydrologic characteristics and to control sediment discharges into the wetlands, and wetland drainage.
- No upland soil or fill material will be backfilled or imported into the wetland.
- Wetlands traversed by the ROW will be reseeded with a wet meadow and wetland seed mix. However, to quickly stabilize the soil, the wetlands may initially be seeded with annual ryegrass to establish vegetative cover and minimize colonization of invasive species and/or erosion; this short-lived species will then recede, allowing the wetland seed mix to establish dominance over time.
- The pipes will be buried a minimum of 4 feet (to top of pipe) below grade through wetland areas, and all wetland elevations and contours will be restored to pre-existing conditions based on field survey data/forms and the elevation of adjacent (upgradient and downgradient) undisturbed wetlands.

- Of the 9 PuB areas located in the Project ROW, SPLP will avoid 5 of them with a trenchless construction method (HDD/bore) and another 3 are not directly crossed by the trenches and will be protected with mats. The crossing of the last PuB area (Indiana County) is described in Enclosure E, Part 4 of this Attachment - Impact Avoidance, Minimization, and Mitigation Procedures.
- No lime or fertilizer will be applied in wetlands.
- SPLP will not maintain the ROW through wetland areas (i.e., no mowing) and will restore/replant all the PEM and PSS areas, as well as approximately 1.174 acres of PFO will be replanted following construction. This will minimize the duration of impacts in forested/scrub-shrub wetland areas, where plantings will provide a “jump start” on forest re-growth, minimizing temporary impacts on the wetland systems’ functions and values. This restoration planting program will be conducted after all construction activities have been completed and the workspace has been restored to pre-existing contours and soil morphology (refer to Enclosure E, Part 4 of this Attachment - Impact Avoidance, Minimization, and Mitigation Procedures).

During restoration, the species to be planted will be the same or similar native/non-invasive, hydrophytic species that were temporarily removed, within adjacent wetland areas, or common to the region. To ensure successful completion and increased survivorship of individual plantings, SPLP anticipates planting in either the fall immediately following completion of Project construction, or during the following year. The timing of planting will be in accordance with guidance and recommendations from a qualified landscape contractor or arborist, depending on the plant species and/or locations. Planting will be conducted by a qualified and reputable landscape contractor or arborist, under the supervision of a qualified Environmental Inspector (EI) who is contracted by SPLP to provide oversight of the restoration activities.

Based on implementation of SPLP’s wetland avoidance and mitigation measures described above, the pre- and post-construction conditions of all wetland areas will be the same, except for a nominal areal extent (approximately 0.4 acre) of forested wetland that will be permanently converted to emergent wetland. Specifically, as a result of a combination of construction avoidance/minimization measures and post-construction planting/mitigation measures, the permanent conversion has been limited to a total of 0.405 acre, 0.209 of which is in EV wetlands. Table 23 identifies the 19 wetlands [Note – one wetland (L70) spans two counties and is presented in the table in both Cambria and Blair] and their associated functions and values that have a permanent conversion, along with their EV status, the wetland area delineated during field surveys (refer to Attachment 11, Enclosure A), acreage of Project impacts, and acreage of permanent conversion.

Table 23. Resource-Specific Permanent Wetland Conversions and Associated Functions and Values

County/ Wetland ID	EV Status (Reason for EV Designa- tion) ¹	Total Wetland in Survey Area (acre) ²	Project Impacts		PFO Conver- sion (acre) ⁵	Description of Wetland Functions and Values
			Temporary (acre) ³	Permanent (acre) ⁴		
Washington						
<i>None</i>	-	-	-	-	-	-
Allegheny						
<i>None</i>	-	-	-	-	-	-
Westmoreland						

County/ Wetland ID	EV Status (Reason for EV Designation) ¹	Total Wetland in Survey Area (acre) ²	Project Impacts		PFO Conver- sion (acre) ⁵	Description of Wetland Functions and Values
			Temporary (acre) ³	Permanent (acre) ⁴		
P15	N/A	0.345	0	0.059	0.005	Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Riparian Buffer, Landscape Support, Natural Adjacent Land Use
P33	N/A	0.532	0.021	0.099	0.002	Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Riparian Buffer, Large Areal Extent, HQ or EV Watershed, Landscape Support, Low Adjacent Land Use
Indiana						
<i>None</i>						
Cambria						
CC15	N/A	0.281	0	0.050	0.002	Groundwater Recharge/Discharge, Sediment/Toxicant Retention
K30	N/A	0.050	0	0.010	0.010	Sediment/Toxicant Retention, Nutrient Removal
L63	N/A	0.522	0	0.064	0.036	Groundwater Recharge/Discharge, Sediment/Toxicant Retention
L70A ⁶	EV (T-WTS)	0.005	0	0.103	0.074	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat
N15	N/A	0.575	0.033	0.099	0.018	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Production Export, Wildlife Habitat, Riparian Buffer, Large Areal Extent, Landscape Support
N29	EV (WTS)	0.139	0	0.022	0.012	Sediment/Toxicant Retention
Blair						
L70B ⁶	EV (T-WTS)	0.235	0	0.019	0.013	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat

County/ Wetland ID	EV Status (Reason for EV Designa- tion) ¹	Total Wetland in Survey Area (acre) ²	Project Impacts		PFO Conver- sion (acre) ⁵	Description of Wetland Functions and Values
			Temporary (acre) ³	Permanent (acre) ⁴		
Q57	EV (T-WTS)	0.032	0	0.006	0.006	Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization, Wildlife Habitat
Huntingdon						
BB127	N/A	0.297	0	0.062	0.015	Sediment/Toxicant Retention
CC28	N/A	0.106	0	0.042	0.031	Sediment/Toxicant Retention
Juniata						
<i>None</i>	-	-	-	-	-	-
Perry						
W26e	EV (WTS)	0.565	0	0.149	0.034	Floodflow Alteration, Fish and Shellfish Habitat, Wildlife Habitat
Cumberland						
I38	EV (PWS)	0.856	0	0.098	0.070	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization, Wildlife Habitat, Riparian Buffer, Large Areal Extent, Landscape Support, Low Adjacent Land Use
York						
J63	N/A	0.432	0	0.004	0.004	Groundwater Recharge/Discharge, Sediment/Toxicant Retention
Dauphin						
B61	N/A	6.660	0	0.197	0.004	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Production Export, Wildlife Habitat, Riparian Buffer, Large Areal Extent, Landscape Support
B64	N/A	0.984	0	0.050	0.025	Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient

County/ Wetland ID	EV Status (Reason for EV Designa- tion) ¹	Total Wetland in Survey Area (acre) ²	Project Impacts		PFO Conver- sion (acre) ⁵	Description of Wetland Functions and Values
			Temporary (acre) ³	Permanent (acre) ⁴		
						Removal, Riparian Buffer, Large Areal Extent, Landscape Support
Lebanon						
C16	N/A	0.439	0	0.247	0.001	Sediment/Toxicant Retention, Nutrient Removal
C17	N/A	0.399	0	0.056	0.015	Groundwater Recharge/Discharge, Sediment/Toxicant Retention
Lancaster						
<i>None</i>	-	-	-	-	-	-
Berks						
<i>None</i>	-	-	-	-	-	-
Chester						
H15	N/A	1.040	0	0.172	0.029	Sediment/Toxicant Retention, Nutrient Removal
Delaware						
<i>None</i>	-	-	-	-	-	-
	Totals	14.494	0.054	1.608	0.405	

Notes:

- EV = Exceptional Value
N/A = Not Applicable (Wetland is Not Exceptional Value)
- Survey Area was typically a minimum of 200 feet wide or wider, depending on location, and in all cases exceeded the proposed Project limits of disturbance.
- PADEP Temporary Impact/Temporary Workspace Areas are the construction workspace areas that will not become part of the 50-foot-wide permanent ROW for the Project. Typically, this consists of any workspace beyond the 50-foot-wide permanent ROW, including additional temporary workspaces, and temporary access roads.
- PADEP Permanent Impact Area/Permanent ROW is the area necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the wetland. The permanent ROW will be 50 feet wide for this Project.
- Final PFO Conversion is the total acreage of wetland vegetation cover type converted from PFO vegetation to scrub-shrub or emergent wetland vegetation, after on-site restoration and plantings. Onsite restoration will include replanting all PSS in disturbed areas, and replanting PFO areas in accordance with the Compensatory Mitigation Plan (Attachment 11, Enclosure F). There will be no loss of wetland acreage due to fill.
- Wetland L70 spans across two counties (Cambria and Blair): it is one wetland complex but has been identified as two areas in order to quantify impacts for each county.

Overall, the amount of PFO conversion represents a very small fraction of the overall wetland, compared to both the size of that wetland delineated in the Project survey area (as detailed in the table), and also of the larger wetland that typically extends beyond the Project survey area. The total amount of PFO conversion represents 2.8% of the total delineated area of the 19 wetlands that have a permanent conversion, and approximately 1% of the total wetland area impacted/disturbed during construction. Where the total size of the wetlands outside the survey area and disturbance area, respectively, is typically much greater, these percents would be even further reduced. In addition, the nature and size of the cover type conversions in each wetland would not significantly or adversely affect the functions and values of these wetlands (refer to Section 3.8.3). In summary, the

very small amount of permanent conversion of vegetation cover type in these wetlands would not represent any adverse change or reduction of the overall functions/values of the individual wetlands, the combined wetlands located in the Project area, or the cumulative wetlands located throughout the Commonwealth.

