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Office of Energy Projects
Washington, DC 20426

Atlantic Coast Pipeline and Supply Header Project

Final Environmental Impact Statement

Volume III

Atlantic Coast Pipeline, LLC
Dominion Energy Transmission, Inc.

Docket Nos. CP15-554-000, CP15-554-001, CP15-555-000, and CP15-556-000
FERC/EIS-0274F

Cooperating Agencies:

U.S. Department of Agriculture – Forest Service	**U.S. Army Corps of Engineers**	**U.S. Environmental Protection Agency**	**U.S. Fish and Wildlife Service**	**West Virginia Department of Environmental Protection**	**West Virginia Division of Natural Resources**

July 2017

This environmental impact statement was prepared by the staff of the Federal Energy Regulatory Commission to assess the potential environmental impacts of the Atlantic Coast Pipeline and Supply Header Project (Docket Nos. CP15-554-000, CP15-554-001, CP15-555-000, and CP15-556-000), proposed for construction in West Virginia, Virginia, North Carolina, and Pennsylvania. The cooperation and assistance of the U.S. Department of Agriculture – Forest Service; U.S. Army Corps of Engineers; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; West Virginia Department of Environmental Protection; and West Virginia Division of Natural Resources was greatly appreciated.

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APPENDIX I

KARST TERRAIN ASSESSMENT, CONSTRUCTION,
MONITORING, AND MITIGATION PLAN

January 20, 2017

Karst Terrain Assessment Construction, Monitoring and Mitigation Plan

Atlantic Coast Pipeline Randolph and Pocahontas Counties in West Virginia and Highland, Augusta, and Nelson Counties in Virginia

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January 20, 2017

Ms. Brittany Moody
Dominion Transmission, Inc.
445 West Main Street
Clarksburg, West Virginia 26301

Subject: **Karst Terrain Assessment, Construction, Monitoring and Mitigation Plan, Atlantic Coast Pipeline, Randolph and Pocahontas Counties in West Virginia, and Highland, Augusta, and Nelson Counties in Virginia (Our 15200)**

Dear Ms. Moody:

Per your request, GeoConcepts Engineering, Inc. (GeoConcepts) has completed a Karst Terrain Assessment, Construction Monitoring, and Mitigation Plan in support of the development of the Atlantic Coast Pipeline in areas of Randolph and Pocahontas Counties, West Virginia Highland, Augusta, and Nelson Counties, Virginia, and Westmoreland County, PA.

We appreciate the opportunity to serve as your geotechnical consultant on this project. Please do not hesitate to contact me if you have any questions or want to meet to discuss the findings and recommendations contained in the report.

Sincerely,

GEOCONCEPTS ENGINEERING, INC.

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ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE
Docket No. PF15-6-000

and

DOMINION TRANSMISSION, INC
SUPPLY HEADER PROJECT
Docket No. PF15-5-000

Karst Terrain Assessment, Construction, Monitoring, and Mitigation Plan

Prepared by
GeoConcepts Engineering, Inc.
January 2017

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Plan Outline

At the request of Atlantic Coast Pipeline, LLC (Atlantic), and Dominion Transmission, Inc. (DTI), GeoConcepts has developed a plan describing the assessment, monitoring, and mitigation activities for the proposed Atlantic Coast Pipeline (ACP) and the Dominion Supply Header Project (SHP) routes through areas of karst terrain. The requested plan is outlined as follows:

Definitions

This section provides a summary of karst-specific terms used in the plan.

Geological Overview

This section provides a brief discussion of karst terrain and features and the overall regional karst geology in the general area of the project. It is of note that the plan as written is a "generic" document due to possible changes that may occur in the specific project alignment. However, regardless of reroutes the alignment will need to pass across each of the provinces discussed in the geological overview section of the plan.

Pre-Construction Assessment and Field Survey

This section describes in detail the pre-construction database and remote sensing review, as well as field survey methods and procedures which are currently being completed.

Construction Monitoring Protocols

This section describes the methods and procedures to be utilized during the construction phase of the ACP/SHP. It includes:

- a description of the pre-excavation electrical resistivity investigation (ERI) methods and procedures, and the manner in which the ERI data will be analyzed, summarized, and presented; and
- a description of the activities to be conducted by the field geologist during excavation and trenching activities, including how the observations will be made and the reporting format and frequency.

Karst Mitigation and Conservation Procedures

This section discusses the best management practices (BMPs) to be utilized for mitigating, remediating, and minimizing impacts to karst features that may be encountered during construction activities. This includes features that either are within or receive drainage from the pipeline right-of-way, or features that are intercepted during the excavation and trenching process, as well as access roads, additional temporary workspace areas, or any other areas where land disturbance necessary for pipeline construction is planned. It is noted that these mitigation and conservation procedures will not apply for existing access roads that do not require land disturbance. The format and manner in which the mitigation and remedial activities will be undertaken and reported are addressed in this section of the plan. The intent is to provide agreed upon solutions to the karst features that may be encountered prior to the start of construction so that those features can be protected. However, in some cases, the actual remedial measure employed may be customized to the specific karst features identified.

Definitions

Karst Specialist – A Licensed Professional Geologist engaged in the practice of engineering geology (or) a Virginia Registered Professional Engineer engaged in the practice of Geotechnical Engineering, with a minimum of 10 years of experience in karst geology characterization and remediation. Practice experience shall be demonstrated by a statement of qualifications.[1]

[1] Adapted from the VA Cave Board Karst Assessment and Survey Guidelines (and) Denton, et al. 2016. All other definitions adapted from Field, 2002.

Cave – A natural hole in the ground, large enough for human entry. This covers the enormous variety of caves that do occur, but eliminates the many artificial tunnels and galleries incorrectly named caves. The size criterion is arbitrary and subjective, but practical, as it eliminates narrow openings irrelevant to explorers but very significant hydrologically, that may be better referred to as *proto-caves*, *sub-conduits*, or *fissures*. A cave may be a single, short length of accessible passage, or an extensive and complex network of tunnels as long as hundreds of kilometers.

Doline; Sinkhole – A basin- or funnel-shaped hollow or depression in limestone, dolostone or other soluble bedrock, ranging in diameter from a few meters up to a kilometer and in depth from a few to several hundred meters. Some dolines are gentle grassy hollows or depressions; others are rocky cliff-bounded basins. A distinction may be made by direct solution of the limestone surface zone (solution dolines), and those formed by collapse over a cave (collapse dolines), but it is generally not possible to establish the origin of individual examples. Generally referred to as a "sinkhole" in the United States, the term doline is more widely accepted by the international geology community.

Throat – An opening within a sinkhole leading into the subsurface through which material passes or has passed from the sinkhole into underlying solutional voids and conduits, which is generally too small to qualify as a cave and often called a *proto-cave*, *sub-conduit*, or *fissure*. Throats may be "open" (i.e. air-filled or water-filled), or "closed/clogged" (filled with debris including but not limited to: loose-soil; gravel; rock; dead-fall wood or brush; or trash).

Parapet – The outer edge or perimeter of a doline (sinkhole).

Ponor – a) Hole or opening in the bottom or side of a depression where a surface stream or lake flows either partially or completely underground into the karst groundwater system. b) Hole in the bottom or side of a doline through which water passes to or from an underground channel. Also known as a swallow hole or swallet.

Solution Cavity – A natural cavity or depression formed by the dissolution of soluble bedrock, typically not large enough to allow the entry of a human being and, therefore, not classified as a cave.

Breccia – Angular fragments of rock commonly, but not always, cemented by finer-grained materials including silica, iron minerals, and calcite to form a new rock. Many fault planes are marked by zones of broken rock, either loose or re-cemented, forming a fault breccia.

Non-Karst Closed Depression – A natural or non-natural topographic depression that is not formed by karst processes and is not floored by bedrock. Examples include (but are not limited to) construction-related soil subsidence, silage pits, farm ponds, scour pools, animal wallows, large animal burrows, and pits created by removal of tree stumps.

Sinking Stream/Swallet – A perennial or intermittent stream whose bed and bank disappear entirely underground, usually through an open throat sinkhole or cave entrance.

Losing Stream – A perennial or intermittent stream which loses flow volume into its bed due to the presence of sub-channel (hyporheic) solution cavities or conduits.

Geological Overview of the Karst Terrain Sections of the Proposed ACP/SHP

Overview of regional karst terrain within the project area

The term “karst” refers to a type of landform or terrain, just like “desert”, “marsh”, “tundra”, “steppe” or “montane”. It was named for a province in Slovenia where it was first described in the late 17th and early 18th century by geologists of the former Austro-Hungarian Empire. Simply stated, karst terrain is characterized or diagnosed by the presence of sinkholes, caverns, an irregular “pinnacled” bedrock surface, and many large springs; however, the development of karst terrain is a result of the presence of soluble bedrock such as limestone, dolomite, marble or gypsum. Any landscape that is underlain by soluble bedrock has the potential to develop a karst terrain landform.

As in any region where soluble bedrock is present, a karst landform regime has developed in three known regions of the proposed ACP/SHP. Folding and faulting of the local carbonate rocks has opened up numerous fractures both parallel with the axis of the geologic structures, as well as perpendicular to them. Surface fractures and joints weather differentially, producing a pinnacled or "saw-tooth" profile at the bedrock/soil interface (referred to as the "epikarst" zone). In contrast, rock-enclosed fractures can be secondarily enlarged by the action of carbon dioxide charged groundwater, in some cases forming water-filled or air-filled conduits. As the regional terrain is "mature" karst, nearly all the fractures have undergone successive cycles of sediment filling and flushing. In areas such as the ACP project area, where there is little topographic relief and a relatively minimal groundwater gradient, the great majority of solution fissures are sediment-filled.

The most prevalent type of karst features in the project area are dolines or sinkholes, and these features comprise the greatest potential geohazard risk to any type of construction in karst terrain. Sinkholes fall into two broad categories, "vault-collapse" sinkholes, and "cover-collapse" sinkholes. Vault-collapse type sinkholes (i.e., where a cavern "vault" or roof has failed catastrophically) are rare in the ACP/SHP Project area (Campbell, et al., 2006). Cover-collapse sinkholes, which are common in the ACP project area, develop by the raveling of fines from the soil overburden into solution channels within the bedrock mass, in which water is the transport medium for the movement of the soil fines. The natural raveling process is generally a very slow one, such that sinkhole development generally occurs over a very long time span. However, various changes at a site can sometimes lead to the very sudden development of sinkholes. The most common changes that will exacerbate sinkhole development are:

1. Increase or redirection of overland or subsurface water flow paths, which accelerates the raveling of soil fines;
2. Removal of vegetation cover and topsoil (i.e., stripping and grubbing), which can reduce the cohesive strength of the soils overlying a conduit; and
3. Sudden changes in the elevation of the water table (such as drought, over-pumping of wells, or quarry dewatering), which removes the neutral buoyancy of the water supporting a conduit's soil plug, and can often result in rapid and catastrophic soil collapse.

Geological Setting

The proposed ACP/SHP will cross three distinct regional provinces of karst geology, from east to west:

1. The **Great Valley subsection of the Valley and Ridge physiographic province**, encompassing the portion of Augusta County, Virginia from the Blue Ridge on the east to Little North Mountain on the west.
2. The **Folded Appalachian subsection of the Ridge and Valley province**, encompassing the westernmost section of Augusta County, and all of Bath County and Highland County, Virginia and extending from the North Mountain area on the east to the Allegheny Mountain on the west.
3. The **Allegheny Front and Appalachian Plateau** provinces of West Virginia, encompassing Pocahontas and Randolph Counties, West Virginia, and the karst section of the SHP located in Westmoreland County, Pennsylvania.

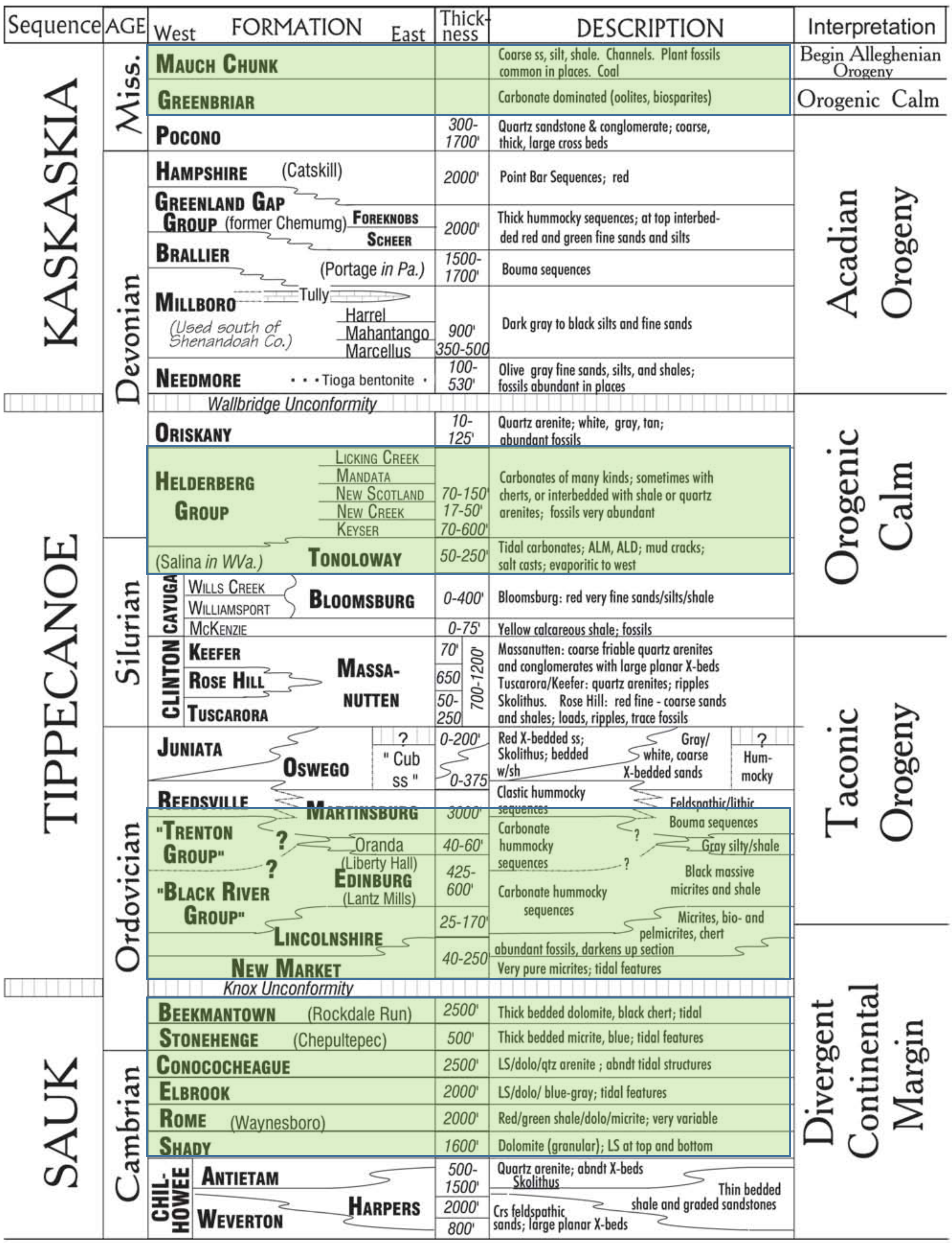

Figure 1. Stratigraphic Column of the central Virginia Great Valley, Folded Appalachians, and eastern Allegheny Front of west central Virginia and eastern West Virginia (Fichter, 2010). (The karst forming units are highlighted in green.)

The Great Valley (Augusta County, VA)

The Great Valley section is a generally downwarped trough (synclinorium) of Paleozoic limestones, shales, and sandstones that lie between the Blue Ridge Massif on the east and the Allegheny Mountains to the west. The Valley extends between the two mountain uplands from northeast to southwest, parallel with the average strike of the bedrock.

The karst terrain of the Great Valley section of the ACP project area is characterized by numerous circular to oval-shaped sinkholes, ranging in size from a few feet to several hundred feet in diameter, the majority of which are completely vegetated and lack any opening to the subsurface ("throat") at their base. Sinkhole depths can vary, but are usually controlled by the angle of repose of the sediments lining their walls. Steep, rock-walled sinkholes are rare in this section, but generally occur in the small hills and uplands that are erosional remnants of the prior valley floor.

The Great Valley section contains large karst springs in the region. It is also characterized by sinkholes called "estavelles", which are insurgences for water during dry periods, and flood or act as springs (resurgences) during wet seasons. There are also numerous caves (i.e., air-filled voids large enough to permit the entry of a human being and that have an entrance to the surface) and subsurface caverns (air-filled voids large enough for human entry with no connection to the surface) in the region. Most of the caves and caverns range in length from a few feet to several miles; however, the average length rarely exceeds 2,500 feet. This is in contrast to the Folded Appalachian and Appalachian Plateau provinces to the west, where some of the longest caves in the region have been surveyed, many of which are more than 10 miles in length. Nevertheless, though not of great length, some of the most voluminous underground chambers in the region occur in the Great Valley section.

A unique type of karst terrain has developed in the eastern portion of Augusta County along the base of the Blue Ridge Mountains. Here, the characteristic karst terrain has been buried beneath a mantle of alluvial material which was shed off the mountains to the east. This alluvium ranges in age from less than 1 million years (Quaternary Period) to over 50 million years (Paleogene Period). The alluvium thins towards the west, and disappears completely west of Waynesboro, Virginia. Although the primary karst terrain is mantled by the alluvium, numerous shallow broad sinkholes are present and indicate the presence of large karst features in the underlying bedrock.

Bedrock Geology

Specifically, the proposed ACP project area in the Great Valley section has been extensively studied and mapped as being underlain by a series of karst-forming carbonate and calcareous clastic rocks (Campbell et al., 2006; DMME, 1993; Rader & Gathright, 2001; Rader & Wilkes, 2001; Hubbard, 1988; Southworth, et al., 2013) ranging in age from the Lower Cambrian to Middle Ordovician geological periods as follows:

Ordovician Period

Martinsburg Formation (Om)

The upper 100 to 200 feet of this formation is a brown, medium-to coarse-grained, fossiliferous sandstone. An olive-green silty shale and dark-gray siltstone comprises the middle portion of this formation, along with a medium-to coarse-grained, locally pebbly sandstone. The Stickley Run Member exists as the lower 400 to 900 feet of the formation. This is a medium-gray to grayish-black, very fine-grained (aphanitic), very thin- to thin-bedded, argillaceous limestone with interbedded medium- to dark-gray, calcareous shale.

Edinburg Formation (Oeln)

A black, fine-grained to aphanitic limestone with layered black shale that commonly contains pyrite, and medium- to light-gray, fine- to coarse-grained, nodular limestone with thin partings of black shale. This formation lies in thicknesses ranging from 450 to 1,000 feet throughout the three subject areas.

Lincolnshire Limestone (Oeln)

Gradational contact with the overlying Edinburg. A light- to very dark-gray, fine- to coarse-grained, medium to very thick-bedded limestone with black chert nodules. The Murat Limestone Member, generally found at the top of the formation, is a light colored, coarse-grained limestone composed of fossil fragments. Thicknesses throughout the subject areas range from 50 to 250 feet.

New Market Limestone (Oeln)

Unconformable upper contact with the Lincolnshire. The upper unit of this formation is a medium-gray, aphanitic, thick-bedded, limestone with scattered calcite crystals. The lower unit is a medium- to dark-gray, fine-grained, thin-bedded, argillaceous, bioturbated limestone that is dolomitic in parts, with its base being a carbonate pebble conglomerate. Formation thicknesses throughout the subject areas range from 100 to 250 feet.

Pinesburg Station Dolomite* (Ob)

This formation is a medium-to light gray, fine-grained, medium- to thick-bedded dolostone, with sparse fossils. When weathered, this dolomite is very light-gray, and exhibits a "butcher-block" structure. A medium-gray, fine-grained limestone exists as the base of this unit. The formation's average thickness is 400 feet.

Rockdale Run Formation* (Ob)

The upper contact with the overlying Pinesburg Station is unconformable. This formation is comprised of a medium-gray, fine-grained, fossiliferous limestone and a light- to medium-gray, fine-grained, laminated dolomitic limestone and dolostone with mottled beds. Thin lenses of gray chert are common near the base of the formation. Formation thickness ranges from 1,500 to 2,400 feet.

Stonehenge Limestone* (Ob)

Upper contact with the Rockdale Run Formation is gradational. The upper 400 to 500 feet is comprised of a medium- to dark-gray and black, fine- to medium-grained limestone, with thin beds of macerated fossil debris. The lower 50 to 150 feet (Stoufferstown Member) is a dark-gray to black, fine-grained limestone with thin sheet-like, crinkly partings due to cleavage, and thin beds of coarse-grained, bioclastic limestone.

***Beekmantown Group (Note – This unit consists of the Pinesburg Station Dolomite, Rockdale Run Formation, and the Stonehenge Limestone)**

Cambrian Period

Conococheague Formation (OCco)

The upper contact with the Stonehenge Limestone of the Beekmantown Group is unconformable. The upper 2,000 feet of this formation is a light- to dark-gray, fine-grained, laminated limestone, dolomitic limestone, and dolostone with flat-pebble conglomerate beds. Some cross laminated sandstone beds occur in the uppermost part of this unit. The Lower 200 to 500 feet (Big Spring Station Member) consists of a light-gray, fine-grained dolostone, medium- to dark-gray, fine-grained laminated limestone and dolomitic limestone, and gray, coarse-grained sandstone and dolomitic sandstone. Beds of flat-pebble conglomerate occur in the dolomite.

