EQUITRANS

Equitrans Expansion Project

Docket No. CP16-__-000

Resource Report 3 – Fisheries, Vegetation, and Wildlife

October 2015

Equitrans Expansion Project
Resource Report 3 – Fisheries, Vegetation, and Wildlife

Resource Report 3 Filing Requirements	
Information	**Location in Resource Report**
Minimum Filing Requirements	
1. Classify the fishery type of each surface waterbody that would be crossed, including fisheries of special concern. (§ 380.12(e)(1)) This includes commercial and sport fisheries as well as coldwater and warmwater fishery designations and associated significant habitat.	Sections 3.1.1, 3.1.2, and 3.1.3
2. Describe terrestrial and wetland wildlife and habitats that would be affected by the project. (§ 380.12(e)(2)) Describe typical species with commercial, recreational or aesthetic value.	Sections 3.1.2.2, 3.1.2.3, 3.1.2.4, 3.2, and 3.3.2
3. Describe the major vegetative cover types that would be crossed and provide the acreage of each vegetative cover type that would be affected by construction. (§ 380.12(e)(3)) • Include unique species or individuals and species of special concern. • Include nearshore habitats of concern.	Sections 3.2, 3.3.2, and 3.4
4. Describe the effects of construction and operation procedures on the fishery resources and proposed mitigation measures. (§ 380.12(e)(4)) Be sure to include offshore effects, as needed.	Section 3.1.4
5. Evaluate the potential for short-term, long-term, and permanent impact on the wildlife resources and state-listed endangered or threatened species caused by construction and operation of the project and proposed mitigation measures. (§ 380.12(e)(4))	Sections 3.4.5
6. Identify all federally listed or proposed endangered or threatened species that potentially occur in the vicinity of the project and discuss the results of the consultations with other agencies. Include survey reports as specified in (§ 380.12(e)(5)). See § 380.13(b) for consultation requirements. Any surveys required through § 380.13(b)(5)(I) must have been conducted and the results included in the application.	Section 3.4
7. Identify all federally listed essential fish habitat (EFH) that potentially occurs in the vicinity of the project and the results of abbreviated consultations with NMFS, and any resulting EFH assessment. (§ 380.12(e)(6))	Section 3.1.2.1
8. Describe any significant biological resources that would be affected. Describe impact and any mitigation proposed to avoid or minimize that impact. (§ 380.12(e)(4&7)) For offshore species be sure to include effects of sedimentation, changes to substrate, effects of blasting, etc. This information is needed on a mile-by-mile basis and will require completion of geophysical and other surveys before filing.	Sections 3.1.4, 3.2.9, and 3.4.5
Additional Information	
Provide copies of correspondence from federal and state fish and wildlife agencies along with responses to their recommendations to avoid or limit impact on wildlife, fisheries, and vegetation.	Resource Report 1 Appendix 1-L
Provide a list of significant wildlife habitats crossed by the project. Specify locations by milepost, and include length and width of crossing at each significant wildlife habitat.	Sections 3.2.8 and 3.3.2

FERC Environmental Information Request for Resource Report 3 Dated September 28, 2015	
Request	**Location in Resource Report**
Draft RR3 – Fish, Wildilfe, and Vegetation	
1. Expand the discussion in section 3.1.2.4 to include recreational fisheries information specific to the waterbodies crossed by the Project.	Section 3.2.1.4.
2. In section 3.1.4, include a table showing waterbody crossing timing restrictions and allowable construction windows for each fishery classification, and note whether the windows are mandated by the FERC Procedures or by either state's guidelines. Clearly state whether Equitrans would abide by the designated construction windows or if a waiver would be sought. If a waiver would be sought, include either a copy of the approved waiver or an update regarding the status of agency coordination.	Section 3.1.4 and Table 3.1-1
3. Section 3.1.4 states freshwater mussels in the Project area would be surveyed, collected, and relocated upstream. Include a table listing the MPs where the pipelines would cross these streams, the species of freshwater mussels known to be present, and the distance from the crossing that mussels would be relocated. File copies of the mussel removal plans, and document that the plans were reviewed and approved by appropriate state agencies and the U.S. Fish & Wildlife Service (FWS) if any federally listed species would affected.	Sections 3.1.2.2. and 3.4.1
4. In section 3.1.4.1:	
a. specify Project components near riparian zones and include updates to agency consultation regarding potential impacts on sensitive aquatic species in these areas; and	Sections 3.1.4.1 and 3.4.1.
b. discuss measures to avoid, minimize or mitigate potential impacts on aquatic and terrestrial wildlife associated with construction of new roads or any necessary improvements (including widening or repaving) of existing roads.	Sections 3.1.4.1 and 3.4.1.
5. Include, in section 3.1.4.3, recent literature citations pertaining to stream restoration to describe the expected timeframe that invertebrate populations would recolonize the crossing area.	Section 3.1.4.3.
6. In section 3.1.4.4, include a detailed discussion of aquatic invasive species. Discuss the potential to spread aquatic diseases, such as largemouth bass virus. Outline measures Equitrans would implement to avoid, minimize, or mitigate the spread of aquatic invasive species and diseases and document consultations with regulatory agencies regarding requirements to avoid transporting aquatic invasive species.	Section 3.1.4.5 Aquatic Non-Native/Invasive Species and Diseases was added to this report. Appendix 3-A table of fish species identifies those species considered invasive.
7. Clarify if in-water blasting may be necessary. If in-water blasting is a possibility, document communications with appropriate federal and state resource agencies regarding in-water blasting and its potential impacts on aquatic species. Based on those communications, outline the measures Equitrans would implement to avoid, minimize, or mitigate potential impacts on fish, mussels, and other sensitive aquatic species from in-water blasting.	Section 3.1.4.

FERC Environmental Information Request for Resource Report 3 Dated September 28, 2015	
Request	**Location in Resource Report**
Vegetation	
1. Summarize the ecosytems or ecozones crossed by Project facilities.	Section 3.2.1.
2. Section 3.2.4.1 describes upland forest as a land cover and section 3.3.1.1 describes upland forests as a wildlife habitat type with some inconsistencies regarding the vegetation species within the area of the Project. Revise so that these sections are consistent.	Sections 3.3.1.1 and 3.2.4.1.
3. Revise tables 3.2-2, 3.2-3, 3.2-4, and 3.2-5 to include the Mobley Tap.	Tables 3.2-2, 3.2-3, 3.2-4, and 3.2-5
4. Revise section 3.2.6 to address:	
a. the common name for *Alnus serrrulata* should be smooth alder;	Section 3.2.6
b. many smartweeds have been moved to the genius *Persicaria*. Verify the correct genius commonly found in the Project area; and	Section 3.2.6
c. update the plant species with species directly observed during field surveys.	Section 3.2.6.
5. Include the proposed seeding mixes, and document that they were developed in consultation with appropriate agencies, including the U.S. Department of Agricultural Natural Resources and Conservation Service (NRCS).	Section 3.2.9.
6. Include an estimate of the timeframe for successful restoration of the various vegetation communities that would be temporarily impacted by construction of the Project.	Section 3.2.9.
7. Clarify whether Equitrans would seed, plant, or allow natural recruitment of trees and other native vegetation that is cleared from the temporary construction right-of-way, particularly in riparian areas. Discuss whether selective plantings at riparian areas would offer more rapid and successful restoration of these areas.	Section 3.2.9.
8. Include a list of observed and suspected invasive plant species occurring along the proposed Project facilities, a detailed discussion regarding the potential for invasive plant species to spread via Project activities, and agency-coordinated measures that Equitrans would incorporate in order to control the spread of invasive plant species during both construction and operation. Discuss measures that Equitrans would implement to control weeds without the use of herbicides.	Section 3.2.9.
9. With regard to tree clearing activities, include:	
a. clarification on how Equitrans intends to meet timing restrictions for tree clearing to avoid impacts on tree roosting bat species as indicated in applicable regulatory guidance; and	Sections 3.3.4 and 3.4.1.
b. clarification on how Equitrans would meet tree clearing restrictions associated with the Migratory Bird Treaty Act.	Section 3.3.3
10. In section 3.3.3:	
a. discuss whether the Atlantic Flyway, would be crossed or affected by the proposed Project;	Section 3.3.3
b. discuss how Equitrans would incorporate appropriate measures outlined in the FWS' National Bald Eagle Management Guidelines; and	Section 3.3.3
c. specify whether aerial surveys for bald eagles would be conducted prior to initial tree clearing activities.	Section 3.3.3.

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Request	**Location in Resource Report**
11. Include recent literature cited to support the assertion that the Project would have little or no long-term impacts on wildlife populations.	Response will be provided in a subsequent filing to FERC.
12. Include a discussion of both direct and indirect impacts (for both construction and permanent operations) on individual forest interior wildlife species, including migratory birds. Document consultations with the FWS and appropriate state resource agencies to develop BMPs and measures that would be implemented to avoid, minimize, or mitigate impacts on forest interior species.	Sections 3.3.3 and 3.3.4.
13. Include a discussion of the potential for wildlife and/or livestock to be injured by construction activities (e.g., vehicle strikes or falling into an open trench). Identify measures Equitrans would implement to avoid, minimize, or mitigate construction impacts on wildlife. These measures may include, but are not limited to low driving speeds, ramps in trenches, and breaks in windrows.	Section 3.3.4.
14. Include a discussion of potential impacts from 24-hour construction activities, such as HDDs, including the use of artificial lights and equipment noise, on wildlife species, particularly nocturnal species such as bats. Identify measures Equitrans would implement to avoid, minimize, or mitigate impacts on nocturnal species at HDDs and other 24-hour construction areas.	Section 3.3.4.
15. Include a list of game species by state or game management zones, including any known game corridors, herding or feeding areas, or game farms. Outline measures Equitrans would implement to avoid, minimize, or mitigate impacts on game species during construction and operation of Project.	See revisions in Section 3.3.1.To date, No concerns have been raised regarding impacts on game species or hunting (e.g., hunt clubs, individual landowners, food plots, etc.).
Endangered, Threatened, and Special Concern Species	
1. Section 3.4.1 states seven federally listed snail and mussel species are included in table 3.4-1. However, table 3.4-1 does not include these species or any other federally listed species. Resolve the apparent discrepancy.	Table 3.4-1
2. Section 3.4.3 states “six bird and mammals species could potentially occur in the Project area, including two federally listed and two delisted wildlife species (table 3.4-4). One federal candidate species for listing, a snake, is associated with the Project area (table 3.4-5).” This sentence only accounts for five species not six as stated. In addition, table 3.4-4 and table 3.4-5 only have one delisted species (the bald eagle). Resolve the apparent discrepancies.	Section 3.4.3
3. Section 3.4.4 states the eastern massasauga and peregrine falcon are described in section 3.4.3 but no descriptions are present. Include descriptions of these species in section 3.4.3.	Section 3.4 reflects species of concern based on consultations with the federal and state resource management agencies. The species indicated in this data request were not raised as a concern and are not included in Section 3.4.

FERC Environmental Information Request for Resource Report 3 Dated September 28, 2015	
Request	**Location in Resource Report**
4. Revise section 3.4.4 to discuss state listed fish species as depicted in table 3.4-2.	Section 3.4 reflects species of concern based on consultations with the federal and state resource management agencies. The species indicated in this data request were not raised as a concern and are not included in Section 3.4.
5. Revise tables 3.4-1, 3.4-2, 3.4-3, and 3.4-5 to include information regarding species in West Virginia.	Section 3.4 reflects species of concern based on consultations with the federal and state resource management agencies. The species indicated in this data request were not raised as a concern and are not included in Section 3.4.
6. Document consultations with the FWS regarding potential Project impacts on Indiana bat and northern long-eared bat (NLEB) and specify whether Equitrans intends to conduct mist-net surveys for those species. Also elaborate on the potential applicability of the 4d rule for NLEB in regards to the Project.	Sections 3.3.4 and 3.4.3.
7. Include proposed construction timeframes in regards to the clearing restrictions for Indiana bat and NLEB, and discuss how Equitrans plans to meet these clearing restrictions or include other proposed plans to address impacts on Indiana bat and NLEB summer and winter roosting habitat.	Sections 3.3.4 and 3.4.3.
8. If the FWS indicates that the Project would likely adversely affect a federally listed species, include an applicant-prepared draft Biological Assessment (APDBA). The APDBA for EEP may be combined with the one prepared for MVP.	Section 3.4.3.
9. Add columns to the appendix 3-B tables to include the habitat types in which each species would be expected to occur and the milepost ranges and project components that correspond to each habitat type.	See discussion of common wildlife-habitat associations in Section 3.3.1. Agency consultations did not identify special or unique habitats that would be crossed by the Project and so this information is not presented in Appendix 3-B.

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FISHERIES, VEGETATION, AND WILDLIFE
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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degree Fahrenheit
ATWS	additional temporary workspace
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BMP	best management practice
CFR	Code of Federal Regulations
E&SCP	Erosion and Sediment Control Plan
Eagle Act	Bald and Golden Eagle Protection Act of 1940
EFH	essential fish habitat
Equitrans	Equitrans, L.P.
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FR	Federal Register
G	global status
H	possibly extinct
HUC	Hydrologic Unit Code
HDD	horizontal directional drilling
IBA	Important Bird Area
IPaC	Information, Planning, and Conservation (USFWS)
LMBV	Largemouth bass virus
MBTA	Migratory Bird Treaty Act
MVP	Mountain Valley Pipeline
N	no current legal status exists, but is under review
NLCD	National Land Cover Database
NMFS	National Oceanic and Atmospheric Administration National Marine Fisheries Service
Pa. C.S.A.	Pennsylvania Consolidated Statutes Annotated
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PANHP	Pennsylvania Natural Heritage Program
PADEP	Pennsylvania Department of Environmental Protection
PE	Pennsylvania Endangered
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
Plan	The FERC May 2013 version of the *Upland Erosion Control, Revegetation, and Maintenance Plan*
PR	Pennsylvania Rare
Procedure	The FERC May 2013 version of the *Wetland and Waterbody Construction and Mitigation Procedures*
Project	Equitrans Expansion Project
PT	Pennsylvania Threatened
PV	Pennsylvania Vulnerable

PX	Pennsylvania Extirpated
S	state status
SPCC Plan	Spill Prevention, Containment, and Countermeasure Plan
TU	Tentatively Undetermined
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USDA	U.S. Department of Agriculture
WNS	white-nose syndrome
WVDNR	West Virginia Division of Natural Resources
X	extinct or extirpated species

RESOURCE REPORT 3
FISHERIES, VEGETATION, AND WILDLIFE

Introduction

Equitrans, L.P. (Equitrans) is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC or Commission) pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the Equitrans Expansion Project (Project) located in three counties in Pennsylvania and one county in West Virginia. Equitrans plans to construct approximately 7.87 miles of pipeline (at multiple separate locations), a new compressor station, an interconnect with the proposed Mountain Valley Pipeline (MVP), and ancillary facilities. In addition, Equitrans is seeking authorization pursuant to Section 7(b) of the Natural Gas Act to abandon an existing compressor station following the construction of the new compressor station.

The Project is designed to transport natural gas from the northern portion of the Equitrans system south to the new interconnect with MVP, as well as to existing interconnects with Texas Eastern Transmission, LP, Dominion Transmission, Inc., and Columbia Gas Transmission, LLC. The Project will provide shippers with additional flexibility to transport natural gas produced in the central Appalachian Basin to meet the growing demand by local distribution companies, industrial users, and power generation facilities located in local, northeastern, Mid-Atlantic, and southeastern regions of the United States. The Project will also increase system reliability, efficiency, and operational flexibility for the benefit of all Equitrans customers. The Project is designed to add up to 600,000 dekatherms per day of north-south firm capacity on the Equitrans system.

Resource Report 1 provides a complete summary of the Project facilities (see Tables 1.2-1 and 1.2-2) and a general location map of the Project facilities (Figure 1.2-1).

Environmental Resource Report Organization

Resource Report 3 is prepared and organized according to the FERC *Guidance Manual for Environmental Report Preparation* (FERC 2002). This report is organized into four major sections and a separate section listing the sources used to prepare this report. Section 3.1 describes fisheries; Section 3.2 describes vegetation; Section 3.3 addresses wildlife; Section 3.4 addresses endangered, threatened, and special concern wildlife; and Section 3.5 provides a list of references cited in this report.

3.1 FISHERY RESOURCES

Equitrans has initiated correspondence with the U.S. Fish and Wildlife Service (USFWS) Pennsylvania Field Office, Pennsylvania Game Commission (PGC), Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Department of Conservation and Natural Resources (PADCNR), and West Virginia Division of Natural Resources (WVDNR) to identify fishery resources in the Project area. To date, a response has been received from PFBC, WVDNR, and USFWS.

3.1.1 Fisheries Habitat Classification

A fishery is generically defined as a system in which the aquatic biota, aquatic habitat, and human users of these renewable resources interact and influence the system's performance (Lackey 2005). Surface water areas provide suitable habitat for fish and are categorized according to water temperature (warmwater or

coldwater), salinity (freshwater, marine, or estuarine), fish harvest (commercial or recreational), upstream areas for spawning marine fish (anadromous species), and migration routes from freshwater to marine waters for reproduction (catadromous species). The FERC defines significant fishery resources as waterbodies that either (1) provide important habitat for foraging, rearing, or spawning; (2) represent important commercial or recreational fishing areas; or (3) support large populations of commercially or recreationally valuable fish species or fish species that are protected at the federal, state, or local level.

Freshwater systems have low salinity and contain fisheries that are typically classified as either warmwater or coldwater. This designation is dependent upon the dominant species of fish (and prey items) occupying the waterbody. Warmwater fisheries are defined as capable of supporting fish able to tolerate water temperatures above 80 degrees Fahrenheit (°F) including gamefish species such as sunfish (Centrarchidae) and catfish (Ictaluridae). Coldwater fisheries are defined as waters capable of supporting year-round populations of coldwater aquatic life such as trout and their associated foraging communities (e.g., mayflies, caddisflies, and stoneflies) and the maximum monthly temperatures do not exceed 68°F. Coldwater fisheries are a stenothermic environment, and therefore, the restrictive conditions often warrant some level of protection.

Pennsylvania and West Virginia have developed their own regulatory systems for evaluating, classifying, and monitoring their surface waters. Each system includes the assignment of "beneficial use designations" that describe the potential or realized capacity of a waterbody to provide defined ecological benefits and recreational values for residents and visitors. The use designation system for each state is discussed in detail in Section 2.2.2.2 (State Designated Use and Sensitive Waters) of Resource Report 2. State water classifications for waterbodies crossed by the Project route are detailed in Appendix 2-A, Waterbody Crossing Table. A total of 23 waterbodies will be crossed by the Project.