Wetland crossings will be restored in accordance with the E&S Plan (Attachment 12) that dictates the restoration of the existing condition including topography, soil, hydrology, and hydrophytic vegetation. Enclosure E, Part 4 of this Attachment (Impact Avoidance, Minimization, and Mitigation Procedures) provides a more detailed discussion of impacts to wetlands, impact avoidance and minimization measures, and a description of the wetland crossing construction methods that will be used. The Impact Avoidance, Minimization, and Mitigation Procedures also includes the details for standard and site-specific wetland restoration, as well as invasive species control, monitoring, and reporting.

The Project does not propose permanent fill in any wetlands; consequently, no loss of wetland area would result from construction or operation of the proposed pipelines. All impacts to wetland resources are considered to be minor and temporary, or completely avoided utilizing HDD or conventional bore crossing methods. In fact, the USACE has agreed that based on SPLP's efforts to further reduce and restore all wetlands impacts that compensatory mitigation would not be required at the federal level. Consequently, the Project will not result in adverse impacts to wetlands on an individual crossing basis or cumulatively as a whole (all Project impacts)

3.8.2 Exceptional Value Wetlands

As presented in Section 2.8.2, all wetlands crossed by the proposed Project were evaluated in accordance with 25 Pa. Code § 105.17(1) to determine whether or not the wetland area satisfies the requirements for classification as an EV wetland resource. Any wetland that satisfied the requirements was identified in the resource table as an EV wetland resource. As presented in Table 21 (above), the Project will cross 139 EV wetlands. The following presents a summary of impacts to the EV wetlands crossed by the Project (acres are provided in Table 2 in Attachment 11 of each county Chapter 105 application):

- SPLP proposes to HDD 35 of the EV wetlands to avoid surface disturbances in these areas.
- A total of 1.499 acres of temporary and 9.743 acres of permanent impacts to the EV wetlands, as defined by PADEP.
- All EV wetlands will be restored to meet wetland criteria, there will be no permanent loss of EV wetland area/acres (i.e., no fill);
- A total of 10.064 acres of PEM including 8.993 acres of permanent (that will be restored) and 1.071 acres of temporary impact to EV wetlands, as defined by PADEP;
- A total of 0.649 acre of PSS including 0.221 acre of permanent (that will be restored) and 0.428 acre of temporary impact to EV wetlands, as defined by PADEP;
- A total of 0.513 acre of PFO including 0.513 acre of permanent and 0 acre of temporary impact to EV wetlands, as defined by PADEP;
- All EV PEM and PSS areas will be restored to their pre-existing conditions.
- A total of 0.304 acre of EV PFO areas will be restored to PFO;
- A total of 0.209 acre of EV wetland will be permanently converted from PFO to PEM, and all other PADEP defined permanent impacts will be restored; and,

- SPLP has developed a Compensatory Mitigation Plan to mitigate for the permanent EV wetland impacts (refer to Enclosure F of this Attachment).
- Refer to the Project’s Impact Avoidance, Minimization, and Mitigation Procedures provided in Attachment 11, Enclosure E, Part 4 for details regarding wetland restoration and monitoring.

EV wetlands are considered an “exceptional ecological resource” and are included in the Commonwealth’s antidegradation program. As part of the antidegradation requirements, the Project must maintain and protect the water quality of the special protection waters, including EV wetlands (refer to Enclosure E, Part 5). Accordingly, SPLP has reduced the construction ROW to 50 feet across all wetlands; limited the land disturbance to the excavated trench line and minor grading of the wetland at the travel lane crossing, as required; roots/stumps will be left in place, to the maximum extent possible, so that the roots stabilize the soils (minimize erosion), and re-establishment of native vegetation is facilitated; implemented the HDD crossing method where possible; implemented timber mats for equipment travel across all wetlands to minimize soil and vegetation impacts; and, implemented erosion and sediment control measures for all land disturbances in accordance with PADEP’s Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project’s ESCGP Permit Applications.

Table 24. Exceptional Value Wetlands, Designation, Crossing Method, and Impacts.

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
Indiana					
N34	PEM	Wild Trout Tributary	HDD	0.004	0
	PFO			0.015	0
N41	PEM	Wild Trout Tributary	Open Cut	0.023	0
N43	PEM	Wild Trout Tributary	Open Cut	0.028	0
O46	PFO	Wild Trout Tributary	Open Cut	0.025	0
O48	PEM	Wild Trout Tributary	Open Cut	0.095	0
O52	PEM	Wild Trout Tributary	Open Cut	0.002	0
O55	PEM	Wild Trout Tributary	Open Cut	0.123	0
O63	PEM	Wild Trout Tributary	Open Cut	0.014	0
O66	PEM	Wild Trout Tributary	Open Cut	0.029	0
O74	PEM	Wild Trout	Open Cut	0.007	0
W134	PEM	Wild Trout Tributary	Open Cut	0.012	0
W135	PEM	Wild Trout	Open Cut	0.018	0.014
W136	PEM	Wild Trout Tributary	Open Cut	0.008	0
Total Number Crossed 13				0.403	0.014
Cambria					
BB111	PEM	Wild Trout Tributary	Open Cut	0.006	0
CC17	PEM	Wild Trout	HDD/Travel Lane	0.029	0.249
	PFO		HDD	0.011	0
CC21	PEM	Wild Trout	Open Cut	0.004	0
CC4	PEM	Wild Trout Tributary	Open Cut	0.024	0
CC6	PEM	Wild Trout	Open Cut	0.009	0
CC7	PEM	Wild Trout	Open Cut	0.008	0

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
K27	PEM	EV Plant	Open Cut	0.038	0
L62	PFO	EV Plant	HDD	0.004	0
L70A	PFO	Wild Trout Tributary	Open Cut	0.103	0
M59	PEM	Wild Trout Tributary	HDD	0.02	0
	PFO			0.054	0
N29	PEM	Wild Trout	Open Cut	0.01	0
	PFO			0.012	0
N30	PEM	Wild Trout Tributary	Open Cut	0.011	0
N33	PEM	Wild Trout Tributary	Open Cut	0.13	0
N4	PEM	EV Plant	Open Cut	0.045	0
O16	PEM	Wild Trout Tributary	Open Cut	0.066	0
O20	PEM	Wild Trout Tributary	Open Cut	0.014	0
	PSS			0.042	0
O37	PEM	Wild Trout Tributary	Open Cut	0.022	0
O42	PEM	Wild Trout Tributary	Open Cut	0.046	0
W139	PEM	Wild Trout Tributary	Open Cut	0.014	0
W140	PEM	Wild Trout Tributary	Open Cut	0.026	0
Total Number Crossed 20				0.748	0.249
Blair					
BB108	PEM	Wild Trout Tributary	Temporary Matting	0	0.021
BB120	PEM	Wild Trout Tributary	HDD	0.001	0
BB124	PEM	Wild Trout Tributary	Open Cut/Temporary Matting	1.166	0.213
	PSS			0.06	0.428
BB125	PEM	Wild Trout	HDD	0.001	0
BB51	PEM	Wild Trout Tributary	Open Cut	0.169	0
BB52	PEM	Wild Trout Tributary	Open Cut	0.093	0
BB56	PEM	Wild Trout Tributary	Open Cut	0.002	0
BB58	PEM	Wild Trout	HDD	0.009	0
	PSS			0.002	0
BB60	PEM	Wild Trout Tributary	Open Cut/Temporary Matting	0.151	0
L35	PEM	Wild Trout	Open Cut	0.021	0
L40	PEM	Wild Trout Tributary	Open Cut	0.033	0
L48	PEM	Wild Trout Tributary	Open Cut	0.001	0
L54	PEM	Wild Trout Tributary	Open Cut/HDD	0.185	0.144
L55	PEM	Wild Trout	HDD	0.01	0
	PFO			0.003	0
L56	PEM	Wild Trout	HDD	0.002	0
	PFO			0.002	0
	PSS			0.003	0
L61	PEM	Wild Trout Tributary	Open Cut	0.044	0
L70B	PFO	Wild Trout Tributary	Open Cut	0.019	0

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
M23	PEM	Wild Trout	Open Cut	0.02	0
M24	PEM	Wild Trout	HDD/Temporary Matting	0.02	0
M26	PEM	Wild Trout Tributary	HDD	0.001	0
M29	PEM	Wild Trout Tributary	HDD	0.006	0
	PSS	Wild Trout Tributary	HDD	0.007	
M35	PFO	Wild Trout Tributary	Bore	0.015	0
M49	PFO	Wild Trout Tributary	HDD	0.022	0
M55	PEM	Wild Trout Tributary	Open Cut	0.125	0
M56	PEM	Wild Trout Tributary	Open Cut	0.022	0
M57	PEM	Wild Trout Tributary	Open Cut	0.014	0
M79	PFO	Wild Trout Tributary	HDD	0.023	0
Q52	PEM	Wild Trout Tributary	Open Cut	0.008	0
Q57	PFO	Wild Trout Tributary	Open Cut	0.006	0
Total Number Crossed 29				2.261	0.806
Perry					
J56	PEM	Wild Trout; EV Stream	Open Cut	0.012	0
J57	PEM	Wild Trout	Open Cut	0.066	0
J69	PEM	Wild Trout Tributary	Open Cut	0.106	0
K49	PEM	Wild Trout Tributary	Open Cut	0.046	0
K52	PEM	Wild Trout Tributary	Open Cut	0.007	0
	PSS	Wild Trout Tributary	Open Cut	0.008	0
K53	PEM	Wild Trout Tributary	Open Cut	0.003	0
K54	PEM	Wild Trout	Open Cut	0.035	0.006
K55	PEM	Wild Trout Tributary	Open Cut	0.091	0
L1	PEM	Wild Trout	HDD	0.001	0
	PFO			0.015	0
L2	PEM	Wild Trout	HDD	0.051	0
	PSS			0.018	0
Q63	PEM	Wild Trout Tributary	Open Cut	0.103	0
W25e	PEM	Wild Trout	Open Cut	0.25	0
	PSS			0.058	0
W26e	PEM	Wild Trout	Open Cut	0.052	0
	PFO			0.097	0
W338	PEM	Wild Trout	Open Cut	0.004	0
Total Number Crossed 14				1.023	0.006
Cumberland					
BB15	PEM	Proximity to Public Water Supply	Open Cut	0.021	0
I25	PEM	Wild Trout Tributary	HDD	0.001	0
I30	PFO	Wild Trout Tributary	HDD	0.015	0
I31	PEM	Wild Trout	HDD	0.01	0