Elbrook Formation (Ce)

This unit's thickness ranges from 2,000 to 2,500 feet. The formation is a dark- to medium-gray, fine- to medium-grained limestone, dolomitic limestone, dolostone, and dolomitic shale. These lithologies commonly occur as erosion-surface-bounded sequences of algal limestone overlain by laminated dolomite. Decalcified, ocherous shale-like chips on the ground surface characterize this unit. The lower 300 to 400 feet is green to greenish-gray, fine-grained dolostone, dolomitic limestone, and shale.

Waynesboro Formation (Cw)

The upper contact with the Elbrook Formation is gradational. A dusky-red to olive-gray, fine- to medium-grained sandstone and dusky-red to gray shale exists as the upper 300 feet. The middle 400 feet is a medium- to dark-gray, saccharoidal dolomite and fine-grained limestone. The lower 500 feet is dusky-red, olive-gray, and dark-gray shale and dusky-red to brownish-gray, fine- to medium-grained sandstone. Overall thickness is approximately 1,200 feet.

Tomstown Dolomite/Shady Dolomite (Ct/Cs)

The upper 600 feet is light- to dark-gray, fine- to coarse-grained, medium- to thick-bedded, locally laminated dolostone with white chert rosettes and nodules in the upper 50 feet. The middle unit (about 210 feet) is very light- to medium-gray, medium-grained, very thick-bedded dolostone and high-magnesium dolostone. The lower unit (about 325 feet) is dark-gray to black, very fine-grained, thin- to very thin-bedded limestone and dolomitic limestone with argillaceous laminations. The overall unit thickness ranges from 1,100 to 1,200 feet. The Shady Dolomite is the homologous unit in the southeastern Great Valley at the base of the western edge of the Blue Ridge Mountains.

The Folded Appalachians (Augusta County, Bath County, Highland County, VA)

The western edge of the Great Valley is demarcated by the North Mountain Fault, and the ridges of Little North and Great North Mountain. The rocks underlying this section are younger than those of the Great Valley, dating primarily from the Late Ordovician through the Devonian periods in age. In general, the mountain ridges are underlain by sandstone and siltstone, clastic rocks which are insoluble and not prone to karst terrain development. In contrast, the intervening deep valleys are often floored by carbonate rocks, and a characteristic karst landscape characterized by sinkholes, caves and springs has developed in many cases along the axis and flanks of these valleys (Hubbard, 1988; Rader & Wilkes, 2001; DMME, 1993).

Bedrock Geology

The regional geology of the Folded Appalachians in the project area has been mapped (DMME, 1993) as being underlain by a series of karst-forming carbonate rocks ranging in age from the Lower Ordovician to Lower Devonian geological periods as follows:

Devonian – Silurian Periods

Helderberg Group (Dh)

This group consists of thick- to massive-bedded, dark gray/black micritic limestone with reef structures. The limestone shows some degree of recrystallization. The uppermost Helderberg is typically silicified near its contact with the overlying Oriskany sandstone. In many areas the Helderberg gives off a distinct petroliferous odor when freshly broken. The contact with the overlying Oriskany Sandstone is poorly exposed regionally, but the contact with the underlying Tonoloway Formation is distinct and often unconformable, where the massive bedding of the Helderberg gives way to the thin-bedding of the Tonoloway Formation. The contact can be identified in places by a lag deposit consisting of flat, packstone rip-ups and pebble conglomerate.

The group is a major cave forming unit of the Folded Appalachian section, however, it is of note that the stratigraphy of this unit has been the subject of a much detailed study in recent years (Haynes, et al., 2014). The Helderberg Group consists of a series of individual formations, from oldest to youngest, respectively: the Keyser Limestone, New Creek Limestone, Corriganville Limestone, and Licking Creek Limestone formations. It should be noted that based on biostratigraphic analysis the Keyser Limestone, the basal formation of the Helderberg Group, is considered to straddle the boundary of the Silurian and Devonian periods (Denkler and Harris, 1988a).

The entire Helderberg Group varies regionally, ranging from 85 feet to over 400 feet in thickness. The Keyser is considered the thickest of the individual formations comprising the group, ranging from 50 to 230 feet in thickness.

Silurian Period

Tonoloway Limestone (Sto)

This formation consists of extremely thin-bedded (0.5 inches or less) dark gray micritic limestone interbedded with fissile, calcareous shale. The formation gives off a distinct petroliferous odor when freshly broken. The contact with the overlying Keyser Limestone is distinct; however, it grades into the underlying Wills Creek Limestone. The Tonoloway Formation varies from 150 to 600 feet in thickness.

Wills Creek Limestone (Swc)

This formation consists of thin-bedded (less than 5 inches) dark gray calcareous shale and fossiliferous micrite, which is poorly exposed in the ACP project area. The thickness is variable, ranging from 3 feet to 230 feet.

Ordovician Period

Juniata, Oswego, Reedsville, Dolly Ridge, and Eggleston Formations (Oun)

Karst forming unit present only in the westernmost Valley and Ridge section of the ACP alignment (Highland and Bath Counties). The Dolly Ridge and Eggleston Formations are the only karst-forming units and consist of a medium-gray, fine-grained, thin-bedded, argillaceous limestone with interbedded olive-gray calcareous claystone, silt argillaceous limestone, gray shale, and K-bentonite beds. Thickness is about 400 feet in Bath and Highland Counties. The unit is laterally equivalent to the Middle Ordovician ("Trenton Group") limestones and part of the lower Martinsburg Formation.

Middle Ordovician Limestones, Undivided (Olm)

These limestones consist of the Edinburg Formation, the Lincolnshire Formation, and the New Market Limestone. The Edinburg is a black, fine-grained to aphanitic limestone with layered black shale that commonly contains pyrite, and medium- to light-gray, fine- to coarse-grained, nodular limestone with thin partings of black shale. Thickness is 400 feet to 500 feet. The Edinburg grades downward into the Lincolnshire Formation, a light- to very dark-gray, fine- to coarse-grained, medium- to very thick-bedded limestone with black chert nodules. Thicknesses throughout the ACP project area range from 25 to 250 feet. This unit is underlain by the New Market Limestone. The upper contact with the Lincolnshire is generally unconformable. The upper unit of this formation is a medium-gray, aphanitic, thick-bedded, limestone with scattered calcite crystals. The lower unit is a medium- to dark-gray, fine-grained, thin-bedded, argillaceous, bioturbated limestone that is dolomitic in parts, with its base being a carbonate pebble conglomerate. Formation thicknesses throughout the ACP project area range from 0 to 150 feet.

Beekmantown Formation (Ob)

This formation is a medium- to light-gray, fine-grained, medium- to thick-bedded dolostone, with sparse fossils. When weathered, this dolomite is very light-gray, and exhibits a "butcher-block" structure. A medium-gray, fine-grained limestone exists as the base of this unit. This formation is comprised of a medium-gray, fine-grained, fossiliferous limestone and a light- to medium-gray, fine-grained, laminated dolomitic limestone and dolostone with mottled beds. Thin lenses of gray chert are common near the base of the formation. Formation thickness ranges from 1,500 to 2,400 feet. The Beekmantown Formation typically consists of three members, which although distinct in the Great Valley region are hard to distinguish in the Folded Appalachian province.

The Allegheny Front & Appalachian Plateau (Pocahontas County and Randolph County, WV)

The last section of the folded Appalachian karst is located in eastern Pocahontas County. To the west occurs the relatively flat-bedded geology of the Allegheny Front and Appalachian Plateau provinces. The karst terrain in this area is formed almost exclusively by the carbonate rocks of the Mauch Chunk and Greenbrier Groups.

In general, the Mauch Chunk and Greenbrier Group carbonates exhibit a high density of caves relative to the other two karst sections along the pipeline. There are several factors that contribute to this, the main one being that the units act as a drain system for groundwater infiltrating downward through the fractured clastic rocks above them. Where they are exposed along the mountain flanks, the steep groundwater gradients have enhanced this cavern development. In many places surface water plunges directly into the carbonates via steep-walled, open throat sinkholes (swallets). Most of the caves are linear networks, and exhibit conduit flow, capturing surface streams upgradient which then emerge as springs at the downgradient end.

Bedrock Geology

The Appalachian Plateau section has been mapped (Cardwell, et al., 1968; Davies, 1958) as being underlain by the karst-forming carbonate rocks of the Greenbrier and Mauch Chunk Groups, exclusively. The geology is described from youngest to oldest as follows:

Mississippian Period

Mauch Chunk Group – Includes the Bluestone and Princeton Formations (Mbp), Hinton Formation (Mh), and Bluefield Formation (Mbf). The group is predominantly red, green and medium-gray shale and sandstone, with a few thin limestone lenses in each formation. Although the limestone strata in the unit are considered secondary, the topographic position of the Mauch Chunk along the edges of the eroded upland of the Allegheny Plateau where there is a relatively steep downward hydraulic gradient has enhanced water flow through the carbonate lenses, forming karst conduit networks with high transmissivity (Kozar & Mathes, 2001), thus from a karst hydrology viewpoint this unit is significant.

Greenbrier Group (Mg) – In the project area the Greenbrier Group (or "Big Lime" as it is known locally) is up to 400 feet in thickness. It is primarily a gray to dark gray, massively bedded marine limestone, with interbeds of red and green marine and nonmarine shale and thin discontinuous beds of sandstone. The Group is divided into six stratigraphic units; from oldest to youngest they are: the Denmar Limestone, Taggard Shale, Pickaway Limestone, Union Limestone, Greenville Shale, and Alderson Limestone. The principle cave forming units are the Pickaway and Union limestones.

Pre-Construction Assessment and Field Survey

The proposed ACP/SHP involves the installation of a gas pipeline extending through West Virginia, Virginia, and into southern North Carolina. The currently proposed pipeline construction alignment information shows that the primary route being considered for the pipeline passes across approximately 32.5 miles of karst terrain located in Randolph and Pocahontas Counties in West Virginia, and Highland, Bath, and Augusta Counties in Virginia, based on regional geological mapping.

The "Karst Review Area" (hereinafter referred to as the "KRA") assessed by data desktop review generally extended 0.25-mile from either side of the centerline of the proposed pipeline and alternate routes, and a 300 foot "study corridor" (300FC) extending 150 feet from either side of the centerline for field review. However, if observed or mapped karst features received drainage from the proposed pipeline work area then these features were delineated to the extent possible, and included in the assessment, even if they were outside of these perimeters.

Thus, the pre-construction assessment and field survey scope can be summarized as follows:

- Located and delineated surface karst features (e.g., sinkholes and karst related subsidence, cave entrances, closed depressions, and sinking and losing streams) within the KRA, with particular emphasis on features that had a direct connection with the phreatic zone such as "open-throat" sinkholes, karst windows, cave entrances, abandoned wells, sinking streams, and areas that could affect the integrity of the pipeline, such as actively forming cover-collapse sinks, areas of soil subsidence, or caves which have passages that extend below the proposed right-of-way at elevations less than 15 feet below the surface. Direct field observations were made by conducting a site reconnaissance over the entire 300FC where access was available.
- Delineated zones of karst terrain, subsidence, and drainages based on the surface karst features assessment.
- Prepared a report summarizing the methods and findings of the assessment.

Methods and Procedures

The above scope of services was accomplished by the following means:

Existing Data Review and Analysis

Potential karst features were identified remotely and/or by database review, and then their presence was confirmed in the field. This process helped to focus the actual field location and survey tasks. The following sources were reviewed:

1. The (proprietary) Cave Databases of the Virginia Speleological Survey (VSS) and the West Virginia Speleological Survey (WVSS);
2. Caves of Virginia (Douglas, 1961);
3. Description of Virginia Caves (Holsinger, 1975);
4. Caverns of West Virginia (Davies, 1965);
5. Maps of selected karst features (sinkholes, caves, springs) available from the Virginia Division of Mines and Mineral Resources and the United State Geological Survey (USGS);
6. 2-foot and 4-foot contour interval maps for the KRA (to determine the presence of surface karst features not included in the above listed databases based on the presence of closed, descending contours or other suspect karst "fingerprint" features);
7. LIDAR data (where available);
8. Aerial photographs (both recent and historical);
9. USGS Topographic 7.5-minute topographic quadrangles;
10. Sinkhole and depression locations available from the US Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) soil studies for the Counties through which the ACP will pass.
11. Weary, D.J. and D.H. Doctor. 2014. Karst in the United States: A digital map compilation and database, USGS open-file report 2014-1156, 23p

In addition, the survey team reviewed the readily available geological literature for bedrock and structural characteristics, relying upon the closest resolution mapping that existed for the particular KRA being examined.

Field Reconnaissance

Upon completion of the existing data review activities for a specific area, GeoConcepts undertook field reconnaissance and survey activities. Specifically, the field reconnaissance entailed:

1. Location and verification of surface karst features identified in the database review;
2. Location of uncatalogued or previously unidentified surface karst features, specifically sinkholes, cave entrances, dry runs and sinking streams.

The field reconnaissance placed particular emphasis on locations where pathways existed to phreatic groundwater such as open-throat sinkholes, cave entrances, karst "windows", and sinking streams. Potential reroutes were identified based on the field observation of sensitive karst features, such as significant caves, sinking streams, or open throat sinkholes.

The 300FC was delineated and the path of the 300FC was examined for karst features (both catalogued and previously unidentified) by field survey. This entailed conducting a site reconnaissance over the 300FC (i.e., the proposed pipeline route) in a systematic manner, to observe any existing surface karst features that fit the criteria. The locations and outlines of all relevant features were recorded using a sub-meter accurate Global Positioning System (GPS) device. For the purpose of this study, the outline (parapet) of sinkholes were defined by the last closed descending contour at mapping interval available for the area under study. Cave entrances were identified as single points, unless the entrance was located within a larger sinkhole structure, in which case the cave entrance was indicated as a point within the sinkhole's parapet. Sinking streams were located as points of entry into the subsurface; however, losing streams were identified as linear features.

All digital data was transmitted in the Universal Transverse Mercator (UTM) Coordinate system. The horizontal datum of reference is NAD83.

Summary Report

The results of the data review and field survey has been summarized in a final report. The report details the methods and findings, and contains an inventory and contained a delineation of karst features and terrain. The frequency and density of karst features was also correlated with the encompassing geological unit at the formational level (e.g., Elbrook Formation, etc.). The report is accompanied by a data set containing the attributed digital points and polygon data as shapefiles with metadata (maps and/or tables). The results of the karst survey work was used during routing and workspace design. In addition, these data will be used during the construction phase to assist in the pre-construction inspection tasks described in the following sections.

Construction Monitoring

The purpose of this section of the plan is to establish a standard set of monitoring protocols for karst features encompassed by the proposed ACP pipeline right-of-way and adjacent areas. The intent of these protocols is to minimize impact to the subterranean environment, ensure water quality, and protect the integrity of the pipeline (Burden, 2012).

I. Geophysical Survey

To obtain more information about the subsurface conditions, and possible karst development along the proposed ACP pipeline alignment, an electrical resistivity investigation (ERI) will be conducted in the areas that are mapped with limestone bedrock. The ERI will be performed along the entire length of the pipeline centerline in karst terrain prior to any earth-disturbance and/or excavation activity.

Instrumentation

The geophysical survey instrument which will be used during this survey is an electrical resistivity meter that maps the resistivity changes in the earth. Resistivity refers to the electrical resistance of a material. The ERI survey will be conducted by introducing a measured current into the earth through two electrodes and measuring the resultant voltage (i.e., potential) across two different electrodes. At the low currents used, voltage is proportional to the current. The meter measures the voltage/current ratio or resistance in Ohms.

The ERI survey will be conducted using an earth resistivity meter which measures the apparent conductivity of the subsurface employing an artificial source that is introduced through point electrodes. The automatic electrode system is designed to optimize survey efficiency by gathering maximum information with a minimum of electrodes. The instrument also uses redundancies in the data set to reduce the effects of lateral heterogeneities in the earth and to calculate uncertainties in the data. The survey will be conducted automatically using a dipole-dipole array system.

Interpretation Method

The ERI data will be converted into a resistivity depth model using a Rapid 2D resistivity inversion model and the least-squares method (RES2DINV). Soundings from each line will be modeled to produce the measured apparent resistivity pseudo-sections. The model will calculate the apparent resistivity pseudo-sections using finite-difference forward modeling. The least-squares optimization technique will be used for the inversion routine that calculates the modeled resistivity section. The generated profiles will include cross-sections that consist of the inverse model resistivity cross-section. The horizontal and vertical scales will be in meters.

The cross-section is the inverse model resistivity pseudo-section. The ER data will be converted into a resistivity depth model (RES2DINV) using a resistivity inversion model by the least-squares method, which will be topographically corrected. RES2DINV will confirm the model reliability by calculating the modeled data into empirical data or the calculated resistivity pseudo-section. The difference between the measured and calculated data is the percent error. The modeled calculated error will be calculated within the five percent range, which is considered very accurate.

Low resistive materials can be caused by certain conductive soils, such as clay, wet silts, and sands, or ionized water. High resistive materials are caused generally by porous soils (i.e., poorly consolidated gravels), laminated bedrock with interstitial clay-filled voids, wood, or large, air-filled cavities. Lower ER anomalies are generally associated with soil-filled voids, saturated sinkhole soils, and water-bearing fractures. High ER anomalies are frequently associated with caverns, buried air filled structures, or weathered, laminated bedrock with air filled cavities.

Resistivity values can vary widely as the geology, mineralogy, and stratigraphy changes from site to site. Therefore, it is important to correlate resistivity results with boring logs for equivalent sections at a specific locality. Typical values are:

Subsurface Material	**Resistivity Range (Ωm)**
Topsoil	1 – 10
Clays	10 – 100
Sands and Gravels (unconsolidated)	600 – 10,000
Fresh Water	3 – 100
Limestone	100 – 10,000
Sandstone	100 – 1,000
Igneous and Metamorphic Rocks	100 – 1,000,000
Open Voids (i.e. caverns, solution conduits)	>10,000

Although the above values are characteristic of various subsurface materials, the absolute resistivity ranges will vary considerably depending on the local geology. Therefore, it is required that the ERI survey is calibrated using soil test/air track borings. In addition, if high ER anomalies are detected, their locations will need to be documented and further investigated. The specific type of investigation will be dictated by the characteristics of each anomaly identified, but typically air track borings will be used to verify anomalies observed during an ERI survey.

II. Inspection Protocols

Inspection protocols will be provided to the contractor and will be reviewed at a pre-construction meeting led by the Karst Specialist (KS). In addition, all geologist or engineering staff utilized during construction will have received training from the KS prior to mobilization to the site regarding the identification and mitigation of karst features that have been previously identified within the project boundaries, or that may be identified during construction.

Pre-Construction Inspection

Prior to the commencement of any earth disturbance activity, the area of the pipeline that will be affected by the planned activities will be inspected by the karst specialist (KS) as follows:

a. The KS will inspect the entire section of the pipeline ROW (right-of-way) in the designated work area, and note any suspect karst features including sinkholes, caves, areas of soil subsidence, or closed depressions.

b. The KS shall conduct a final preconstruction field assessment of seeps and springs within 500 feet of construction workspaces in karst terrain. The KS shall subsequently determine if construction activities could have an impact on the seeps and/or springs, and provide construction alternatives to avoid or mitigate impacts where practical.

c. The locations of observed features will be noted on site drawings and flagged for surveying and/or recorded using sub-meter accuracy GPS instrumentation.

d. The KS will issue a report summarizing the findings of the inspection. Findings will supplement the summary report and shall include an inventory of feature type(s), drainages, and potential impact to the feature by the planned activities, and recommendations to limit impacts if they are expected. This inspection is intended to supplement the aforementioned pre-construction karst assessment and field survey report, as new features may have developed, or existing features described in identified in the original assessment may have changed.

e. Features that are considered to have potential impacts are: caves, sinkholes with open throats, ponors, open solution cavities, abandoned wells, and sinking streams. (Note – If a sinkhole throat is filled, the type of fill, i.e. rock, soil, flood debris, etc., will be described in detail).

f. Features that are not considered to have a potential impact are: soil-bottomed (stable) sinkholes (i.e., no evidence of recent soil raveling or tension cracks along the parapet), karst springs, or non-karst closed depressions. However, it is of note that land disturbance to stable sinkholes can render them unstable. Not structurally unstable in general, but strictly in terms of raveling of surface materials (sediment) and associated contaminants into the subsurface.

g. The pre-construction inspection will have a "shelf-life" of 1 year from the day of the inspection. If work does not commence within 1 year, a new inspection will need to be completed prior to any earth disturbing activities.

h. The pre-construction inspection report shall be delivered to Atlantic/DTI no later than 1-month after the completion of the field survey.