A review of the PFBC online interactive county map that identifies warmwater and coldwater fisheries, stocked trout streams, state fish hatcheries, and special regulated streams did not identify any that would be crossed or affected by the Project in Pennsylvania (PFBC 2015a). A review of the West Virginia Hunting, Trapping and Fishing Map did not identify any fishing and boating access sites, stocked trout streams, special regulation areas (warmwater species), or public fishing areas in the area of the Webster Interconnect, the H-319 pipeline, or the Mobley Tap (WVDNR no date).

3.1.2 Existing Fishery Resources

All surface waters crossed by the Project are designated as freshwater habitats. All fisheries crossed by the Project are classified as warmwater or coldwater fisheries. Major waterbodies that will be crossed by the Project include the South Fork Tenmile Creek (crossed by H-316 pipeline) and the Monongahela River (crossed by H-318 pipeline). The South Fork Tenmile Creek is a tributary to the Monongahela River.

Resource Report 2 Section 2.2.2.2 (State Designated Use and Sensitive Waters) details the Pennsylvania and West Virginia regulatory systems for evaluating, classifying, and monitoring its surface waters and includes a summary of the use designation system for each state. Each system assigns "beneficial use designations" for the potential or realized capacity of a waterbody to provide defined ecological benefits and recreational values for residents and visitors. State water classifications for waterbodies crossed by the Project route are detailed in Appendix 2-A, Waterbody Crossing Table.

The Commonwealth of Pennsylvania classifies surface waters according to five broad categories of protected water use: aquatic life, water supply, recreation and fish consumption, special protection, and

other. The aquatic life category has four sub-categories: coldwater fish, warmwater fish, migratory fish, and trout stocking (USEPA 2012). The recreation and fish consumption category has four sub-categories: boating, fishing, water contact sports, and aesthetics. Waters that have not been assigned a designated use are assigned a default designation of: warm water fish, potable water supply, industrial water supply, livestock water supply, wildlife water supply, irrigation, boating, fishing, water contact sports, and aesthetics.

The State of West Virginia classifies surface waters according to five broad categories of designated use: public water supply, propagation and maintenance of fish and other aquatic life, water contact recreation, agriculture and wildlife, and water supply for industrial, water transport, cooling, and power (USEPA 2014). The propagation and maintenance of fish and other aquatic life category has three sub-categories: warm water fishery streams, trout waters, and wetlands. The agriculture and wildlife category has three sub-categories: irrigation, livestock watering, and wildlife. Waters that have not been assigned a designated use are assigned a default designation of propagation and maintenance of fish and other aquatic life or water contact recreation.

River basins or watersheds are land areas that drain to a particular waterbody (i.e., lake, stream, river, and estuary). A river basin drains to a large river, and the term watershed describes a smaller area of land draining to a smaller stream, lake, or wetland. Appendix 3-A provides a list of the typical fish species occurring in the Ohio River Basin, which includes the South Fork Tenmile Creek and the Monongahela River basins. South Fork Tenmile Creek and Monongahela River are the two major waterbodies crossed by the Project. Facilities located in the Wetzel County, West Virginia area of the Project (Webster Interconnect, H-319 pipeline, and Mobley Tap) are within the Hydrologic Unit Code (HUC) 8 Little Muskingum-Middle Island watershed, adjacent to North Fork Fishing Creek and Mobley Run, both of which also are part of the Ohio River Basin (USEPA 2015). These waterbodies are located within the Permian Hills level IV ecoregion (ecoregions are discussed in Section 3.2.1 of this report). Special status fish and aquatic invertebrate species (snails and mussels) are discussed in Section 3.4.1 (Protected Aquatic Species) of this report, which includes a table of aquatic species considered by federal and state resource agencies to be most in need of conservation.

3.1.2.1 Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth a new mandate for the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitats. This mandate is addressed through the establishment of "essential fish habitat" (EFH) for federally managed species. The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 as amended through October 11, 1996) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."

According to the NMFS online EFH Mapper tool, accessed May 23, 2015 (NMFS 2015), no EFH occurs within the Project area. Because the Project is located well inland of saltwater and tidal waters and does not cross known anadromous or diadromous fish migration routes, none of the waterbodies crossed by the Project contain, or have the potential to support, species managed by the NMFS. Those waterbodies with direct connection to rivers that drain into the Gulf of Mexico and the Atlantic Ocean (i.e., South Fork Tenmile Creek and Monongahela River) have dams and/or reservoirs that inhibit potential upstream movement of migratory species that spend a portion of their life cycle at sea, returning to inland freshwater

systems to breed and/or spawn. Equitrans' coordination with NMFS on past similar projects has confirmed waters in the Project area are well outside of NMFS' jurisdiction.

3.1.2.2 Aquatic Species Potentially Occurring Near Project

The Project route is located in Allegheny, Greene, and Washington counties in Pennsylvania and in Wetzel County, West Virginia. The major waterbodies that will be crossed by the Project are the South Fork Tenmile Creek in Greene County, Pennsylvania and the Monongahela River in Allegheny and Washington counties, Pennsylvania. Both of these waterbodies are located within the Ohio River Basin Watershed (PADEP 2015).

The South Fork Tenmile Creek is a fourth-order stream with a drainage area of approximately 199 square miles (Greene County Conservation District no date a). South Fork Tenmile Creek begins in Center Township, Greene County, and flows northeast and drains into Tenmile Creek on the northeast border of Morgan Township, Pennsylvania. The Pennsylvania Department of Environmental Protection (PADEP) has classified the South Fork Tenmile Creek as a Warm Water Fishery (PADEP no date and Pennsylvania Code Chapter 93.9v - Water Quality Standards, General Provisions, Drainage List V, Ohio River Basin in Pennsylvania, Monongahela River).

The streams of the Monongahela River watershed contain a diversity of habitats, with streams located along the western side of the watershed generally associated with warmwater fishery systems, containing a much higher diversity of fish in comparison to the coldwater fishery systems associated with the mountainous areas along the eastern side of the watershed. The Monongahela River basin supports modest fish diversity and contains approximately 89 native taxa, 13 introduced species, and 2 euryhaline species, along with 2 fish species that have been extirpated in recent history. No endemic species have been identified for the Monongahela River basin. Fish fauna associated with the basin include 32 species of Cyprinidae, 12 Catostomidae, 9 Ictaluridae, 1 Cottidae, 11 Centrarchidae, and 15 Percidae species (U.S. Army Corps of Engineers, Pittsburgh District 2012).

The Webster Interconnect, H-319 pipeline, and Mobley Tap facilities are located in the HUC 8 Little Muskingum-Middle Island watershed, adjacent to North Fork Fishing Creek and Mobley Run (USEPA 2015). Little Muskingum-Middle Island is a fourth-level watershed that is part of the Upper Ohio River Basin and within the larger Ohio River Basin (USDA Natural Resources Conservation Service 2015; U.S. Geological Survey 2014).

Appendix 3-A provides a list of fish species that have the potential to occur in the Ohio River Basin, in which the Project is located. This list will be further refined to include species expected to occur within the Project area upon completion of field surveys and the agency consultation process.

The Pennsylvania Comprehensive Wildlife Conservation Strategy provides a list of priority mussel species for the entire state (PGC and PFBC 2008). All native mussels are protected in the state of West Virginia (including nine federally listed species). Freshwater mussels are expected to occur within waterways traversed by the Project.

The Pennsylvania Natural Heritage Program (PANHP) has developed a list of freshwater mussel communities for Pennsylvania. Freshwater mussel communities that have been documented in southwestern Pennsylvania within the Ohio River Basin and in waterbodies located within vicinity of Pennsylvania Project facilities includes the fatmucket mussel and fluted shell mussel communities

(PANHP no date a). Aquatic species of special concern identified for the Project area are described in more detail in Section 3.4.1 (Protected Aquatic Species). Definitions for the state and global ranks that are noted for the species of special concern in the following community summaries are provided in footnote section of Table 3.4-1 (Aquatic Invertebrate Wildlife Species of Special Concern in Allegheny, Greene, and Washington counties, Pennsylvania With the Potential to Occur in the Project Area).

Species indicators in the fatmucket mussel community include fatmucket (*Lampsilis siliquoidea*), giant floater (*Pyganodon grandis*), three-ridge (*Amblema plicata*), and Wabash pigtoe (*Fusconaia flava*) (PANHP no date a). The Wabash pigtoe (S2S3/G5) and three-ridge (S2S3/G5) are species of conservation concern. Habitat associated with this community includes muddy waters within streams of various size, but generally this community occurs in 4th order or greater streams and rivers. This community is more common at moderate to high elevation sites with a low gradient, high specific conductivity, and moderate alkalinity. Substrates are generally dominated by shale or sandstone geology, containing sand and gravel substrates; however, the greatest abundances have been documented in standing water containing clay, silt, or mud substrate (PANHP no date a).

Species indicators in the fluted shell mussel community include fluted shell (*Lasmigona costata*), kidneyshell (*Ptychobranchus fasciolaris*), mucket (*Actinonaias ligamentina*), elktoe (*Alasmidonta marginata*), squawfoot (*Strophitus undulatus*), pocketbook (*Lampsilis ovata*), plain pocketbook (*L. cardium*), and wavy-rayed lampmussel (*L. fascioloa*) (PANHP no date a). The fluted shell (S4/G5), kidneyshell (S4/G4G5), mucket (S4/G5), elktoe (S2/G4), squawfoot (S2S4/G5), pocketbook (S3S4/G5), plain pocketbook (S3S4/G5), and wavy-rayed lampmussel (S3S4/G5) are species of conservation concern. Habitat associated with this community includes large streams and medium size rivers with sand or gravel substrate. This community occurs in low to moderate gradient waterbodies, waters having a high alkalinity, and high conductivity. Substrates are generally dominated by sandstone geology (PANHP no date a).

A letter received from PFBC on May 19, 2015 identified three rare or protected freshwater mussel species that have the potential to be impacted by the Project (PFBC 2015c). These are discussed in Section 3.4.1 (Protected Aquatic Species).

3.1.2.3 Commercial Fisheries

Commercial fishing in Pennsylvania is allowed in accordance with Pennsylvania Code Title 58 Chapter 69: Fishing in Lake Erie and Boundary Lakes, Subchapter D, Commercial Fishing, Seasons and Nets, Section 69.31. Provisions of 58 Pennsylvania Code §69.31 limit commercial fishing to Lake Erie. The Project components in Pennsylvania are located within Allegheny, Greene, and Washington counties and are not located in proximity to Lake Erie. As such, the Project will have no impact on commercial fishing in Pennsylvania.

West Virginia State Code allows the Director of the WVDNR to issue permits for commercial take of certain species from the Ohio River. Currently, there is a provision for the Director to issue permits for the commercial take of minnows and other bait from West Virginia waters (Preston 2010); however, other than this provision, commercial fishing (e.g., trawling, seining, gill netting, trap netting fish or shellfish for wholesale or retail sale) is not permitted in West Virginia. The Project is not expected to have any significant impact on the take of minnows and other bait in the waterbodies located in the vicinity of the Webster Interconnect, H-319 pipeline, or Mobley Tap.

Although not commercial fishing in the traditional sense, Pennsylvania and West Virginia both have active aquaculture industries. Pennsylvania ranks third in the United States, behind California and Washington, for the value of trout distributed for conservation and recreational purposes. Pennsylvania produced trout valued at $15.5 million in 2011, which accounts for approximately 9 percent of the nation's distributed trout value (USDA National Agricultural Statistics Service, Pennsylvania Field Office 2012). Trout in Pennsylvania were primarily produced by the state fish commission, its cooperative nurseries, and private fishing clubs. Commercial trout production was approximately 1.82 million pounds of trout, valued at $6.3 million during 2011. Pennsylvania farm-raised trout for conservation and recreational purposes was valued at $9.2 million in in 2011.

No Pennsylvania State Fish Hatcheries or trout-stocked flowing waters are located within the Project area in Pennsylvania, based on a review of the PFBC online interactive county map that identifies state fish hatcheries (PFBC 2015a). No private sport fish hatcheries are located within Allegheny, Greene, or Washington counties, Pennsylvania (Pennsylvania Department of Agriculture no date).

Trout is the fish most commonly grown by West Virginia aquaculturists (West Virginia Department of Agriculture 2009). In 2012, aquaculture sales in the state of West Virginia totaled $2,835,000 of which the primary sales involved trout ($2.77 million) and catfish ($54,000) (USDA 2014). Sales of other sport fish totaled $7,000 in 2012. Commercial trout production in West Virginia in 2014 was valued at $1.23 million (USDA National Agricultural Statistics Service, West Virginia Field Office 2015). The WVDNR is the largest single producer of fish in the state. It operates two warmwater and seven coldwater hatcheries, none of which are located in Wetzel County. No state fish hatcheries (Shingleton 2013; WVDNR 2003a) or private aquaculture facilities (West Virginia Department of Agriculture 2002) are located within the West Virginia portion of the Project.

3.1.2.4 Recreational Fisheries

Recreational fishing in all environments (i.e., marine, estuarine, and freshwater) provides economic and conservation benefits to Pennsylvania and West Virginia. In 2011, all fishing-related expenditures in Pennsylvania totaled approximately $486 million (USFWS and United States Census Bureau 2014a), and all fishing related expenditures in West Virginia totaled approximately $429 million (USFWS and United States Census Bureau 2014b).

Some of the common recreational fish species associated with warmwater fisheries of Pennsylvania include bass (*Micropteris* spp. and *Morone* spp.) catfish (*Ictalurus* spp.), crappie (*Pomoxis* spp.), muskellunge and pickerel (*Esox* spp.), northern pike (*Esox lucius*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), redbreast sunfish (*Lepomis auritus*), walleye (*Stizostedion vitreum*), sauger (*Stizostedion canadense*), and yellow perch (*Perca flavescens*) (PFBC 2015b). Specific recreational fisheries associated with the major waterbodies that will be crossed by the Project have not been identified; however, all of the major streams and rivers that will be crossed in Pennsylvania, including the Monongahela River, South Fork Tenmile Creek, Kelly Run, and Bunola Run, are classified as warmwater fisheries (Pennsylvania Code Chapter 93.9v - Water Quality Standards, General Provisions, Drainage List V, Ohio River Basin in Pennsylvania, Monongahela River).

Game fish associated with South Fork Fishing Creek, which is located in the vicinity of the facilities proposed in Wetzel County, West Virginia, include smallmouth bass (*Micropterus dolomieu*), largemouth

bass (*Micropterus salmoides*), spotted bass (*Micropterus punctulatus*), bluegill, channel catfish (*Ictalurus punctatus*), sunfish (*Lepomis* spp.), and stocked trout (WVDNR 2003b).

3.1.3 Fisheries of Special Concern

Waterbodies with fisheries of special concern include those that have fisheries with important recreational value; support coldwater fisheries; are included in special state fishery management regulations; or provide habitat for federally or state-listed threatened and endangered, or candidate species. Waterbodies that have significant economic value because of fish stocking programs, commercial fisheries, EFH, or tribal harvest, also are considered fisheries of special concern. Field surveys and agency consultation are ongoing, and once these are completed, any waterbodies considered fisheries of special concern that are anticipated to be crossed by the Project will be included in this section. To date, response letters have been received from PFBC and USFWS, which did not identify any fish species of concern for the Project (PFBC 2015c and USFWS 2015a).

3.1.3.1 Federal Fisheries of Special Concern

Project response letters have been received from PGC and USFWS, which did not identify any federally listed or candidate fish species or fisheries under their jurisdiction that may be present near the Project. Field surveys and agency consultation requirements regarding federal fisheries of special concern is completed, and no fish species or fisheries of federal concern have been identified.

3.1.3.2 State Fisheries of Special Concern

Warmwater and coldwater hatcheries are present in Pennsylvania and West Virginia, and both have state programs to release fish into respectively supporting waterbodies. Both states implement trout stocking programs into streams with suitable habitat requirements. In addition, both states have streams that harbor wild, reproducing populations of trout; however, none of these streams are located in the Project area (PFBC 2005 and wildtroutstreams.com 2014).

A letter received from PFBC on May 19, 2015 identified three rare or protected freshwater mussel species that have the potential to be impacted by the Project (PFBC 2015c). These are discussed in Section 3.4.1 (Protected Aquatic Species).

3.1.4 Fisheries Impacts and Mitigation

This section describes potential impacts and measures that will be implemented to minimize impacts on fisheries resources along the Project. The Project does not cross marine, estuarine, or diadromous fish environments, so fisheries associated with those environments will not be affected. The Project will be constructed across freshwater environments; however, none have been identified as fisheries of special concern. No commercial or recreational fisheries are expected to be impacted by the Project.

Short-term impacts on fisheries associated with pipeline construction activities may be caused by temporary increases in sedimentation and turbidity, introduction of water pollutants, or entrainment of fish. However, no long-term effects on dissolved oxygen, pH, benthic invertebrates, or fish communities are expected to occur due to the construction or operation of the Project facilities. Equitrans will adopt the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) (FERC 2013a, 2013b) and will develop its own Project-specific Erosion and Sediment Control Plan (E&SCP) in compliance with state regulations that will outline best

management practices (BMPs) to avoid increasing sedimentation of downstream habitats and to minimize impacts on fishery resources.

Construction impacts on fishery resources may include direct contact by construction equipment with food resources in the form of relatively immobile prey, increased sedimentation and water turbidity immediately downstream of the construction work area, alteration or removal of aquatic habitat cover and vegetation on adjacent banks, and introduction of contaminants. Equitrans will implement the FERC Plan and Procedures and its E&SCP to minimize potential impacts associated with loss of riparian shade and vegetation cover. Clearing of trees and other vegetation will be restricted to only what is necessary to safely construct and operate the Project, and Equitrans will follow applicable time of year restrictions specified in agency correspondence for the Project. To date, Project response letters have been received from PFBC and USFWS, which did not identify any tree cutting restrictions pertaining to protection of fishery resources (PFBC 2015c and USFWS 2015a). Equitrans will follow the construction timing restrictions for fisheries for waterbodies crossed by the Project (Table 3.1-1); however only waterbodies containing warmwater fisheries will be crossed in Pennsylvania, and these do not have any construction timing restrictions. Equitrans plans to follow FERC's recommended work window of June 1 to November 30. Once construction is complete, streambeds and banks will be restored to preconstruction conditions to the fullest extent practicable. Restoration, bank stabilization, and revegetation efforts, which are defined in the FERC Plan and Procedures, will minimize the potential for erosion from the surrounding landscape. Adherence to the FERC Plan and Procedures and the Equitrans E&SCP also will maximize the potential for regrowth of riparian vegetation, thereby minimizing the potential for any long-term impacts associated with lack of shade and cover.