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
I32	PFO	Wild Trout	HDD	0.006	0
I38	PEM	Proximity to Public Water Supply	Open Cut	0.028	0
	PFO			0.07	0
J10	PEM	Proximity to Public Water Supply	HDD/Open Cut/Temporary Matting	1.873	0.051
J11	PEM	Proximity to Public Water Supply	Pullback Workspace/Open Cut	0.013	0.141
J13	PEM	Proximity to Public Water Supply	Open Cut	0.096	0
	PSS			0.001	0
J14	PEM	Proximity to Public Water Supply	Open Cut	0.027	0
J15	PEM	Proximity to Public Water Supply	Open Cut	0.032	0
Total Number Crossed 11				2.193	0.192
Lebanon					
A19	PEM	Wild Trout Tributary	Open Cut	0.028	0
CJ2	PEM	Wild Trout	Bore/Travel Lane	0.002	0.02
H4	PEM	Wild Trout Tributary	Open Cut	0.369	0
W5c	PEM	Wild Trout Tributary	Open Cut	0.057	0
Total Number Crossed 4				0.456	0.02
Lancaster					
A52	PEM	Adjacent to Bog Turtle	Open Cut/Temporary Matting	0.05	0
A54	PEM	Bog Turtle	HDD	0.062	0
	PFO			0.006	0
A55	PEM	Bog Turtle	HDD	0.054	0
A56	PEM	Adjacent to Bog Turtle	Bore/Travel Lane	0.021	0.172
K32	PEM	Adjacent to Bog Turtle	HDD	0.043	0
Total Number Crossed 5				0.236	0.172
Berks					
Pond-B3	PuB	Wild Trout	HDD	0.016	0
AM2	PEM	Bog Turtle; Wild Trout	Open Cut	0.046	0.006
B21	PEM	Wild Trout Tributary	Open Cut	0.109	0
B22	PEM	Wild Trout Tributary	Open Cut	0.29	0
B24	PEM	Wild Trout Tributary	Open Cut	0.057	0
B27	PEM	Wild Trout Tributary	Open Cut	0.059	0
B28	PEM	Wild Trout Tributary	Open Cut	0.027	0
B29	PEM	Wild Trout Tributary	Open Cut	0.18	0
B30	PEM	Wild Trout Tributary	Open Cut	0.001	0
B31	PEM	Wild Trout Tributary	Bore/Temporary Matting	0.005	0
B32	PEM	Wild Trout Tributary	Open Cut	0.081	0
B33	PEM	Wild Trout Tributary	Bore/Temporary Matting	0.019	0

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
B42	PEM	Wild Trout Tributary	Open Cut	0.112	0
B43	PEM	Wild Trout Tributary	Open Cut	0.023	0
B44	PEM	Wild Trout Tributary	Open Cut	0.008	0
B49	PSS	Wild Trout	Open Cut	0.018	0
C1	PEM	Wild Trout Tributary	Open Cut	0.101	0
C12	PEM	Wild Trout Tributary	Open Cut	0.136	0
C13	PEM	Wild Trout Tributary	Bore/Travel Lane	0.003	0.023
C2	PEM	Wild Trout Tributary	Open Cut	0.007	0
C5	PEM	Wild Trout Tributary	Open Cut	0.079	0
C6	PSS	Bog Turtle; Wild Trout	Bore	0.008	0
H21	PEM	Wild Trout Tributary; EV Stream	Open Cut	0.032	0
H25	PEM	Wild Trout	Open Cut	0.006	0
H26	PEM	Wild Trout	Open Cut	0.017	0
K25	PEM	Wild Trout Tributary	Open Cut	0.012	0
Q80	PFO	Wild Trout Tributary	Bore	0.003	0
W301	PEM	Wild Trout; EV Stream	Open Cut	0.02	0
W302	PEM	Wild Trout Tributary	Open Cut	0.058	0
W48A	PEM	Wild Trout	Open Cut	0.001	0
Total Number Crossed 30				1.534	0.029
Chester					
A46	PEM	EV Stream	Open Cut	0.015	0
B12	PEM	EV Stream	Open Cut	0.001	0
B13	PEM	EV Stream	Open Cut	0.031	0.001
B14	PEM	EV Stream	Open Cut	0.024	0
C33	PEM	EV Stream	Open Cut	0.193	0
C34	PEM	EV Stream	Open Cut	0.005	0
C35	PEM	EV Stream	Open Cut	0.145	0
C37	PEM	Wild Trout Tributary	HDD	0.02	0
	PFO			0.002	0
C38	PEM	Adjacent to Bog Turtle; Wild Trout Tributary	Open Cut	0.077	0
C40	PEM	Adjacent to Bog Turtle; Wild Trout	Open Cut	0.1	0
Total Number Crossed 10				0.613	0.001
Delaware					
C10	PEM	Proximity to Public Water Supply	HDD	0.004	0
	PSS			0.003	0
C23	PEM	Wild Trout	Open Cut	0.276	0
I1	PEM	Proximity to Public Water Supply	HDD	0.014	0

Wetland ID	Cowardin Classification	EV Designation	Crossing Method	Impacts	
				PADEP Permanent Impacts	PADEP Temporary Impacts
Total Number Crossed 3				0.297	0
PROJECT Total Number Crossed 139				9.764	1.489

The Project will cross a total of 139 EV wetlands. As presented above and described below, these wetlands have been classified as EV wetlands based on a number of different ecological considerations.

- Bog Turtle Presence:** Two wetlands (A54 and A55) in Lancaster County are classified as EV wetlands because they support bog turtles (*Glyptemys muhlenbergii*), a federally listed endangered species. Both of these wetlands will be crossed using the horizontal directional drill (HDD) method. Specifically, a single HDD will be implemented to cross beneath the combined distance of both these wetlands which will allow the pipes to be installed at a deeper depth and reduces the number of entry and exit holes. The HDD crossing of these wetlands eliminates all earth disturbance; therefore, there will be no impacts to the wetland vegetation, hydrology, and soils associated with these areas. Consequently, the functions and values of these wetlands will not be impacted nor will their classification as EV wetlands. In addition, SPLP will adhere to all requirements identified in the United States Fish and Wildlife Service’s letter dated October 31, 2016 in which they conclude “the effects of the project to bog turtles will be insignificant or discountable”.

Two wetlands (AM2 and C6) in Berks County are classified as EV wetlands because C6 supports a known population of the federally listed endangered bog turtle (*Glyptemys muhlenbergii*), and AM2 was determined to provide marginal, suitable habitat for bog turtles. Wetland C6 will be crossed with a conventional “dry” bore. The bore crossing of this wetland eliminates all earth disturbances and does not require the use of drilling fluid; therefore, there will be no impacts to the wetland vegetation, hydrology, soils, and functions and values associated with this area. Wetland AM2 will be crossed via open cut and SPLP will implement all requirements identified in the United States Fish and Wildlife Service’s letter dated October 31, 2016 including, but not limited to, installation of bog turtle exclusion fencing and the presence of a Qualified Bog Turtle Surveyor (QBTS) during construction when it occurs in the active bog turtle season. Based on the avoidance, minimization, and mitigation measures SPLP will implement the USFWS has concluded that “the effects of the project to bog turtles will be insignificant or discountable”.

- Bog Turtle Adjacent:** Three wetlands (A52, A56, and K32) in Lancaster County are classified as EV wetlands because they are located in proximity to a wetland that supports bog turtles (*Glyptemys muhlenbergii*), a federally listed endangered species; however, these wetland were determined not to support bog turtles or suitable habitat. Wetland A56 will be bored under and K32 will be crossed via the HDD method. Both these crossing methods eliminate all earth disturbance; therefore, there will be no impacts to the wetland vegetation, hydrology, and soils associated with the Project. Wetland A56 will have a travel lane across the wetland that may result in the temporary disturbance of vegetation where the mats are placed but the soils and hydrology will not be altered. Wetland A52 will be crossed using an open cut resulting in the temporary disturbance of vegetation, soil, and hydrology. However, the wetland area will be restored to its pre-existing condition and there will be no long term impact to the wetlands’ vegetation, hydrology, or soils. Consequently, the functions and values of these 3 wetlands will not be impacted nor will their classification as EV wetlands be altered.

Two wetlands (C38 and C40) in Chester County are classified as EV wetlands because they are located in proximity to a wetland that supports either suitable habitat of individual bog turtles (*Glyptemys muhlenbergii*), a federally listed endangered species; however, these wetland were determined not to support bog turtles or suitable habitat. In addition, C38 is located in the floodplain of a tributary of a wild trout stream and C40 is located in the floodplain of a wild trout designated stream. Both these wetlands will be crossed using the open cut method resulting in the temporary disturbance of vegetation, soil, and hydrology. However, both wetland areas will be restored to their pre-existing condition and there will be no long term impact to the wetlands' vegetation, hydrology, or soils. Consequently, the functions and values of these 2 wetlands will not be impacted nor will their classification as EV wetlands be altered.