Monitoring of Pre-Identified Features During Construction

Features identified during the pre-construction inspection will be monitored as follows:

a. If an identified feature with potential impact to the subterranean environment falls within the area designated for earth disturbing activities and cannot be avoided, the feature will be documented by field location and photographs, and then assessed for pre-construction remediation by Atlantic/DTI staff with input and guidance to be provided by the KS. Remediation will be in compliance with the USDA-NRCS's Conservation Practice Standard Code 527 "Karst Sinkhole Treatment" (2010) and the West Virginia Department of Environmental Protection Division of Water and Waste Management Ground Water Protection Program Sinkhole Mitigation Guidance, August 8, 2005. (see Appendix A)

b. If a feature that has potential impact falls within the right-of-way but is not intercepted by the excavation, that feature will be monitored during the work by Atlantic/DTI staff for changes such as:

    1. soil subsidence;
    2. rock collapse;
    3. sedimentation;
    4. increased surface water infiltration;
    5. flooding;
    6. clogging; and/or other changes in morphology or function that might indicate potential impact to the epikarst stratum caused by the work.

c. All features, whether remediated or left in an undisturbed natural state, will be monitored by Atlantic/DTI staff, or their designee, for any changes in appearance, drainage, siltation, etc., at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If changes in the features are observed, Atlantic/DTI staff will report the condition to the KS who will provide consultation on potential impacts to the karst environment and possible remedial actions.

Monitoring of Features That are Intercepted During Construction

Features that are intercepted during construction shall be monitored as follows:

Level 1 Inspection of Features Intercepted During Construction

If any feature is intercepted during work activities including borings, blasting, and excavation or trenching, the onsite geologist will conduct an initial assessment of the feature to determine if further inspection (Level 2) by the KS will be required. Suspect features shall include:

1. Bedrock enclosed conduits, cave entrances[2] and voids;
2. Solution pockets that extend beyond visual examination range (and therefore may be open);
3. Areas of soft soils;
4. Soil voids;
5. Highly fractured bedrock;
6. Areas of breccia enclosed within the surrounding bedrock.

Level 2 Inspection of Features Intercepted During Construction

If any of the aforementioned features are observed during the Level 1 inspection, work will stop within a 100-foot radius of the feature, and then the KS will conduct a Level 2 inspection as follows:

a. The KS will examine the feature and determine if it has potential impact to the subterranean environment based on potential connectivity with the phreatic aquifer via the epikarst stratum (Moore, et al, 2013). The choice of characterization methods will be determined by the KS, and will include any combination of (but not be limited to):

    1. visual assessment;
    2 geophysical survey;
    3 track drill probes;
    4. infiltration or dye trace testing; or
    5. other techniques utilized to facilitate subsurface characterization of karst features.

b. If the feature is determined to have potential impact to the subterranean environment, the KS will advise Atlantic/DTI staff regarding appropriate remedial actions.

[2] If an opening to a cave is intercepted during construction activities, there should be immediate coordination with the US Fish and Wildlife Service, US Forest Service (if within Forest Service ownership land) Virginia DCR-NHP Karst Program (or) West Virginia Department of Conservation, for investigation.

c. If the feature is determined to not have potential impact to the subterranean environment, work will resume as planned.

d. All features that are intercepted during construction and subsequently remediated will be located by project surveyors exclusively, and monitored by Atlantic/DTI staff, or their designee, for any changes in appearance, drainage, siltation, etc., at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If any changes are observed, the KS will provide consultation on potential impact and recommend remedial actions, if necessary.

e. All Level 2 inspections, findings, and remedial activity will be summarized in a report by the KS, to be delivered to Atlantic/DTI after the completion of the field work.

Monitoring of Features That Form During Construction

Features that form during construction will be monitored as follows:

Level 1 Inspection of Features That Form During Construction

If any feature forms during work activities including hydrostatic testing, drilling, blasting, and excavation or trenching, Atlantic/DTI staff will conduct an initial assessment of the feature to determine if further inspection (Level 2) by the KS will be required. Suspect features will include:

a. Cave entrances[3]
b. Sinkholes;
c. Soil subsidence areas; and/or
d. Rock collapses.

This will apply to any of the above features that may form either within the work area, whether located along the proposed disturbance section or anywhere within a 300-foot radius of the work area.

Level 2 Inspection of Features That Form During Construction

If any of the aforementioned features are observed during the Level 1 inspection, work will stop in the area of the feature based on the observed site conditions, and then the KS will conduct a Level 2 Inspection as follows:

a. The KS will examine the feature and determine if it has potential impact to the subterranean environment based on potential hydraulic connectivity with the karst aquifer via the epikarst stratum.

b. The choice of characterization methods will be determined by the KS, and will include any combination of (but not be limited to) the following:

    a. visual assessment;
    b. electrical resistivity survey;
    c. track drill probes;
    d. infiltration testing; and/or
    e. other techniques utilized to perform subsurface characterization of karst features.

c. If the feature is determined to have potential impact to the subterranean environment, the KS will consult with Atlantic/DTI staff regarding appropriate remedial actions.

d. If the feature is determined to not have potential impact to the subterranean environment, work will commence as planned.

e. All features that form during construction, whether remediated or left in an undisturbed natural state, will be located on the site plans by the project surveyors, and will be monitored for any changes in appearance, drainage, siltation, etc. at 1 year, 2 year, and 5 year intervals after the completion of the earth disturbing activities. If any changes are observed, the KS will provide consultation on potential impact to the karst environment and remedial actions, if necessary. This

[3]If an opening to a cave forms during construction activities, should be immediate coordination with the Virginia DCR-NHP Karst Program (or) West Virginia Department of Conservation for investigation.

monitoring will be carried out on all features that form during work activities, regardless of whether they have a potential impact to the karst environment or not.

III. Notification and Consultation

Notification of, and consultation with State and Federal regulatory and administrative agencies will be completed for the following:

1. Any planned invasive subsurface exploration, including: geotechnical soil borings; rock coring; air track borings; test pits; or other invasive investigative measures that have the potential for intercepting subsurface voids, conduits, or caverns.
2. Any karst features that were identified and located prior to construction that will require remediation or mitigation.
3. Any karst features that were identified and located prior to construction that will require periodic monitoring, whether remediated or left in an undisturbed natural state. The results of the monitoring shall be documented and reported to the appropriate agencies.
4. Any karst features that are intercepted during construction. Notification and consultation will take place after the performance of the Level I inspection.
5. Any karst features that form during construction. Notification and consultation will take place after the performance of the Level I inspection.
6. Any karst features that form following construction which are observed during the post-construction karst feature monitoring (*see* Level 2 Inspection of Features that form during construction, part e).

Federal Agencies to be Notified

United States Fish and Wildlife Service (USFWS)
Federal Energy Regulatory Agency (FERC)
United States Forest Service (USFS)[4]

State Agencies to be Notified (Virginia)

Virginia Department of Conservation and Recreation – Natural Heritage Program (DCR-NHP)
Virginia Department of Environmental Quality (VDEQ)

State Agencies to be Notified (West Virginia)

West Virginia Division of Natural Resources (WVDNR)
West Virginia Department of Environmental Protection (WVDEP)

Karst Mitigation and Conservation Procedures

The following procedures will be used to avoid and minimize any impact of pipeline construction and/or O&M activity which might present a risk to environmental receptors, in particular obligate subterranean taxa. Please note that other resource protection measures that may be implemented for the ACP may provide redundancy with regard to the karst mitigation and conservation procedures detailed herein.

Measures to Avoid Impact to the Karst Aquifer and Environment

These measures shall apply to any karst feature which allows the unfiltered and unimpeded flow of surface drainage into the subsurface environment, including (but not limited to): open throat sinkholes, caves which receive surface drainage, sinking streams, and losing stream segments. These avoidance measures were derived from the NiSource Habitat Conservation Plan, Madison Cave Isopod Avoidance and Minimization Measures, and the Columbia Pipeline Group HCP and non-HCP species Best Management Practices

[4] Only if within USFS lands.

Guidance Document. They are intended to prevent impact to the karst aquifer and the subsurface habitat of obligate stygobiont species through protection of groundwater quantity and quality (Burden, 2012).

1. Protect known and/or future mapped recharge areas of cave streams and other karst features by following relevant conservation standards, specifically the FERC 2013 Upland Erosion Control, Revegetation and Maintenance Plan, the FERC 2013 Wetland and Waterbody Construction and Mitigation Procedures, and the ACP Spill Prevention, Containment, and Control (SPCC) plan.

2. Buffers of 300 feet around karst features in all work areas (within and off-ROW including discharge areas) must be clearly marked in the field with signs and/or highly visible flagging until construction related ground disturbing activities are completed. If a karst feature or its 300-ft buffer falls within the 125-ft wide workspace the following steps should be taken:

   a. The workspace should be narrowed (if practicable) to impact as little of the buffer as possible.

   b. No spraying of insecticides or herbicides shall be allowed within the 300-ft buffer.

   c. No refueling, repair or maintenance of vehicle or equipment shall be allowed within the 300-ft buffer.

   d. Soil disturbance within the buffer (i.e. trenching) shall be performed in a manner which prevents sediment from entering the subsurface through the use of carefully designed and continuously maintained sediment and erosion control measures, and shall follow the procedures and BMPs specified in the FERC plans and procedures mentioned in section 1, above.

   e. If the karst feature is located downgradient from the area of soil disturbance, drainage shall be directed away from the karst feature and its 300-ft buffer through the use of diversion trenches, water breaks, or other engineered methods. This shall apply even if the feature itself is located outside of the 125-ft workspace, but the workspace intercepts the 300-ft buffer.

   f. No activity of any kind shall be allowed within the parapet of a sinkhole or within a 25-ft buffer around the parapet, which should remain in an undisturbed, natural state. The sinkhole and the 25-ft parapet buffer should be delineated using temporary fencing.

3. Earth disturbing activities will be conducted in a manner that minimizes alteration of existing grade and hydrology of existing surficial karst features. Pre-existing flow channels will be stabilized but will not otherwise be altered. Concentrated flow caused by construction activities will be dispersed with a suitable spreading or diversion technique. Surface water flow volume will be maintained at historic (or predevelopment) levels as changes to the volume of surface water flow can disturb the subsurface hydrology.

4. Any open-throat sinkholes and cave entrances within 300 feet of the workspace, located downgradient from the centerline which receives drainage from the workspace will be carefully protected using silt fences, diversion trenches, constructed temporary berms around the parapet, or water breaks. If the feature receives flow via a discreet drainage channel, the channel will be equipped with absorptive boom and a double row of silt fences.

5. In addition to the aforementioned requirements, the following will be implemented in construction workspace areas:

   a. If a new open throat, cover-collapse sinkhole forms within the ROW or construction work space, work in that area will stop and the sinkhole will be isolated from the rest of the work area with sandbags or other suitable materials. The sinkhole will be inspected by the KS and appropriate action taken (e.g., pipeline relocated, sinkhole remediated, etc.) to ensure pipeline integrity and protection of the aquatic resource and subterranean habitat. The preferred method for remediation will be the graded/inverted filter method (Ralstein and Oweis, 1999). This technique involves excavation and cleaning out collapsed, soft soils in the weakened zone to limit further soil raveling, and placing rocks or boulders large enough to bridge the bedrock conduit or "throat" at the bottom of the excavation. Progressively finer rock and gravel are then placed and compacted above the base course, above which is placed a layer of permeable geotextile fabric and soil to the final grade which is then seeded. The advantage of this method is that it allows surface water to continue to infiltrate into the subsurface, but prevents further soil raveling (which is the root cause of cover-collapse sinkholes). The vegetated soil stratum and underlying gravel acts as a natural filter for the water infiltrating to the underlying solution enlarged conduits and fracture system. (see Appendix A).

b. If a subsurface void or conduit should open or be intersected in the process of excavation and/or trenching, work in that area will stop and the void will be isolated from the rest of the work area with sandbags or other suitable materials. The void will be inspected by the KS and the most appropriate remedial method will be determined on a case-by-case basis. Soil voids will be backfilled using the graded filter method as described above. Small conduits (< 1 foot in diameter) may be closed with low mobility grout and/or flowable fill. Large conduits (>1 foot in diameter) will require specific remedial actions (capping, void bridging, or plugging) based on the location and geometry of the conduit (i.e. whether the conduit is located at the bottom, one side, or both sides of the trench).

c. If a subsurface void or conduit should open or be intersected in the process of excavation and/or trenching through which water is flowing (i.e. an underground stream) work in that area will stop, and the void will be isolated from the rest of the work area with sandbags or other suitable materials. The void will be inspected by the KS, and the most appropriate remedial method will be determined on a case-by-case basis. All efforts will be made to ensure that the existing flow path is not interrupted by isolating the stream using trench breakers, and backfilling the location of the saturated karst feature or stream with permeable material such as well-graded stone or other material which will not interfere with the continued flow of water from one side of the trench to the other.

d. In linear excavations adjacent to karst features, spoils will be placed on the upgradient side of the excavation so that if any erosion takes place the stockpiled soil will flow back into the excavation and not downgradient towards the karst feature.

e. Surface water control measures, including, but not limited to: diversion (direct water flow into trench or off right-of-way areas past the area of concern), detention or collection and transportation, will be utilized to prevent construction-influenced surface water from free flowing into open throated surface karst features, and eventually into the subsurface.

f. Open throat surface karst features will not be utilized for the disposal of water. This shall include, but not be limited to: hydrostatic test water, water from trench dewatering, or any other water generated by, or utilized in, construction activities.

6. Blasting will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of known or inferred subsurface karst structures. If blasting or hammering is deemed necessary then the following parameters will be adhered to:

   a. The excavation will be carefully inspected for any voids, openings or other tell-tale signs of solution activity.

   b. If the rock removal intercepts an open void, channel, or cave, the work in that area will be stopped until a remedial assessment can be carried out by a qualified geologist or engineer with experience in karst terrain.

   c. All use of explosives will be limited to low-force charges that are designed to transfer the explosive force only to the rock which is designated for removal (e.g., maximum charge of 2 inches per second ground acceleration).

   d. If the track drill used to prepare the hole(s) for the explosive charge(s) encounters a subsurface void larger than 6 inches within the first 10 feet of bedrock, or a group of voids totaling more than 6 inches within the first 10 feet of bedrock, then explosives should not be used (or) a subsurface exploration should be conducted to determine if the voids have connectivity with a deeper structure. The subsurface exploration can be carried out with track drill probes, coring drill, electrical resistivity, or other techniques capable of resolving open voids in the underlying bedrock. If a track drill or coring rig is used, then all open holes will be grouted shut after the completion of the investigation.

7. Horizontal Directional Drilling (HDD) will not be used in karst terrain.
8. If authorized by the landowner, block (e.g. gate) all access roads and ROWs leading to cave entrances or open throat sinkhole structures to prevent unauthorized access.
9. Comply with requirements of project SPCC plan.
10. A Spill Prevention, Control, and Countermeasures Plan (SPCC) has been developed for the proposed ACP/SHP which will further avoid and minimize potential impact of spills by implementing the following measures:
    g. equipment refueling will not be performed within flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features, except by hand-carried cans (5 gallon maximum capacity) when necessary;
    h. equipment servicing and maintenance areas will be sited outside of flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features;
    i. prevent runoff resulting from construction equipment washing operations to directly enter any karst feature by locating these operations outside of the buffer area;
    j. construction equipment vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will not be parked, stored, or serviced within 300 feet of any karst feature;
    k. all equipment will be checked by a construction inspector daily for leaks prior to beginning work in karst areas; damaged or defective equipment will be removed or repaired; and
    l. if a reportable spill has impacted a karst feature:

        i. follow the SPCC Plan and

        ii. call the National Response Center (800-424-8802) and the Virginia Department of Environmental Quality (800-469-8892) or the West Virginia Department of Environmental Protection (304-558-5938), as appropriate.
11. Hydrostatic test water will not be obtained from karst features (only free-flowing streams).
12. Hydrostatic testing water from new pipe installations shall not be discharged into flagged or marked buffer areas of sinkholes, fissures, or other karst features or channels or surface features that flow towards those features. Discharging of hydrostatic testing water shall be performed in the following manner (in order of priority and preference):
    a. Discharge hydrostatic test water downgradient of flagged or marked buffer areas of sinkholes, fissures, or other karst features unless on-the-ground circumstances (e.g., man-made structures, terrain, or other sensitive resources) prevent such discharge.
    b. If water cannot be discharged downgradient as described in 12a, discharge water into uplands greater than 300 feet from flagged or marked buffer areas of sinkholes, fissures, or other karst features unless on-the-ground circumstances (e.g. man-made structures, terrain, other sensitive resources) prevent such discharge.
    c. If the conditions listed in either 12a or 12b are not practicable, discharge water as far from flagged or marked sinkholes, fissures, or other karst features as is practical and utilize additional sediment and water flow control devices to minimize effects.

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Appendix A – Sinkhole Mitigation Guidance Documents

West Virginia Department of Environmental Protection
Division of Water and Waste Management
Groundwater Protection Program

Sinkhole Mitigation Guidance

August 8, 2005

Purpose:

These sinkhole mitigation designs serve to allow the filling of sinkholes while maintaining recharge to the aquifer, reducing potential contamination threats to groundwater, and eliminating safety hazards at sinkhole entries.

General:

Consideration should be given to the method used for removing contaminated materials from sinkholes and reducing or eliminating direct inflow of surface water into sinkholes. Land treatment methods that improve the filtration and infiltration of surface water before it enters the sinkhole should be used along with the mitigation of the sinkhole.

Before selecting a treatment option the following should be considered:

- Land use
- Existing and planned land treatment
- Sinkhole drainage area
- Dimensions of the sinkhole opening
- Safe outlet for diverted surface water
- Environmentally safe disposal of sinkhole “clean out” material
- Availability and quality of filter material
- Safety of equipment and operators and laborers during installation

Treatment selection should be based on the dimensions of the sinkhole drainage area and include direct sinkhole treatment with surface water control measures and filter strips. Whichever treatment option is chosen, it should avoid surface water ponding or the creation of high soil moisture conditions in excess of 72 hours.

Treatment designs apply to sinkholes with excavated depths of 5 to 25 feet and with drainage areas up to 15 acres. Excavations up to 5 feet are sufficient for most sinkholes. Sinkholes with excavation depths of greater than 25 feet or with uncontrolled drainage areas greater than 15 acres may require adjustments to the treatment measure(s) and/or surface water control measure(s). In these cases, geologic and engineering assistance must be obtained and a site-specific treatment design prepared.

Treatment for Sinkholes with Drainage Areas Less than 5 Acres

Treat the sinkhole using the mitigation design in Figure 1 of this guidance document. The treatment site should be inspected after periods of heavy precipitation because some material may run into adjacent sinkhole voids causing a surface depression. In this case, maintenance will include adding soil material at the surface. The existing land use or practice may continue over the treated sinkhole as long as the treatment is maintained.

Treatment for Sinkholes with Drainage Areas of 5 Acres or More and Having a Safe Outlet

The following additional treatment criteria are applicable to sinkholes with drainage areas of 5 acres or more where a safe outlet can be provided to divert surface water away from the sinkhole. A safe outlet is one that does not erode, divert surface water to another sinkhole or injection well, or cause flood damage to crops, property, buildings, or highways/roads.

Surface water control measures should be situated to reduce the internal drainage area around the sinkhole to less than 5 acres. The choice of surface water control measures is generally based on site-specific conditions.

Treatment for Sinkholes with Drainage Areas of 5 to 15 acres and Having No Safe Outlet

Treat the sinkhole using the mitigation design in Figure 2 of this guidance document. The site should be inspected after periods of heavy precipitation because some material may run into adjacent sinkhole voids causing a surface depression. In this case, maintenance will include adding soil material at the surface. The sinkhole should remain as unused land.

Vegetated Buffer Area

A vegetated buffer area should be installed around the sinkhole to improve runoff water quality by filtration and adsorption of contaminants. The vegetated buffer area should be installed within the sinkhole drainage area and should begin at the treated sinkhole.

The minimum width (in feet) of the vegetated buffer area is determined by multiplying the sinkhole drainage area (in acres) by seven. This width should provide beneficial filtering for some distance outside the sinkhole because surface water runoff may be temporarily held before reaching the treated sinkhole.

Appropriate vegetation should be used for the buffer area. Use native vegetation as much as possible. **DO NOT** use noxious plants or weeds. It is recommended that a plant nursery be consulted for the appropriate vegetation.

Acceptable Materials

Engineering fabric - must meet the applicable requirements of AASHTO M-288.

Aggregates – fine aggregates, gravel, or rock rip rap that conforms to the West Virginia Department of Highways, Standard Specifications for Roads and Bridges, Sections 702, 703, and 704.

Specifications

Use the following guidance for installing a mitigation design for sinkholes and sinkhole areas with drainage areas of less than 5 acres:

1. Remove and properly dispose of materials dumped in and around the sinkhole in accordance with applicable federal, state, and local laws.

2. Excavate loose material from the sinkhole and try to expose the solution void(s) in the bottom. Enlarge the sinkhole, as necessary, to allow for installation of the filter material.

3. Select stone that is approximately 1.5 times larger than the solution void(s). Place the stone into the void(s) forming a competent bridge. Stone used for the bridge should have rock strength equal to, at least, moderately hard (*e.g.*, resistant to abrasion or cutting by a knife blade but can be easily dented or broken by light blows with a hammer). Shale or similar soft and non-durable rock is not acceptable.