Table 3.1-1

Construction Timing Restrictions for Fisheries Crossed by the Project

State	Water and Classification	In-Stream Work Window	Applicable Regulation
Pennsylvania	South Fork Tenmile Creek and Tributaries - Warmwater Fishery a/	No Restriction	PAFBC
	Monongahela River and Tributaries – Warmwater Fishery b/	No Restriction	PAFBC

a/ Greene County Conservation District no date a.
b/ Greene County Conservation District no date b.

Equitrans does not anticipate the need to conduct blasting, including in-water blasting, for the Project; however, should it become necessary, Equitrans will develop and submit a blast plan to the FERC Office of Energy Projects for its review and acceptance prior to use. If a blast plan is determined to be required, and it includes the potential to conduct in-water blasting, Equitrans will coordinate with appropriate federal and state agencies to mitigate potential impacts to aquatic species, and these will be included in the blasting plan.

Pennsylvania does not have time of year restrictions for land clearing or activities located near sensitive waterbodies, and no rare, threatened or endangered species or sensitive habitats have been identified for the Project area in West Virginia. The FERC Procedures will be followed to minimize potential impacts to fisheries spawning, recruitment, ecology, and populations in the Project area.

In a letter dated May 15, 2015, Project information was received from the PFBC-identified Project area streams that could potentially contain three species of state rare or protected freshwater mussels. To avoid impacts and at the request of PFBC (PFBC 2015c), the proposed H-316 pipeline crossing at South Fork Tenmile Creek was surveyed for the presence of rare and protected freshwater mussel species in October 2015. Results of this survey included observations of native freshwater mussel species at low abundances; however, no federally listed mussel species were identified. A report summarizing the results of this survey is currently being prepared. Equitrans has elected to use horizontal directional drilling (HDD) techniques for crossing of South Fork Tenmile Creek and the Monongahela River, which will avoid impacts on freshwater mussels in these waterbodies. See Appendix 1-L for agency consultation letters.

3.1.4.1 Access Roads and Aboveground Facilities

Several potential aboveground facilities have been identified for installation near riparian zones. A letter received from PFBC on May 19, 2015 identified three rare or protected freshwater mussel species that have the potential to be impacted by the Project (PFBC 2015c). These are discussed in Section 3.4.1 (Protected Aquatic Species).

Aboveground facilities positioned adjacent to riparian zones will implement appropriate BMPs to prevent adverse effects to nearby waterways. Construction activities associated with aboveground facilities (e.g., compressor stations; contractor yards) will be conducted as outlined in the FERC Plan and Procedures and earth disturbance permits (PA: ESCGP-2; WV: NPDES). To the extent practicable, Equitrans will use existing access roads for the Project or other existing farm or construction access roads. Where new access roads will cross streams, Equitrans will adhere to the FERC Plan and Procedures and the conditions outlined in its state permits.

3.1.4.2 Waterbody Construction Methods

Construction methods at waterbody crossings will vary with the characteristics of the waterbody encountered and will be performed consistent with permit conditions outlined in the regulatory approvals. Methods for construction at waterbody crossings are detailed in Section 1.4.1.1 (Standard Construction and Restoration Techniques and Typical Upland Pipeline Construction Procedures, Typical Waterbody Crossings) of Resource Report 1 and include dam and pump, flume, horizontal bore, open-cut, and HDD techniques.

Most intermediate waterbodies (greater than 10 feet wide and less than or equal to 100 feet wide) and minor channels (less than 10 feet wide at water's edge) will be crossed by dry crossing methods (i.e., dam and pump and flume). Temporary construction-related impacts would be limited primarily to short periods of increased turbidity during the installation of temporary upstream and downstream dams prior to pipeline installation, as well as following installation of the pipeline when the dams are removed and flow across the restored work area is re-established.

Avoidance of streambed disturbance can be achieved by HDD and conventional bore methods and may be used by Equitrans to avoid direct impacts to certain sensitive waterbodies. HDD methods are proposed for the Monongahela River (H-318 pipeline) and South Fork Tenmile Creek (H-316 pipeline) crossings. The HDD method allows trenchless construction by drilling a borehole well below the depth of a conventional pipeline lay and pulling the pipeline through the pre-drilled borehole. An HDD Contingency Plan is included in Appendix 1-H to provide guidance on (a) the determination of HDD failure, (b) alternate

crossing methods in the event of HDD failure, and (c) the prevention, detection, required notifications, and response to inadvertent returns.

Mitigation measures will be implemented to minimize impacts on the aquatic environment during construction as described in the FERC Procedures. Construction activities will be scheduled so that the trench is excavated immediately prior to pipe laying activities. In accordance with the FERC Procedures, excavated spoil that is stockpiled in the construction right-of-way will be at least 10 feet from the stream bank or in approved additional work areas, and will be surrounded by sediment control devices to prevent sediment from returning to the waterbody. The waterbody banks will be returned to as near to pre-construction conditions as possible within 24 hours of completion of each crossing.

3.1.4.3 Vegetation Clearing

Removal of trees and other streamside vegetation from the edges of waterbodies at the crossing may reduce shading of the waterbody, diminish escape cover, and can result in locally elevated water temperatures. Elevated water temperatures can, in turn, lead to reductions in levels of dissolved oxygen. This can negatively influence habitat quality and reduce availability of habitat for certain fish species. Equitrans has attempted to minimize impacts resulting from tree clearing by routing the pipeline adjacent to existing cleared rights-of-way and previously developed corridors and open lands where possible.

To further minimize potential impacts associated with loss of riparian shade and vegetation cover, clearing of trees and other vegetation will be restricted to only what is necessary to safely construct and operate the pipeline. Equitrans will follow time of year recommendations specified by USFWS (USFWS 2015a), which include restricting tree-cutting activities to the winter months for protection of migratory birds and federally listed bat species. Once construction is complete, streambeds and banks will be restored to preconstruction conditions to the fullest extent practicable. Restoration, bank stabilization, and revegetation efforts, which are defined in the FERC Procedures, will minimize the potential for erosion from the surrounding landscape. Adherence to the FERC Procedures also will maximize the potential for re-growth of riparian vegetation, thereby minimizing the potential for long-term impacts associated with lack of shade and cover.

Implementation of the FERC Procedures during construction will minimize the short-term impacts on fishery resources, and the aquatic habitats upon which these fishery resources depend. After construction, invertebrate populations will recolonize the crossing area and temporary workspaces will revert to their original condition, including re-establishment of riparian cover. For rapidly reproducing species or assemblages of insects, recovery may be as quick as a few months (Mattaei and Townsend 2000) or even within weeks or days, depending on stream substratum (Brooks and Boulton 1991). Recolonization of invertebrate species that do not have an aerial adult stage will require longer periods of time than those with a winged, terrestrial adult stage (Wallace 1990). Operation and routine maintenance of the pipeline right-of-way and aboveground facilities, which will be restricted to clearing and mowing vegetation on the permanent rights-of-way, are not expected to have any noticeable impact on fishery resources crossed by the Project.

Equitrans will limit the amount of vegetation cleared between the waterbody and the additional temporary workspaces (ATWS) and minimize the amount of ATWS to the greatest extent possible. Crossings will be aligned as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions allow. ATWS are typically located at least 50 feet away from the wetland/water's edge unless adjacent uplands consist of actively cultivated or rotated cropland or other disturbed land. If the pipeline parallels a

waterbody, Equitrans will attempt to maintain a vegetation buffer zone between wetland/waterbodies and the upland construction areas, except for the pipe trench and travel lane. Implementation of the FERC Plan and Procedures will minimize short- and long-term water quality impacts within the waterbodies crossed by the proposed pipeline.

3.1.4.4 Spill Prevention and Control

Accidental spills of construction-related fluids (e.g., oil, gasoline, or hydraulic fluids) on the landscape or directly into waterbodies could result in water quality impacts affecting fish and other organisms. Impacts to fisheries would depend on the type and quantity of the spill, and the dispersal and attenuation characteristics of the waterbody. Minimization and mitigation procedures related to water quality impacts from spills of pollutants will be addressed in Equitrans' Spill Prevention, Containment, and Countermeasure Plan (SPCC Plan). The implementation of the SPCC Plan will minimize the potential for adverse effects on aquatic species from the accidental or unintended release of contaminants. To minimize spill risk and in accordance with the FERC Procedures, fuel will not be stored within 100 feet of wetlands or other waterbodies. During operations, an individual SPCC Plan will be implemented at each aboveground facility that stores oil in excess of the volumes identified in 40 Code of Federal Regulations (CFR) 112 to protect surface water resources during operation.

3.1.4.5 Aquatic Non-Native/Invasive Species and Diseases

Executive Order 13112, signed by President Clinton in 1999, defines an invasive species as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." The purpose of Executive Order 13112 is to "prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause," and directs federal agencies to prevent, detect, respond to, monitor, and research invasive species. It is well-documented that aquatic invasive species can enter new waterways and demonstrate adverse effects to native species by various means such as food-web interactions or physical or chemical alterations to aquatic habitat, water quality, and flow. Commonly encountered aquatic invasive species and diseases and the proposed measures to avoid or minimize their spread are described below.

Zebra mussels (*Dreissena polymorpha*) were first introduced to U.S. freshwater systems in 1985 and are a concern in many states, including Pennsylvania and West Virginia. High fecundity, a planktonic larval stage, tolerance for a variety of environmental conditions, a generalist diet, and the strong attachment of adults to a substrate make the zebra mussel a very successful invader (Marsden 1992). Zebra mussels attach to hard surfaces, including piers, boats, docks, pipes, native mussels, and even other zebra mussels. Negative economic impacts, such as maintenance and cleaning of water intake pipes and removal control efforts, can be caused by zebra mussels. Adults and microscopic larvae typically spread to new waterways via ballast water of boats, bait bucket introduction, or contaminated fishing gear. Zebra mussels are highly effective filter feeders and form thick colonies wherever they can manage to attach themselves. Native mussels often suffer loss of habitat or are smothered by the dense colonies of zebra mussels.

The Asian clam (*Corbicula fluminea*) is a bivalve that can tolerate colder temperatures and reproduce rapidly. The Asian clam can be a nuisance to irrigation canals and pipes, as well as industrial water and power plant systems (Werner and Rothhaupt 2007). Native to Southeast Asia, this species has invaded much of the United States and Europe.

Hydrilla (*Hydrilla verticillata*) is a submersed, herbaceous aquatic plant that has become established in many states throughout the United States. Hydrilla can displace native aquatic plants, greatly reduce flow of water in drainage and irrigation canals, interfere with commercial and recreational watercraft by clogging propellers, and have negative economic impacts (Langeland 1996).

Eurasian water milfoil (*Myriophyllum spicatum*) is a submersed aquatic plant that has invaded and become a nuisance throughout much of the United States. The species shades out native vegetation and alters aquatic macroinvertebrate communities. Like hydrilla, it may have adverse effects to boating by clogging propellers, which may also contribute to the spread of the plant. This species spreads rapidly by fragmentation, allowing it to quickly colonize disturbed areas (Smith and Barko 1990).

Largemouth bass virus (LMBV) was first discovered in the United States in Florida and has spread to at least 18 other states, including Pennsylvania and West Virginia. LMBV is a disease known to affect several fish species; however, behavioral and/or lethal effects are only known to occur in largemouth bass (Virginia Department of Game and Inland Fisheries 2015). LMBV may be present in infected organisms year-round and lethal effects are believed to be expressed in largemouth bass during periods of stress (e.g., thermal, pollutant, oxygen, etc.) (Florida Fish and Wildlife Conservation Commission 2015). LMBV can be spread by transmission through water, fish to fish contact, and by consuming infected prey (Indiana Department of Natural Resources 2005). The virus can last for seven days on water and can be transmitted through the live wells of boats or bait-bucket introductions.

Viral hemorrhagic septicemia is a disease known to affect several fish species (approximately 40 freshwater and marine species) as has been reported to cause significant fish kills in North America (USDA 2006). Viral hemorrhagic septicemia was first detected in the Great Lakes during 2005 and has since spread (USDA 2006). It is caused by an epizootic virus that is spread via urine and reproductive fluids. Transmission of the virus is possible through the water or contact; therefore, predation by fish eating birds may potentially be a transmission mechanism to novel areas.

Chytridiomycosis, caused by the chytrid fungus (*Batrachochytrim dendrobatidis*) and commonly referred to as chytrid, is one of the most threatening diseases faced by amphibian species worldwide (Daszak et al. 1999). Believed to have originated in Africa (Weldon et al. 2004), the disease has spread to every continent, except Asia, and caused severe declines or extinctions of amphibian species. Chytrid invades the surface layer of an amphibian's skin, causing damage to the kertain layer. Individuals infected with chytrid appear lethargic, have abnormal posture, lose righting reflex, experience hemorrhages, and sloughing of skin (Daszak et al. 1999). Spores from the chytrid fungus can be transported from one waterbody to another in boots or other field equipment, through release of infected captive amphibians into the natural environment, or the improper disposal of contaminated water from holding tanks containing infected individuals.

The spread of aquatic invasive species is typically transferred by means of (but not limited to) water pipelines, boats, contaminated equipment, and interbasin transfer of waters. The direct exchange of water between drainage basins is not anticipated to occur; therefore, minimizing the potential for waters contaminated with aquatic invasive species to be transferred to non-contaminated waters. All equipment will be allowed to dry for 48 hours and inspected by the environmental inspector to ensure equipment is free of mud and debris before transporting it between water basins. Some of the potential water uses associated with construction of the Project include (but are not limited to) hydrostatic testing, hydroseeding, or dust control. Water used for these purposes will be obtained from municipal sources, thus preventing transfer of nuisance or exotic species.

3.2 VEGETATION

This section describes the vegetation resources potentially affected by construction and operation of the Project. Included are the descriptions of various plant communities found in the Project area and methods that will be used to minimize impacts on these vegetation resources.

3.2.1 Ecoregions

Areas similar in ecosystem composition and in the type, quality, and quantity of environmental resources are generally denoted as ecoregions. Boundaries of ecoregions are delineated based on patterns observed in vegetation, animal species, geology, soil, water quality, climate, human land use, and miscellaneous living and non-living ecosystem components. Ecoregions provide a spatial framework for the research, management, and monitoring of ecosystems often employed by many federal and state agencies to develop biological criteria and resource quality standards for a given area. A Roman numeral hierarchical scheme is utilized for different levels of ecological regions, Level I being the coarsest and Level IV being the most detailed. All Project facilities are located within the Western Allegheny Plateau Level III ecoregion. The Webster Interconnect, H-319 pipeline and Mobley Tap facilities located in West Virginia; and the eastern portion of the H-316 pipeline and facilities located south of South Fork Tenmile Creek in Pennsylvania are located within the Permian Hills Level IV ecoregion. The portion of the H-316 pipeline and associated facilities located north of South Fork Tenmile Creek, and the remainder of Project facilities are located within the Monongahela Transition Zone Level IV ecoregion. The following descriptions of these ecoregions are derived from the U.S. Environmental Protection Agency (USEPA) (Woods et al. 1999; Omernik and Griffith 2008).

In West Virginia, the Western Allegheny Plateau ecoregion consists of an area extending from the northern panhandle down into the center of the state where it follows the Monongahela Transition Zone in a northeasterly direction. This ecoregion is a mostly unglaciated, dissected plateau with crestal elevations of less than 2,000 feet. It is underlain by horizontally bedded sedimentary rock that is frequently mined for coal. The soils developed from residuum and support Appalachian oak and mixed mesophytic forests. The current land uses include a mosaic of forests, urban-suburban-industrial activity, agriculture, pastures, coal mines, and oil-gas fields.

The Webster Interconnect, H-319 pipeline, Mobley Tap facilities, and the section and facilities of the H-316 pipeline (0.73 mile) located south of South Fork Tenmile Creek are located within the Permian Hills Level IV ecoregion. The Permian Hills ecoregion is characterized by hilly terrain, with elevations ranging from 575 to 1,600 feet, and relief ranging from 200 to 750 feet. The ecoregion is generally more rugged, forested, and cooler than the adjacent Monongahela Transition Zone ecoregion. Soils are mostly Alfisols and Ultisols which support a natural vegetation of Appalachian oak forest or mixed mesophytic forest. Soils were derived from shale, siltstone, limestone, sandstone, and coal. Forests are common in the ecoregion as most of the area is too steep to be farmed or is reverting to woodland. However, there are some farms that grow corn and hay on the ridges, as well as some pastures on the hillslopes. Grazing and cultivation in the area have caused slope erosion and upland topsoil is often thin or absent. Coal mining and oil and gas production also occur in the area.

The remainder of the Project facilities, including the western 2.26 miles of the H-316 pipeline and associated facilities located north of South Fork Tenmile Creek, and the entirety of the secondary pipeline segments except H-319, as well as the Pratt and Redhook Compressor Stations, are located within the Monongahela Transition Zone Level IV ecoregion. The Monongahela Transition Zone ecoregion is characterized by unglaciated hills, knobs and ridges underlain by interbedded limestone, shale, sandstone and coal. Elevations range from 575 to 1,900 feet, and relief ranges from 200 to 700 feet. Vegetation in the area is mapped as mostly mesophytic forest. Forests are extensive and urban, suburban, and industrial activities are found in the river valleys that also serve as transportation corridors. Coal mining is common, but some general farming and oil production occurs in the area as well. Acid mine drainage, siltation, and industrial pollution also can degrade stream habitat and affect fish and invertebrates and may result in the disappearance of some freshwater species.

3.2.2 Existing Vegetation

Vegetation cover types along the Project route are determined by review of aerial photography, existing land use classifications, and field surveys. Descriptions of existing representative vegetation cover types along the Project route are based on the natural community classification system described in the 2011 National Land Cover Database (NLCD) (Jin et al. 2013).

A detailed list of invasive plant species associated with the Project area has not been developed; however, rare plant surveys scheduled to occur in 2016 (see Section 3.4.2, Protected Plant Species) will include documenting observations of invasive species populations. Invasive species that have been documented during other survey work include honeysuckle (*Lonicera* spp.), multi-flora rose (*Rosa multiflora*), and tree-of-heaven (*Ailanthus altissima*).

Developed or managed land classes mapped along the Project route consist of agricultural land, industrial, commercial, and residential areas. Major natural vegetation land classes include forested upland, herbaceous upland, and wetlands. The following paragraphs provide a description of NLCD land classes along the Project route.