- **Wild Trout and Wild Trout Tributaries:** A total of 32 wetlands crossed by the Project are considered to be EV wetlands because they are located in or along the floodplain of the reach of a wild trout stream, two of these wetlands are also located in the floodplain of an EV stream; and, another 79 wetlands are located in or along the floodplain of tributaries to wild trout streams, of which one of these wetlands is also located in the floodplain of an EV stream. SPLP plans to cross 27 of these wetlands via HDD or bore, one wetland (L54) will be crossed utilizing both HDD and open cut methods, one wetland will be crossed using only temporary matting, and the remaining 82 will be open cut during construction. The HDD and bore crossings of these wetlands eliminates all earth disturbances; therefore, there will be no impacts to the wetland vegetation, hydrology, soils, and functions and values of these wetland areas. Construction across the 82 wetlands using the open cut method will result in the temporary disturbance of vegetation, soil, and hydrology. However, all these wetland areas will be restored to their pre-existing condition and there will be no long term impact to the wetlands' vegetation, hydrology, or soils except for 0.139 acre of PFO conversion associated with wetlands L70A, N29, L70B, Q57, and W26e. All temporarily disturbed forested and scrub-shrub areas will be replanted post-construction but no trees will be restored on the permanent ROW to ensure safe operation of the pipelines. This localized conversion of PFO is not anticipated to impact the overall functions and values of the affected wetlands and will have no impact on their status as EV wetlands. Consequently, the functions and values of these 111 wetlands will not be impacted nor will their classification as EV wetlands be altered.
- **EV Streams:** A total of seven wetlands crossed by the Project are considered to be EV wetlands because they are located in or along the floodplain of the reach of an EV stream or within the floodplain of its tributary: wetlands A46, B12, B13, B14, C33, C34, and C35. SPLP plans to cross all of these wetlands using the open cut method. Construction across these EV wetlands using the open cut method will result in the temporary disturbance of vegetation, soil, and hydrology. However, all these wetland areas will be restored to their pre-existing condition and there will be no long term impact to the wetlands. Consequently, the functions and values of these EV wetlands will not be impacted nor will their classification as EV wetlands be altered.
- **Public Water Supply:** A total of nine wetlands (BB15, I38, J10, J11, J13, J14, J15, C10, I1) crossed by the Project are considered to be EV wetlands because they are located within 1 mile upstream of a known public or private water drinking water supply. SPLP plans to cross six of these wetlands using the open cut method, one will be crossed via the HDD/opencut method, and two will be crossed via HDD. The HDD crossings of these wetlands will eliminate all earth disturbance; therefore, there will be no impacts to the wetland vegetation, hydrology, soils, and functions and values of these wetland areas. Construction across the other seven wetlands using the open cut method will result in the temporary disturbance of vegetation, soil, and hydrology. However, all these wetland areas will be restored to their pre-existing condition and there will be no long term impact

to the wetlands' vegetation, hydrology, or soils except for 0.070 acre of PFO conversion associated with wetland I38 in Cumberland County. All temporarily disturbed forested and scrub-shrub areas will be replanted post-construction but no trees will be restored on the permanent ROW to ensure safe operation of the pipelines. This localized conversion of PFO is not anticipated to impact the overall functions and values of the wetland and will have no impact on its status as an EV wetland. Consequently, the functions and values of these nine EV wetlands will not be impacted nor will their classification as EV wetlands be altered.

- Three wetlands in Cambria County are considered to be exceptional value due to the presence of rare plant species.
 - Wetland K27 supports a population of Appalachian blue violet (*Viola appalachensis*) a PA Proposed Rare plant species. ROW minimization and B fencing will minimize impacts to this species that the Department of Conservation and Natural Resources (DCNR) describes as disturbance tolerant.
 - Wetland N4 supports a population of mountain bugbane (*Actaea podocarpa*) a PA Proposed Rare species. SPLP proposes to sod-excavate this population and restore the area within 24-48 hours with the same sod following construction.
 - Wetland L62 supports a population of Northeastern bulrush (*Scirpus ancistrochaetus*) a PA Proposed Threatened and federally listed species. The wetland will be crossed using HDD to avoid impacts to the bulrush population. There will be no travel through or tree clearing between the exit and entry points on this HDD.
 - Open cut construction across the 2 rare plant PEM wetlands will result in the temporary disturbance of vegetation, soil, and hydrology. However, these wetland areas will be restored to their pre-existing condition and there will be no long term impact to the wetlands' vegetation, hydrology, or soils. In addition, the agencies (DCNR and USFWS) have determined that the Project will not adversely affect these plant populations. Consequently, the functions and values of all the EV wetlands in Cambria County will not be impacted nor will their classification as EV wetlands be altered.

In addition, SPLP has incorporated ABACT BMPs into their E&S Plan to further reduce potential erosion and sediment impacts to EV wetlands crossed by the Project or located within the limits of disturbance. Specifically, standard and ABACT BMPs that SPLP will implement to control/manage erosion and sedimentation within the Project area include:

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

In addition to the design/construction alternatives/actions and standard E&S BMPs identified above, SPLP will implement the following ABACT BMPs to protect and maintain the existing water quality of the EV wetlands impacted by the Project:

- Compost Filter Socks: This temporary sedimentation control measure consists of wood or metal posts driven through a compost filled mesh tube. Filter socks

will be located as needed on side-slope and down-slope boundaries of disturbed areas. Compost filter socks will be sized in accordance with PADEP Construction Detail provided in Attachment 4 of the Chapter 102 Permit Application. Compost filter socks will be used in drainage areas with HQ and EV waters during construction and will remain in place until the disturbed areas are stabilized/vegetated post-construction.

- Rock Filter Outlet: Rock filter outlets will be used, as necessary, to address problems of concentrated flows to sediment barriers. In the event of unanticipated concentrated flow and sediment barrier failure, a rock filter outlet will be installed unless the concentrated flow can be diverted away from the barrier. Rock filter outlets used in drainage areas with HQ and EV waters need a 6" layer of compost installed on the upslope side of the rock.
- Compost Sock Sediment Trap: This temporary sedimentation control measure is useful in controlling runoff from access roads and may also be used at other locations where a temporary sediment trap is appropriate. The minimum base width will be equivalent to the height of the trap and sediment accumulation will not exceed 1/3 the total height of the trap. Ends of the trap will be a minimum of 1 foot higher in elevation than the mid-section, which will be located at the point of discharge. Compost sock sediment trap will be sized in accordance with PADEP Construction Detail provided in Attachment 4 of the Chapter 102 Permit Application. Compost sock sediment traps can be used in drainage areas with HQ and EV waters.
- Pumped Water Filter Bag: Pumped water filter bags may be used to filter water pumped from disturbed areas prior to discharging to surface waters. Compost filter socks will be installed within 50 feet of any receiving surface water or where grassy area is not available. Filter bags will be installed in accordance with PADEP Construction Detail provided in Attachment 4 of the Chapter 102 Permit Application.
- Wash Racks: Reasonable methods which are sanctioned by the PADEP as alternatives to installation of tire wash stations on public road access points for gathering pipeline projects in EV/HQ or siltation impaired watersheds include:
 - For paved surface public roads: use of a vacuum truck sweeper or sweeper with a catch bin attachment.
 - For dirt or gravel surface public roads: rigorous manual removal of mud/dirt from vehicle/equipment tires prior to exiting construction site, supplemented by immediate recovery, by manual or mechanical means, of soil which may become discharged onto public roadways. Dust control and/or compaction via rolling of the dirt public road surface will be implemented as needed.
- Erosion Control Blanket: A manufactured erosion control blanket will be installed post-construction on all slopes 3:1 or steeper and within 100 feet of all special protected waters (HQ/EV resources). The blanket will be biodegradable but capable of providing protection for two growing seasons. Straw or similar fiber material will be placed between two biodegradable nets. Erosion control blankets will be installed in accordance with the manufacturer's recommendations and the detail on the construction drawings provided in Attachment 4 of the Chapter 102 Permit Application.
- Stabilization: Stream and wetland crossings will be restored and stabilized as soon as practicable post-construction. Specifically, disturbed areas within 150

feet of a HQ or EV stream or wetland will be blanketed or matted within 24 hours of initial disturbance for minor streams or 48 hours of initial disturbance for major streams unless otherwise authorized. Seed and mulch will be applied to all disturbed areas.

An alternatives analysis (Enclosure E, Part 3) and wetland functions and values assessment (Enclosure C) were conducted for each of the identified EV wetlands. Specifically, SPLP evaluated the functions and values of the EV wetland areas crossed by the proposed Project using the USACE Highway Methodology (USACE 1993). Completed data forms and summary tables for all the EV wetlands are provided in the Wetland Functions and Values Assessment for each county, and Section 3.8.3 of this Project Impacts analysis provides a summary of the impacts to functions and value for the EV wetlands that include a conversion of cover type (PFO to PEM).

As demonstrated below and in Enclosure E, Part 1, the Project complies with the requirements of Section 105.18a.