4. Place a layer of filter material over the bridge to a minimum thickness of 24 inches. Approximately 35 percent of the material should be larger than the opening between the bridge and the void(s). There should be no discernable large openings around the bridge. The material should be either gabion stone, stone for rip rap, or stone for special rock fill that conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Section 704.

5. Place a layer of smaller size filter material over the previous layer to a minimum thickness of 10 inches. The size of the material should be ¼ to ½ the size of that used in the previous layer. The material should be No. 57 aggregate, which conforms to West Virginia Department of Highways, *Standard Specifications Roads and Bridges*, Sections 703.1.1, 703.1.2, 703.1.3, 704.1.4, and 703.2.1. Unacceptable filter material consists of pea gravel or slags (steel, electromagnetic, or power plant).

6. Place a layer of sand-sized filter material over the previous layer ~~at~~ to a minimum thickness of 10 inches. The sand must be compatible in size with the previous layer to prevent piping. The material should be fine aggregate that conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Sections 702.1.1, 702.1.2, and 702.1.3.

7. Engineering fabric conforming to AASHTO M 288 may be substituted for the stone and sand filter materials discussed in 5 and 6.

8. Backfill over the top filter layer or engineering fabric with soil material to the surface. This should be mineral soil with at least 12 percent fines. Reuse soil material excavated from the sinkhole as much as possible and place any available topsoil over the backfill. Overfill by about 5 percent to allow for settling.

9. Establish vegetation on the mitigated sinkhole and other disturbed areas of the site.

Use the following guidance for installing a mitigation design for sinkholes and sinkhole areas with drainage areas of 5 to 15 acres:

1. Remove and properly dispose of materials dumped in and around the sinkhole.

2. Excavate loose material from the sinkhole.

3. Place a layer of filter material into the sinkhole, allowing the stone to fill the void(s) below the bottom of excavated sinkhole. The size should be ¼ to ½ the size of the void(s). This material can be WVDOH gabion stone, rip rap stone, or special rock fill stone.

4. Place a layer of the same size filter material to a thickness of about ¾ TD (TD = total depth) above the sinkhole bottom.

5. Place a layer of smaller size filter material over the previous layer to a thickness of about ¼ D. Bring this layer to surface level. The size should be ¼ to ½ the size of the previous layer. The material should be No. 57 aggregate, which conforms to West Virginia Department of Highways, *Standard Specification Roads and Bridges*, Sections 703.1.1, 703.1.2, 703.1.3, 703.2.1, and 704.1.4. Unacceptable stone consists of pea gravel or slags (steel, electrometallurgical, or power plant).

6. Shale or similar soft and non-durable rock is not acceptable.

7. Establish vegetation on the mitigated sinkhole and disturbed areas of the site.

Engineering Fabric Requirements for Subsurface Drainage

Engineering fabric used in the mitigation of sinkholes should meet the applicable requirements of AASTHO M 288, Section 7.2

Engineering Fabric Installation

Proper construction and installation techniques are essential to ensure that the intended function of the engineering fabric is fulfilled.

When sewn seams are necessary, the seam strength must be equal to or greater than 90 percent of the specified grab strength, as measured in accordance with ASTM D 4632.

When sewn seams are used for the seaming of the engineering fabric, the thread must be high strength polypropylene, or polyester. Nylon thread is unacceptable.

For Sinkhole Mitigation Design A, place the engineering fabric loosely, with no wrinkles or folds, and with no void spaces between the fabric and the bridge. Overlap successive sheets of engineering fabric a minimum of 12 inches, with the upstream sheet overlapping the downstream sheet.

Prior to covering, the engineering fabric should be inspected to ensure that it has not been damaged (*e.g.* holes, tears, rips) during installation. An engineer or the engineer's designated representative should conduct the inspection. The designated representative should be a certified field inspector.

Damaged fabric must be repaired immediately. Cover the damaged area with an engineered fabric patch that overlaps to 12 inches beyond the damaged area.

Any damaged engineering fabric that cannot be repaired shall be replaced as directed by the engineer.

Place material over the engineering fabric in such a manner as to avoid stretching and subsequently tearing the fabric. Do not drop stone and soil placement from a height greater then one meter. Do not allow stone with a mass of more than 100 kg to roll down the slope of the sinkhole.

Grading the sinkhole slope is not permitted if the grading will result in the movement of the stone directly above the engineering fabric.

Operation and Maintenance

The owner/operator is responsible for maintaining the mitigated sinkhole and sinkhole area. At a minimum, the following maintenance practices should be performed:

1. Mow grass and plantings as necessary to promote vigorous growth.

2. Inspect mitigation measures at least twice a year and after all major rain events. Repairs to the sinkhole mitigation measures should be made promptly were warranted.

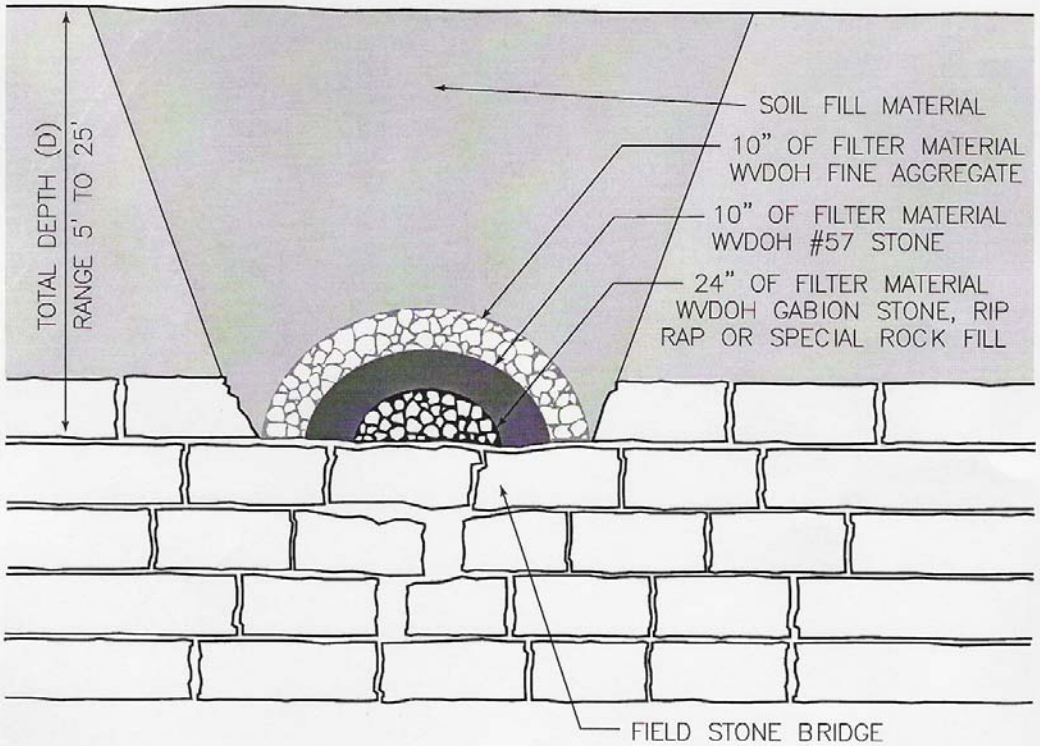
References:

USDA Natural Resources Conservation Center, January 2004. *Maryland Conservation Practice Standard, Sinkhole and Sinkhole Area Treatment, Code 725.*

West Virginia Department of *Highways, Standard Specifications Roads and Bridges*, 2000, Section 702, “Fine Aggregates”, Section 703, “Coarse Aggregates”, Section 704, “Stone and Crushed Aggregate”, Section 715, “Miscellaneous Materials”.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SINKHOLE MITIGATION GUIDANCE

FIGURE 1



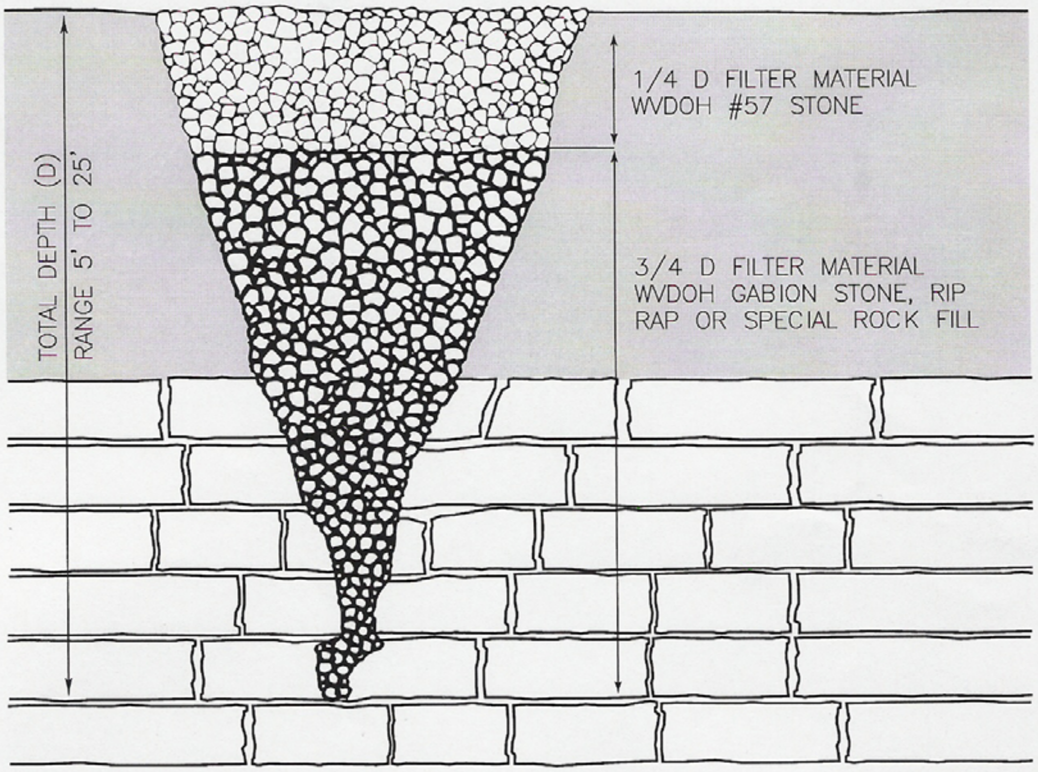
NOTE:
A NONWOVEN GEOTEXTILE MEETING AASHTO M288, SECTIONS 7.1+7.2 MAY BE SUBSTITUTED FOR THE WVDOH #57 STONE AND WVDOH FINE AGGREGATE

SINKHOLE MITIGATION

(DRAINAGE AREA LESS THAN 5 ACRES)

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SINKHOLE MITIGATION GUIDANCE

FIGURE 2



SINKHOLE MITIGATION

(DRAINAGE AREA 5 TO 15 ACRES)

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

KARST SINKHOLE TREATMENT

(No.)

CODE 527

DEFINITION

The treatment of sinkholes in karst areas to reduce contamination of groundwater resources, and/or to improve farm safety.

PURPOSE

This practice may be applied as part of a conservation management system in karst topography, which is an area underlain by solutioned carbonate bedrock with sinkholes and caverns. The practice supports one or more of the following purposes:

- Improve water quality
- Improve farm safety

CONDITIONS WHERE PRACTICE APPLIES

On any land surface or in conjunction with any existing practice where the soils and geologic conditions are characterized by sinkholes or karst topography.

This practice does not apply to erosional or collapse features caused by failure or leakage of underground pipes or constructed surface drainage features (e.g., canals), or due to piping of unstable soil materials, or due to poorly compacted or poorly constructed features.

This practice does not apply to sinkholes that may appear in or beneath structures or in flowing streams. Treatment of sinkholes in these areas will be determined through engineering investigations and structural design solutions.

CRITERIA

General Criteria Applicable to all Purposes

The installation and operation of karst sinkhole treatment(s) will comply with all Federal, State, and local laws, rules, and regulations.

A geologic investigation of the potential impact of the treatment on groundwater, surface water run-in, and the karst features will be conducted by a qualified geologist.

Trash and other material will be removed from the sinkhole and disposed of in an environmentally sound manner.

Excess surface water caused by construction activities will be diverted from the sinkhole area.

Nutrient and pest management plans will be developed for the drainage area of the sinkhole controlled by the landowner.

Vegetative Treatment. All sinkholes treated will have a vegetated buffer established and/or maintained. The buffer will be a minimum of 25-feet wide measured from the rim of the sinkhole. The buffer area may be extended to prevent concentrated flow channels from occurring and entering the sinkhole. The width of the vegetated buffer will be established and maintained in accordance with the type of buffer chosen. The sinkhole and surrounding buffer area will be fenced.

Livestock will be excluded from the vegetative buffer except when grazing would be beneficial to maintenance of the buffer.

Nutrients, herbicides, pesticides, and animal waste will not be applied within an established buffer area. Only mechanical treatments shall be used for weed control.

Appropriate erosion and sediment control measures will be used to reduce the amount of sediment entering sinkhole openings during the establishment of the vegetative buffer.

Surface Water Control. Changes to the volume of surface water that enters a sinkhole may disturb the underground hydrology. To the extent possible, the surface water flow should be maintained at historic (or predevelopment) volumes.

Pre-existing concentrated flow channels will be stabilized but should not otherwise be altered. If a plug or inverted filter is used, the area to be protected will be characterized by a qualified Geologist to enable a suitable design. Concentrated flow caused by construction activities will be dispersed with a suitable spreading or diversion technique.

Sinkhole Treatment/Closing. Adequate protection of most sinkhole and sinkhole areas can be achieved by the use of vegetative buffers and livestock exclusion. However, if an open sinkhole is a safety hazard, it may be treated with a rock filter, gabions, or other methods approved by the State Conservation Engineer or delegated authority.

Sinkholes to be treated or closed via a reverse filter or plug shall be excavated to stable, unweathered bedrock, if possible, prior to construction.

Sinkholes that open into caves shall not be filled under any circumstances. Gated openings may be used for safety reasons.

CONSIDERATIONS

Current and planned land use should be considered. In particular, structures, septic drain fields, wells, feedlots, ponds, and animal waste storage systems should not be located over a sinkhole site or within the impact area.

Sinkholes may be natural conveyances of organic material and nutrients important to cave fauna.

For a sinkhole receiving contaminated overland flow, every effort should be made to first treat the source of the contamination. Although it is important to maintain the hydrology of the karst system, it may be more beneficial to the groundwater quality to divert the contaminated water away from the sinkhole. In some cases, it may be necessary to completely plug a sinkhole with sealing materials rather than treat it with an inverted filter. Acceptable sealing materials are provided in ASTM D 5299, part 6.4. An example of this would be a sinkhole in a feedlot or a site that is difficult to protect by any other method.

The sinkhole treatment should not result in excessive surface water ponding or high soil moisture conditions over an extended period of time.

When filling a sinkhole, mounding of the fill material may be needed to offset future settlement due to consolidation and migration of the fill material into subsurface voids. Additional fill may be required as treatment ages.

Treatment of one sinkhole may have an effect on other sinkholes or solution features in the vicinity.

The use of a conservation easement for the buffer and sinkhole should be considered.

PLANS AND SPECIFICATIONS

Plans and specifications for Sinkhole and Sinkhole Area Treatment will be in keeping with this standard and will describe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications shall include the following:

- Plan view showing sinkhole and sinkhole area Include topographic information and photographs
- The geologic investigation will include a study of potential impacts on the karst resource
- Depth to stable, unweathered bedrock
- Description of planned treatment measures
- The drainage area of sinkhole delineated on a topographic map
- Availability of safe outlet for surface water, if applicable
- Operation and Maintenance requirements
- Special safety requirements

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan will provide specific instructions for maintaining the sinkhole and sinkhole area treatment, including reference to periodic inspections and the prompt repair and/or replacement of damaged components.

APPENDIX J

SITE-SPECIFIC PLANS

J1 RESIDENTIAL CONSTRUCTION PLANS

J2 SITE-SPECIFIC CROSSING PLAN FOR THE JAMES RIVER WILDLIFE MANAGEMENT AREA

J3 SITE-SPECIFIC CROSSING PLAN FOR THE GREENBRIER RAIL TRAIL

J4 SITE-SPECIFIC CROSSING PLAN FOR THE ALLEGHENY TRAIL

J5 SITE-SPECIFIC CROSSING PLAN FOR THE NORTH BEND RAIL TRAIL

J1 RESIDENTIAL CONSTRUCTION PLANS

Atlantic Coast Pipeline

AP-1

FERC's Plans will be followed for Residential Construction, for all Residences located within 50 feet of the construction work area

1. Orange safety fence will be installed at a minimum 15 feet from the residence, and 100 feet along the construction corridor, each direction from residence.
2. Will avoid the removal of mature trees and landscaping within the construction work area, unless necessary for safe operation of equipment, or as specified in the landowner agreements
3. Restore all lawn areas and landscaping immediately following clean up operations or as specified in landowner agreement
4. During landowner negotiations, identify location of septic system and avoid or develop a replacement plan with landowner during construction.

For this project, the following notes will also be applied

a. Where the pipeline centerline is within 25 feet of a residence, the trench will not be excavated until the pipe is ready for installation.

b. Landowner will be notified one week prior to construction on his/her property

c. No refueling or storage of hazardous materials will occur within 200 feet of a private well.

d. Steel plating or other effective means will be provided to allow landowner access to his/her residence should construction or other ground disturbance occur. Required at egress points, landowner driveways, or other private access ways.

e. On public roads, we will follow our traffic management plans that are filed as part of the permit

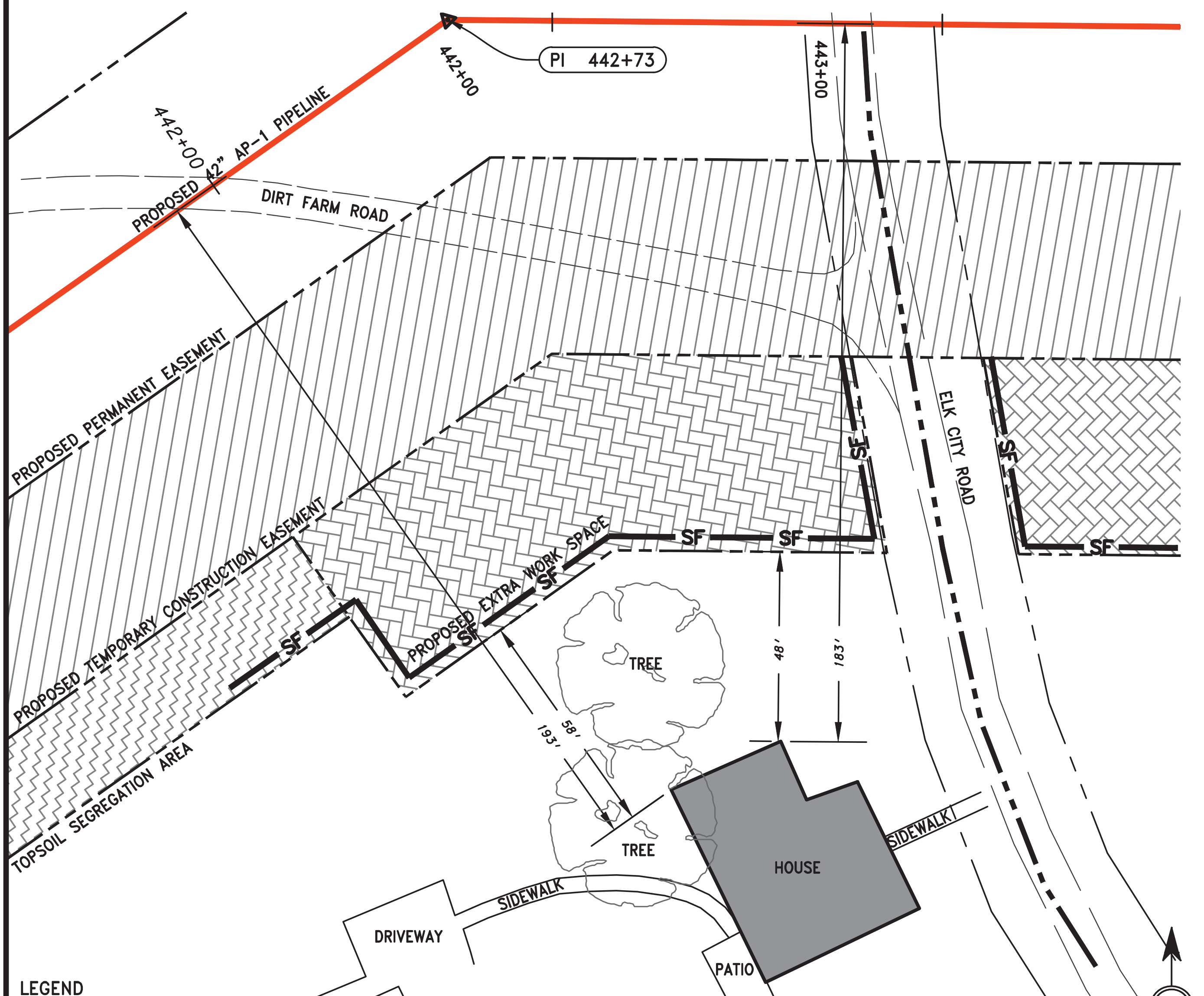
f. Construction will be limited to daylight hours.