3.2.3 Agricultural Land

According to the 2011 NLCD, agricultural land includes pastureland, hay fields, and cultivated crops subclasses. Pastureland and hay fields are characterized as areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation within this subclass.

Cultivated crops are areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton. Cultivated crops also include areas devoted to perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation within this subclass. This class also includes all land being actively tilled. Table 3.2-1 provides a breakdown of agricultural land within the footprint of Project facilities.

Table 3.2-1

Agricultural Land Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	1.33	44%
Permanent Right-of-Way	8.48	53%
Temporary Workspace c/	23.12	54%
Subtotal Acres	**31.6**	
H-318 Pipeline		
Pipe Centerline	1.22	29%
Permanent Right-of-Way	7.39	27%
Temporary Workspace	28.84	42%
Subtotal Acres	**36.23**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.09	19%
Permanent Right-of-Way	1.06	20%
Temporary Workspace	0.84	24%
Subtotal Acres	**1.90**	
H-305 and H-319 Pipelines		
Pipe Centerline	0.10	71%
Permanent Right-of-Way	0.80	58%
Temporary Workspace	0.92	41%
Subtotal Acres	**1.72**	
Mobley Tap		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Redhook Compressor Station		
Permanent Right-of-Way	10.87	61%
Temporary Workspace	2.83	46%
Subtotal Acres	**13.70**	
Pratt Compressor Station		
Permanent Right-of-Way	6.26	82%
Subtotal Acres	**6.26**	
Webster Interconnect		
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Grand Total Miles	**2.74**	
Grand Total Acres	**91.41**	

a/ NLCD categories include Pasture/Hay and Cultivated Crops.
b/ Pipe Centerline values equal miles; all other values in the table equal acreages of expected impacts.
c/ Temporary Workspace includes temporary workspace, temporary access roads and additional temporary workspace.

3.2.4 Forested Upland

The NLCD forested upland land class includes deciduous forest, evergreen forest, and mixed deciduous-evergreen forest. Of the NLCD forested upland sub-classes, only deciduous forest is mapped within the Project area.

3.2.4.1 Upland Deciduous Forest

According to the 2011 NLCD, areas of upland deciduous forest are dominated by trees generally greater than 15 feet tall and contain greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change. A variety of upland deciduous forest vegetation communities are present along the Project route. The dominant type is oak-hickory forest, followed by mixed mesophytic forest.

Oak-hickory forest, also known as Appalachian oak forest, is dominated by a canopy consisting of red oak (*Quercus rubra*), often codominated by red maple (*Acer rubrum*), black oak (*Quercus velutina*), white oak (*Q. alba*), mockernut hickory (*Carya tomentosa*), shagbark hickory (*C. ovata*), sweet birch (*Betula lenta*), yellow birch (*B. alleghaniensis*), white ash (*Fraxinus americana*), American beech *(Fagus grandifolia*), and tuliptree (*Liriodendron tulipifera*). Historically, American chestnut (*Castanea dentata*) was a dominant or co-dominant in this community until its virtual elimination due to the chestnut blight caused by the accidental introduction of the pathogenic fungus *Cryphonectria parasitica* during the early 1900s. Common sub-canopy species in oak-hickory forests include northern arrowwood (*Viburnum recognitum*), southern arrowwood (*V. dentatum*), maple-leaved viburnum (*V. acerifolium*), smooth serviceberry (*Amelanchier laevis*), shadbush (*A. arborea*), mountain laurel (*Kalmia latifolia*), hornbeam (*Carpinus caroliniana*), hop-hornbeam (*Ostrya virginiana*), witch hazel (*Hamamelis virginiana*), and spicebush (*Lindera benzoin*). The herbaceous layer within oak-hickory forests varies greatly and is dependent on local site conditions. Common species encountered include wildoats (*Uvularia sessilifolia*), false solomon's-seal (*Smilacina racemosa*), mayapple (*Podophyllum peltatum*), pipissewa (*Chimaphila maculate*), teaberry (*Gaultheria procumbens*), Indian cucumber-root (*Medeola virginiana*), blue cohosh (*Caulophyllum thalictroides*)—on richer sites, wood ferns (*Dryopteris spp.*), and hayscented fern *(Dennstaedtia punctilobula*) (Fike 1999).

Mixed mesophytic forest is dominated by tuliptree, sugar maple (*Acer saccharum*), American beech, basswood (*Tilia americana*), red oak, cucumbertree (*Magnolia acuminate*), wild black cherry (*Prunus serotine*), white ash, black walnut (*Juglans nigra*), shagbark hickory, Ohio buckeye (*Aesculus glabra*), and yellow buckeye (*A. flava*). Eastern hemlock (*Tsuga canadensis*) may occur in these forests, but is not characteristically a dominant. Common sub-canopy trees and shrubs include pawpaw (*Asimina triloba*), bladdernut (*Staphylea trifolia*), rosebay (*Rhododendron maximum*), umbrella magnolia (*Magnolia tripetal*), redbud (*Cercis canadensis*), spicebush, wild hydrangea (*Hydrangea arborescens*), and witch hazel. The herbaceous flora is extremely rich and includes such species as white trillium (*Trillium grandiflorum*), purple trillium (*T. erectum*), toadshade (*T. sessile*), trout-lily (*Erythronium americanum*), wild blue flox (*Phlox divaricate)*, wood anemone (*Anemone quinquefolia*), squirrelcorn (*Dicentra canadensis*), dutchman's-breeches (*D. cucullaria*), speckled wood-lily (*Clintonia umbellulata*), black snakeroot (*Cimicifuga racemosa*), wood geranium (*Geranium maculatum*), blue cohosh (*Caulophyllum thalictroides*), foam flower (*Tiarella cordifolia*), liverleaf (*Hepatica nobilis*), wild leek (*Allium tricoccum*), bloodroot (*Sanguinaria canadensis*), yellow fumewort (*Corydalis flavula*), rattlesnake fern (*Botrychium virginianum*), spring beauty (*Claytonia virginica*), cut-leaved toothwort (*Cardamine concatenate*), bishop's-cap (*Mitella diphylla*), and wild ginger (*Asarum canadense*). Most of these systems have a complete, or nearly complete, annual litter turnover (Fike 1999). Table 3.2-2 provides a breakdown of forested upland within the footprint of Project facilities.

Table 3.2-2

Upland Deciduous Forest Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	1.45	48%
Permanent Right-of-Way	6.24	39%
Temporary Workspace c/	16.26	38%
Subtotal Acres	**22.50**	
H-318 Pipeline		
Pipe Centerline	2.04	48%
Permanent Right-of-Way	13.03	48%
Temporary Workspace	24.85	36%
Subtotal Acres	**37.88**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.31	65%
Permanent Right-of-Way	3.30	63%
Temporary Workspace	1.59	46%
Subtotal Acres	**4.89**	
H-305 and H-319 Pipelines		
Pipe Centerline	0.03	21%
Permanent Right-of-Way	0.50	36%
Temporary Workspace	1.03	46%
Subtotal Acres	**1.53**	
Mobley Tap		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.04	35%
Subtotal Acres	**0.04**	
Redhook Compressor Station		
Permanent Right-of-Way	4.55	26%
Temporary Workspace	0.74	12%
Subtotal Acres	**5.29**	
Pratt Compressor Station		
Permanent Right-of-Way	0.26	3%
Subtotal Acres	**0.26**	
Webster Interconnect		
Permanent Right-of-Way	0.26	31%
Temporary Workspace	0.67	41%
Subtotal Acres	**0.93**	
Grand Total Miles	**3.83**	
Grand Total Acres	**73.32**	

a/ NLCD categories include Deciduous Forest

b/ Pipe Centerline values equal miles; all other values in the table equal acreages of expected impacts.

c/ Temporary Workspace includes temporary workspace, temporary access roads and additional temporary workspace.

3.2.5 Herbaceous Upland

Herbaceous upland includes natural to semi-natural areas of open grassland. According to the 2011 NLCD, grassland is dominated by grammanoid or herbaceous vegetation, generally greater than 80 percent of total vegetation, and is not subject to intensive management such as tilling but can be utilized for grazing. Common grassland species with potential to occur within the Project area include little bluestem (*Schizachyrium scoparium*), Pennsylvania sedge (*Carex pensylvanica*), poverty grass (*Danthonia spicata*), common hairgrass (*Deschampsia flexuosa*), a sedge (*C. communis*), prickly dewberry *(Rubus flagellaris*), bush clovers (*Lespedeza* spp.), wild columbine (*Aquilegia canadensis*), shooting star (*Dodecatheon meadia*), white heath aster (*Aster ericoides*), aromatic aster (*A. oblongifolius*), bladder fern (*Cystopteris bulbifera*), side-oats gramma (*Bouteloua curtipendula*), purple cliff-brake (*Pellaea atropurpurea*), evergreen wood fern (*Dryopteris marginalis*), nodding onion (*Allium cernuum*), alum root (*Heuchera americana*), maidenhair spleenwort (*Asplenium trichomanes*), hairy rock-cress (*Arabis hirsute*), lyre-leaved rock-cress (*A. lyrata*), early saxifrage (*Saxifraga virginiensis*), and less commonly, slender mountain ricegrass (*Oryzopsis pungens*). Mosses and lichens, especially reindeer lichens (*Cladonia* spp. and *Cladina* spp.), and hairy-cap mosses (*Polytrichum* spp.), are abundant on some sites (Fike 1999). Table 3.2-3 provides a breakdown of herbaceous upland within the footprint of Project facilities.

Table 3.2-3

Herbaceous Upland Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.02	≤1%
Temporary Workspace c/	0.29	≤1%
Subtotal Acres	**0.31**	
H-318 Pipeline		
Pipe Centerline	0.18	4%
Permanent Right-of-Way	0.99	4%
Temporary Workspace	0.94	1%
Subtotal Acres	**1.93**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Mobley Tap		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	

Table 3.2-3 Herbaceous Upland Crossed by the Project Facilities a/		
Project Facility	**Acres/Miles Crossed b/**	**Percent (%) of Facility**
Redhook Compressor Station		
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Pratt Compressor Station		
Permanent Right-of-Way	0.23	3%
Subtotal Acres	**0.23**	
Webster Interconnect		
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	0%
Grand Total Miles	**0.18**	
Grand Total Acres	**2.47**	

a/ NLCD categories include Grassland/Herbaceous.
b/ Pipe Centerline values equal miles; all other values in the table equal acreages of expected impacts.
c/ Temporary Workspace includes temporary workspace, temporary access roads and additional temporary workspace.

3.2.6 Wetlands

Wetlands include emergent herbaceous and woody wetlands. According to the USACE 1987 Wetlands Delineation Manual, wetlands are generally defined as areas that are inundated or saturated by surface or ground water 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 (USACE 1987). Three diagnostic characteristics are used to define wetlands: hydrophytic vegetation, soils, and hydrology.

Common woody plant species associated with wetlands in the vicinity of the Project area include black willow (*Salix nigra*), smooth alder (*Alnus serrulata*), speckled alder (*A. incana*), red-willow (*Cornus amomum*), red-osier dogwood (*C. sericea*), and willows (*Salix* spp.). The herbaceous layer is variable, but often includes smartweeds (*Persicaria* spp.), beggar-ticks (*Bidens* spp.), reed canary grass (*Phalaris arundinacea*), and spike-rush (*Eleocharis erythropoda*).

Table 3.2-4 provides a breakdown of field delineated wetlands within the footprint of Project facilities. Delineation data showed that approximately 0.02 mile and 0.08 mile of wetland were crossed by the H-316 and H-318 pipeline centerlines, respectively. All of the H-316 pipeline wetland crossing and 0.07 mile of the H-318 pipeline crossing are emergent wetlands. The remainder of the wetlands crossed by the H-318 pipeline are forested wetlands. In addition to pipe centerlines, small portions of the permanent footprint of the Redhook Compressor Station (0.002 acre) and Pratt Compressor Station (0.08 acre) are within emergent wetlands.

Table 3.2-4

Wetlands Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	0.02	≤1%
Permanent Right-of-Way	0.14	≤1%
Temporary Workspace c/	0.06	≤1%
Subtotal Acres	**0.20**	
H-318 Pipeline		
Pipe Centerline	0.08	2%
Permanent Right-of-Way	0.61	2%
Temporary Workspace	0.22	≤1%
Subtotal Acres	**0.83**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Mobley Tap		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	
Subtotal Acres	**0.00**	
Redhook Compressor Station		
Permanent Right-of-Way	0.002	≤1%
Temporary Workspace	0.09	1%
Subtotal Acres	**0.09**	
Pratt Compressor Station		
Permanent Right-of-Way	0.08	1%
Subtotal Acres	**0.08**	
Webster Interconnect		
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
Grand Total Miles	**0.10**	
Grand Total Acres	**1.20**	

a/ Wetland impacts were calculated based on field delineated wetlands.

b/ Pipe Centerline values equal miles; all other values in the table equal acreages of expected impacts.

c/ Temporary Workspace includes temporary workspace, temporary access roads and additional temporary workspace.

3.2.7 Industrial, Commercial, and Residential Uses

Industrial and commercial land as mapped by the 2011 NLCD includes manufacturing or industrial plants; paved areas, landfills, mines, quarries electric power, or natural gas utility facilities; developed areas, roads, railroads and railroad yards; and commercial or retail facilities. Residential areas include existing developed residential areas and planned residential developments. This may include large developments, low, medium, and high density residential neighborhoods, urban/suburban residential, multi-family residences, ethnic villages, and residentially zoned areas that have been developed or short segments of the route at road crossings with homes near the route alignment. Table 3.2-5 provides a breakdown of industrial, commercial, and residential land within the footprint of Project facilities.

Table 3.2-5

Industrial, Commercial, and Residential Uses Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	0.19	
Permanent Right-of-Way	1.28	8%
Temporary Workspace c/	3.20	7%
Subtotal Acres	**4.48**	
H-318 Pipeline		
Pipe Centerline	0.68	
Permanent Right-of-Way	4.76	18%
Temporary Workspace	13.49	20%
Subtotal Acres	**18.25**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.08	
Permanent Right-of-Way	0.90	17%
Temporary Workspace	1.02	30%
Subtotal Acres	**1.92**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	0.01	
Permanent Right-of-Way	0.08	6%
Temporary Workspace	0.29	13%
Subtotal Acres	**0.37**	
Mobley Tap		
Pipe Centerline	0.02	
Permanent Right-of-Way	0.38	99%
Temporary Workspace	0.07	61%
Subtotal Acres	**0.45**	
Redhook Compressor Station		
Permanent Right-of-Way	2.32	13%
Temporary Workspace	2.67	43%
Subtotal Acres	**4.99**	
Pratt Compressor Station		
Permanent Right-of-Way	0.90	12%
Subtotal Acres	**0.90**	

Table 3.2-5

Industrial, Commercial, and Residential Uses Crossed by the Project Facilities a/

Project Facility	Acres/Miles Crossed b/	Percent (%) of Facility
Webster Interconnect		
Permanent Right-of-Way	0.58	70%
Temporary Workspace	0.97	59%
Subtotal Acres	**1.55**	
Grand Total Miles	**4.78**	
Grand Total Acres	**32.91**	

a/ NLCD categories include Developed, Open Space; Developed, Low Intensity; Developed, Medium Intensity; and, Developed, High Intensity.

b/ Pipe Centerline values equal miles; all other values in the table equal acreages of expected impacts.

c/ Temporary Workspace includes temporary workspace, temporary access roads and additional temporary workspace.

3.2.8 Unique, Sensitive, or Protected Vegetation

In April 2015, Equitrans submitted Project review request letters to the federal and state resource agencies, including the USFWS, U.S. Forest Service, PADCNR, and WVDNR. Consultation with these agencies regarding unique, sensitive, or protected vegetation is complete, and copies of all agency correspondence received to date is included in Appendix 1-L of Resource Report 1. Agency correspondence has not identified any unique, sensitive, or protected vegetation communities that would be impacted by the Project. Section 3.4.2 (Protected Plant Species) provides Project information regarding rare and protected plant species.

3.2.9 Vegetation Impacts and Mitigation

This section summarizes Project construction and operation impacts on the vegetative cover types. The clearing for the pipelines varies based on the size of the pipe being installed. The H-316 pipeline segment will require a 125-foot-wide construction right-of-way. The M-80 and H-158 pipeline segments will be collocated within a single 125-foot-wide construction right-of-way and will be constructed approximately 15 feet apart. The H-318 and H-305 pipeline segments will require a 100-foot-wide construction right-of-way, and the H-319 pipeline segment will require an 85-foot construction right-of-way. In accordance with the FERC Procedures, Equitrans will decrease the construction right-of-way to 75 feet in wetlands and streams as shown in Appendix 1-E. Once the pipelines are installed, all segments will maintain a 50-foot-wide permanent right-of-way.

Land requirements for aboveground facilities, which include compressor stations, receiver sites, and metering and regulation facilities, have been identified for the Project. Mainline valve sites will be entirely contained within the pipeline right-of-way and, therefore, will not require any additional land disturbance. ATWS will be required for construction activities requiring space outside of the construction right-of-way. ATWS will be required for staging and parking areas, laydown areas, additional work space, construction entrances, HDD pull back and entrance areas, hot taps, and possible bore workspace. The total ATWS estimated for these Project elements is 77.85 acres. Potential pipe storage and contractor staging yards for temporary use during construction will be selected with consideration given to the avoidance of wetlands or other sensitive habitats.

Construction of the pipeline and aboveground facilities will include short-term, long-term, and permanent impacts on the existing vegetation cover types previously described. To the extent possible, the pipeline has been aligned parallel to existing utility right-of-ways and other linear features, and Equitrans will utilize, to the extent possible, existing access roads including private roads, drives, lanes, farm, or construction access roads to minimize clearing. Construction of the pipeline adjacent to existing rights-of-way will minimize impacts on vegetation by reducing trampling, compaction, land use change, tree clearing, and stump removal activities.

The pipeline construction right-of-way and temporary workspaces will be cleared of vegetation prior to construction to provide safe working conditions. The construction work space, pipeline centerline, and any ATWS will be identified and staked by the civil survey crew prior to the start of clearing operations. Timber will be cut into usable lengths and stacked adjacent to the right-of-way in accordance with landowner preferences. Brush and slash will be burned, stacked, or chipped. All stumps will be disposed of to the satisfaction of the property owner and/or company representative in accordance with applicable laws including, but not limited to, anti-pollution law, rule or regulation. When feasible, vegetation will be cut to ground level only, leaving the root systems intact. Where needed for erosion control, the FERC Plan will be implemented along the construction right-of-way, and BMPs outlined in the FERC Plan will be properly maintained throughout construction. BMPs will remain in place until permanent erosion controls are installed and the right-of-way is determined to be successfully revegetated in accordance with the FERC Plan.