1. In accordance with Section 105.14(b), SPLP has documented throughout their Chapter 105 permit applications and specifically in the Environmental Assessment Form (Attachment 11) that the EV wetland encroachments identified above:
 - a. Do not pose any potential threats to life or property;
 - b. Do not pose any threats to safe navigation;
 - c. Do not impact the riparian rights of landowners;
 - d. Will not significantly impact or alter the regimen and ecology of the watercourses or wetlands including water quality, stream flow, fish and wildlife, aquatic habitat, instream and downstream uses, and other environmental factors;
 - e. Will not adversely impact any natural areas, wildlife sanctuaries, public water supplies, National wildlife refuges, National natural landmarks, National/state/local parks or recreation areas, National/state/local historical sites, sensitive geological features, or historical landmarks;
 - f. Will comply with all applicable federal, state and local laws;
 - g. Have been minimized to the extent possible via paralleling an existing right-of-way and reduced construction widths, and the Project cannot entirely avoid wetland/streams resources and is therefore considered water-dependent;
 - h. Will not result in cumulative impacts to current or reasonably foreseeable future activities in the watershed (Enclosure E, Part 6);
 - i. Comply with state and local floodplain and stormwater management programs/requirements (Attachment 14);
 - j. Comply with requirements of the Wild and Scenic River Act;
 - k. Comply with state antidegradation requirements (Enclosure E, Part 5);
 - l. Will not require any additional water encroachments (secondary impacts) to fulfill the need of the Project;
 - m. Will not result in the loss of wetland functions and values as the emergent and scrub-shrub wetlands will be restored and the conversion of forested wetland to emergent will be mitigated off-site; and,
 - n. Will not result in significant cumulative impacts to the wetland resources in the Project area (Enclosure E, Part 6).

2. This Project is considered to be water-dependent because there is no other practicable alternative to the proposed pipelines that does not involve crossing streams and wetlands. In some cases, routing around a wetland (or EV wetland) would be considered possible but not practicable, because the alternative route would either affect other aquatic resources or would involve other environmental impact considerations (refer to Enclosure E, Part 3 – Alternatives Analysis). Other environmental impact considerations include the creation of new ROW where an existing ROW does not currently exist and/or addition of mileage to the overall length, resulting in new tree clearing in a wider ROW (if the beneficial opportunity to overlap with existing corridors was not available), newly fragmenting habitats, new disturbance in previously undisturbed areas (cultural/archaeological resources), possible additional species/habitats of concern, and involving new/additional landowners and properties with new easements that encumber future land uses.
3. The Project has no available practicable alternatives that would fulfill the purpose of the Project and would not involve a wetland or that would have less effect on EV wetlands, and which would not have other significant adverse effects on the environment (refer to Enclosure E, Part 3 – Alternatives Analysis).
4. The Project will not cause or contribute to a violation of an applicable state water quality standard.
5. The Project will not cause or contribute to pollution of groundwater or surface water resources or diminish any resources such that their uses are impaired/impacted (Attachment 12).
6. The Project will not cumulatively contribute to the impairment of the Commonwealth's EV wetland resources.
7. The Project includes a wetland restoration (Enclosure E, Part 4) and compensatory mitigation plan (Enclosure F) to restore temporary impacts on the construction right-of-way and mitigate long-term/permanent conversion of wetland cover types in accordance with Section 105.20a.

The Project has been designed such that the requirements of Section 105.18a(a) are fully addressed. With regard to Section 105.18a(a)(1), the EV wetlands temporarily impacted by the Project include a total of 1.499 acres of temporary impacts and 9.743 acres of permanent impacts, as defined by PADEP. Of these impacts, all will be restored to their pre-construction condition except for 0.209 acre of EV PFO that will be permanently converted to EV PEM (Table 23). This conversion of wetland cover types represents 11% of the total surveyed area of the 6 EV wetlands that involve a permanent conversion, 0.4% of all the forested EV wetlands delineated within the original survey corridor along the entire Project ROW, and 0.1% of the combined EV wetlands delineated within the original survey corridor along the entire Project ROW. These impacts are considered negligible and do not represent a significant or adverse impact to the EV wetland resources in the Project area or the Commonwealth.

3.8.3 Functions and Values

As described in Section 2.8.2, SPLP also completed a functions and values assessment for all the wetland areas crossed by the proposed Project using the USACE Highway Methodology (USACE 1993) assessment method and, additionally, a Wetland Function-Value Evaluation Form was used to assess the functions/values of all the impacted EV wetlands (refer to Attachment 11, Enclosure C). In accordance with the Highway Methodology method, eight functions (groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, and

wildlife habitat), and five values (recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened/endangered species habitat) were assessed for each impacted wetland.

SPLP has implemented a number of different measures throughout the Project planning and design phases, and will implement during construction and restoration that focus on specifically avoiding and minimizing impacts to wetlands and their associated functions and values: refer to Alternatives Analysis (Attachment 11, Enclosure E, Part 3); E&S Plan (Attachment 12); and, the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4). Specifically, the Project will include the following measures that will avoid and minimize impacts to wetland functions and values:

- Trench breakers will be installed at all wetland entry and exit points to protect wetland hydrology and maintain preconstruction groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, and production export when these functions are present.
- Top-soil will be segregated in non-saturated wetlands to ensure proper restoration of the native seedbank, and wetland contours, hydrology, and hydrophytic vegetation will be restored.
- Stream bed and banks will be restored to a stabilized condition, such that the sediment/shoreline stabilization function in wetlands directly abutting stream banks is expected to remain unchanged.
- All streams will be crossed using dry construction methods, including HDDs/bores thus avoiding/minimizing degradation of fish and shellfish habitat in the Project area or downstream waters. In addition, implementation of dry crossing methods, reduces construction sedimentation impacts and minimizes impacts to aquatic life.
- Restoration of stream beds and banks after installation protects adjacent wetlands and downstream waters.
- Stream bed substrate will be separated and restored to protect important fish spawning habitat, and most streams will be traversed (trenched and backfilled) within 24 hours to reduce exposure to Project activities.
- Construction will avoid sensitive seasonal restrictions/windows for fish species.

Although many impacts are avoided and minimized, some functions and values would be temporarily affected by construction of the Project. However, most wetlands extend beyond the Project boundaries and would continue to provide functions and values during construction as the impact area relative to the size of the wetland is minor. Several wetlands are noted as providing the wildlife habitat function. While temporary, short-term impacts may be unavoidable to non-mobile wildlife occupying these wetlands, the wetland will be restored and re-colonization and use of the area is expected by the general wildlife community. More mobile species are expected to occupy adjacent habitats during construction and impacts to wetlands occupied by sensitive species have been avoided through re-routes or Project design (e.g., HDD).

The Project includes the permanent conversion of 0.405 acre of PFO to PEM (Table 23). However, the nature and size of the cover type conversions in each wetland would not significantly or adversely affect the functions and values of these wetlands or the wetlands across the Project area. There will be no loss of wetland acreage due to fill or new impervious areas in the wetland, and the areas will be restored to wetlands and permanently revegetated and stabilized. Accordingly, the functions of groundwater recharge/discharge and floodflow alteration should remain equally effective as the existing

pre-construction wetland condition. In some cases, functions/values may be enhanced with a conversion of PFO to PEM, such as where emergent/meadow vegetation functions more effectively than forest vegetation for sediment/toxicant retention and nutrient removal. With respect to the 6 wetlands identified in Table 23 that support the Riparian Buffer function, the area of PFO to PEM conversion in these wetlands (0.124 acre) will be revegetated with herbaceous vegetation that will continue to provide filtering of runoff, and represents a small area (1%) in comparison to the total area surveyed for those same 6 wetlands (9.952 acres). A small change in cover type will have neutral or no effects on other functions/values, such as wildlife habitat (changing one type of habitat [forested] to another [emergent/meadow]), large areal extent, HQ or EV Watershed, landscape support, and low adjacent land use. Overall, the very small amount of permanent conversion of vegetation cover type in these wetlands would not represent any meaningful change or reduction of the overall functions/values of the individual wetlands, the combined wetlands located in the Project area, or the cumulative wetlands located throughout the Commonwealth.

In summary, the wetlands impacted by the Project provide functions and values at varying levels. The permanent ROW conversion of 0.405 acre of PFO to PEM (Table 23) 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 reduced (wildlife habitat), some will not be altered (groundwater discharge), while others may be increased due the establishment of a thick herbaceous ground layer (sediment retention and nutrient removal).

3.8.4 Hydrology

Project construction will result in minor, temporary impacts to wetland hydrology resulting from excavation of the pipeline trenches. Accordingly, Site-Specific Plans located within the E&S Plan sheet sets (Attachment 12) have been revised to address complex aquatic resource crossings and will aid in the restoration of contours and hydrology. For other wetlands areas, the construction and restoration methods are the same methods commonly used and standard for the industry, and are described in the Impact Minimization, Avoidance, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4) and in Section 3.8.1. These standards include adhering to PADEP's General Permit 5 - Utility Line Stream Crossings and the USACE's Pennsylvania State Programmatic General Permit – 5 requirement that original grades must be restored after trenching and backfilling in wetlands, and that any excess fill material must be removed from the wetland and not spread onsite. These standard wetland utility installation crossing methods have been documented to result in successful restoration of wetland vegetation and hydrology, and will be implemented on the Project. Other mitigation measures that will be implemented to minimize impacts to wetland hydrology include segregation of topsoil and subsoil, and the installation of trench plugs at the wetland boundaries to reduce hydrologic loss along the trench line.