g. Applicant will:

- Ensure piping is welded and installed as quickly as possible to minimize the amount of time a neighborhood is affected by construction;
- Complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting.
- During landowner negotiations, will work with landowner on restoration procedure. These procedures will include seeding mix, tree/shrub planting and hardscape replacement.

gai consultants SOUTHPOINTE OFFICE 6000 TOWNE CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES GENERAL NOTES	DWN. JJP	CHKD. DLH	APPD. NET	DATE 07/28/2016
		SCALE: NONE			TASK NO. 00
	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. C140468			
		DRAWING NO. A001			REV –

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.
TOPSOIL SEGREGATION AREA

LL-02-039
789 ELK CITY ROAD
JANE LEW, WEST VIRGINIA 26378
TAX MAP # 04-7B000200000000
AP-1 PIPELINE
MILE POST 8.37

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
LEWIS COUNTY, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC CHKD. DLH APPD. NET DATE 6/28/2016
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-02-039 REV

GAI CAD FILE: J:\2665 -GA\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-02-039.DWG

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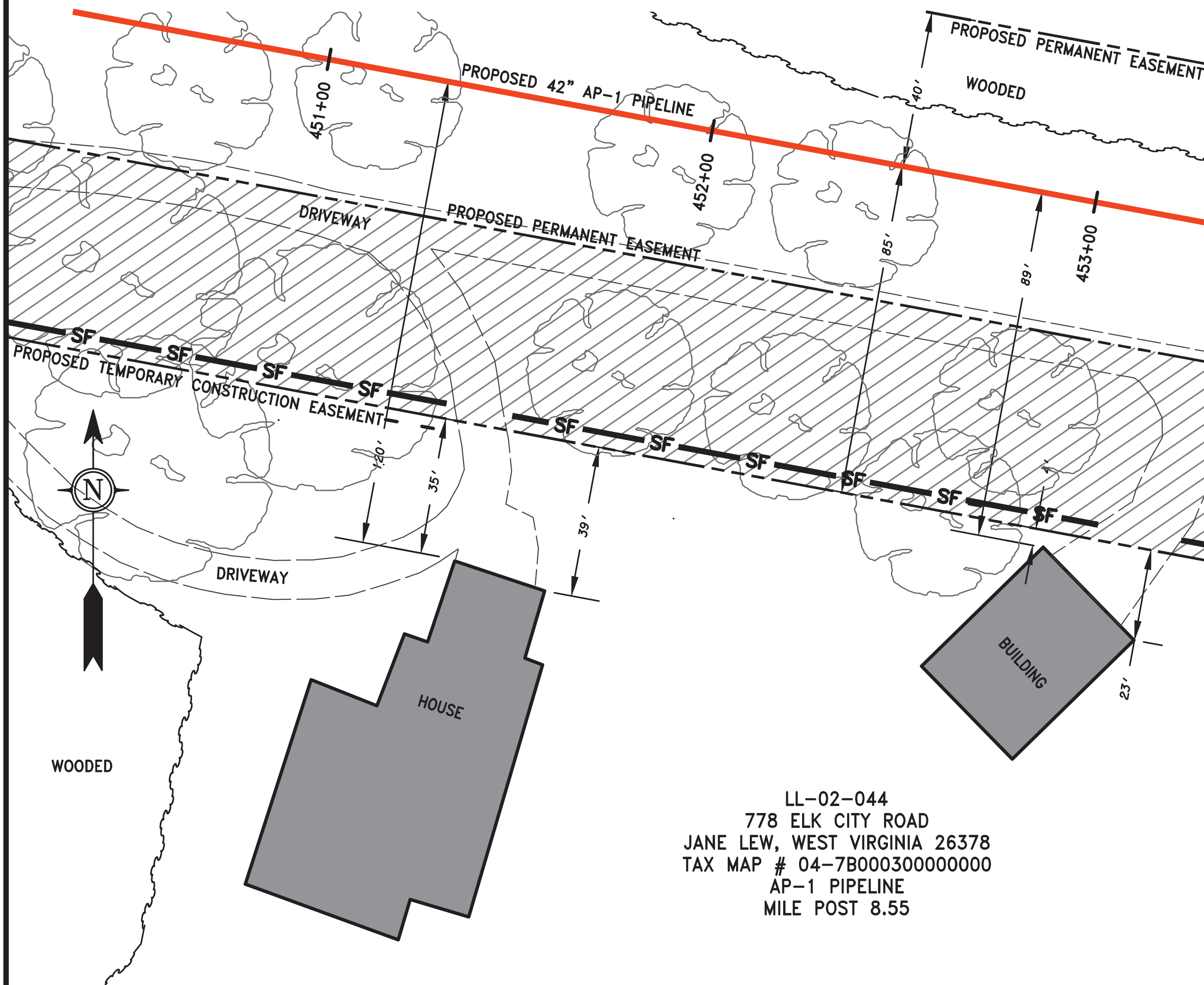
1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE

PROPOSED LIMITS OF CONSTRUCTION

PROPOSED GAS PIPELINE

SF ORANGE SAFETY FENCE

EXTRA WORK SPACE

PROPOSED TEMPORARY R.O.W.

SCALE: 1" = 40'

40' 0 40' 80'

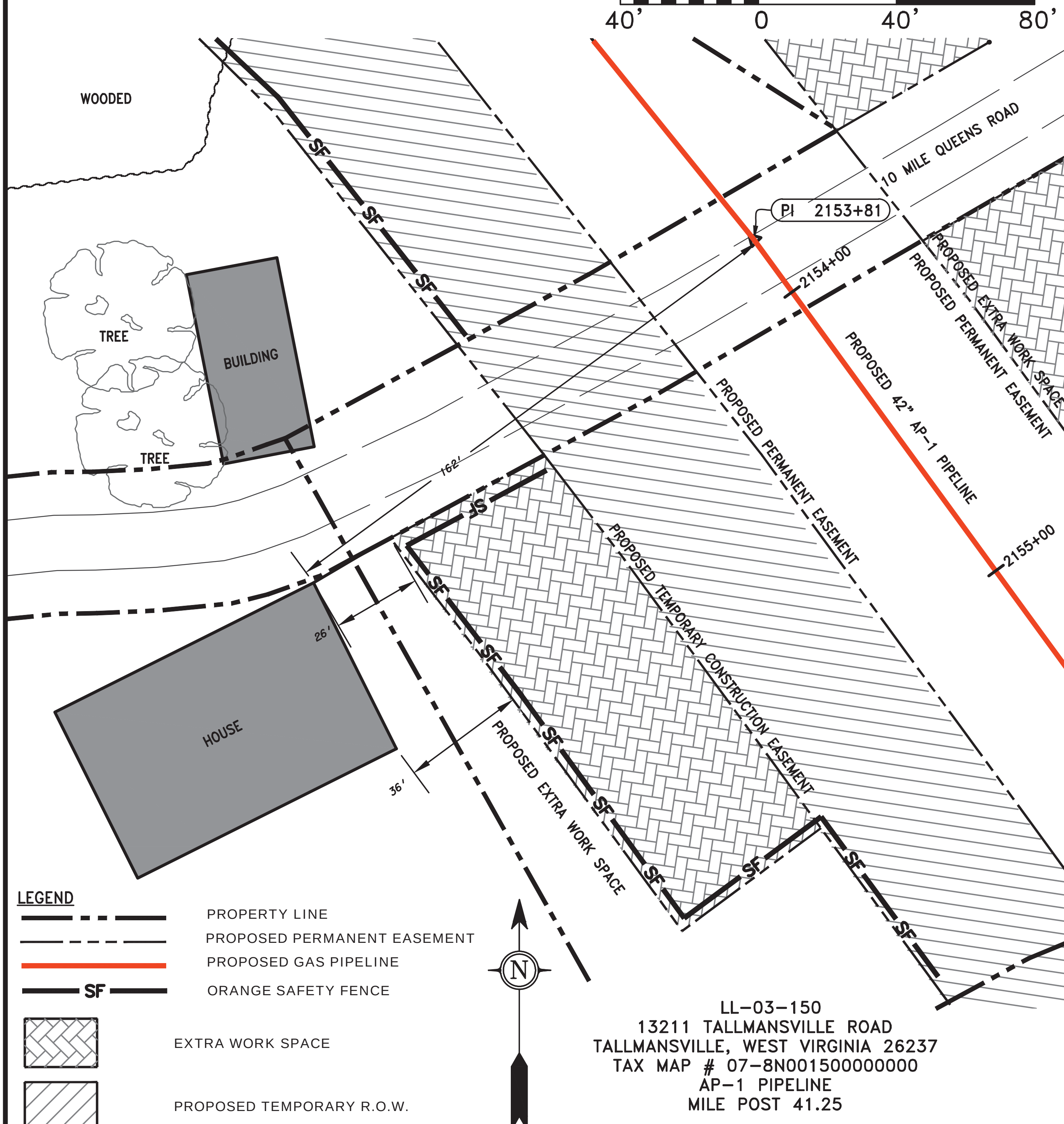
gai consultants SOUTHPOINTE OFFICE 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	mbe monaloh basin engineers 300 BUSINESS CENTER DRIVE PITTSBURGH, PA 15205 412-788-2433	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES LEWIS COUNTY, WEST VIRGINIA ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	DWN. RDC CHKD. DLH APPD. NET DATE 6/28/2016 SCALE: AS SHOWN TASK NO. 01 PROJECT NO./DASH NO. 140468 DRAWING NO. LL-02-044 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-02-044.DWG

6/28/2016 3:29 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 40'



LL-03-150
13211 TALLMANSVILLE ROAD
TALLMANSVILLE, WEST VIRGINIA 26237
TAX MAP # 07-8N001500000000
AP-1 PIPELINE
MILE POST 41.25

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

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PITTSBURGH, PA 15205
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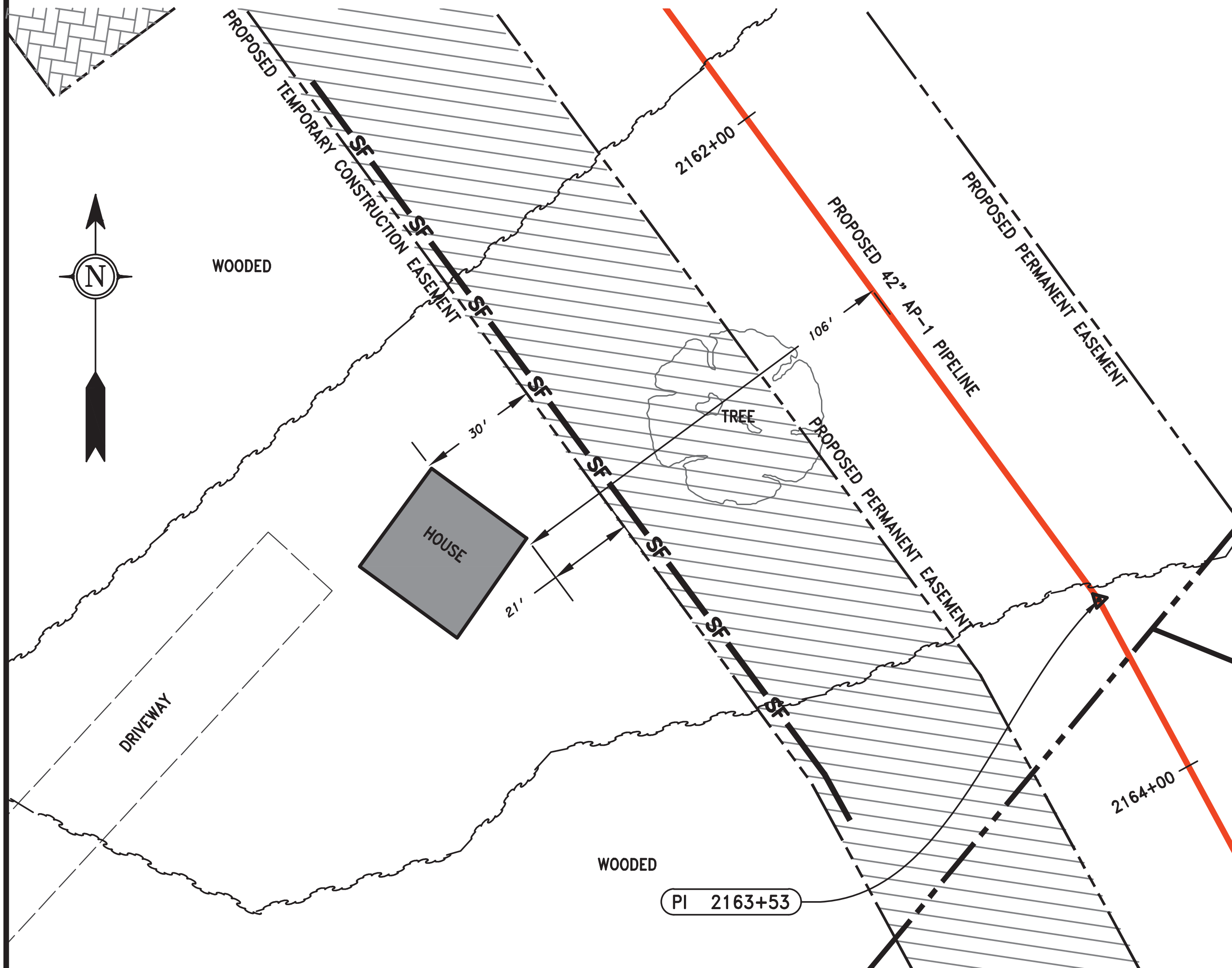
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
UPSHUR COUNTY, WEST VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/28/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-03-150			REV –

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

	PROPERTY LINE
	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
SF	ORANGE SAFETY FENCE
	EXTRA WORK SPACE
	PROPOSED TEMPORARY R.O.W.

LL-03-154
1950 GUM ROAD
ELKINS, WEST VIRGINIA 26241
TAX MAP # 07-8N002800000000
AP-1 PIPELINE
MILE POST 41.41

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
UPSHUR COUNTY, WEST VIRGINIA

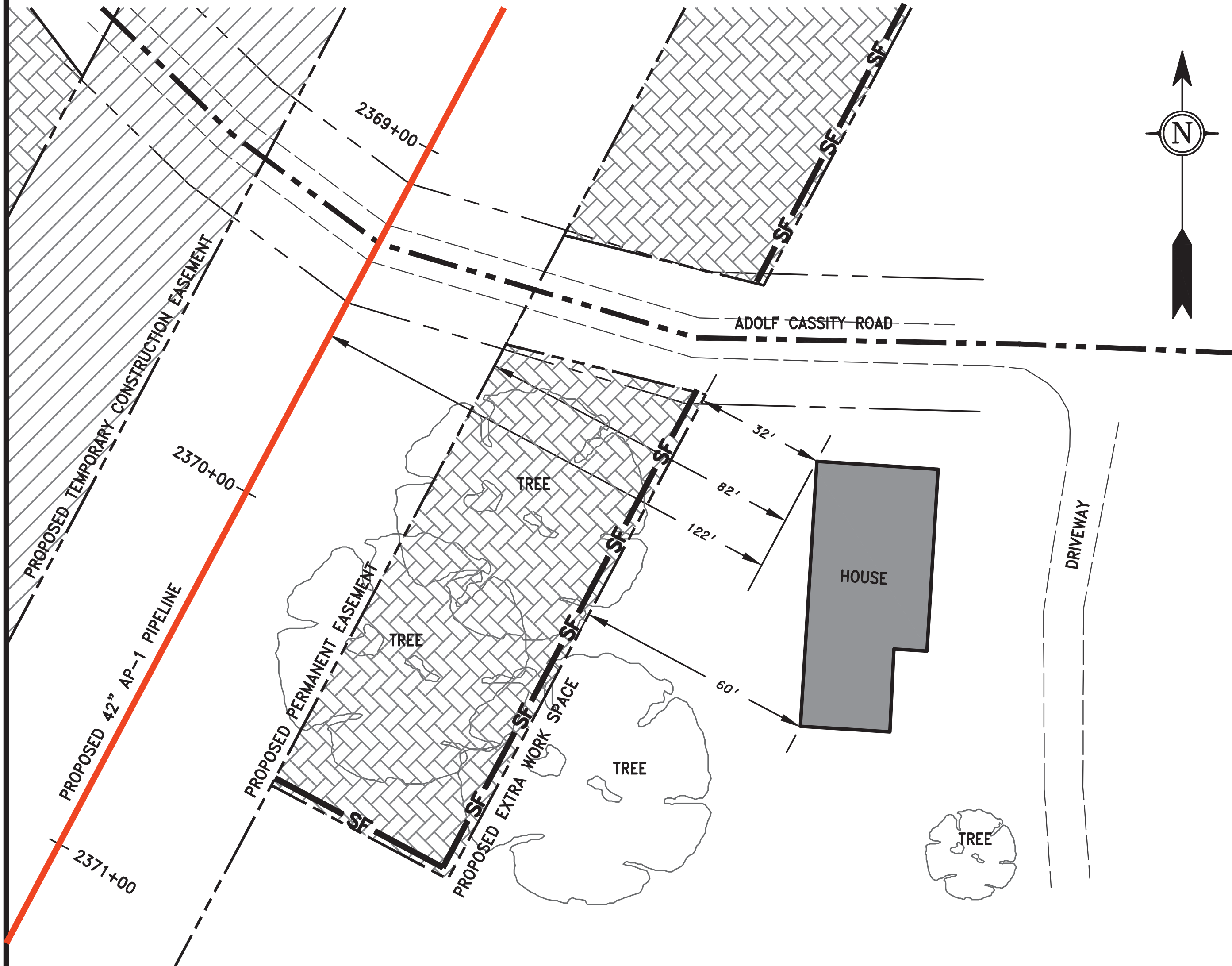
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 6/24/2016
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-03-154
REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-03-154.DWG

6/24/2016 3:03 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

LL-04-002-A002
2332 CASSITY ROAD
MABIE, WEST VIRGINIA 26278
TAX MAP # 11-111001000000000
AP-1 PIPELINE
MILE POST 45.35

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
RANDOLPH COUNTY, WEST VIRGINIA

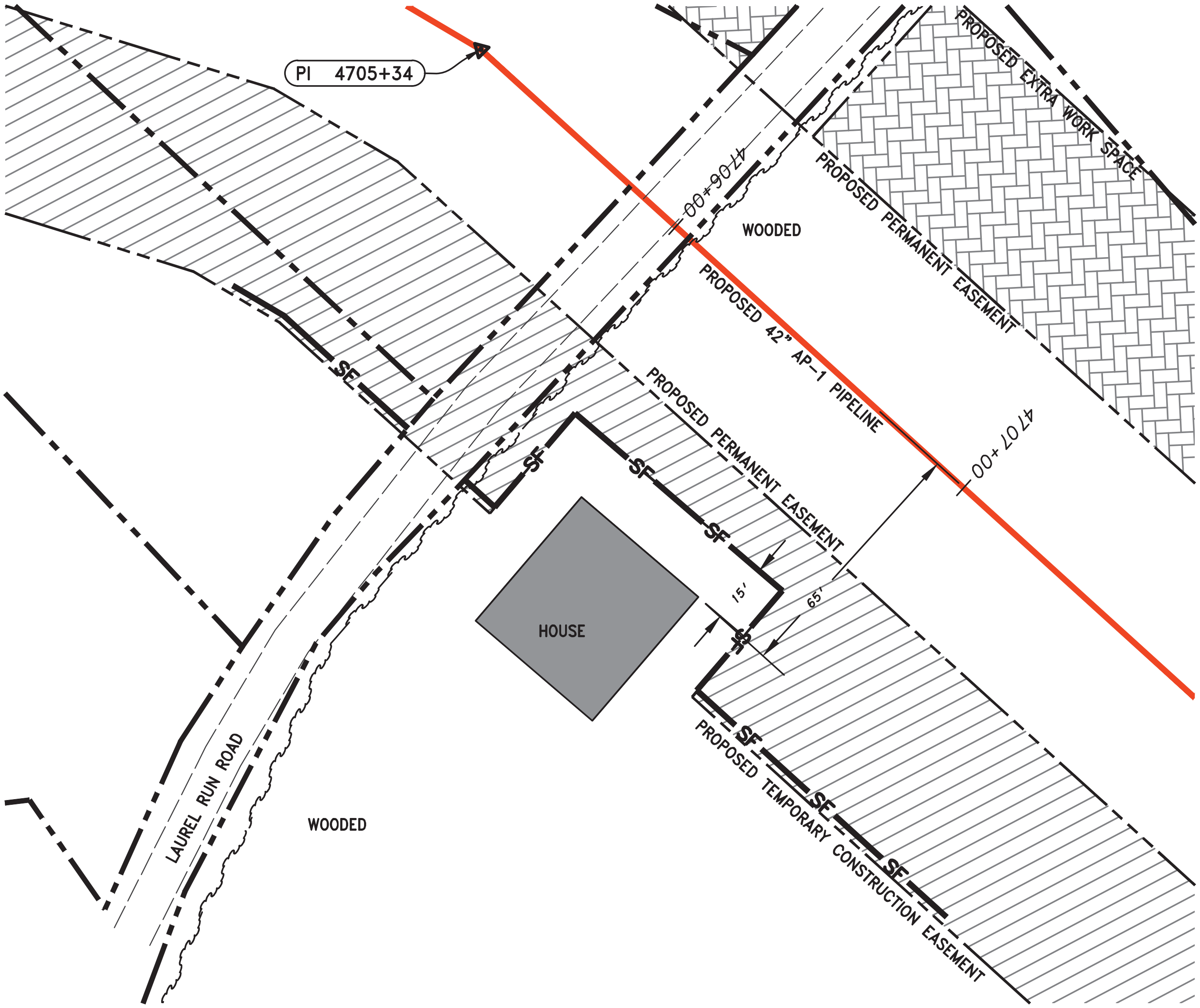
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 6/24/2016
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-04-002-A002 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\BUILDING CONFLICT EXHIBITS\2665-01 SPREAD-1 - BUILDING CONFLICT EXHIBITS LL-04-002-A002.DWG