During operation, routine maintenance of the right-of-way is required to allow continued access for routine pipeline patrols, maintaining access in the event of emergency repairs, and visibility for aerial patrols. Following construction, all areas disturbed by construction will be restored, and a 50-foot wide permanent right-of-way will be maintained by Equitrans for all pipeline segments. The areas disturbed by construction will be restored to their original grades condition and use, to the greatest extent practicable. However, aboveground facilities will be converted to industrial use. Restoration will be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed, revegetation is successful, and proper drainage has been restored.

In upland areas, trees or deep-rooted shrubs will be removed from the construction right-of-way and will not be permitted to grow within the 50-foot-wide permanent right-of-way. Depending on the time of year, a seasonal variety, such as ryegrass, may be broadcast or drilled until a more permanent cover can be established. As such, the maintained permanent right-of-way will be subjected to mowing as needed and will result in permanent conversion of some areas of existing upland forested vegetation to herbaceous or scrub vegetation. Within wetlands or adjacent waterbodies, Equitrans will maintain vegetation in a 10-foot corridor centered over the pipeline by mechanical means. Following seeding and ground stabilization, MVP will allow natural recruitment of trees and vegetation in riparian areas that occur outside of the 50-foot permanent right-of-way. Maintenance of vegetation is not expected to be required in agricultural or grazing areas. Maintenance practices will be consistent with the FERC Plan.

Temporary workspaces used during construction (other than gravel or paved areas) will be seeded and allowed to revegetate and will not require further maintenance or disturbance during operation of the pipeline.

Approximately 3.83 miles of the pipeline segments (49%) will cross forested vegetation (upland deciduous and mixed). During construction, approximately 73 acres of forest would be cleared from within the

construction rights-of-way and within the footprints of the aboveground facilities. Of that, approximately 45 acres would be within the temporary construction work space and would be allowed to revegetate naturally following construction, and 28 acres within the permanent operational right-of-way would be maintained in a shrub or herbaceous condition.

Along with implementing restoration measures contained in the FERC Plan and Procedures, Equitrans will re-establish herbaceous vegetative cover by spreading a grass seed and hydro/straw-mulch-mixture over the disturbed surface. Equitrans will follow temporary or permanent seeding recommendations specified in PADCNR or WVDEP BMPs guidance documents, or as outlined in landowner agreements. Seed mixes will be approved by the applicable DEP in Equitrans' earth disturbance permits. Equitrans will use seed mix selection, maintenance vegetation scheduling, and selection of mechanical vegetation maintenance techniques to encourage a low ground cover of native species.

The time frame for revegetation of areas disturbed by Project construction will depend on factors such as site topography, aspect, soil texture, and micro climate. All areas not in active farming (i.e., cultivated crops) will be seeded with restoration seed mixes of native grasses and forbs, and is expected to be successfully vegetated with grasses within one or two growing seasons and other forbs and legumes within two to six growing seasons. Seed mixes will be developed to maximize the success of revegetation, including a localized analysis of mixes best suited for use on specific segments of the pipeline. Natural revegetation of shrub and forest cover types is expected to take significantly longer, with some saplings and nurse trees established within 5 to 10 years, and tree cover then continuing through natural succession of the forest type (Burger and Zipper 2009).

A list of invasive plant species associated with the Project area will be available upon completion of rare plant surveys scheduled to be completed in 2016 (see Section 3.2.2, Existing Vegetation; and Section 3.4.2, Protected Plant Species). During operations, Equitrans may apply herbicide as necessary to control invasive species. Applications are made in accordance with the FERC Plan and Procedures.

Excavation for pipeline placement exposes the topsoil surface to potential entrance of exotic, noxious, and/or invasive plant species. This can occur either by physical transport onto the exposed soil site by way of equipment, machinery or vehicles, through windborne dissemination of seeds of exotic or invasive species from the surrounding area, or by introduction of seeds or plant parts contained in mulch or straw bales.

Equitrans has not received any specific mitigation requirements or recommendation from stakeholders thus far regarding exotic, noxious and invasive species. However, to avoid and minimize the potential for the introduction of these seeds to the Project corridor, Equitrans will apply the following management strategies to control exotic, noxious, and invasive species.

The two principal strategies for exotic, noxious, and invasive species control include:

- Avoidance of bringing exotic and invasive species in organic materials to the Project site; and use of weed-free mulch, straw and hay bales, if available, to construct sediment control devices during construction.
- Monitoring and selective spot treatment/eradication of any exotic or invasive species encountered during construction and post-construction. Equitrans will monitor the right-of-way annually after the first and second growing seasons following construction to allow for early detection of exotic

or invasive species infestations or outbreaks. If species or colonies of exotic or invasive species are found in numbers that are substantially greater than those existing nearby in off-right-of-way locations, Equitrans will conduct selective spot eradications of those species. Eradication measures could include herbicide application or hand-cutting to achieve effective removal of these species.

In addition to these strategies, the following control measures will be used to further minimize introduction and/or spread of these species:

- Adherence to erosion control measures in the FERC Plan and Procedures to ensure that sediment movement and the associated movement of non-native seeds into newly disturbed soils are minimized.
- Use of construction techniques along the pipeline route that minimize the time bare soil is exposed and, therefore, minimize the opportunity for exotic species to become established.
- Reseed all disturbed areas promptly after final grading, weather and soil conditions permitting, and in consideration of written recommendations from the local soil conservation authorities. Prompt reseeding will ensure that bare soil is not available for exotic or invasive species for an extended period of time. Note: seeding is not required in active agriculture lands unless requested by the landowner.
- As described in the FERC Plan, mulch, consisting of weed-free straw or hay or other erosion-control materials will be applied if final grading and installation of permanent erosion control measures are not completed within 20 days after the trench is backfilled or seeding cannot be completed properly due to scheduling outside of recommended seeding dates.

3.3 WILDLIFE

This section describes the wildlife resources potentially affected by the construction and operation of the Project. Wildlife and habitat types typically found in the Project area and methods used to avoid and minimize impacts on these resources are described.

3.3.1 Existing Resources

Ecoregions associated with the Project are described in Section 3.2.1 (Ecoregions). The Project traverses through various habitat types within the Western Allegheny Plateau ecoregion. The habitats associated with the Project can be generally categorized as upland forest, agricultural lands, herbaceous uplands, and wetland, as described in Section 3.2 of this resource report. The Project also is located within industrial, commercial, and residential lands. The vegetation impacts associated with the Project are summarized in Section 3.2.9 (Vegetation Impacts and Mitigation) and Tables 3.2-1 through 3.2-5. Each of these habitat types supports a diversity of wildlife species potentially found near the Project area. Species expected to occur within the Project area are typical of the Western Allegheny Plateau Ecoregion and the Eastern Broadleaf Forest (Oceanic) Province and include diverse populations of mammals, birds, fish, reptiles, and amphibians. Appendix 3-B identifies common wildlife species associated with habitats of Pennsylvania and West Virginia. Typical wildlife species specific to the Project area vary by the habitat types crossed, and these are in the process of being identified through ongoing field surveys and agency consultation. Potential wildlife species in each habitat type, including knowledge of common wildlife species provided by biologists familiar with the Project area, will be determined once the ongoing field surveys are completed and as ongoing agency consultation progresses and correspondence from interested agencies are received

for specific wildlife and habitats potentially affected by the Project. Differences in the land cover types described in Section 3.2 and this section are based on the more specific habitat descriptions used to adequately describe wildlife habitats associated with the Project area, which filter down to assessing Project-specific wildlife impacts.

Common big game species for the region include white-tailed deer (*Odocoileus virginianus*), American black bear (*Ursus americanus*), wild turkey (*Meleagris gallopavo*), and other small game species such as squirrel, rabbit, grouse, quail and turkey. No concerns have been raised to date regarding impacts on game species or hunting (e.g., hunt clubs, individual landowners, food plots, etc.). The BMPs outlined throughout this resource report will avoid, minimize or mitigate impacts on game species during construction and operation.

3.3.1.1 Upland Forest

Common wildlife in upland forest communities of the Project includes wild turkey, blue jay (*Cyanocitta cristata*), eastern gray squirrel (*Sciurus carolinensis*), chipmunk (*Tamias* spp.), and a variety of other wildlife species that feed on the acorns and hickory nuts produced by this mixed oak forest type. White-tailed deer also is associated with forested uplands. Herpetofauna common to upland forest communities include eastern box turtle (*Terrapene carolina*), northern copperhead (*Agkistrodon contortrix*), spotted salamander (*Ambystoma maculatum*), red-backed salamander (*Plethodon cinereus*), northern slimy salamander (*Plethodon glutinosus*), and wood frog (*Lithobates sylvatica*).

Forested uplands also serve as important habitat areas for both resident and migrating birds. The great horned owl (*Bubo virginianus*), red-bellied woodpecker (*Melanerpes carolinus*), and blue jay are a few of the resident birds commonly found within this habitat. Migratory songbirds that nest in this habitat include wood thrush (*Hylocichla mustelina*), Acadian flycatcher (*Empidonax virescens*), black-and-white warbler (*Mniotilta varia*), hooded warbler (*Setophaga citrina*), ovenbird (*Seiurus aurocapilla*), and scarlet tanager (*Piranga olivacea*).

3.3.1.2 Agricultural Lands

These lands include pastureland, hay fields, and cultivated crops, and can provide habitat for species adapted to living in open areas (e.g., grasslands). Species commonly occurring in agricultural lands include the brown-headed cowbird (*Molothrus ater*), horned lark (*Eremophila alpestris*), mourning dove (*Zenaida macroura*), and barn swallow (*Hirundo rustica*). Seasonally flooded fields can serve as stopover sites for migrating waterfowl such as the ring-necked duck (*Aythya collaris*), lesser scaup (*Aythya affinis*), and hooded merganser (*Lophodytes cucullatus*).

A variety of mammals will use agricultural lands for foraging and cover, including white-tailed deer, raccoon (*Procyon lotor*), groundhog (*Marmota monax*), and deer mice (*Peromyscus maniculatus*). Eastern ratsnake (*Pantherophis alleghaniensis*) can take advantage of the large number of rodents and small mammals attracted to these habitats.

3.3.1.3 Herbaceous Upland

These natural to semi-natural grasslands support species adapted to living in open areas that are dominated by grasses and forbs. Common nesting grassland birds include eastern meadowlark (*Sturnella magna*), vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus savannarum*). American

kestrels (*Falco sparverius*) and eastern bluebirds (*Sialia sialis*) prefer these open areas and nest where suitable cavities (e.g., snags) are available.

These areas provide an abundance of food and places for basking, which is attractive for reptiles such as the eastern gartersnake (*Thamnophis sirtalis sirtalis*), northern brownsnake (*Storeria dekayi dekayi*), and eastern milksnake (*Lampropeltis triangulum triangulum*).

The groundhog is an open-area specialist that inhabits grassland areas, while mammals such as the meadow vole (*Microtus pennsylvanicus*) and coyote (*Canis latrans*) are generalists that occur in this habitat.

3.3.1.4 Wetlands

Wetlands can be seasonal (e.g., vernal pools) or perennial, making them attractive to a wide-range of species, including those found in forested or more open habitats.

A variety of resident and migratory birds are found in wetlands, including common yellowthroat (*Geothylpis trichas*), yellow warbler (*Setophaga petechia*), tree swallow (*Tachycineta bicolor*), red-winged blackbird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), green heron (*Butorides virescens*), and wood duck (*Aix sponsa*).

Wetlands support a diversity of herpetofauna, including spring peeper (*Pseudocris crucifer*), upland chorus frog (*P. feriarum*), green frog (*Lithobates clamitans*), bullfrog (*Lithobates catesbeianus*), eastern red-spotted newt (*Notophthalmus viridescens*), four-toed salamander (*Hemidactylium scutatum*), queensnake (*Regina septemvittata*), snapping turtle (*Chelydra serpentina*), and eastern painted turtle (*Chrysemys picta*). Salamanders in the family Ambystomatidae, such as the spotted salamander and Jefferson salamander (*Ambystoma jeffersonianum*), spend most of their lives underground, but come out in spring following rains to migrate to vernal pools and other wetlands to breed.

Muskrat (*Ondatra zibethiucs*) and American beaver (*Castor canadensis*) are both indicators of wetlands and play important roles in the maintenance of this habitat. Other mammals found in wetlands include the raccoon, Virginia opossum (*Didelphis virginiana*), and white-tailed deer.

3.3.2 Significant or Sensitive Wildlife Habitat

Based on a review of USFWS information and a Project response letter received from the USFWS Pennsylvania Field Office, no Project facilities would be located within a USFWS National Wildlife Refuge (USFWS no date a; USFWS no date b; and USFWS 2015a). The Project is located in Pennsylvania Wildlife Management Units 2A and 2B; however, a review of PGC mapping for State Game Lands did not identify any special wildlife areas within the Pennsylvania portion of Project area.

Three West Virginia wildlife management areas are located within 10 miles of the Webster Interconnect, H-319 pipeline, and Mobley Tap, including Lewis Wetzel Wildlife Management Area, Lantz Farm and Nature Preserve, and Cecil H. Underwood Wildlife Management Area (WVDNR 2003b). Lewis Wetzel Wildlife Management Area and Lantz Farm and Nature Preserve are located adjacent to each other in Jacksonburg, West Virginia. Lewis Wetzel Wildlife Management Area is located approximately 4 miles southwest of the Webster Interconnect site and consists of moderate–steep terrain, ranging in elevations from 736 to 1,560 feet (WVDNR 2003b). The area is heavily forested and is dominated by oak–hickory and cove hardwood. Game hunting is available for deer, grouse (family Phasianidae), raccoon, squirrel, and turkey; and game fish within the South Fork Fishing Creek includes smallmouth bass, spotted bass, and

stocked trout. Lantz Farm and Nature Preserve is located approximately 6 miles west of the Webster Interconnect site and consists of gently rolling to moderately steep terrain ranging in elevations from 736 to 1,475 feet (WVDNR 2003b). Habitat is dominated by old-growth oak–hickory, cove hardwood forest, and large open fields. The preserve allows hunting for deer, squirrel, and turkey. Fishing areas include the South Fork Fishing Creek, and game fish species includes smallmouth bass, largemouth bass, spotted bass, bluegill, channel catfish, sunfish, and stocked trout. The Cecil H. Underwood Wildlife Management Area is located approximately 10 miles north of Mobley Tap and is situated along the Wetzel-Marshall county line in West Virginia (WVDNR 2003b). This Wildlife Management Area is located along the West Virginia Fork Fish Creek and contains steep–moderate terrain, with elevations of 800 to 1,510 feet. Habitat within this Wildlife Management Area is dominated by oak–hickory and cove hardwood, and serves as a hunting area for deer, grouse, squirrel, and turkey. Game fish within Fish Creek includes rock bass (*Ambloplites rupestris*), smallmouth bass, and sunfish.

The Project does not cross any state or federal forests. A review of online databases and resources did not identify any privately managed conservation lands within vicinity of the Project area. To date, a Project response letter has been received from PADCNR (PADCNR Bureau of Forestry 2015), which did not identify any unique, sensitive, or protected vegetation that would be impacted by the Project; a copy of this letter is included in Appendix 1-L. Completion of the field surveys and agency consultation process will confirm the Project does not cross any significant or sensitive wildlife habitats.

3.3.3 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) (16 United States Code [USC] 703-711) affords protection to all birds listed in 50 CFR 10.13 (78 *Federal Register* [FR] 65844 65864). In addition to the MBTA, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act of 1940 (Eagle Act) (16 USC 668-688d). Executive Order 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid and minimize these adverse effects through enhanced collaboration with the USFWS. Executive Order 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors. It further states that particular focus should be given to addressing population-level impacts over individual impacts.

The Project is located within the Atlantic Flyway, which is a bird migration route that generally follows the Atlantic Coast of North America and the Appalachian Mountains. This route is used by birds typically because no mountains or even ridges of hills block this path over its entire extent, and the pathway contains good sources of water, food, and cover over its entire length.

According to the USFWS Birds of Conservation Concern (BCC) 2008 report, the Project is located within Bird Conservation Region (BCR) 28 (Appalachian Mountains), which contains 18 BCC species. Each BCR maintains a list of BCC species, including migratory and non-migratory birds that are of conservation concern and are considered species that, without additional conservation measures, may become candidates for the Endangered Species Act (ESA) (USFWS 2008). None of the 18 BCC species that are associated with the Appalachian Mountains BCR crossed by the Project have been identified as species of concern by agencies having jurisdicition of these species in the Project area, and they are not discussed further in this report.

The Important Bird Areas (IBA) Program is a global initiative developed through Birdlife International to identify and conserve critical areas associated with birds and other biodiversity. The National Audubon Society serves as the Partner of Birdlife International to administer the IBA Program in the United States. The Audubon's IBA online mapping application was accessed on May 31, 2015 to determine if the Project would intersect any IBAs. The Project does not cross any IBAs (Audubon no date a; Audubon no date b).

On March 30, 2011, the USFWS and FERC entered into a voluntary Memorandum of Understanding that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two federal agencies. The Memorandum of Understanding does not authorize the take of migratory birds or waive legal requirements under the MBTA, Eagle Act, ESA, or any other statutes.

Construction activities occurring during the nesting season for migratory birds (approximately April 1 to August 31) could result in direct and indirect effects on migratory birds. Some potential effects caused by Project construction may include habitat loss, disruption in foraging activities, and destruction or abandonment of active nests. The proposed construction areas represent a small portion of the available nesting habitat within the immediate vicinity. Equitrans will implement measures during Project development, construction, and operation to limit effects to migratory birds, including:

- Routing Project facilities to avoid sensitive resources where possible;
- Reducing the right-of-way in sensitive resource areas;
- Collocating Project facilities with existing pipeline or utility rights-of-way where feasible;
- Environmental training of Equitrans personnel and inspection of construction and restoration activities;
- Minimizing fragmentation of habitats to the maximum extent possible;
- Adhering to measures outlined in the Project's E&SCP during construction; and
- Limiting clearing of vegetation and routine right-of-way maintenance during the nesting season for most native birds (April 1 to August 31) in accordance with the FERC Plan.

A Migratory Bird Habitat Conservation Plan is being prepared and will be submitted to the agencies for review and comment. This plan will address:

- Migratory bird species of concern and associated habitat within the Project area;
- Conservation requirements for migratory bird species of concern within the Project area; and
- Equitrans' strategies to avoid and minimize impacts on migratory birds and their associated habitats.