Impacts to wetland hydrology associated with open-cut construction vary depending on the wetlands primary source of hydrology, the wetlands position relative to the water table, and the underlying geology/soils (i.e., confining layer and/or fragipans to maintain hydrology). A restrictive layer is a layer in the soil/substratum profile that could slow or prevent the infiltration of water, potentially resulting in a perched water table. Restrictive layers could include, but are not limited to, consolidated bedrock, fragipans, dense glacial till, layers of silt or substantial clay content, strongly contrasting soil textures (e.g., silt over sand), or cemented layers, such as ortstein.

In order to minimize impacts to wetlands that depend on a restrictive layer for hydrology, SPLP has evaluated the potential for all wetlands to contain fragipan soils or other confining layers through an investigation of the USDA soil series as well as field data

collected during wetland delineations and functions and value assessments (refer to Enclosure E, Part 4). A licensed professional geologist (PG) will be present to evaluate each wetland that is found to have a potential confining layer during trenching. During trenching of these wetlands, the PG will advise on the segregation of confining layers for proper restoration of subsurface conditions. At wetlands determined to require confining layer restoration, the PG will be on-site during subsurface soil backfilling to ensure proper soil layer restoration. PGs may advise on bentonite or bentonite sandbag layering along the entire or portions of the trench line at the appropriate height if an identified confining layer cannot be segregated and/or restored properly. The PG will also provide technical expertise and oversight when karst openings or groundwater seeps are encountered during trenching activities, and also when the presence of groundwater seeps and drains are encountered within wetland areas. This combined with implementation of standard utility wetland crossing methods described more fully in the Impact Avoidance, Minimization and Mitigation Procedures in Attachment 11, Enclosure E, Part 4, will ensure that hydrology is maintained post-construction.

Based on the minimization and mitigation measures that will be implemented to address wetland impacts, the Project will result in no permanent or adverse impacts on wetland hydrology.

3.8.5 Inadvertent Returns

In order to avoid direct impacts to wetland vegetation, hydrology, and soils, SPLP proposes to HDD / Bore a total of 131 wetlands, including 35 EV wetlands. As described in Section 3.7.6 above, HDD is a widely used trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the ground surface, including streams and wetlands. The primary potential environmental impact associated with HDD revolves around the use of drilling fluids. An inadvertent return of drilling lubricant is a potential concern when the HDD method is used in or near sensitive resources. Therefore, in those areas where HDD has been identified the HDD profile has been designed to minimize the potential for the release of drilling fluids in sensitive areas. As such, SPLP does not anticipate that the use of HDD will alter, disturb, or otherwise impact subsurface hydrology of associated streams and wetlands, including subsurface pressurized waters, and the surfacing of groundwater is not expected.

However, SPLP has prepared an Inadvertent Return Assessment, Preparedness, Prevention and Contingency Plan for the Project (Attachment 12, TabC). An evaluation of baseline geology as well as site-specific geotechnical soil borings was completed at each HDD location to aid in the planning and design of each HDD, and an inadvertent return risk assessment of the final design of each HDD is provided within the Inadvertent Return Plan. This plan also details the impact minimization measures and response protocol in the event of an inadvertent return near a wetland. SPLP will adhere to the plan during all construction activities where the HDD construction method is planned. Furthermore, on-site monitors will closely monitor fluid circulation to detect potential inadvertent returns at the earliest possible time.

In addition, SPLP has developed a Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 12, Tab12D) that provides an assessment of potential impacts and avoidance and mitigation measures during open-cut and drilling procedures. The Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Attachment 12, Tab 12B) and Inadvertent Return Plan also provide an assessment of the geology in terms of potential risks to groundwater discharges from below surface inadvertent returns.

3.9 THREATENED AND ENDANGERED SPECIES

As previously stated, SPLP has coordinated extensively with the regulatory agencies with regard to species of concern located in the Project area. Based on this coordination a total of 20 different plant and animal species of concern have been identified in the Project area and SPLP has conducted all surveys and developed conservation plans as required by the agencies. SPLP has received either a “no effect/impact” or a “not likely to adversely affect” determination from PADCNR, PGC, PAFBC, and USFWS. Attachment 6 (PNDI and Agency Coordination) of this application provides a detailed summary of these agency consultations as well as all of the agency approved conservation plans. SPLP will adhere to all conditions provided within the final determination letters and associated conservation plans to ensure that the agency determinations remain valid.

4.0 SECONDARY IMPACTS

As demonstrated in the Alternatives Analysis (Attachment 11, Enclosure E, Part 3), the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4), and throughout this Project Impacts analysis, direct impacts to waters of the Commonwealth have been avoided and minimized to the maximum extent practicable. Secondary impacts may also occur as a result of the Project and were considered during Project planning. Specifically, in reviewing a permit application under this chapter, the PADEP will use the following factor to make a determination of secondary impact associated with a project:

“Secondary impacts associated with but not the direct result of the construction or substantial modification of the dam or reservoir, water obstruction or encroachment in the area of the project and in areas adjacent thereto and future impacts associated with dams, water obstructions or encroachments, the construction of which would result in the need for additional dams, water obstructions or encroachments to fulfil the project purpose.” 25 Pennsylvania (Pa.) Code § 105.14(b)(12)

Although secondary impacts are not defined in 25 Pa. Code § 105, U.S. Environmental Protection Agency (USEPA) Regulations (40 CFR 230.11) define secondary (indirect) effects as effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Secondary or indirect impacts are generally considered “caused” by the action and are later in time or further removed in distance, but are still reasonably foreseeable.

Given the scope of PA Code § 105, projects are required to make a determination of secondary impacts associated with the proposed encroachments to waters of the Commonwealth, including watercourses, floodways, and bodies of water (i.e., natural or artificial lake, pond, reservoir, swamp, marsh, or wetland). As such, the secondary impacts evaluated for the Project include impacts that are adjacent to or potentially realized in the future yet causally tied to the direct impacts or maintenance/operational aspects of the Project on watercourses (e.g., creeks, streams, rivers) and bodies of water (typically wetlands). Specifically, potential secondary impacts considered in this assessment have been categorized as follows and include effects on:

- Aquatic habitat;
- Water quantity; and
- Water quality.

Potential secondary impacts to the categories identified above are provided separately for streams (Section 4.1) and wetlands (Section 4.1). In addition, potential secondary impact considerations regarding maintenance and operation of the Project are presented in Section 4.3.

Secondary impacts, including their monitoring, prevention, and control strategies, are addressed in the Project E&S Plan (see Attachment 12), the Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11, Enclosure E, Part 4), and Compensatory Mitigation Plan (see Attachment 11, Enclosure F).

4.1 STREAMS

The following sections identify the potential secondary impacts and mitigation for the aquatic habitat, water quantity, and water quality of the 883 streams crossed by the Project.

4.1.1 Aquatic Habitat

Potential secondary impacts on adjacent stream habitat functions could result from short-term release of turbid waters and vegetation clearing, resulting in temporary displacement of wildlife using adjacent areas for spawning, foraging, nesting, rearing, and resting. Potential secondary impacts from release of turbid waters, at most, will be negligible in nature given the short duration of in-stream construction and through SPLP's implementation of temporary and permanent erosion and sediment (E&S) controls (see E&S Plan in Attachment 12). Additionally, SPLP has agreed to adhere to PADEP's/PAFBC's in-stream construction time windows to avoid in-water activities during fish spawning, thereby avoiding direct and secondary impacts on this aquatic habitat function.

The majority of the pipelines will be co-located such that further widening of the overall ROW corridor will not result in new edge conditions to aquatic habitat but instead will shift the edge conditions to the new ROW limit. The shifted edge along co-located segments of the pipeline and the new edge created by installation of the pipelines in greenfield locations, could secondarily impact adjacent aquatic habitat by making these areas susceptible to changes in vegetation community (species composition and density) and introduction of invasive or exotic vegetation. The majority of streams traversed by the Project are buffered by wetlands. PEM wetlands will be replanted with a native seed mix and PSS wetlands will be restored with native shrubs or allowed to revert back to the PSS condition if adequate root stock is preserved during construction. In addition, the majority of PFO areas (74%) will be replanted following Project construction. Restoration of these areas with native plants will avoid potential secondary impacts to adjacent habitat from changes in adjacent vegetation communities as well as the establishment of invasive or exotic vegetation.

In the event a stream is traversed via HDD, potential secondary impacts from changes in adjacent vegetation communities or introduction of invasive or exotic vegetation will be avoided. In general, vegetation over HDDs will not be cleared, thereby maintaining the existing buffer the vegetation provides to off-ROW adjacent stream habitat.

4.1.2 Water Quantity

Potential secondary impacts on water quantity or the hydrology of streams could result from changes in natural/current drainage patterns and alteration in flow and water levels from construction and hydrostatic test water withdrawals. The Project does not involve any stream relocations, enclosures, or channel deepening/dredging activities. Given the project involves no direct impacts to natural and current drainage patterns, the Project will likewise not result in secondary impacts to natural and current drainage patterns. Temporary dam and flow bypass methods will be used to maintain a continuous downstream flow during construction. SPLP will implement the stream construction and restoration procedures outlined in the E&S Plan (Attachment 12) and the Project's Impact

Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4) which will prevent secondary impacts to these water quantity functions. Use of the HDD construction method to cross streams will also avoid secondary impacts to water quantity in streams.

Outside the ROW, potential secondary impacts to water quantity of streams from hydrostatic test water withdrawals include alterations in flow and water levels. The applicable agency will regulate Project water withdrawals such that flow and water levels are maintained at acceptable levels to avoid potential secondary impacts on flow and water levels in downstream areas.