6/24/2016 2:41 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.
TOPSOIL SEGREGATION AREA

LL-05-001-E102
P.O. BOX 4938
EASTMAN, GEORGIA
TAX MAP # 04 83A001300000000
AP-1 PIPELINE
MILE POST 76.5

SCALE: 1" = 40'

40' 0 40' 80'

N

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
POCAHONTAS, WEST VIRGINIA

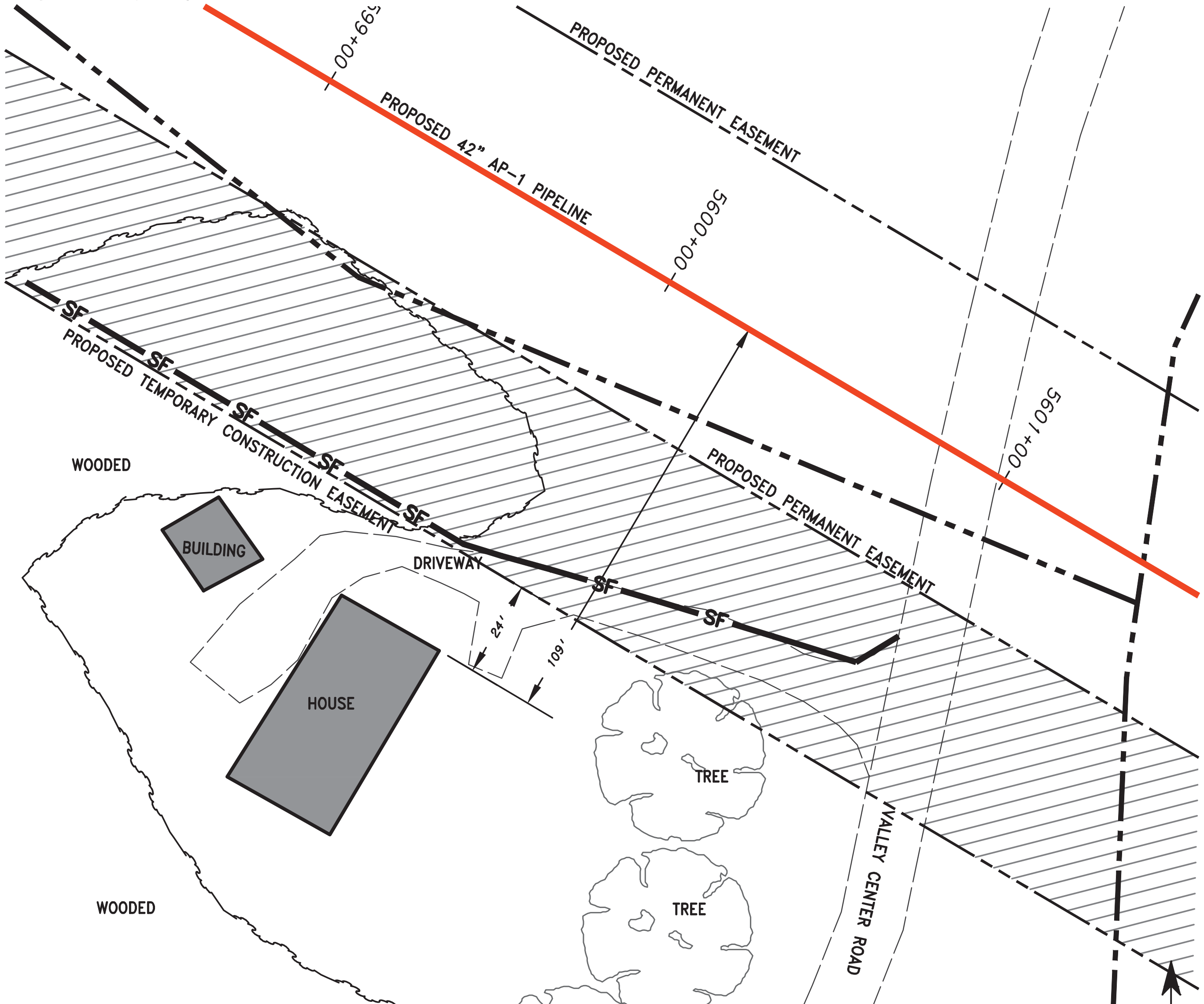
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/2016
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-05-001-E102 | 1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\1 - REROUTE 1A\BUILDING EXHIBITS\2665-01 SPREAD-1A - LL-05-001-E102.DWG

7/18/2016 2:34 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.
TOPSOIL SEGREGATION AREA

LL-06-001-C008
457 FORESTRY ROAD
HOT SPRINGS, VIRGINIA 24445
TAX MAP # 64-4-1
AP-1 PIPELINE
MILE POST 88.45

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
HIGHLAND COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 6/24/2016

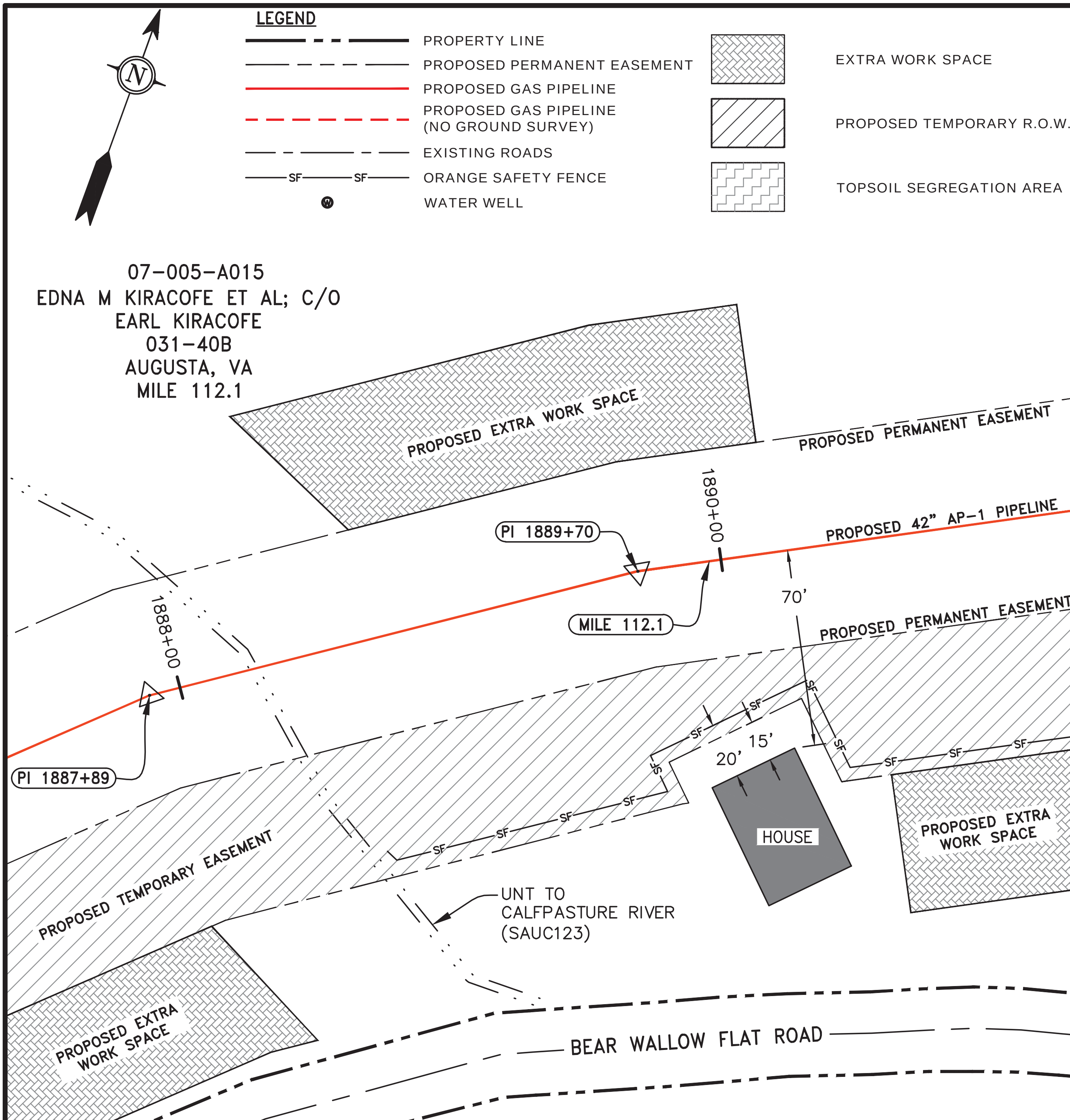
SCALE: AS SHOWN | TASK NO. 01

PROJECT NO./DASH NO. 140468

DRAWING NO. LL-06-001-C008 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 02 - SOUTHEAST PIPELINE (SECTION 1)\1 - REROUTE 1A\BUILDING EXHIBITS\2665-01 SPREAD-1A - LL-06-001-C008.DWG

6/24/2016 12:55 PM



NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 50'

50' 0 50' 100'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
AGUSTA COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. ACE | CHKD. DLH | APPD. NET | DATE 7/18/16

SCALE: AS SHOWN | TASK NO. 001

PROJECT NO./DASH NO. C140468

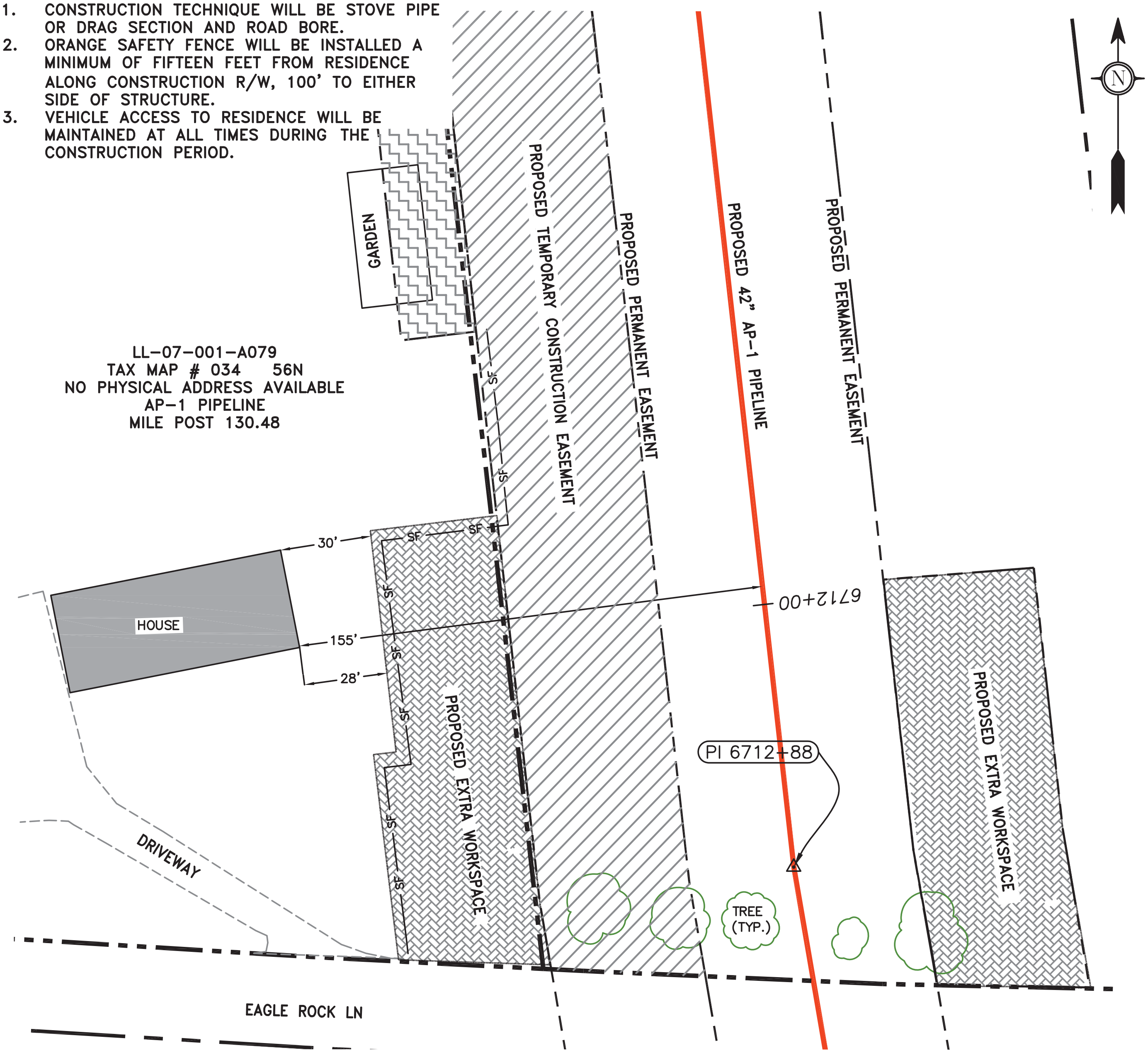
DRAWING NO. LL-07-005-A015 REV

GAI CAD FILE: \\GAICONSULTANTS.LOCAL\BUPROJ\ENERGY\2014\C140468.00 - DOMINION - SOUTHEAST PIPE\CAD\MON FOREST REROUTE\DWG\HOUSE EXHIBITS\SITE SPECIFIC-LL-07-005-A015.DWG

7/18/2016 1:43 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-07-001-A079
TAX MAP # 034 56N
NO PHYSICAL ADDRESS AVAILABLE
AP-1 PIPELINE
MILE POST 130.48



LEGEND

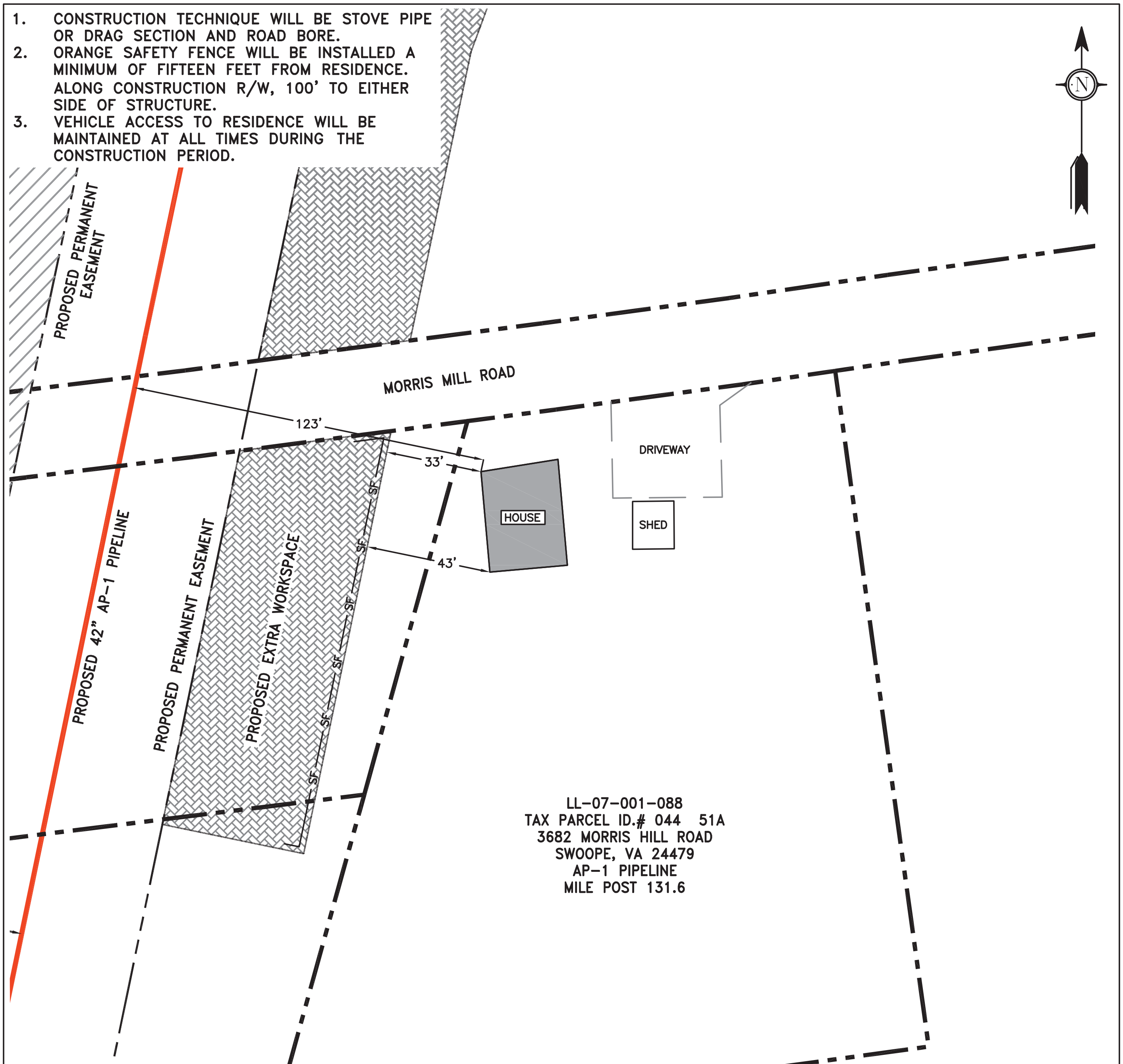
PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants SOUTHPOINTE OFFICE 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES AUGUSTA COUNTY, VIRGINIA	DWN. SIB CHKD. DLH APPD. NET DATE 6/30/16 SCALE: AS SHOWN TASK NO. 01
	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 140468 DRAWING NO. LL-07-001-A079 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 3\SECTION 3 HOUSE EXHIBITS - REROUTE.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF — SF — ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

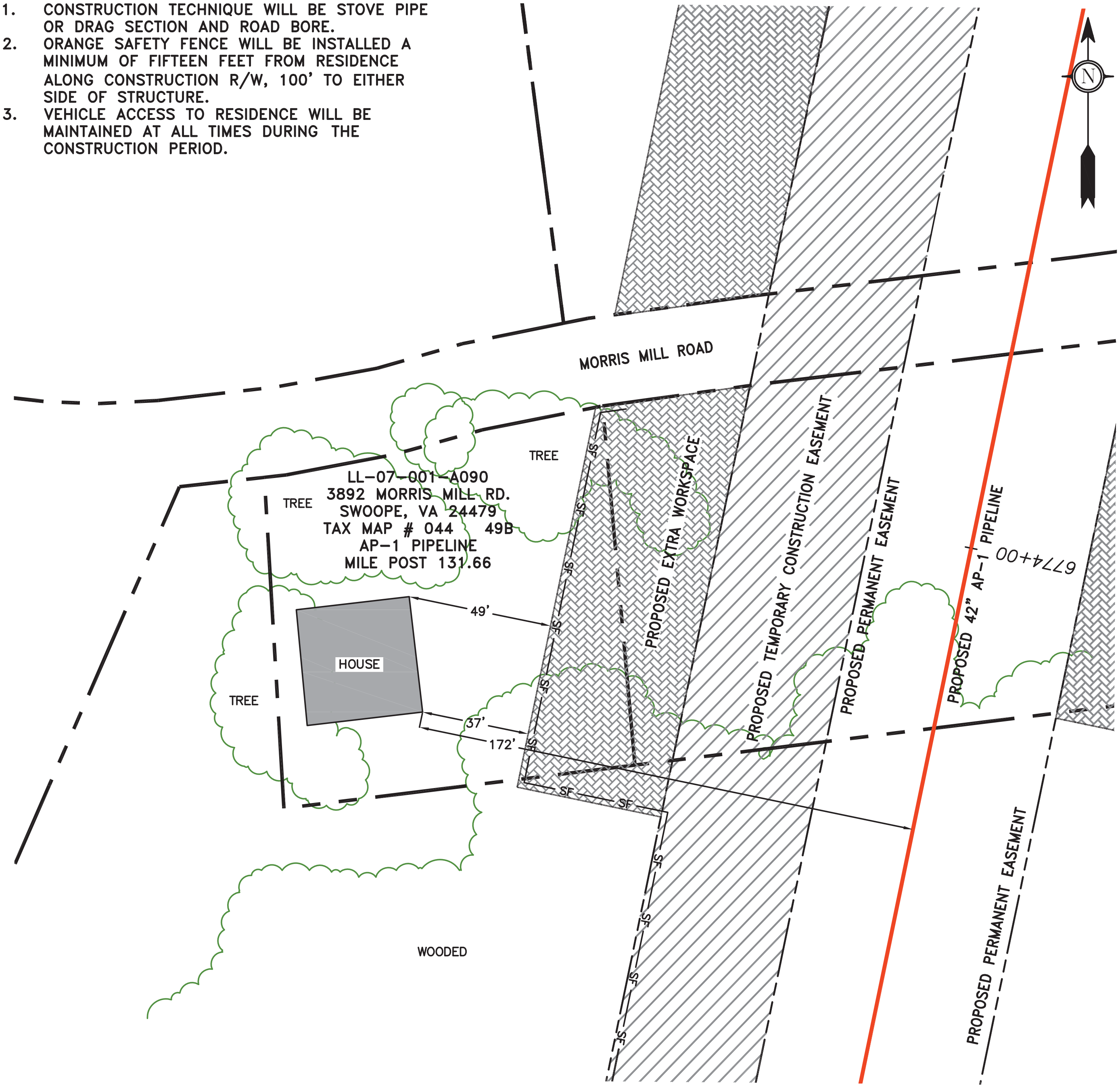
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
AUGUSTA COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GPT	CHKD. DLH	APPD. NET	DATE 7/11/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-07-001-A088			REV –

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 3\SECTION 3 HOUSE EXHIBITS – REROUTE.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE

PROPOSED PERMANENT EASEMENT

PROPOSED GAS PIPELINE

SF SF ORANGE SAFETY FENCE

PROPOSED TEMPORARY R.O.W.