The Migratory Bird Habitat Conservation Plan will detail Equitrans' responsibilities as required under the MBTA, and voluntary commitments to conserving migratory birds in the Project area. The Migratory Bird Habitat Conservation Plan also will summarize correspondence from biologists with the USFWS and state natural resource agencies regarding migratory birds and potential bird species of concern in the Project area, as well as their recommendations to Equitrans for conserving migratory birds.

The USFWS Information, Planning, and Conservation (IPaC) database review for the Project area reports the bald eagle as a potential year-round resident species; however, a review of the USFWS Pennsylvania Field Office Pennsylvania Bald Eagle Nest Locations and Buffer Zones map (USFWS 2014a) did not identify any bald eagle nests in the Project area, and a Project response letter received from USFWS did

not identify bald eagle as a species of concern for the Project (USFWS 2015a). No bald eagle nest sites have been identified for the Webster Interconnect, H-319 pipeline, and Mobley Tap area of the Project, and completed field surveys to date have not identified presence of bald eagles or eagle nests. Although eagle nests are not expected to be present within the Project survey corridor, any nest encountered during future field activities will be recorded, and applicable avoidance and minimization measures would be implemented in consultation with state and federal agencies. Construction activities are not likely to disturb nesting bald eagles because the Project does not cross any known eagle concentration areas.

3.3.4 Wildlife Impacts and Mitigation

Temporary wildlife impacts are those associated with disturbance activities during Project construction, whereas permanent impacts are associated with conversion of forested habitats to scrub-shrub or herbaceous as a result of recurring maintenance of the permanent right-of-way. Indirect, short-term impacts to wildlife associated with construction noise and increased human activity are expected to be temporary and could result in abandoned or delayed reproductive efforts, displacement from the Project area, and complete avoidance of active work areas. Direct mortality to less mobile species of small wildlife could occur during clearing and grading operations. Specifically, wildlife could be crushed while on the surface or, in the case of subterranean species, while underground when tunnels or burrows are collapsed due to heavy equipment directly aboveground. Excavated trenches left open during Project construction risk wildlife accidentally becoming trapped or possibly experiencing bodily injury after falling into the trench. Equitrans will install escape ramps within the open trenches to allow wildlife to exit and not become trapped. There also will be breaks in the trench to allow for wildlife to pass over. Each day and prior to the start of construction, the trench and equipment will be inspected, and wildlife encountered will be safely removed.

Pipeline construction using HDD techniques typically may include 24-hour activity for several weeks in a single location, which can result in a longer duration of disturbance to wildlife than standard pipeline construction activities.

Effects on non-forested habitat impacted during construction will be temporary, and these areas are expected to recover quickly once construction is completed and restoration is initiated. The temporary effects on these habitats will have little or no long-term impact on individual wildlife species or wildlife populations. Temporary loss of herbaceous cover during the construction and installation of the pipeline will potentially reduce habitat normally utilized by insect pollinators, such as bees and butterflies, or by ground nesting songbirds. By implementing the FERC Plan and Procedures and incorporating native grasses and wildflowers into seed mixtures during restoration, herbaceous habitat is expected to return to pre-construction conditions.

Forested habitats, both upland and wetland, will be impacted to a greater extent due to the long-term conversion of these wooded habitats to earlier successional stage, grassland/scrub-shrub in the permanent, maintained right-of-way. Tree removal associated with Project construction will permanently reduce available nesting, roosting, and denning sites for numerous woodland wildlife species, including birds and bats. Continuous tracts of forest will be fragmented and sharp edges created at the interface of intact forest and the permanent right-of-way will deprive interior forest wildlife species, such as warblers, salamanders, and many woodland flowers, of the necessary shade and humidity that only deep, canopied-forest environments can provide. New corridors traversing forested tracts may inhibit movement of forest interior species which are more reluctant to cross large openings to due to the increased risk of predation (Bennett 2003).

The USFWS has expressed concern for potential Project impacts to migratory birds, and avian mortality from habitat destruction and alternation within the Project boundaries (USFWS 2015a; see also Appendix 1-L). Equitrans has considered site-specific factors during Project design and siting to avoid and minimize risks to birds to the extent practicable. Avian abundance; quality, quantity, and type of habitat; geographic location; type and extent of bird use (e.g. breeding, foraging, migration); and landscape features are all considerations that could impact migratory birds and avian survivorship in the Project area. A summary of the USFWS recommendations for the Project for protection of migratory birds, and Equitrans'response to those recommendations, include the following:

1. Conduct ground/vegetation disturbances between September 1 and March 31 – As practicable, Equitrans intends to conduct vegetation and tree clearing during the winter months or as specified by the regulating agency (consultation ongoing) to avoid impacts on protected bats as well as nesting and migratory birds. If no winter clearing restriction to avoid impacts on protected *Myotis* species is imposed, Equitrans will attempt to conduct tree clearing during September 1 to March 31.

2. Minimize land and vegetation clearing – Equitrans has co-located with existing utility corridors and has made use of existing access roads to the extent practicable. Equitrans also has used open or previously disturbed areas for laydown/staging/yards, further reducing impacts. Construction widths at stream and wetland crossings will be limited to 75 feet; crossings are planned for the narrowest point and perpendicular to the waterbody. Where HDD is planned, vegetation clearing will be avoided, which will limit impacts on wetlands and forested land.

3. Avoid areas where birds are concentrated – The Project avoids areas where birds would concentrate, such as designated state or federal refuges, Audubon Important Bird Areas, private duck clubs, avian staging areas, rookeries, leks, roosts, and riparian areas.

4. Avoid fragmentation – Where practicable, the Project is co-located with existing utility corridors. Additionally, 20 percent of the Project occurs on agricultural lands. Where HDD is planned, the permanent right-of-way will be left intact, avoiding impacts on approximately 1.4 miles of habitat.

5. Minimize construction site hazards to wildlife – To minimize potential impacts on wildlife species that could result from construction equipment and vehicle activities (i.e., vehicle collisions, wildlife falling into with open trenches), Equitrans will employ specific measures, including implementing speed restrictions for construction vehicles and equipment traffic, as well as escape ramps or routes in open trenches, and constructing breaks in windrows for wildlife travel corridors.

6. Develop a habitat restoration plan – The vegetation clearing during construction and operations will be scheduled to occur between September 1 and March 31. Native vegetation will be used in developing seed mixes for temporary and permanent seed cover, and one of the key components of the native seed mixes will be inclusion of native flowering plants for the express benefit of native and domestic pollinators (bees). Equitrans will complete restoration activities in compliance with the FERC Plan and Procedures, as well as its state earth disturbance permits.

Some benefits to breeding and nesting bird species could occur from the conversion of forest habitats to scrub-shrub habitats within the pipeline rights-of-way that will be maintained, and increased foraging habitat could occur if the amount of open wetlands is increased. The permanent, maintained right-of-way will provide a travel corridor for many wildlife species, such as bats or birds of prey, and may provide food,

shelter, and breeding habitat for species that prefer open herbaceous or scrub-shrub early successional habitats to forested habitats. Maintained utility rights-of-way are often heavily used by many locally important game species including white-tailed deer and American black bear.

3.4 ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

The federal ESA of 1973 (16 USC A-1535-1543, Public Law 93-205) provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under the ESA, plants and animals provide aesthetic, ecological, educational, historic, and scientific value to the United States. The USFWS is mandated to monitor and protect all federally listed freshwater and terrestrial species, whereas the NMFS is responsible for marine species. A federally listed endangered species is any species which is in danger of extinction throughout all or a significant portion of its range. A federally listed threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

ESA also provides protection for "critical habitat" which, as defined by the USFWS, is (1) specific areas within the geographical area occupied by the species, at the time of listing, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protections; and (2) specific areas outside the geographical area occupied by the species at the time it is listed and are determined to be areas essential for the conservation of the species.

Under provisions of the ESA, all states were granted the authority to enact their own endangered species protection policies. Pennsylvania's Wildlife Resource Conservation Act Title 34 Pennsylvania Consolidated Statutes Annotated (Pa. C.S.A.) §2167; 34 Pa. C.S.A. §2924; 34 Pa. C.S.A. §925; and 32 Pennsylvania Statutes §5301–14 is the set of Pennsylvania laws that govern the state's endangered species provisions. Section 2167 makes it unlawful for any person to bring into or remove from this Commonwealth, or to possess, transport, capture or kill, or attempt, aid, abet or conspire to capture or kill, any wild bird or wild animal, or any part thereof, or the eggs of any wild bird, which are endangered or threatened species. Any commerce in endangered species also is prohibited. For a first violation, a person may have his or her hunting privileges revoked for 7 years. In Pennsylvania, responsibility for protection of listed species is divided between PADCNR (flora); PGC (wild birds and mammals; and PFBC (fish, reptiles, amphibians and aquatic invertebrates).

West Virginia currently does not have state laws pertaining to threatened and endangered species. Rare species are assigned "State Ranks" by the West Virginia Natural Heritage Program and range in value from S1 (critically imperiled) to S5 (Secure). Species with state ranks of S1, S2 (imperiled), and S3 (vulnerable) are tracked by the West Virginia Natural Heritage Program.

Equitrans reviewed USFWS' IPaC system and has initiated consultation with federal and state agencies (USFWS, PGC, PFBC, PADCNR, and WVDNR) to request any known federally listed, state-listed or rare species records within the Project area. To date, Project response letters have been received from the USFWS Pennsylvania Field Office, PADCNR Bureau of Forestry, PFBC, PGC and WVDNR; and some specific field surveys have been completed. Copies of agency correspondence is included in Appendix 1-L.

3.4.1 Protected Aquatic Species

The Project is located within western Pennsylvania and northern West Virginia and is not in proximity to aquatic or marine resources under the jurisdiction of NMFS. According to the NMFS online EFH mapper tool, no EFH occurs within the Project area. None of the waterbodies crossed by the Project contain or have the potential to support species managed by the NMFS. The Project occurs well inland of saltwater or tidal waters, and a review of online databases and resources did not identify any anadromous or diadromous fish migration routes that would be crossed by the Project. As such, protected marine species are not discussed further.

A letter was received from PFBC on May 19, 2015, which identified three species of state rare or protected freshwater mussel species that have the potential to be impacted by the Project (PFBC 2015c). Rare or protected freshwater mussels that are known to occur in the South Fork Tenmile Creek area of the Project include round pigtoe (*Pleurobema sintoxia*), three-ridge, and Wabash pigtoe. PFBC identified these freshwater mussel species as especially vulnerable to physical and chemical impacts to their aquatic environment.

The PFBC recommended using directional boring (i.e., HDD) rather than open cutting for the H-316 pipeline crossing of the South Fork Tenmile Creek. No instream work was recommended, which would prevent erosion and/or sediment to impact the waterbody. Further, PFBC recommended strict adherence to erosion and sedimentation control measures identified for the Project. PFBC does not foresee any significant adverse impacts from the Project to the freshwater mussels of South Fork Tenmile Creek under its jurisdiction if directional boring methods are used, in-stream work is avoided, erosion and sediment controls are maintained, other BMPs are implemented to protect water quality, and if the following contingencies to prevent impacts to water quality from drilling/boring operations are employed:

- A designated environmental inspector will remain on-site for the duration of the entire crossing operation;
- Boring or drilling operations will cease immediately if inadvertent returns are observed;
- If a release occurs, a Vac Truck will be onsite, or on call within three hours to initiate cleanup of the release into the stream channel to prevent downstream migration of drilling fluids; and
- PFBC Bureau of Law Enforcement Regional Office will be notified within 24 hours (http://fishandboat.com/dir_regions.htm; North Central – (814) 359-5250; Northeast (570) 477-5717; Northwest (814) 337-0444; Southwest (814) 445-8974).

Additionally, PFBC Bureau of Law Enforcement requires notification of any release of sediment to the stream so that they can address the issue. Any unauthorized disturbance, unpermitted discharge, or release of sediment(s) that is determined to be a pollution event (generally described at http://www.fish.state.pa.us/fishpub/summary/reporting.html) per the PFBC Code is subject to appropriate legal enforcement action.

Equitrans intends to use HDD to cross South Fork Tenmile Creek and will implement the PFBC's recommendations for mitigation for potential impacts caused by Project construction. As recommended by PFBC (PFBC 2015c), Equitrans completed a freshwater mussel survey for round pigtoe, three-ridge, and Wabash pigtoe of the South Fork Tenmile Creek in October 2015. As required by PFBC, this survey was performed by a qualified malacologist in accordance with the PFBC-approved mussel survey protocol,

which required that the survey be performed when water temperatures were generally above 55°F when mussels are more readily detectible near the substrate surface, and during normal flows and when relatively clear water conditions were present (PFBC 2015c). A freshwater survey work plan for the Project was submitted to PFBC for approval prior to completion of the survey. Native freshwater mussels were observed in low abundances, but no federally listed mussel species were identified during the survey. A summary report detailing the methods and results of the survey is currently being prepared and submitted to PFBC. Because no rare or protected mussel species were observed in the survey, it is not expected that PFBC will require freshwater mussel relocation for the Project.

No special status fish species have been identified that could potentially occur within freshwater systems in the Project area (Appendix 3-A), and additionally, the Project response letter received from PFBC did not identify any fish species of special concern within waterbodies that could potentially be affected by the Project in Pennsylvania.

Table 3.4-1 identifies status information for the three freshwater mussel species of concern identified by PFBC in their Project response letter.

Table 3.4-1

Freshwater Mussels Species of Special Concern identified by Pennsylvania Fish and Boat Commission for Project Area

Common Name	Scientific Name	Federal Status	State Status	Global Rank a/	State Rank b/	Allegheny County	Greene County	Washington County
Round pigtoe	*Pleurobema sintoxia*	-	-	G4G5	S3S4	-	X	-
Three-ridge	*Amblema plicata*	-	-	G5	S2S3	-	X	-
Wabash pigtoe	*Fusconaia flava*	-	-	G5	S2S3	X	X	X

a/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

b/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

3.4.2 Protected Plant Species

Project field surveys and consultation with USFWS, PGC, PFBC, PADCNR, and WVDNR are ongoing. Site-specific Project information contained in this section regarding protected plant species will be updated as field surveys are completed, and the agency consultation process progresses and additional agency correspondence regarding protected plant species information is received.

A review of PANHP data identified one federally listed plant species, the small whorled pogonia (*Isotria medeoloides*), a federally threatened species that has the potential to occur in the Greene County area of the Project. A response to a Project letter submitted to PADCNR, PGC, PFBC, and the USFWS Pennsylvania Field Office on June 24, 2015 requesting a review of Pennsylvania Natural Diversity Inventory data for the Project was received from PADCNR on July 22, 2015 (PADCNR 2015) and USFWS on July 27, 2015 (USFWS 2015a). Neither of these letters identified small-whorled pogonia as a species of concern for the

Project area; however, the PADCNR letter did identify six other rare or state listed plant species that have a potential to occur in the Project area, including blue false-indigo (*Baptisia australis*), cranefly orchid (*Tipularia discolor*), purple rocket (*Iodanthus pinnatifidus*), rock skullcap (*Scutellaria saxatilis*), snow trillium (*Trillium nivale*), and white trout-lily (*Erythronium albidum*) (PADCNR 2015) (Table 3.4-2). PADCNR recommended Project surveys for these species be performed by a qualified botanist at the appropriate times of year and in accordance with PADCNR's Botanical Survey Protocols. Three rare plant surveys are scheduled to be conducted in 2016, including: (1) a cranefly orchid, snow trillium, and white trout lily survey to be completed between April 15 and April 30, 2016; (2) a white trout lily, purple rocket, and blue false-indigo survey to be completed between May 15 and May 31, 2016; and (3) a rock skullcap, small whorled pogonia (if a subsequent letter from USFWS requests this survey), and cranefly orchid survey to be completed between August 15 and August 31, 2016. Upon completion of rare plant surveys, survey reports will be submitted to PADCNR for review. If any of rare plants targeted during the surveys are identified within the Project area, Equitrans will work with PADCNR to determine Project-effects and to identify appropriate mitigation and monitoring measures for conservation of listed, special concern, or rare plant species identified for the Project. Results of field surveys, effects determination, and mitigation measures (if necessary) will be filed with the FERC, once available.

Table 3.4-2

Plant Species of Special Concern identified by Pennsylvania Department of Conservation and Natural Resources as having the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status a/	Global Rank b/	State Rank c/	Allegheny County	Greene County	Washington County
Blue false-indigo	*Baptisia australis*	-	N (proposed PT)	G5	S2	X	-	X
Cranefly orchid	*Tipularia discolor*	-	PR	G4G5	S3	-	X	X
Purple rocket	*Iodanthus pinnatifidus*	-	PE	G5	S1	X	X	X
Rock skullcap	*Scutellaria saxatilis*	-	TU (proposed PE)	G3	S1	X	X	-
Snow trillium	*Trillium nivale*	-	PR	G4	S3	X	X	X
White trout-lily	*Erythronium albidum*	-	N (proposed PR)	G5	S3	X	X	X

a/ N = No current legal status exists, but is under review for future listing PE = Pennsylvania Endangered; PR = Pennsylvania Rare TU = Tentatively Undetermined

b/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

c/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation)

3.4.2.1 Blue False-indigo

Blue false-indigo is not currently state listed, but is proposed for listing as threatened in Pennsylvania (PADCNR 2015). This species was reported by PADCNR as locally documented in the Project area, and is associated with rich wooded riverine slopes, preferably open woods, streambanks, and sandy floodplains. It is a perennial herb, and produces white (sometimes slightly tinged with blue or pink) flowers in May and June. Pennsylvania occurrences are widespread, but particularly along major rivers and streams along bottomlands, floodplains, and lower slopes containing limestone substrates (Pennsylvania Natural Heritage Program no date).

3.4.2.2 Cranefly Orchid

Cranefly orchid is identified as a rare plant species in Pennsylvania. This species was reported by PADCNR as locally documented in the Project area and is associated with red oak mixed hardwood forests, preferably deciduous forests and streambanks (PADCNR 2015). Its leaves are identifiable in the fall, winter, and spring, with flowers produced in July and August.

3.4.2.3 Purple Rocket

Purple rocket is a Pennsylvania endangered species (PADCNR 2015). PADCNR reported this species as having been documented locally within the Project area, and it is associated with rich wooded riverine slope, preferably moist alluvial woods and wooded slopes. It also occurs in soggy meadows near wooded streams and prefers sunny areas adjacent to small streams and drainages (Illinois Wildflowers no date). Purple rocket is short-lived with most vegetative growth occurring in the spring, blooming in early summer for about three weeks in May and June.