4.1.3 Water Quality

Potential secondary impacts to stream water quality beyond the Project's limit of disturbance could result from: release of sediments/turbid waters from trenching, dewatering, clearing and grading of adjacent land and stream banks, and post-construction stream bank subsidence; and, release of pollutants from construction equipment or activities adjacent to waters.

In accordance with the Chapter 102 E&S requirements, trench dewatering will be monitored and directed into appropriate receiving structures located in well-vegetated uplands to allow for filtration. Released water will naturally infiltrate to prevent secondary impacts to water quality of streams outside the ROW. Potential secondary impacts from stream bank subsidence will be avoided by leaving roots/stumps in place, except for over the trench, and by stabilizing/revegetating stream banks as soon as possible after construction. Additionally, the ESCGP-2 permits for the Project will require monitoring until the Project area has been permanently stabilized. The post-construction monitoring done in accordance with the Project ESCGP-2 will ensure successful restoration occurs or necessary corrective actions are implemented to result in successful restoration, thereby avoiding potential secondary impacts from stream bank subsidence/subsequent downstream erosion and sedimentation. Additionally, during Project operation, aerial and ground inspections by SPLP personnel will identify stream bank subsidence and soil erosion issues which will be rectified by repairs or installation of temporary erosion control devices until permanent erosion control measures become effective.

SPLP has developed four plans that accompany the E&S Plan (see Attachment 12) that are designed to assess the potential impacts and provide for the protection of surface and groundwater from contamination due to project activities. The overarching Prevention, Preparedness, and Contingency Plan (PPC Plan) is designed to address spill prevention in general, and potential impacts to surface waters and public and private water supplies in particular have been analyzed and addressed within two supplemental plans to the PPC Plan; the Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Water Supply Plan) and this Inadvertent Return Assessment, Prevention, Preparedness, and Contingency Plan (IR Plan). The Water Supply Plan provides for the assessment of the existing environment in terms of public and private water supplies in or along the project areas and impacted waters, as well as the prevention and preparedness measures to be implemented to protect those supplies. The IR Plan outlines the preconstruction activities implemented to ensure sound geological features are included in the HDD profile, the measures to prevent impact, and the preparedness plan if an impact were to occur. In addition, a Void Mitigation Plan for Karst Terrain and Underground Mining is provided as part of the E&S Plan and provides an assessment of potential impacts and avoidance and mitigation measures during open-cut and drilling procedures. The purpose of these plans is to protect surface and groundwater resources on-site and in the vicinity of the Project, thereby preventing secondary water quality impacts on streams.

4.2 WETLANDS

The following sections identify the potential secondary impacts and mitigation for the aquatic habitat, water quantity, and water quality of the 562 wetlands crossed by the Project.

4.2.1 Aquatic Habitat

Potential secondary impacts on wetland habitats could result from the Project; however, SPLP has sited and designed the Project such that these potential impacts will be avoided to the maximum extent possible. Specifically, potential secondary impacts, such as the short-term release of sediments into waterways and vegetation clearing, could result in the temporary displacement of wildlife to adjacent areas. These short-term impacts adjacent to and downgradient of the LOD could temporarily alter substrate and make it less suitable for spawning and foraging, and create temporary turbidity that could alter the feeding habits of local wildlife. In addition, the clearing of vegetation reduces the shelter and buffer capacity to adjacent habitats and creates new edge habitat when located through greenfield areas. SPLP has mitigated for these potential secondary impacts by co-locating over 80% of the Project with existing utility corridors, reducing the area of disturbance and clearing, minimizing the duration of construction activities in stream and wetland areas, adhering to seasonal restrictions to avoid and or limit the disruption to certain species, implementing the E&S BMPs (Attachment 12), and restoring the disturbed areas with vegetation to avoid impacts off the ROW.

In addition, potential secondary impacts to aquatic habitat will be avoided by HDD and bore crossings. Specifically, potential secondary impacts to wetland habitat at HDD crossings will be avoided: vegetation over HDDs will not be cleared (with the exception in some instances for a 15-foot-wide travel lane), thereby eliminating creation of new edge conditions which could contribute to changes in vegetative communities or facilitate introduction of invasive or exotic vegetation. Also, potential secondary impacts from an inadvertent return during HDDs will be avoided and minimized by implementation of the Project's Inadvertent Return Assessment, Preparedness, Prevention and Contingency Plan (see Attachment 12).

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

Secondary impacts will be avoided and are at most, anticipated to be negligible in nature, based on the temporary duration of construction activities in wetlands, and wetland restoration will be implemented following completion of all construction activities. In addition, secondary impacts will be avoided, minimized, and mitigated based on SPLP's implementation of E&S controls (see E&S Plan in Attachment 12), the Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11, Enclosure E, Part 4), and Compensatory Mitigation Plan (see Attachment 11, Enclosure F).

Secondary impacts will be avoided and are at most, anticipated to be negligible in nature, based on the temporary duration of construction activities in wetlands and that wetland restoration will be implemented following completion of all construction activities. In addition, secondary impacts will be avoided and mitigated based on SPLP's implementation of E&S controls (see E&S Plan in Attachment 12), the Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11, Enclosure E, Part 4), and Compensatory Mitigation Plan (see Attachment 11, Enclosure F).

4.2.2 Water Quantity

SPLP will implement measures to avoid direct and secondary impacts to the hydrology of wetlands as indicated in the Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11, Enclosure E, Part 4) and E&S Plan (see Attachment 12). During construction in saturated wetlands, equipment mats will be used to prevent soil compaction which could alter hydrology in adjacent wetlands. Topsoil from the trench will be separated during construction and then replaced to original horizon and elevation in wetland areas. The pipelines' trench/ROW area will be restored to pre-construction grade. This will allow the direction, volumes, and rates of flow to be restored to pre-construction conditions. Additionally, trench plugs will be installed in the trench at the entry and exit of wetlands to prevent draining of wetlands along the trench line which will ensure draining of adjacent wetlands is avoided. SPLP will implement decompaction practices during the cleanup and restoration phases of construction to ensure wetland soils are not compacted. In addition, SPLP has developed a program to address potential direct and indirect/secondary impacts to hydrology associated with potential impacts to wetlands dependent on fragipan layers (refer to Section 3.8.4). Given the Project will not cause direct impacts to the water quantity of wetlands in the ROW, no secondary impacts to water quantity of adjacent wetlands will occur.

4.2.3 Water Quality

SPLP will avoid secondary impacts to water quality in adjacent and downgradient areas through the implementation of the E&S BMPs. Specifically, the Project has been designed to avoid (via HDD and bore construction methods) and minimize the introduction of sediment into the surface waters of inundated wetlands located downgradient of the Project during construction. The construction sites will be contained by temporary erosion control devices (e.g., silt fence, filter socks) as detailed in the Project E&S Plan (see Attachment 12). These temporary erosion control devices will also be placed along edges of cleared uplands adjacent to wetlands. Isolation of the in-wetland work space and adjacent cleared uplands will avoid secondary impacts to water quality of adjacent wetlands as these measures will prevent sedimentation in wetlands.

SPLP will also install permanent erosion control measures in the trench and adjacent cleared uplands (in the ROW) to avoid potential secondary impacts to water quality of wetlands. The ESCGP-2 for the Project will require monitoring until the Project area has been permanently stabilized. The post-construction monitoring conducted in accordance with the ESCGP-2 permits will ensure successful stabilization (revegetation) occurs or necessary corrective actions are implemented as necessary, thereby avoiding potential secondary impacts to water quality in adjacent wetlands.

SPLP has developed four plans that assess the potential impact to, and provide for the protection of, surface and groundwater from impacts related to potential releases of fluids (Attachment 12). The overarching Prevention, Preparedness, and Contingency Plan (PPC Plan) is designed to address release prevention in general, and potential impacts to surface waters and public and private water supplies in particular have been analyzed and addressed within two supplemental plans to the PPC Plan; the Water Supply Assessment, Prevention, Preparedness, and Contingency Plan (Water Supply Plan) and the Inadvertent Return Assessment, Prevention, Preparedness, and Contingency Plan (IR Plan). The Water Supply Plan provides for the assessment of the existing environment in terms of public and private water supplies in or along the Project areas and impacted waters, as well as the prevention and preparedness measures to be implemented to protect those supplies. The IR Plan outlines the preconstruction activities to be implemented to ensure competent geological features are included in the HDD profile, the measures to prevent impact, and the preparedness plan if an impact were to occur. In addition, a Void Mitigation Plan for Karst Terrain and Underground Mining is provided as

part of the E&S Plan and provides an assessment of potential impacts, as well as avoidance and mitigation measures to be implemented during open-cut and drilling procedures. The purpose of these plans is to protect surface and groundwater resources on-site and in the vicinity of the Project, thereby preventing secondary water quality impacts on streams and wetlands.

4.3 MAINTENANCE AND OPERATION

This section addresses potential secondary impacts which potentially could occur in the future from maintenance and operation of the Project. Maintenance and operation activities that could result in potential secondary impacts to streams and wetlands include: short-duration noise disturbances from mowing of ROW adjacent to streams/wetlands and vehicles and equipment use during pipeline integrity inspections; unanticipated releases due to failure of pipeline integrity or from third party damage to the pipeline; pipeline repair/replacement activities; and, additional infrastructure for maintenance/operation purposes.

Potential secondary impacts from mowing of ROW adjacent to streams and vehicles used during pipeline integrity inspections could result in short-term noise disturbances that may cause temporary displacement of wildlife. Given the short-duration of exposure to noise, fish and wildlife are expected to return to adjacent streams and wetlands immediately thereafter resulting in a negligible effect.