EXTRA WORK SPACE

SCALE: 1" = 50'

50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
AUGUSTA COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

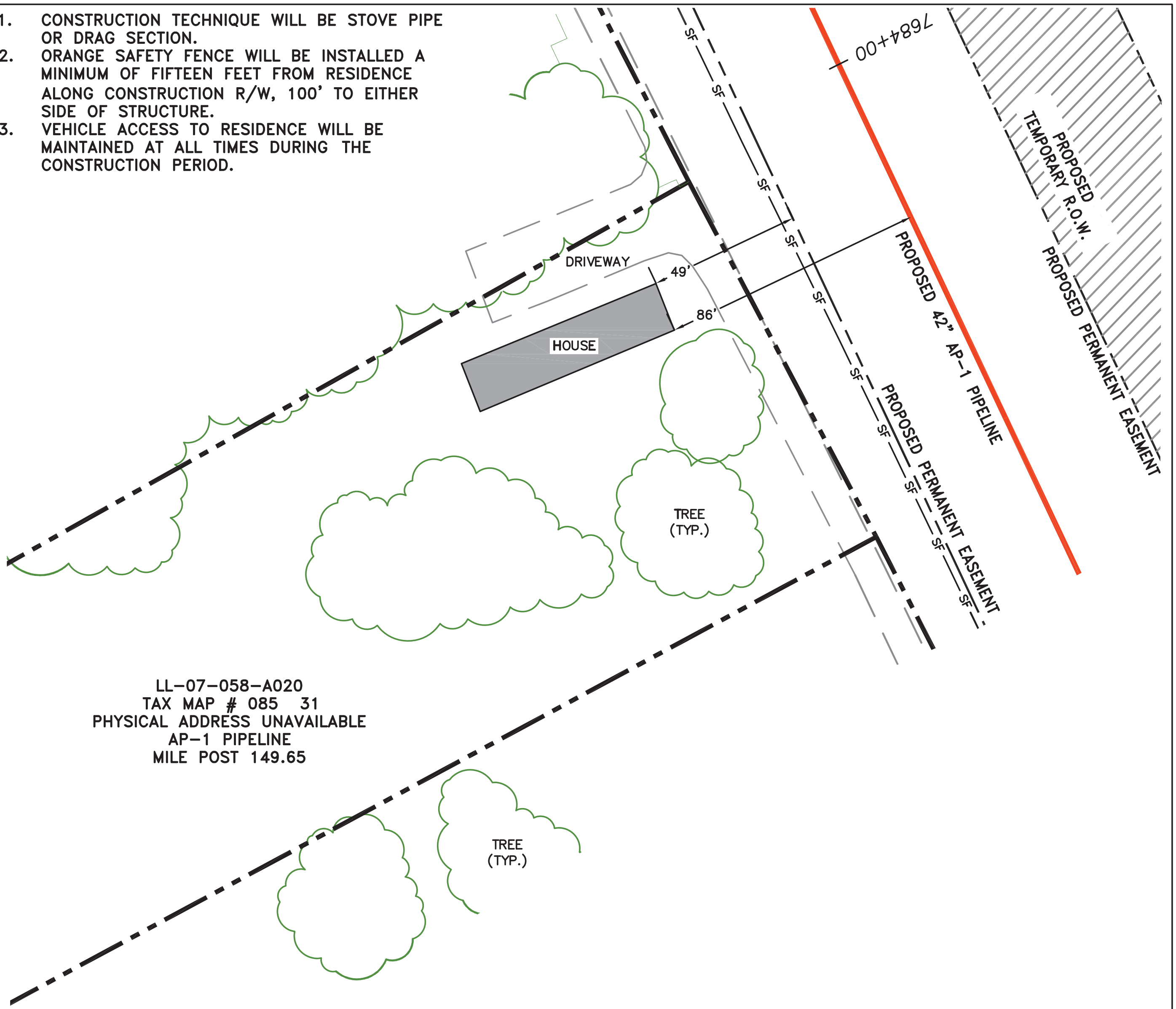
DWN. GAH	CHKD. DLH	APPD. NET	DATE 7/11/16
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468

DRAWING NO. LL-07-001-A090 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 3\SECTION 3 HOUSE EXHIBITS.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-07-058-A020
TAX MAP # 085 31
PHYSICAL ADDRESS UNAVAILABLE
AP-1 PIPELINE
MILE POST 149.65

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF —— SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

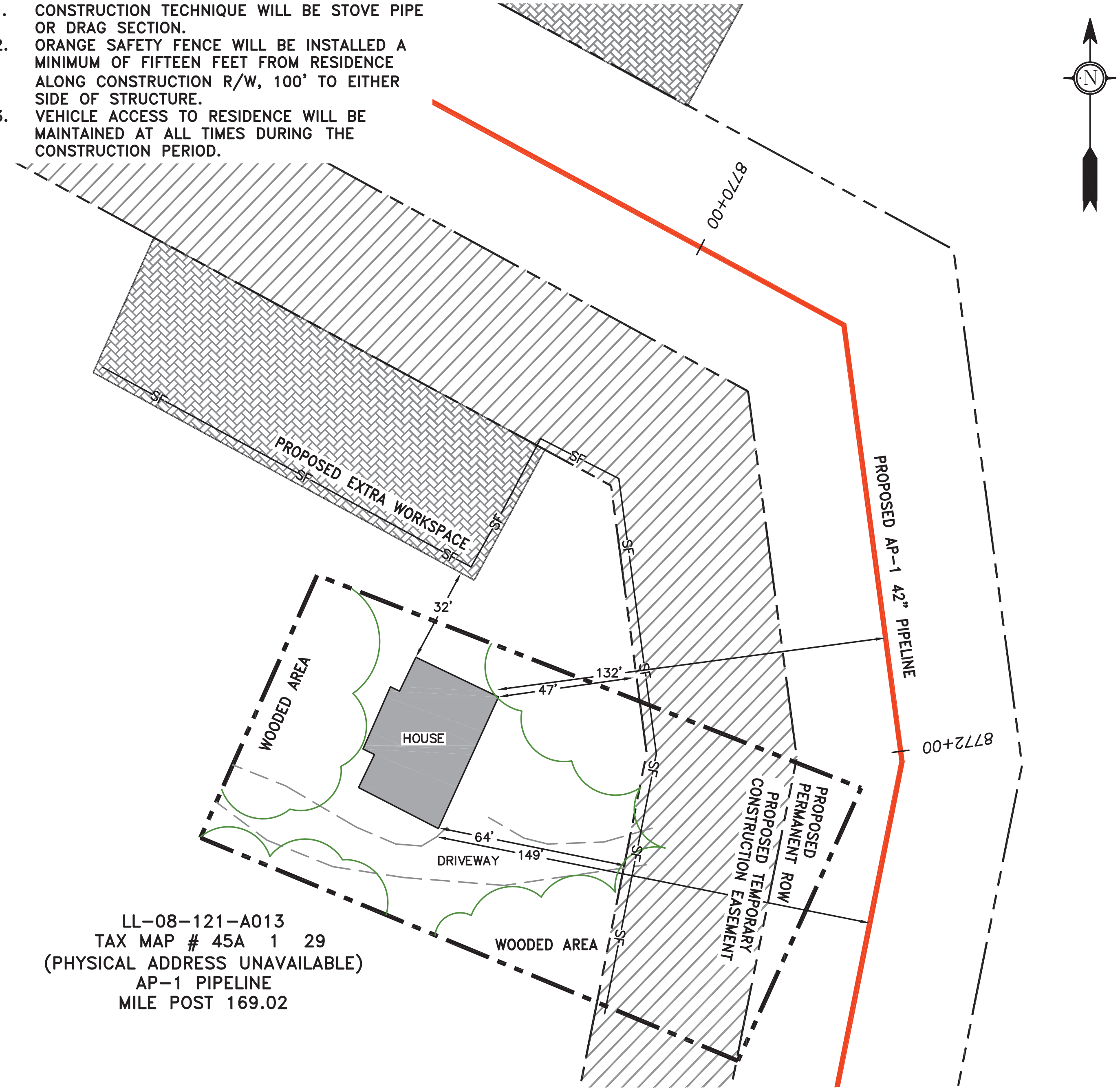
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
AUGUSTA COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 7/11/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-07-058-A020 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 3\SECTION 3 HOUSE EXHIBITS - REROUTE.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-08-121-A013
TAX MAP # 45A 1 29
(PHYSICAL ADDRESS UNAVAILABLE)
AP-1 PIPELINE
MILE POST 169.02

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
—SF—SF— ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

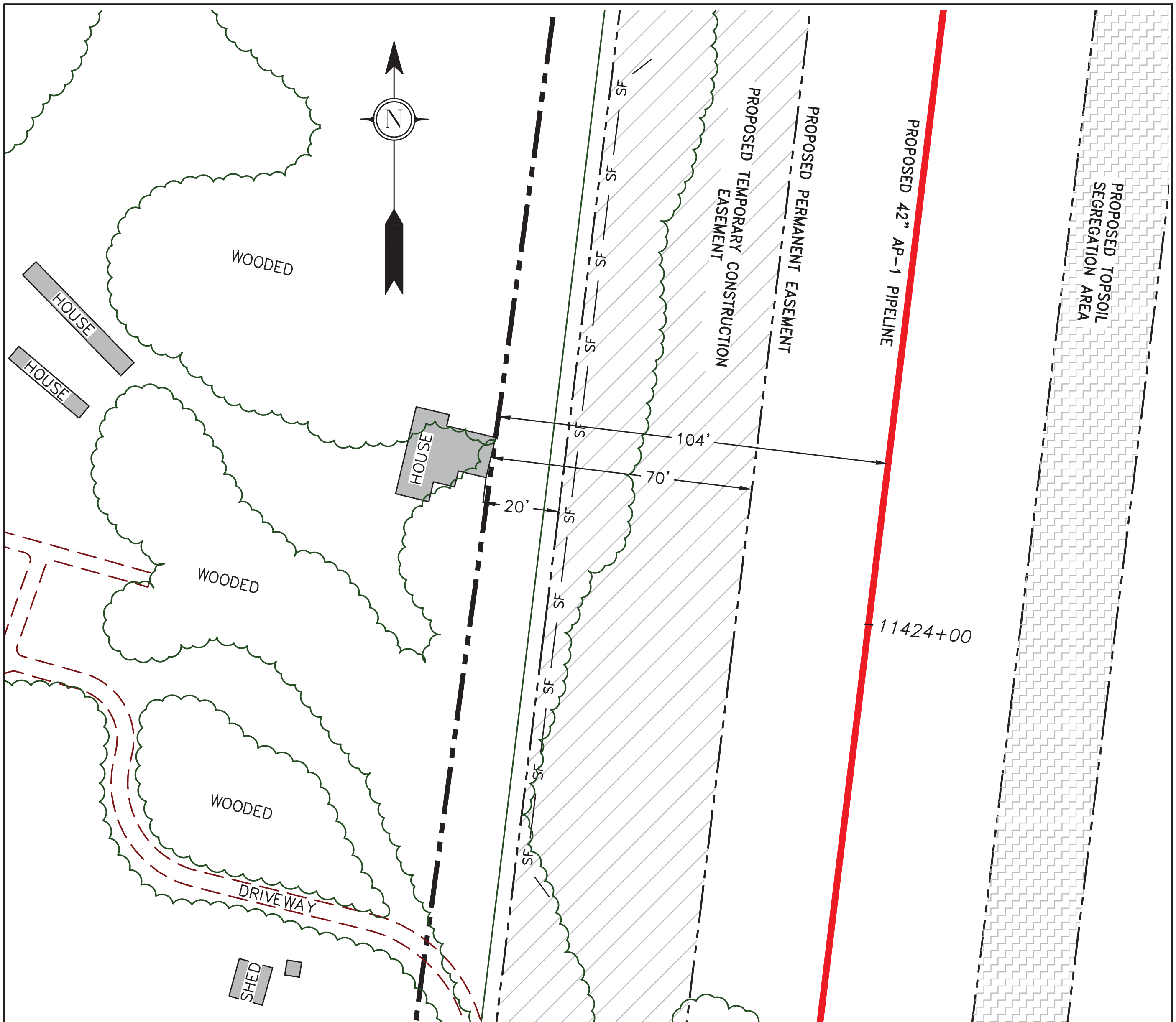
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
NELSON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 7/11/16
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-08-121-A013 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 4\HOUSE EXHIBITS\SECTION 4 HOUSE EXHIBITS_RVSD 6-30-16.DWG



1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-10-011
TAX MAP # 096-A-72B
376 RAINES TAVERN ROAD
FARMVILLE, VA 23901
AP-1 MILE POST 213.26

LEGEND

	PROPERTY LINE
	PERMANENT EASEMENT
	EDGE OF PAVEMENT
SF SF	ORANGE SAFETY FENCE
	PROPOSED GAS PIPELINE
	PROPOSED TEMPORARY WORKSPACE
	PROPOSED ADDITIONAL TEMPORARY WORKSPACE

SCALE: 1" = 40'

40' 0 40'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

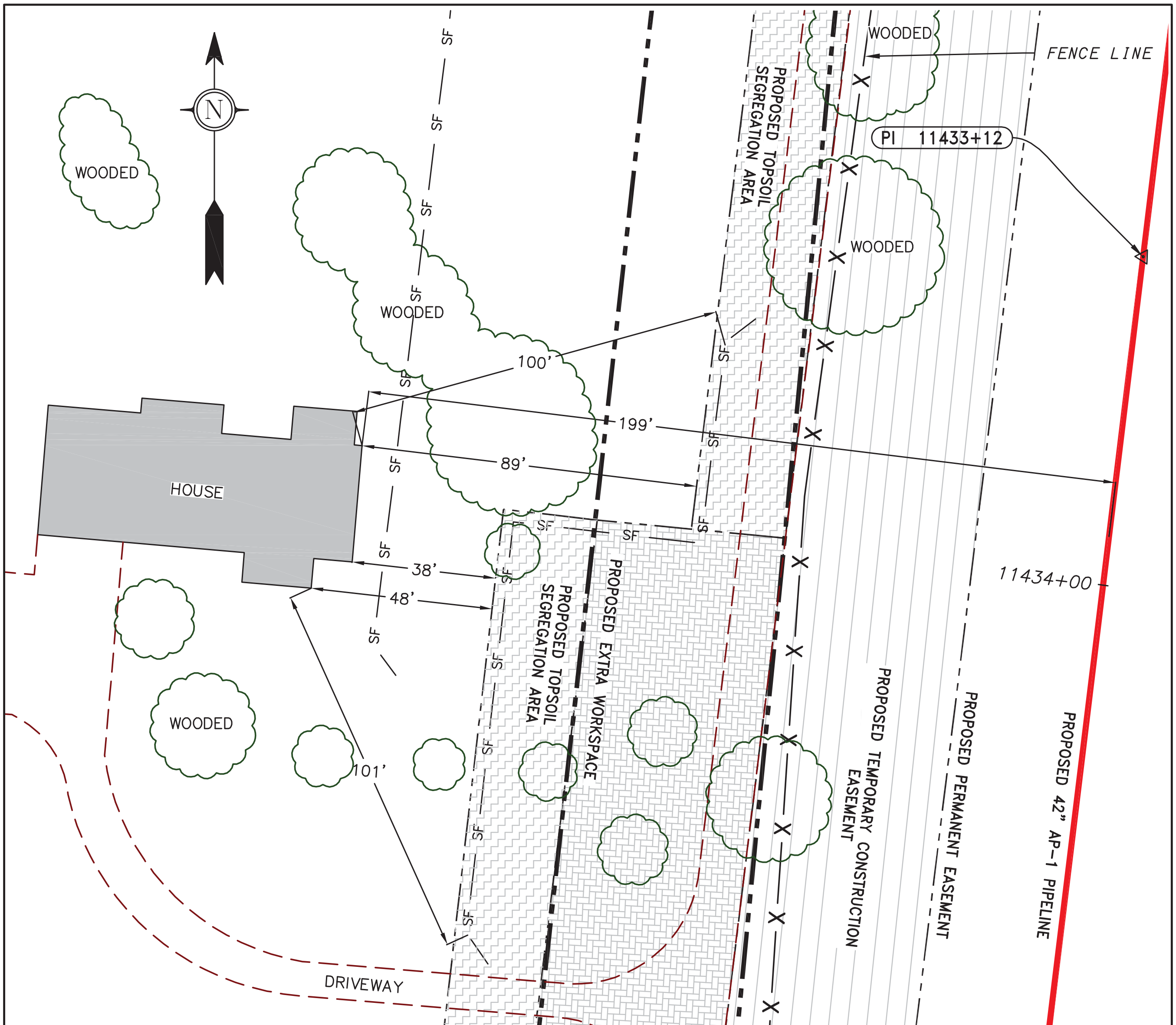
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. JFS | CHKD. DLH | APPD. NET | DATE 7/14/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. C140468
DRAWING NO. LL-10-011 | REV 5

GAI CAD FILE: T:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-10-011 HOUSE DETAIL.DWG

7/14/2016 8:53 a.m.



1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-10-011.5
N/F
RACHEL SHELTER
TAX MAP # 096-A-72A
378 RAINES TAVERN RD
CUMBERLAND, VA 23901
MILE POST 213.46

LEGEND

- **TAX PARCEL LINE**
- **PERMANENT EASEMENT**
- **EDGE OF PAVEMENT**
- SF — SF **ORANGE SAFETY FENCE**
- **PROPOSED GAS PIPELINE**
- **PROPOSED TEMPORARY WORKSPACE**
- **PROPOSED ADDITIONAL TEMPORARY WORKSPACE**

SCALE: 1" = 40'

40' 0 40'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

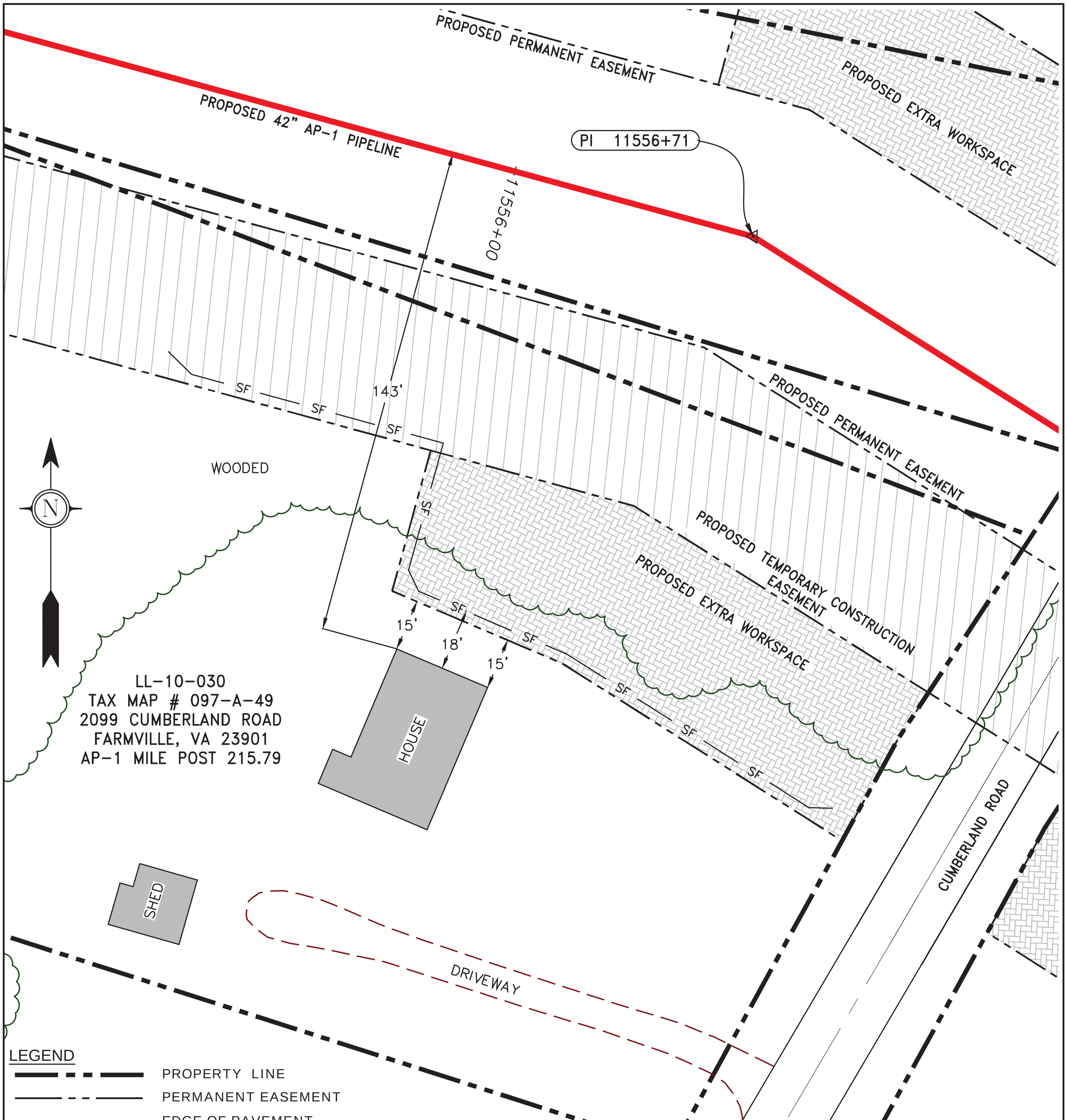
CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. DOO	CHKD. DLH	APPD. NET	DATE 1/19/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. C140468			
DRAWING NO. LL-10-011.5			REV 1

GAI CAD FILE: F:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-10-011.5 HOUSE DETAIL.DWG

1/19/2016 1:33 p.m.