3.4.2.4 Rock Skullcap

Rock skullcap currently has an undetermined status in Pennsylvania, but is proposed for state listing as endangered (PADCNR 2015). PADCNR reported this species as having been locally documented in Project area, and it is associated with sycamore scrub floodplains, preferably low woods, rocky streambanks, and roadsides. It is a small perennial herb that flowers in July and August.

3.4.2.5 Snow Trillium

Snow trillium is a Pennsylvania rare species. PADCNR has documented this species locally within the Project area, and it is associated with rich stream valley wooded slopes, preferably stream valleys and wooded slopes, especially on limestone (PADCNR 2015). This small lily flowers in March and April.

3.4.2.6 White Trout-lily

White trout-lily is not currently listed in Pennsylvania, but is proposed as rare (PADCNR 2015). PADCNR reported this species has having been documented locally within the Project area, and is associated with floodplain forests and rich wooded slopes along rivers and creeks, preferably moist woods and rich slopes, especially on limestone (PANHP no date b). It flowers in April and May.

Pennsylvania maintains a list of state-listed endangered, threatened, and rare species. Pennsylvania uses the designations “PE” (Pennsylvania Endangered), “PT” (Pennsylvania Threatened), “PR” (Pennsylvania Rare), “PX” (Pennsylvania Extirpated), “PV” (Pennsylvania Vulnerable), “TU” (Tentatively Undetermined), and “N” (no current legal status exists, but is under review) for native plant taxa. Other species are ranked in Pennsylvania using assigned letters and numbers that indicate the level of concern

related to the threat of extinction for a species. The rank of each species of concern is determined in terms of its total population size, number of populations, extent of the species habitat, and extent of its geographic range. Other factors are considered when determining rarity such as increasing or decreasing population trends and threats to survival. The conservation status of a species of concern is considered on a global (G) and state (S) basis. The level of concern is designated with a 1–critically imperiled, 2–imperiled, 3–vulnerable to extirpation or extinction, 4–apparently secure, or 5–demonstrably widespread, abundant, and secure. Extinct or state extirpated species are assigned an "X" or an "H" if they are possibly extinct, but not definitively extirpated.

West Virginia does not have state legislation for designation of listed endangered, threatened, or rare species, but does maintain a natural heritage database of rare species and sensitive habitats. Ongoing consultation with WVDNR and field survey results will be used to determine if any special concern or rare plant species are associated with the Webster Interconnect, H-319 pipeline, and Mobley Tap area of the Project, and if any species-specific surveys are required.

3.4.3 Federally Protected Wildlife Species

Project field surveys and consultation with USFWS (Pennsylvania Field Office), PGC, PFBC, PADCNR, and WVDNR is ongoing, and some specific wildlife surveys have been completed. Site-specific Project information contained in this section regarding federally protected wildlife species will be updated as field surveys are completed, and the agency consultation process progresses and agency correspondence regarding protected wildlife species information is received. A Project-response letter was received from the USFWS Pennsylvania Field Office on July 27, 2015, which identified two federally listed species, Indiana bat (*Myotis sodalis*) and northern long-eared bat (*M. septentrionalis*), that could potentially occur in the Project area (USFWS 2015a) (Table 3.4-3). The bald eagle is described in more detail in Section 3.3.3 (Migratory Birds).

Table 3.4-3

Mammal Species of Special Concern identified by U.S. Fish and Wildlife Service having the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b/	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County	Wetzel County
Indiana bat	*Myotis sodalis*	LE	PE	G2	SUB, S1N	X	X	X	X
Northern long-eared bat	*Myotis septentrionalis*	LT	-	G4	S1	X	X	X	X

a/ LE = Federally Listed as Endangered; LT = Federally Listed as Threatened

b/ PE = Pennsylvania Endangered

c/ G2 = Imperiled (at high risk of extinction globally due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

d/ SUB = Applicable to breeding population; S#N = Applicable to non-breeding population; S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state)

The Project-response letter received from the USFWS Pennsylvania Field Office on July 27, 2015 identified Project recommendations for protection of Indiana bat and northern long-eared bat, including restricting land-clearing activities during periods when these species could be present (April 1 through September 30), and conducting these activities during times the species are likely to be concentrated near or overwintering in their hibernacula (October 1 through March 31). As described in Section 3.4.3.1 below, Equitrans completed mist-netting surveys for the Indiana bat and northern long-eared bat in July and August 2015 in accordance with the USFWS Protocol for Assessing Abandoned Mines/Caves for Bat Use (USFWS no date d), USFWS Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2015b), and USFWS Northern Long-eared Bat Interim Conference and Planning Guidance (Updated January 2014). Additional portal searches of potential winter hibernacula for these species also were completed in the Project area in October 2015.

3.4.3.1 Protected Bat Species

The USFWS listed the Indiana bat as endangered on March 11, 1967 (USFWS no date c). Their range occurs over most of the eastern half of the United States (USFWS 2006), and this species has the potential to occur in all areas of the Project. The 2013 range-wide estimate of the population was 534,239 individuals (USFWS 2013). The Indiana bat is a small, social bat, often occurring in large numbers during hibernation (USFWS 2006). In flight its wingspan is 9 to 11 inches, and it has dark-brown to black fur. In winter, the Indiana bat hibernates in caves, or occasionally in abandoned mines, where they require cool, humid conditions with stable temperatures below 50°F, but above freezing. After hibernation, these bats migrate to summer habitats that are located in woodlands where they roost under loose tree bark, or in dead or dying trees. Males roost alone in the summer, whereas females roost in groups of 100 or more bats (maternity roosts). This species forages along edges of bottomland or upland forests, old fields and pastures, and along riparian edges of rivers or lakes, eating a variety of flying insects (PGC and PFBC 2008). They typically eat about half of their body weight each night.

The Project is within the documented range of northern long-eared bats (76 FR 38095-38106). Northern long-eared bats inhabit forested and riparian habitats for foraging and roosting. The USFWS recently listed the northern long-eared bat (also known as northern myotis and eastern long-eared bat) as threatened on May 4, 2015 (80 FR 63). The USFWS initiated a 90-day review on July 29, 2011 to determine if federal listing of the northern long-eared bat was warranted, and on October 2, 2013, the USFWS released their 12-month finding on a petition to list the northern long-eared bat and to designate critical habitat for this species (78 FR 191). This finding indicated that designation of critical habitat could not be determined, and to date, no critical habitat has been designated for this species by USFWS. On January 6, 2014, the USFWS published their Interim Conference and Planning Guidance that addresses immediate information needs for Section 7 consultations and conservation planning for this species (USFWS 2014b). At the time of listing, the USFWS also established an interim rule amending 50 CFR 17.40 under the authority of Section 4(d) (Interim 4[d] rule) of the ESA that provides measures that are necessary and advisable to provide for the conservation of this species. The comment period for this interim rule ended on July 1, 2015.

Preferred summer roosts of the northern long-eared bat are generally associated with old-growth forests composed of trees 100 years old or older, and this species is dependent on intact interior forest habitats that have a low edge-to-interior ratio (76 FR 38095-38106). Relevant late-successional forest features include a high percentage of old trees, uneven forest structure, single and multiple tree-fall gaps, standing snags, and woody debris. This species appears to favor small cracks or crevices in cave ceilings for hibernation.

Northern long-eared bats are opportunistic insectivores, obtaining prey both in flight and by gleaning from surfaces. Prey includes small insects, such as moths, flies, leafhoppers, and beetles. Forested hillsides and ridges are their preferred foraging habitat, with the presence of mature forest stands thought to play an important role in their foraging behavior. Foraging occurs at dusk over small ponds and forest clearings under the forest canopy or along streams (USFWS 2011).

Primary threats to these species include human disturbance (especially during hibernation), cave commercialization (cave tours), improper gating of caves (blocking the entrance or resulting in changing the internal temperature or air flow within the cave), loss or degradation of summer habitat, pesticide use, and environmental contaminants. In addition to these threats, white-nose syndrome (WNS) can have devastating mortality effects on hibernating bat populations. WNS was first documented in New York in the winter of 2006–2007, and likely was present in bat populations in Pennsylvania in 2008 (PGC 2013). WNS is a white fungus (*Geomyces destructans*) that can infect bat populations and may completely or significantly reduce bat populations residing in caves during their hibernation period. Affected bats will have the white fungus on their muzzles and/or wing membranes. This fungus thrives in the cold, damp conditions where bats hibernate, but typically does not grow on bats during the summer months when they are active at typical forest temperatures. This fungus has been confirmed to be the causative agent of the disease, although the specific mechanism in how it causes mortality is not fully understood.

Mist-netting surveys were completed for the Indiana bat and northern long-eared bat in July and August 2015 in accordance with the USFWS Protocol for Assessing Abandoned Mines/Caves for Bat Use (USFWS no date d), USFWS Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2015b), and USFWS Northern Long-eared Bat Interim Conference and Planning Guidance (Updated January 2014). A draft study plan detailing survey type, effort, and locations was submitted to the USFWS, PGC, PFBC, PADCNR, and WVDNR for approval in July 2015. The mist-netting surveys were conducted for 60 net nights at 10 sites between July 16, 2015 and August 9, 2015. No Indiana bats or northern long-eared bats were collected during the mist-net survey period.

To determine if potentially suitable winter habitat for the Indiana bat or northern long-eared bats exists within the Project area, portal searches of potential winter hibernacula were completed in the Project area in September and October 2015. Many of the portals (caves or abandoned mines) were determined to be unsuitable as hibernacula due to short passageways or extensive evidence of flooding. Those portals deemed suitable have been surveyed for bat use, and no bats have been observed or documented using these areas. No mitigation measures are proposed for Project impacts on potentially suitable winter habitat for the Indiana bat or northern long-eared bat, as use of suitable hibernacula identified for the Project area by these species (or any other bat species) was not documented during portal searches. Equitrans intends to pursue an ESA determination that clearing at any time of the year in Pennsylvania and West Virginia *may affect, but is not likely to adversely affect* the Indiana bat or northern long-eared bat. Finalized bat survey reports and any subsequent agency correspondence received for the Project for protected bat species will be provided to FERC upon receipt. If recommended by the USFWS, Equitrans will commit to seasonal winter clearing restrictions that avoid direct impacts on bats. Additional surveys for winter and summer habitat assessments for the Indiana bat and northern long-eared bat are scheduled to be completed in the fall of 2015.

3.4.4 State Protected Wildlife Species

Project field surveys and consultation with USFWS (Pennsylvania Field Office), PGC, PFBC, PADCNR, and WVDNR are ongoing. Site-specific Project information contained in this section regarding state protected wildlife species will be updated as field surveys are completed, and the agency consultation process progresses and additional agency correspondence regarding protected wildlife species information is received.

A response to a Project letter submitted to PADCNR, PGC, PFBC, and the USFWS Pennsylvania Field Office on June 24, 2015, requesting a review of Pennsylvania Natural Diversity Inventory data for the Project, was received from PGC on June 30, 2015. This letter indicated that although Pennsylvania Natural Diversity Inventory records of bird and mammal species of concern are located in the vicinity of the Project, the Project as described would not likely impact bird or mammals species (PGC 2015). No further coordination with PGC is required unless the Project description changes or additional information on protected species becomes available. The PGC Project determination is valid for two years from the date of the letter. A letter from the PFBC, which did not identify any potential Project impacts on fish, amphibians, or reptiles (PFBC 2015c), also was received for the Project on May 19, 2015. The letter received from the USFWS Pennsylvania Field Office did not specifically address state listed species, but did identify conservation measures for protection of migratory birds, which are described in Section 3.3.3 (Migratory Birds).

3.4.5 Endangered, Threatened, and Special Concern Species Impacts and Mitigation

Equitrans is actively engaged with state and federal natural resource agencies to determine the likelihood of threatened and endangered species that may be present in the Project vicinity and the potential need for species-specific field surveys for the Project. The consultation process with the USFWS Pennsylvania Field Office, PGC, PFBC, PADCNR, and WVDNR is ongoing, and specific impacts and mitigation measures to special status federal and state species have yet to be identified for the Project. Survey results and subsequent agency consultation will be filed with FERC as they become available.

Equitrans will continue coordination with the agencies to determine reasonable and prudent measures to avoid, minimize, or mitigate anticipated impacts to threatened and endangered species within the Project area. The anticipated impacts resulting from construction and operation of the Project on state and federally protected species will be determined following completion of field surveys and agency consultation process.

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Equitrans Expansion Project

Docket No. CP16-___-000

Resource Report 3

Appendix 3-A
Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Appendix 3-A

Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
Allegheny pearl dace	*Margariscus margarita*
American brook lamprey a/	*Lampetra appendix*
American eel	*Anguilla rostrata*
Atlantic salmon b/	*Salmo salar*
Banded darter	*Etheostoma zonale*
Banded killifish	*Fundulus diaphanus*
Bigeye chub	*Notropis amblops*
Bigmouth buffalo c/	*Ictiobus cyprinellus*
Bigmouth chub	*Nocomis platyrhynchus*
Bigmouth shiner c/	*Hybopsis dorsalis*
Black buffalo	*Ictiobus niger*
Black bullhead c/	*Ameiurus melas*
Black crappie	*Pomoxis nigromaculatus*
Black redhorse	*Moxostoma duquesnei*
Blackchin shiner c/	*Notropis heterodon*
Blacknose dace	*Rhinichthys atratulus*
Blacknose shiner	*Notropis heterolepis*
Blackside darter	*Percina maculata*
Bluebreast darter c/	*Etheostoma camurum*
Blueside shiner	*Lythrurus ardens*
Blue catfish d/	*Ictalurus furcatus*
Blue sucker d/	*Cycleptus elongatus*
Bluegill	*Lepomis macrochirus*
Bluntnose minnow	*Pimephales notatus*
Bowfin c/	*Amia calva*
Brassy minnow	*Hybognathus hankinsoni*
Brindled madtom c/	*Noturus miurus*
Brook silverside a/	*Labidesthes sicculus*
Brook stickleback c/	*Culaea inconstans*
Brook trout	*Salvelinus fontinalis*
Brown bullhead	*Ameiurus nebulosus*
Brown trout b/	*Salmo trutta*
Bullhead minnow d/	*Pimephales vigilax*
Burbot c/	*Lota lota*
Central mudminnow c/	*Umbra limi*
Central stoneroller	*Campostoma anomalum*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Chain pickerel b/	*Esox niger*
Channel catfish	*Ictalurus punctatus*
Channel darter a/	*Percina copelandi*
Channel shiner	*Notropis wickliffi*
Common carp b/	*Cyprinus carpio*
Common shiner	*Luxilus cornutus*
Creek chub	*Semotilus atromaculatus*
Creek chubsucker	*Erimyzon oblongus*
Eastern mosquitofish	*Gambusia holbrooki*
Eastern sand darter c/	*Ammocrypta pellucida*
Emerald shiner	*Notropis atherinoides*
Fallfish b/	*Semotilus corporalis*
Fantail darter	*Etheostoma flabellare*
Fathead minnow	*Pimephales promelas*
Flathead catfish	*Pylodictis olivaris*
Freshwater drum	*Aplodinotus grunniens*
Ghost shiner c/	*Notropis buchanani*
Gilt darter c/	*Percina evides*
Gizzard shad	*Dorosoma cepedianum*
Gravel chub c/	*Erimystax x-punctatus*
Golden redhorse	*Moxostoma erythrurum*
Golden shiner	*Notemigonus crysoleucas*
Golden rainbow trout b/	*Oncorhynchus mykiss*
Goldeye d/	*Hiodon alosoides*
Goldfish b/	*Carassius auratus*
Grass carp b/	*Ctenopharynogodon idella*
Grass pickerel	*Esox americanus vermiculatus*
Green sunfish	*Lepomis cyanellus*
Greenside darter	*Etheostoma blennioides*
Highfin carpsucker d/	*Carpiodes velifer*
Hornyhead chub c/	*Nocomis biguttatus*
Iowa darter	*Etheostoma exile*
Johnny darter	*Etheostoma nigrum*
Kanawha minnow	*Phenacobius teretulus*
Lake sturgeon c/	*Acipenser fulvescens*
Largemouth bass	*Micropterus salmoides*
Least brook lamprey c/	*Lampetra aepyptera*
Logperch	*Percina caprodes*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Longear sunfish c/	*Lepomis megalotis*
Longhead darter a/	*Percina macrocephala*
Longnose dace	*Rhinichthys cataractae*
Longnose gar a/	*Lepisosteus osseus*
Longnose sucker c/	*Catostomus catostomus*
Margined madtom	*Noturus insignis*
Mimic shiner	*Notropis volucellus*
Mooneye a/	*Hiodon tergisus*
Mottled sculpin	*Cottus bairdi*
Mountain brook lamprey c/	*Ichthyomyzon greeleyi*
Mountain madtom c/	*Noturus eleutherus*
Muskellunge	*Esox masquinongy*
Mummichog b/	*Fundulus heteroclitus*
New River shiner	*Notropis scabriceps*
Northern brook lamprey	*Ichthyomyzon fossor*
Northern hogsucker	*Hypentelium nigricians*
Northern madtom c/	*Noturus stigmosus*
Northern pike	*Esox lucius*
Northern redbelly dace c/	*Chrosomus eos*
Northern studfish	*Fundulus catenatus*
Ohio lamprey	*Ichthyomyzon bdellium*
Orange spotted sunfish	*Lepomis humilis*
Paddlefish	*Polyodon spathula*
Popeye shiner d/	*Notropis ariommus*
Pugnose minnow	*Opsopoeodus emiliae*
Pumpkinseed	*Lepomis gibbosus*
Quillback	*Carpiodes cyprinus*
Rainbow darter	*Etheostoma caeruleum*
Rainbow trout b/	*Oncorhynchus mykiss*
Redbreast sunfish	*Lepomis auritus*
Redear sunfish b/	*Lepomis microlophus*
Redfin shiner c/	*Lythrurus umbratilus*
Redside dace	*Clinostomus elongatus*
River carpsucker	*Carpiodes carpio*
River chub	*Nocomis micropogon*
River darter	*Percina shumardi*
River redhorse a/	*Moxostoma carinatum*
River shiner c/	*Notropis blennius*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Rock bass	*Ambloplites rupestris*
Rosyface shiner	*Notropis rubellus*
Rosyside dace	*Clinostomus funduloides*
Rudd minnow e/	*Scardinius erythrophthalmus*
Sand shiner	*Notropis stramineus*
Sauger	*Stizostedion canadense*
Sharpnose darter d/	*Percina oxyrhynchus*
Shorthead redhorse	*Moxostoma macrolepidotum*
Shortnose gar d/	*Lepisosteus platostomus*
Shovelnose sturgeon d/	*Scaphirhynchus platorynchus*
Silver chub a/	*Macrhybopsis storeriana*
Silver lamprey	*Ichthyomyzon unicuspis*
Silver redhorse	*Moxostoma anisurum*
Silver shiner	*Notropis photogenis*
Silverjaw minnow	*Notropis buccatus*
Skipjack herring a/	*Alosa chrysochloris*
Smallmouth bass	*Micropterus dolomieu*
Smallmouth buffalo a/	*Ictiobus bubalus*
Smallmouth redhorse	*Moxostoma anisurum*
Southern redbelly dace c/	*Chrosomus erythrogaster*
Spotfin shiner	*Cyprinella spiloptera*
Spottail shiner b/	*Notropis hudsonius*
Spotted bass	*Micropterus punctulatus*
Spotted darter c/	*Etheostoma maculatum*
Spotted sucker c/	*Minytrema melanops*
Steelcolor shiner	*Cyprinella whipplei*
Stonecat	*Noturus flavus*
Streamline chub	*Erimystax dissimilis*
Stripeback darter	*Percina notogramma*
Striped bass	*Morone saxatillis*
Striped bass hybrid	*Morone chrysops x M. saxatilis*
Striped shiner	*Luxilus chrysocephalus*
Tadpole madtom c/	*Notorus gyrinus*
Telescope shiner	*Notropis telescopus*
Threadfin shad	*Dorosoma petenense*
Tiger muskellunge b/	*Esox lucius x E. masquinony*
Tippecanoe darter c/	*Etheostoma tippecanoe*
Tonguetied minnow	*Exoglossum laurae*

Appendix 3-A

Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Torrent sucker	*Thoburnia rhothoecum*
Trout perch	*Percopsis omiscomaycus*
Variegate darter	*Etheostoma variatum*
Walleye	*Stizostedion vitreum*
Warmouth c/	*Lepomis gulosus*
White bass	*Morone chrysops*
White catfish b/	*Ameiurus catus*
White crappie	*Pomoxis annularis*
White perch b/	*Morone americana*
White shiner	*Luxilus albeolus*
White sucker	*Catostomus commersoni*
Whitetail shiner	*Cyprinella galactura*
Yellow bullhead	*Ameiurus natalis*
Yellow perch	*Perca flavescens*

Sources:

West Virginia Department of Environmental Protection. 2015. Fishes of West Virginia. http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/Fishes.aspx Accessed 07 June 2015.