Unanticipated releases from the pipeline during operation, while very rare, have the potential to result in secondary impacts to the water quality and aquatic habitat in adjacent streams and wetlands. To prevent such secondary impacts, SPLP will operate and maintain the newly constructed pipelines in accordance with the requirements of the Department of Transportation's (DOT's) Pipeline and Hazardous Materials Safety Administration (PHMSA), 49 Code of Federal Regulation (CFR) Part 195, and industry-proven practices and techniques. Qualified personnel will perform both emergency and routine maintenance on the pipelines. The Project will be operated and maintained in a manner such that pipeline integrity is protected and secondary impacts are minimized to the maximum extent possible. Specifically, periodic aerial, ground, and in-pipe (with smart tool technology) inspections by SPLP personnel will identify:

- soil erosion that might expose the pipe or result in erosion and sedimentation into adjacent streams and wetlands;
- dead vegetation that may indicate a leak in the line;
- conditions of the vegetative cover and permanent erosion control measures;
- unauthorized encroachment on the ROW, such as building and other substantial structures which could impact the integrity of the pipelines;
- internal conditions of the pipe that may require repair; and,
- other conditions that could require preventative maintenance or repairs.

SPLP will implement appropriate responses to conditions observed during inspection. Soil erosion will be rectified by installation of temporary erosion control devices (e.g., silt fence, hay bales) until permanent erosion control measures (e.g., re-seeding, water bars) become effective and resolve the erosion control issue. If a leak in one of the pipelines is identified, it will be addressed immediately to prevent potential secondary impacts to water quality and aquatic habitat of streams and wetlands.

To prevent potential operational secondary impacts to water quality and aquatic habitat from unanticipated releases caused by third party damage to the pipelines, SPLP

participates in the “Pennsylvania One Call” system for utility companies in Pennsylvania. Under the “Pennsylvania One Call” system, anyone planning excavation activities must call a single number to alert all utility companies of the planned excavation. When a call to the Pennsylvania One Call system is made, representatives of the utility companies that might be affected then visit the site and mark their facilities so that the third party excavation can proceed with certainty as to the location of the pipelines, thereby preventing damage to the pipelines and potential associated releases, thus avoiding secondary impacts to wetlands and waterbodies. Depending on the nature of the work to be performed, SPLP representatives may be on-site at third party excavations to monitor compliance with the necessary separation of work from the pipelines.

Routine inspections may result in the detection of a pipeline anomaly requiring repair. A repair may be required at any location along the length of the pipelines, including in uplands, wetlands, or streams. Should a repair be required in a regulated water, SPLP will identify the proposed location, activity, and procedures to be implemented, and ensure that the required environmental permits and clearances, including but not limited to a Chapter 105 and Chapter 102, are obtained. Repairs in regulated areas will be conducted in a manner consistent with the Project Procedures and the environmental permits and clearances. SPLP will proceed with the repair following receipt of, and in compliance with, the issued permits and clearances.

Other potential secondary impacts from the Project would be related to additional infrastructure required for maintenance/operational purposes. No additional infrastructure (e.g. pipes, pumps, valves, meters, access roads) is expected to be required or installed in wetlands and waterbodies for routine inspection/maintenance of the Project. Cathodic protection station locations will not be located in streams, wetlands, or floodways. As depicted in the Project site plans (Attachment 7, Tab 7A), SPLP will use existing public and private roads for temporary construction access to the ROW to construct cathodic protection stations. The access roads will be used during maintenance and operation activities; as such, no new access roads that might necessitate a secondary impact/water encroachment are anticipated.

5.0 CUMULATIVE IMPACTS AND ALTERNATIVES ANALYSIS

SPLP has prepared a cumulative impacts analysis (CIA) (Attachment 11, Enclosure E, Part 6) to comply with the requirements of 25 Pennsylvania Code (Pa. Code) §§ 105.14(b)(14) and 105.15, and to evaluate the cumulative impact of the Project and other potential or existing projects, and if numerous piecemeal changes may result in a major impairment of the wetland resources, including consideration of wetland areas or streams affected by the Project. The 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 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.

Accordingly, the CIA prepared for the Project addresses the cumulative impact of the Project and other potential or existing SPLP projects and other projects within the Cumulative Impact Assessment Area (CIAA) of the Project (see Enclosure E, Part 6, Section 3.0 of this Attachment for a discussion of the CIAA). As part of the CIA, the wetland impacts related to this Project 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. Refer to the CIA (Enclosure E, Part 6 of this Attachment) for additional information related to SPLP’s cumulative impact analysis methods and results.

As presented in the Alternatives Analysis (Enclosure F, Part 3 of this Attachment), during initial and detailed planning, pipeline routing, and aboveground facility siting of the proposed Project, SPLP was prudent in siting 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 (Enclosure F, Part 3, Section 4.0 of this Attachment). As a result of this wetland impact avoidance and minimization effort, the Project will disturb approximately 36.7 acres of wetlands during construction, and with mitigation will result in a limited wetland cover type conversion of 0.405 acre across 19 wetlands. As demonstrated in this Project Impact analysis, with the implementation of the Project and BMPs as proposed, impacts to wetlands will be minor and temporary. Similarly, based on SPLP's CIA, implementation of the Project and other potential or existing projects within the CIAA, will not result in a cumulative impairment of the Commonwealth's EV wetland resources or a major impairment of the Commonwealth's other wetland resources.

6.0 POST-CONSTRUCTION MONITORING

The Project area that will be temporarily impacted will be restored to original grade, stabilized, and vegetated in accordance with the E&S Plan (Attachment 12). SPLP is responsible for maintaining the ROW under the provisions of their Chapter 102 permits. Post-construction maintenance of the ROW will include periodic visual inspections to identify the progress of vegetative growth and cover. Insufficient vegetative cover is defined in upland areas as any area not achieving a uniform 70-percent perennial vegetative cover. Bare spots and areas with insufficient vegetative cover will be reseeded and mulched within 24 hours of observation, weather permitting. The ROW will be inspected for signs of erosion, especially on steep slopes, and corrective measures will be taken to eliminate erosion, as needed. If there is evidence of trench settling, the area will be regraded to maintain pre-construction drainage patterns, mulched, and seeded. A written report will be prepared to document each E&S inspection and for each repair or maintenance activity.

The following summary of criteria is set forth to describe the post-construction monitoring of wetlands and streams.

All restored wetland areas will be monitored post-construction by a qualified wetland specialist and in accordance with the terms of the applicable permits. PADEP's guidance document entitled "Design Criteria - Wetlands Replacement/Monitoring" describes a program that requires wetland monitoring twice a year for the first two years (Years 1 & 2) and once a year for the following 3 years (Years 3-5) during the growing season. The wetland inspections will assess the success of the wetland restoration based on the following criteria:

- At least 50% coverage of emergent species, excluding invasive species (which are not to exceed the percent cover found in adjacent wetlands) by the end of the first growing season, and
- At least 85% coverage of emergent species for all additional years for a minimum of 5 years.
- Invasive species will be monitored and noted for remedial action, where necessary to meet success criteria.

Hydrology will be evaluated during each inspection to ensure that the hydrologic regimes are similar to the preconstruction and adjacent area conditions. Changes in hydrology will be evidenced by significant changes in plant species composition, the prolonged presence of standing water in areas not previously inundated, or the lack of inundation where standing water was previously present. The soil morphology in undisturbed areas of the

wetland (i.e., cleared but not excavated) will be monitored for significant changes to hydric soil indicators, including but not limited to, a significant change in the relative percentage of redox concentrations in the form of iron-manganese soft masses and/or pore linings, observations of water levels within the soil pit, positive reaction to application of “a,a'-dipyridyl” dye in the upper part of the soil (e.g., 12 inches), and/or the presence of oxidized rhizospheres associated with living plant roots. Adjacent area conditions will also be noted to determine if the hydrologic regime of the surrounding area is changing.

During monitoring, SPLP will also make note of any wetlands where issues such as landowner disturbance (i.e., ATV use), natural impacts (i.e., excessive deer browse, insect infestation), and/or loss of signage are observed. SPLP will recommend corrective actions for these issues on a case-by-case basis by working with PADEP/USACE and landowners to achieve the success criteria.

All stream crossings which were not subjected to trenchless construction will also be monitored in accordance with the terms of the applicable permits.

Following each inspection, SPLP will prepare a monitoring report that will:

- Identify the success of the restoration;
- Provide photographs of the areas with figures showing the location and orientation of each photograph;
- Summarize deficiencies or problems identified during the monitoring period;
- Outline any proposed corrective actions and schedules for implementation; and
- Present the results of prior corrective actions.

After the first full growing season, SPLP’s monitoring report will include an assessment regarding the overall success of the restored wetlands. Specifically, if the wetland areas are not exhibiting signs of successful revegetation, the overall seeding/planting program will be reevaluated to determine if additional on-site measures are warranted in these areas. The results of this detailed assessment will be presented in the Year 1 monitoring report and coordinated with the appropriate regulatory agencies, to develop and implement adaptive management strategies.

7.0 CONCLUSION

SPLP has identified the resources regulated under Chapter 105 and identified potential primary and secondary impacts to those resources. Through the plethora of reports and materials submitted to the Department, that are referenced in this Report, SPLP has addressed the multitude of measures by which it will avoid and mitigate those impacts. As demonstrated in this Report, all secondary impacts that cannot be avoided or mitigated, are minor and temporary in nature. In this regard, the Project is therefore compliant with the requirements of the Chapter 105 regulations.

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