Pennsylvania Fish and Boat Commission. 2015d. Gallery of Pennsylvania Fishes. Chapter 2 – Pennsylvania Species by Watershed. http://fishandboat.com/pafish/fishhtms/chap2.htm Accessed 07 June 2015.

a/ Delisted species

b/ Introduced species

c/ State or federally listed or candidate species

d/ Thought to be extirpated

e/ Invasive species

Equitrans Expansion Project

Docket No. CP16-___-000

Resource Report 3

Appendix 3-B
Wildlife Species with the Potential to Occur Along the Project Route

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Amphibians	
Allegheny mountain dusky salamander	*Desmognathus ochrophaeus*
American bullfrog	*Lithobates catesbeianus*
American toad	*Bufo americanus*
Black mountain salamander	*Desmognathus welteri*
Black-bellied salamander	*Desmognathus quadramaculatus*
Common mudpuppy	*Necturus maculosus*
Cumberland plateau salamander	*Plethodon kentucki*
Eastern American toad	*Anaxyrus americanus americanus*
Eastern hellbender	*Cryptobranchus alleganiensis*
Eastern red-backed salamander	*Plethodon cinereus*
Eastern red-spotted newt	*Notophthalmus viridescens viridescens*
Four-toed salamander	*Hemidactylium scutatum*
Fowler's toad	*Bufo fowleri*
Gray treefrog	*Hyla versicolor*
Green frog	*Lithobates clamitans*
Green salamander	*Aneides aeneus*
Jefferson salamander	*Ambystoma jeffersonianum*
Long-tailed salamander	*Eurycea longicauda longicauda*
Marbled salamander	*Ambystoma opacum*
Midland mud salamander	*Pseudotriton montanus diastictus*
Mountain chorus frog	*Pseudacris brachyphona*
Northern dusky salamander	*Desmognathus fuscus*
Northern green frog	*Rana clamitans melanota*
Northern leopard frog	*Rana pipiens*
Northern ravine salamander	*Plethodon electromorphus*
Northern red salamander	*Pseudotriton ruber ruber*
Northern slimy salamander	*Plethodon glutinosus*
Northern spring salamander	*Gyrinophilus porphyriticus porphyriticus*
Northern two-lined salamander	*Eurycea bislineata*
Pickerel frog	*Lithobates sylvaticus*
Red-spotted newt	*Notophthalmus viridescens*
Seal salamander	*Desmognathus monticola*
Small-mouthed salamander	*Ambystoma texanum*
Southern ravine salamander	*Plethodon richmondi*
Southern two-lined salamander	*Eurycea cirrigera*
Spotted salamander	*Ambystoma maculatum*
Spring peeper	*Pseudacris crucifer*
Spring salamander	*Gyrinophilus porphyriticus*
Streamside salamander	*Ambystoma barbouri*
Upland chorus frog	*Pseudacris feriarum*
Wehrle's salamander	*Plethodon wehrlei*
White-spotted slimy salamander	*Plethodon cylindraceus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Wood frog	*Rana sylvatica*
Reptiles	
Black ratsnake	*Elaphe obsoleta*
Common five-lined skink	*Plestiodon fasciatus*
Common ribbonsnake	*Thamnophis sauritus*
Common watersnake	*Nerodia sipedon*
Eastern black kingsnake	*Lampropeltis getula niger*
Eastern box turtle	*Terrapene carolina carolina*
Eastern fence lizard	*Sceloporus undulatus*
Eastern gartersnake	*Thamnophis sirtalis sirtalis*
Eastern hog-nosed snake	*Heterodon platirhinos*
Eastern milksnake	*Lampropeltis triangulum triangulum*
Eastern painted turtle	*Chrysemys picta picta*
Eastern ratsnake	*Pantherophis alleghaniensis*
Eastern smooth earthsnake	*Virginia valeriae*
Eastern wormsnake	*Carphophis amoenus amoenus*
Mountain earthsnake	*Virginia valeriae pulchra*
Northern black racer	*Coluber constrictor constrictor*
Northern brownsnake	*Storeria dekayi*
Northern copperhead	*Agkistrodon contortrix mokasen*
Northern pinesnake	*Lampropeltis getula*
Northern red-bellied Snake	*Storeria occipitomaculata*
Northern ring-necked snake	*Diadophis punctatus edwardsii*
Northern rough greensnake	*Opheodrys aestivus*
Northern watersnake	*Nerodia sipedon sipedon*
Queensnake	*Regina septemvittata*
Smooth greensnake	*Opheodrys vernalis*
Snapping turtle	*Chelydra serpentina*
Timber rattlesnake	*Crotalus horridus*
Birds	
Acadian flycatcher	*Empidonax virescens*
American bittern	*Botaurus lentiginosus*
American black duck	*Anas rubripes*
American coot	*Fulica Americana*
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tristis*
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American redstart	*Setophaga ruticilla*
American robin	*Turdus migratorius*
American tree sparrow	*Spizella arborea*
American woodcock	*Scolopax minor*
Bald eagle	*Haliaeetus leucocephalus*
Baltimore oriole	*Icterus galbula*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Bank swallow	*Riparia riparia*
Barn owl	*Tyto alba*
Barn swallow	*Hirundo rustica*
Barred owl	*Strix varia*
Bay-breasted warbler	*Setophaga castanea*
Belted kingfisher	*Megaceryle alcyon*
Bewick's wren	*Thryomanes bewickii*
Black vulture	*Coragyps atratus*
Black-and-white warbler	*Mniotilta varia*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Blackburnian warbler	*Setophaga fusca*
Black-capped chickadee	*Poecile atricapillus*
Blackpoll warbler	*Setophaga striata*
Black-throated blue warbler	*Setophaga caerulescens*
Black-throated green warbler	*Setophaga virens*
Blue grosbeak	*Passerina caerulea*
Blue jay	*Cyanocitta cristata*
Blue-gray gnatcatcher	*Polioptila caerulea*
Blue-headed vireo	*Vireo solitarius*
Blue-winged teal	*Anas discors*
Blue-winged warbler	*Vermivora cyanoptera*
Bobolink	*Dolichonyx oryzivorus*
Broad-winged hawk	*Buteo platypterus*
Brown creeper	*Certhia americana*
Brown thrasher	*Toxostoma rufum*
Brown-headed cowbird	*Molothrus ater*
Bufflehead	*Bucephala albeola*
Canada goose	*Branta canadensis*
Canada warbler	*Cardellina canadensis*
Cape May warbler	*Setophaga tigrina*
Carolina chickadee	*Poecile carolinensis*
Carolina wren	*Thryothorus ludovicianus*
Cedar waxwing	*Bombycilla cedrorum*
Cerulean warbler	*Setophaga cerulea*
Chestnut-sided warbler	*Setophaga pensylvanica*
Chimney swift	*Chaetura pelagica*
Chipping sparrow	*Spizella passerina*
Cliff swallow	*Petrochelidon pyrrhonota*
Common goldeneye	*Bucephala clangula*
Common grackle	*Quiscalus quiscula*
Common merganser	*Mergus merganser*
Common nighthawk	*Chordeiles minor*
Common raven	*Corvus corax*
Common redpoll	*Acanthis flammea*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Common yellowthroat	*Geothlypis trichas*
Cooper's hawk	*Accipiter cooperii*
Dark-eyed junco	*Junco hyemalis*
Dickcissel	*Spiza Americana*
Downy woodpecker	*Picoides pubescens*
Eastern bluebird	*Sialia sialis*
Eastern kingbird	*Tyrannus tyrannus*
Eastern meadowlark	*Sturnella magna*
Eastern phoebe	*Sayornis phoebe*
Eastern screech owl	*Megascops asio*
Eastern towhee	*Pipilo erythropthalmus*
Eastern whip-poor-will	*Antrostomus vociferous*
Eastern wood-pewee	*Contopus virens*
Evening grosbeak	*Coccothraustes vespertinus*
Field sparrow	*Spizella pusilla*
Fox sparrow	*Passerella iliaca*
Golden-crowned kinglet	*Regulus satrapa*
Golden-winged warbler	*Vermivora chrysoptera*
Grasshopper sparrow	*Ammodramus savannarum*
Gray catbird	*Dumetella carolinensis*
Gray-cheeked thrush	*Catharus minimus*
Great blue heron	*Ardea herodias*
Great crested flycatcher	*Myiarchus crinitus*
Great egret	*Ardea alba*
Great horned owl	*Bubo virginianus*
Greater scaup	*Aythya marila*
Green heron	*Butorides virescens*
Green-winged teal	*Anas crecca*
Hairy woodpecker	*Picoides villosus*
Hermit thrush	*Catharus guttatus*
Hooded merganser	*Lophodytes cucullatus*
Hooded warbler	*Setophaga citrine*
House finch	*Haemorhous mexicanus*
House wren	*Troglodytes aedon*
Indigo bunting	*Passerina cyanea*
Kentucky warbler	*Geothlypis formosa*
Killdeer	*Charadrius vociferous*
Least bittern	*Ixobrychus exilis*
Lesser scaup	*Aythya affinis*
Lincoln's sparrow	*Melospiza lincolnii*
Loggerhead shrike	*Lanius ludovicianus*
Louisiana waterthrush	*Parkesia motacilla*
Magnolia warbler	*Setophaga magnolia*
Mallard	*Anas platyrhynchos*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Mourning dove	*Zenaida macroura*
Mourning warbler	*Geothlypis philadelphia*
Nashville warbler	*Oreothlypis ruficapilla*
Northern cardinal	*Cardinalis cardinalis*
Northern flicker	*Colaptes auratus*
Northern goshawk	*Accipiter gentilis*
Northern harrier	*Circus cyaneus*
Northern mockingbird	*Mimus ployglottos*
Northern parula	*Setophaga americana*
Northern pintail	*Anas acuta*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Northern saw-whet owl	*Aegolius acadicus*
Northern waterthrush	*Parkesia noveboracensis*
Olive-sided flycatcher	*Contopus cooperi*
Orange-crowned warbler	*Oreothlypis celata*
Orchard oriole	*Icterus spurius*
Osprey	*Pandion haliaetus*
Ovenbird	*Seirus aurocapilla*
Palm warbler	*Setophaga palmarum*
Pied-billed grebe	*Podilymbus podiceps*
Pileated woodpecker	*Dryocopus pileatus*
Pine siskin	*Spinus pinus*
Pine warbler	*Setophaga pinus*
Prairie warbler	*Setophaga discolor*
Prothonotary warbler	*Protonotaria citrea*
Purple finch	*Haemorhous purpureus*
Red crossbill	*Loxia curvirostra*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-breasted nuthatch	*Sitta canadensis*
Red-crowned kinglet	*Regulus calendula*
Red-eyed vireo	*Vireo olivaceus*
Redhead	*Aythya americana*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-necked duck	*Aythya collaris*
Rose-breasted grosbeak	*Pheucticus ludovicianus*
Ruby-throated hummingbird	*Archilochus colubris*
Ruffed grouse	*Bonasa umbellus*
Savannah sparrow	*Passerculus sandwichensis*
Scarlet tanager	*Piranga olivacea*
Sharp-shinned hawk	*Accipiter striatus*
Short-eared owl	*Asio flammeus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Song sparrow	*Melospiza melodia*
Summer tanager	*Piranga rubra*
Swainson's thrush	*Catharus ustulatus*
Swainson's warbler	*Limnothlypis swainsonii*
Swamp sparrow	*Melospiza georgiana*
Tennessee warbler	*Oreothlypis peregrina*
Tree swallow	*Tachycineta bicolor*
Tufted titmouse	*Baeolophus bicolor*
Turkey vulture	*Cathartes aura*
Veery	*Catharus fuscescens*
Vesper sparrow	*Pooecetes gramineus*
Warbling vireo	*Vireo gilvus*
White-breasted nuthatch	*Sitta carolinensis*
White-crowned sparrow	*Zontrichia leucophrys*
White-eyed vireo	*Vireo griseus*
White-throated sparrow	*Zonotrichia albicollis*
Wild turkey	*Meleagris gallopavo*
Willow flycatcher	*Empidonax traillii*
Wilson's warbler	*Cardellina pusilla*
Winter wren	*Troglodytes hiemalis*
Wood duck	*Aix sponsa*
Wood thrush	*Hylocichla mustelina*
Worm-eating warbler	*Helmitheros vermivorum*
Yellow warbler	*Setophaga petechia*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Yellow-billed cuckoo	*Coccyzus americanus*
Yellow-breasted chat	*Icteria virens*
Yellow-rumped warbler	*Setophaga coronate*
Yellow-throated vireo	*Vireo flavifrons*
Yellow-throated warbler	*Setophaga dominica*
Mammals	
Allegheny wood rat	*Neotoma magister*
American beaver	*Castor canadensis*
American black bear	*Ursus americanus*
Appalachian cottontail	*Sylvilagus obscurus*
Big brown bat	*Eptesicus fuscus*
Black bear	*Ursus americanus*
Bobcat	*Lynx rufus*
Common porcupine	*Erethizon dorsatum*
Common raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Eastern chipmunk	*Tamias striatus*
Eastern cottontail	*Sylvilagus floridanus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Eastern cottontail	*Sylvilagus floridanus*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern harvest mouse	*Reithrodontomys humulis*
Eastern mole	*Scalopus aquaticus*
Eastern pipistrelle	*Pipistrellus subflavus*
Eastern red bat	*Lasiurus borealis*
Eastern small-footed bat	*Myotis leibii*
Eastern spotted skunk	*Spilogale putorius*
Evening bat	*Nycticeius humeralis*
Feral or domestic dog	*Canis familiaris*
Feral or house cat	*Felis catus*
Fisher	*Martes pennanti*
Fox squirrel	*Sciurus niger*
Golden mouse	*Ochrotomys nuttalli*
Gray bat	*Myotis grisescens*
Gray fox	*Urocyron cinereoargenteus*
Groundhog	*Marmota monax*
Hairy-tailed mole	*Parascalops breweri*
Hoary bat	*Lasiurus cinereus*
Indiana bat	*Myotis sodalis*
Least shrew	*Cryptotis parva*
Little brown bat	*Myotis lucifugus*
Long-tailed shrew	*Sorex dispar*
Long-tailed weasel	*Mustela frenata*
Masked shrew	*Sorex cinereus*
Meadow jumping mouse	*Zapus hudsonius*
Meadow vole	*Microtus pennsylvanicus*
Mink	*Mustela vison*
Mountain lion	*Puma concolor*
Muskrat	*Ondatra zibethicus*
Northern long-eared bat	*Myotis septentrionalis*
Northern short-tailed shrew	*Blarina brevicauda*
Prairie vole	*Microtus ochrogaster*
Pygmy shrew	*Sorex hoyi*
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*
Red fox	*Vulpes vulpes*
Red squirrel	*Tamiasciurus hudsonicus*
River otter	*Lutra canadensis*
Rock vole	*Microtus chrotorrhinus*
Silver-haired bat	*Lasionycteris noctivagans*
Smoky shrew	*Sorex fumeus*
Snowshoe hare	*Lepus americanus*
Southeastern shrew	*Sorex longirostris*
Southern bog lemming	*Synaptomys cooperi*

Appendix 3-B

Wildlife Species with the Potential to Occur Along the Project Route

Common Name	Scientific Name
Southern flying squirrel	*Glaucomys volans*
Southern red-backed vole	*Clethrionomys gapperi*
Star-nosed mole	*Condylura cristata*
Striped skunk	*Mephitis mephitis*
Tri-colored bat	*Perimyotis subflavus*
Virginia big-eared bat	*Corynorhinus townsendii*
Virginia opossum	*Didelphis virginiana*
Virginia white-tailed deer	*Odocoileus virginianus virginianus*
Water shrew	*Sorex palustris*
West Virginia northern flying squirrel	*Glaucomys sabrinus*
White-footed mouse	*Peromyscus leucopus*
Woodland jumping mouse	*Napaeozapus insignis*
Woodland vole	*Microtus pinetorum*

Sources:

Marshall University. No Date. Amphibians and Reptiles in West Virginia. http://www.marshall.edu/herp/WVHERPS.HTM; accessed June 9, 2015.

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