LEGEND

- PROPERTY LINE
- PERMANENT EASEMENT
- EDGE OF PAVEMENT
- SF — SF ORANGE SAFETY FENCE
- PROPOSED GAS PIPELINE
- PROPOSED TEMPORARY WORKSPACE
- PROPOSED ADDITIONAL TEMPORARY WORKSPACE

SCALE: 1" = 40'

40' 0 40'

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, VIRGINIA

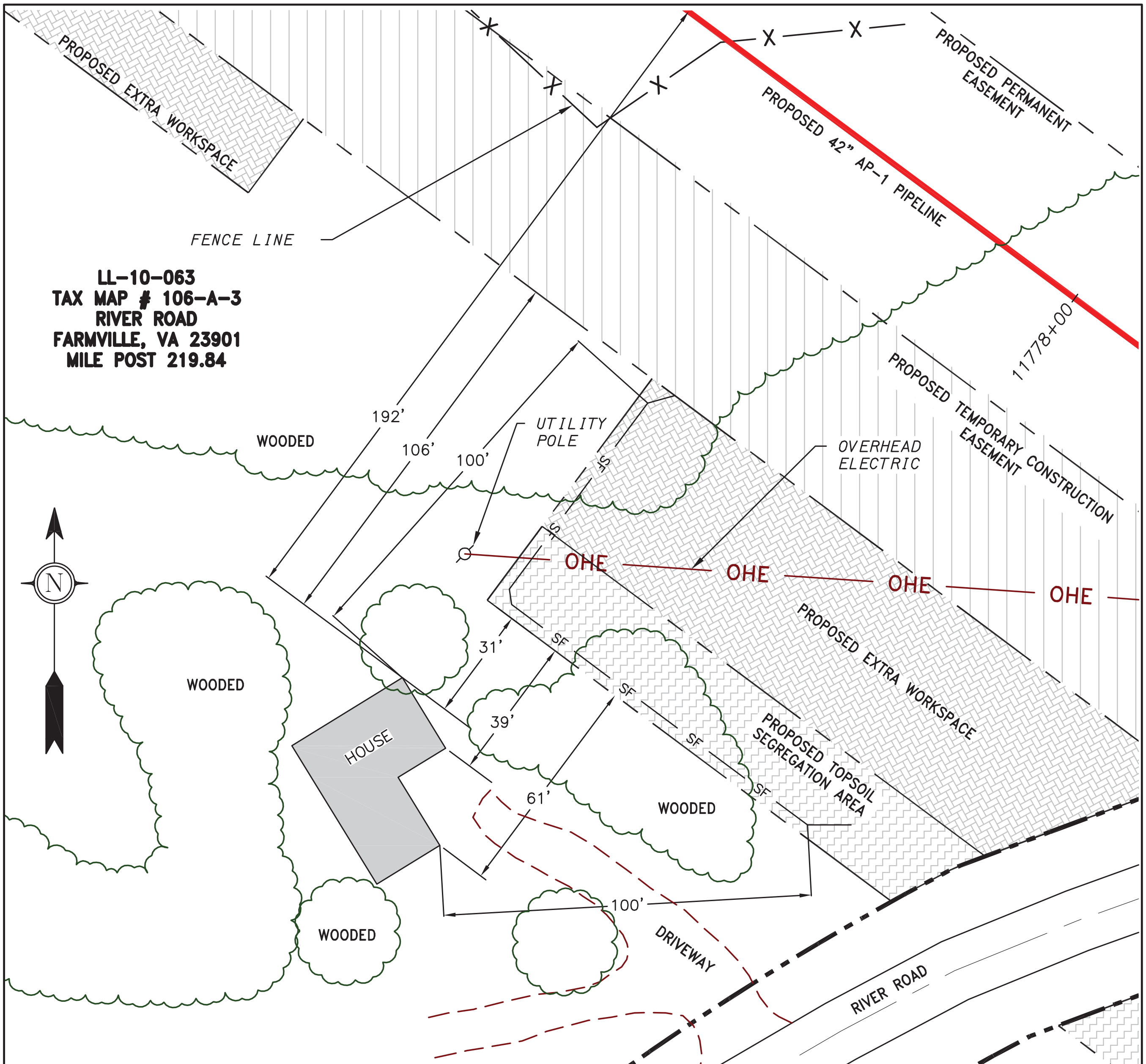
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. JFS	CHKD. DLH	APPD. NET	DATE 7/13/16
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. C140468
DRAWING NO. LL-10-030 REV 3

GAI CAD FILE: T:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-10-030 HOUSE DETAIL.DWG

7/13/2016 4:30 p.m.



LEGEND

- TAX PARCEL LINE
- PERMANENT EASEMENT
- EDGE OF PAVEMENT
- SF — SF ORANGE SAFETY FENCE
- PROPOSED GAS PIPELINE
- PROPOSED TEMPORARY WORKSPACE
- PROPOSED ADDITIONAL TEMPORARY WORKSPACE
- TOPSOIL SEGREGATION AREA

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 40'

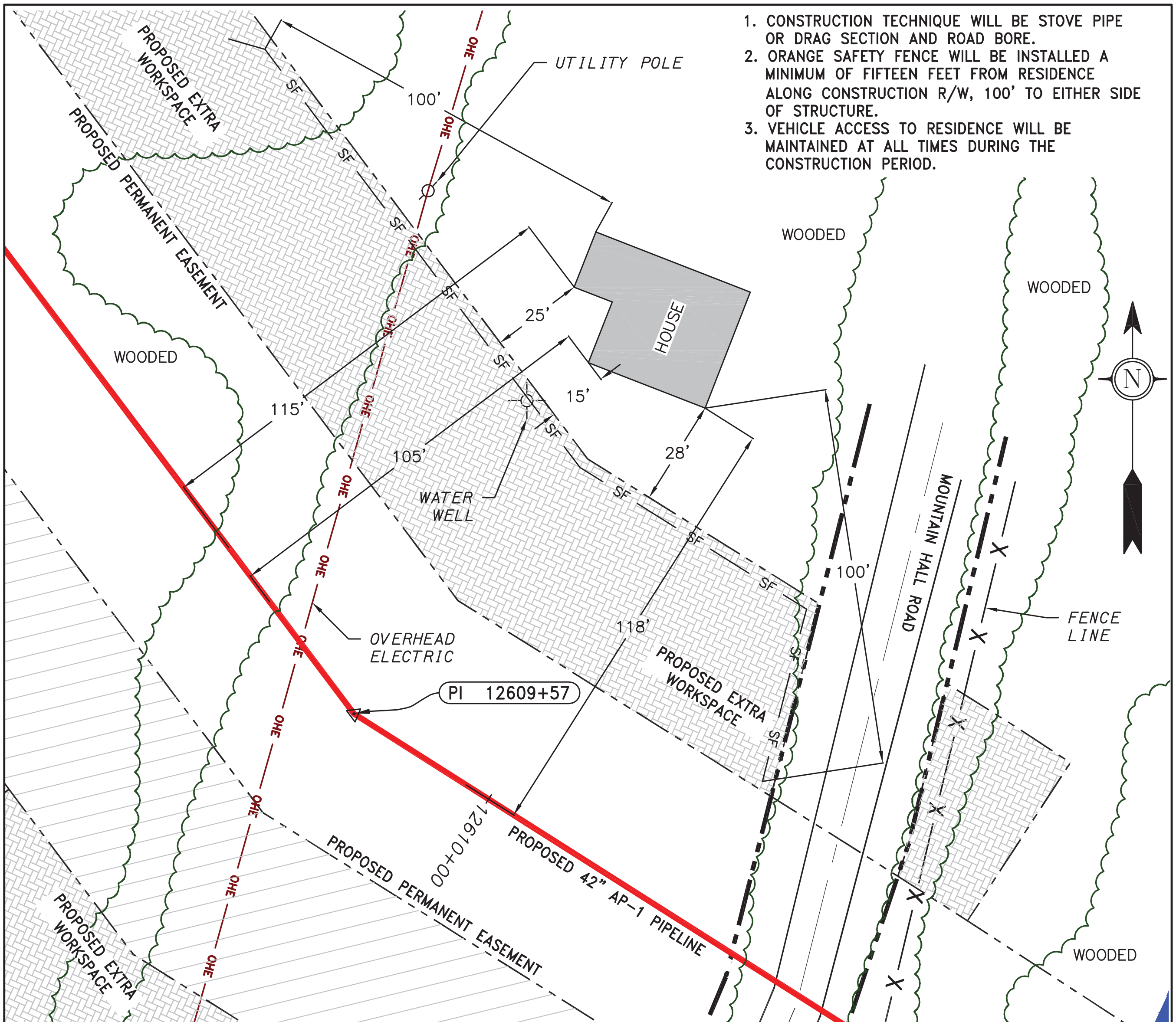
40' 0 40'

gai consultants	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES CUMBERLAND COUNTY, VIRGINIA	DWN. EEA	CHKD. DLH	APPD. NET	DATE 1/13/16
6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	SCALE: AS SHOWN			TASK NO. 01
		PROJECT NO./DASH NO. C140468			
		DRAWING NO. LL-10-063			REV 1

GAI CAD FILE: F:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-10-063 HOUSE DETAIL.DWG

1/13/2016 1:08 p.m.

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-12-043
N/F
FRANK DYSON
TAX MAP # 6509-09-5118
MILE POST 235.62

(PHYSICAL ADDRESS UNAVAILABLE)

LEGEND

- TAX PARCEL LINE
- PERMANENT EASEMENT
- EDGE OF PAVEMENT
- ORANGE SAFETY FENCE
- PROPOSED GAS PIPELINE
- PROPOSED TEMPORARY WORKSPACE
- PROPOSED ADDITIONAL TEMPORARY WORKSPACE

SCALE: 1" = 40'
40' 0 40'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
NOTTOWAY COUNTY, VIRGINIA

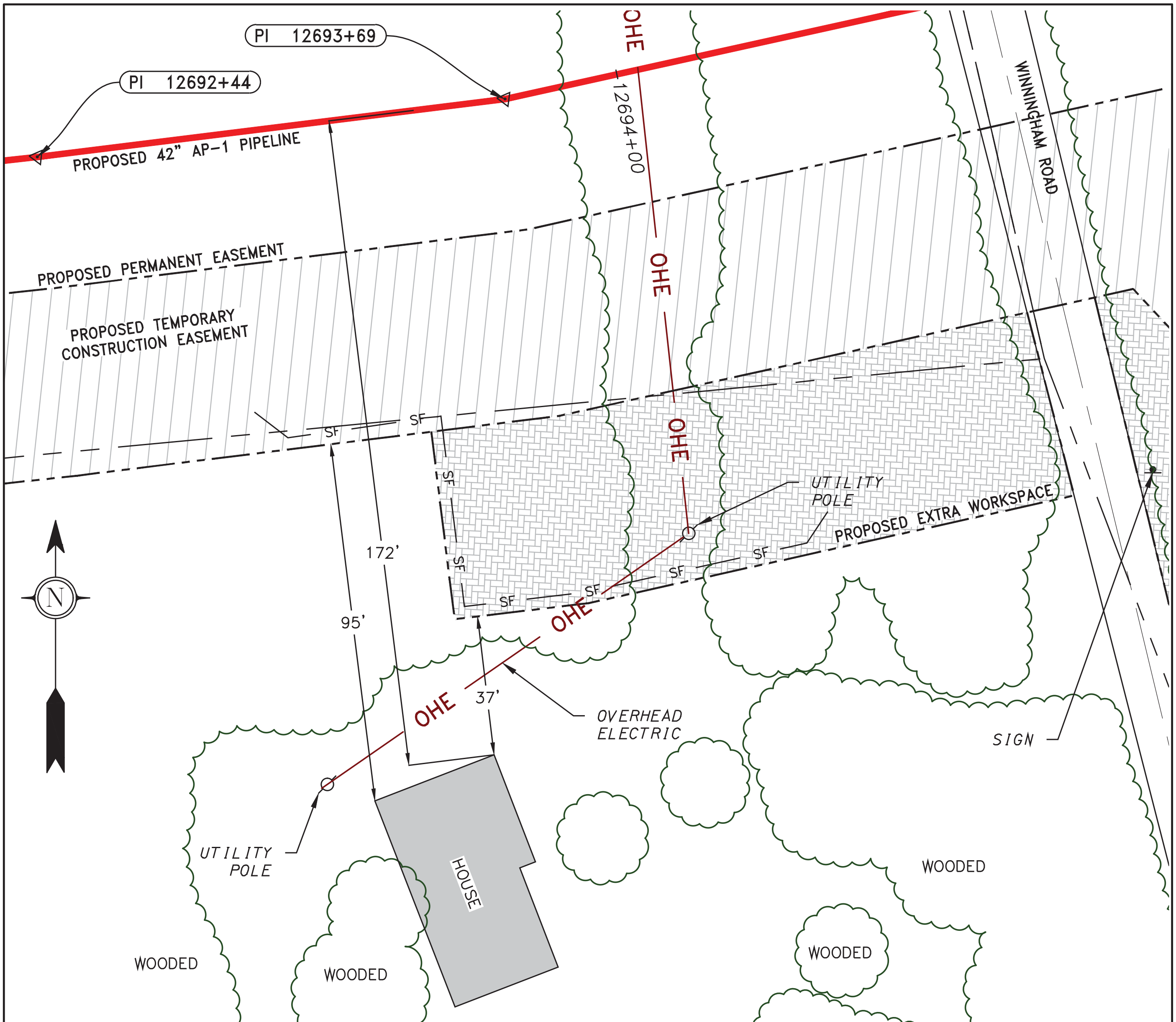
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. EEA	CHKD. DLH	APPD. NET	DATE 1/18/16
SCALE: AS SHOWN			TASK NO. 01

PROJECT NO./DASH NO. C140468
DRAWING NO. LL-12-043 REV 2

GAI CAD FILE: F:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-12-043 HOUSE DETAIL.DWG

1/18/2016 1:54 p.m.



LEGEND

- PROPERTY LINE
- PERMANENT EASEMENT
- EDGE OF PAVEMENT
- SF — SF ORANGE SAFETY FENCE
- PROPOSED GAS PIPELINE
- PROPOSED GAS PIPELINE
- PROPOSED TEMPORARY WORKSPACE
- PROPOSED ADDITIONAL TEMPORARY WORKSPACE

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-12-049.5
TAX MAP # 20-11
AP-1 MILE POST 237.19

(PHYSICAL ADDRESS UNAVAILABLE)

SCALE: 1" = 40'

40' 0 40'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
NOTTOWAY COUNTY, VIRGINIA

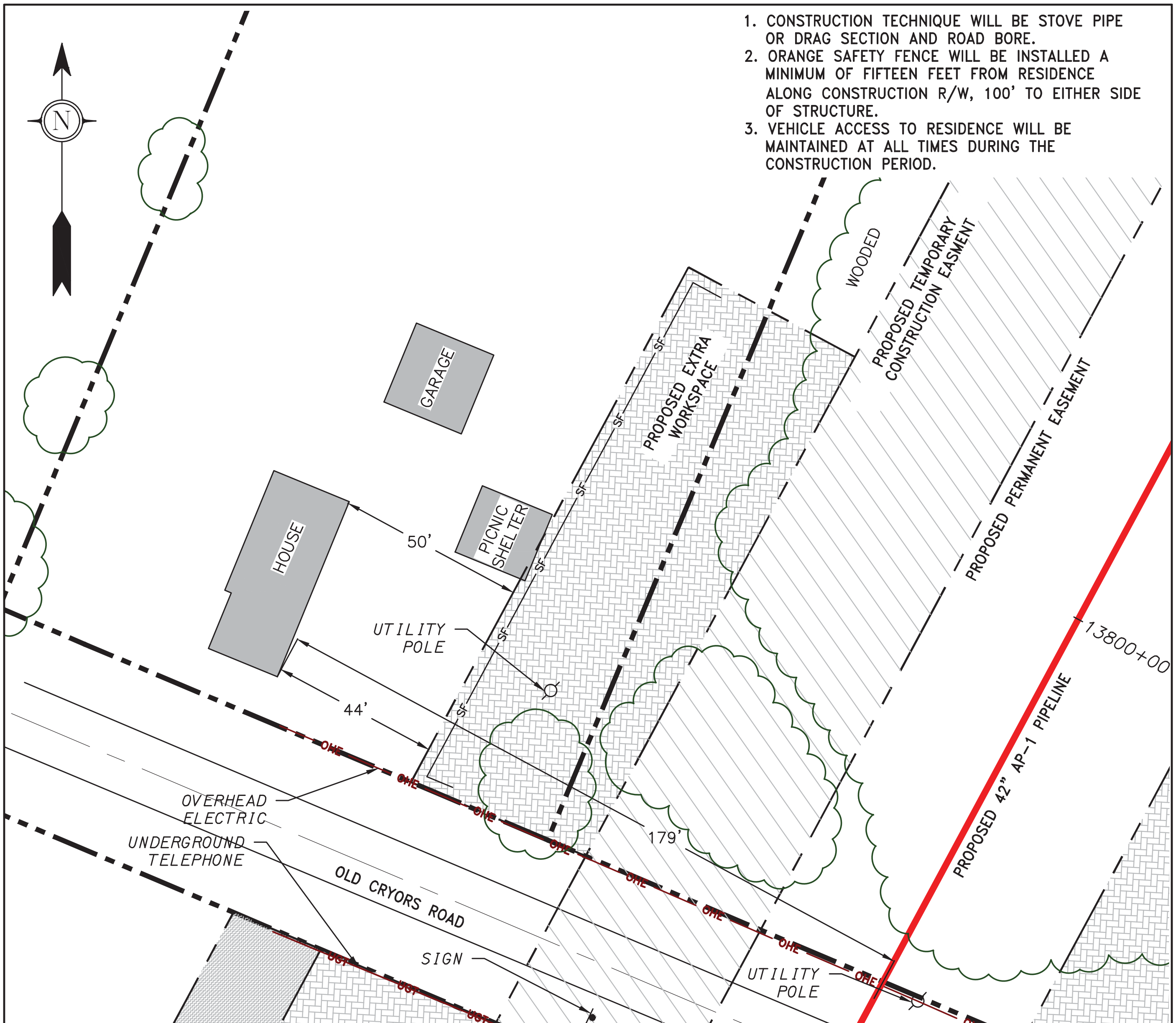
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. JFS	CHKD. DLH	APPD. NET	DATE 6/24/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. C140468			
DRAWING NO. LL-12-049.5			REV 2

GAI CAD FILE: T:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-12-049.5 HOUSE DETAIL.DWG

6/24/2016 9:38 a.m.

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-13-019-A006
TAX MAP # 52-5A
AP-1 MILE POST 255.86
(PHYSICAL ADDRESS UNAVAILABLE)

LEGEND

PROPERTY LINE
PERMANENT EASEMENT
EDGE OF PAVEMENT
SF —— SF —— ORANGE SAFETY FENCE
PROPOSED GAS PIPELINE
PROPOSED TEMPORARY WORKSPACE
PROPOSED ADDITIONAL TEMPORARY WORKSPACE

SCALE: 1" = 40'

40' 0 40'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
DINWIDDIE COUNTY, VIRGINIA

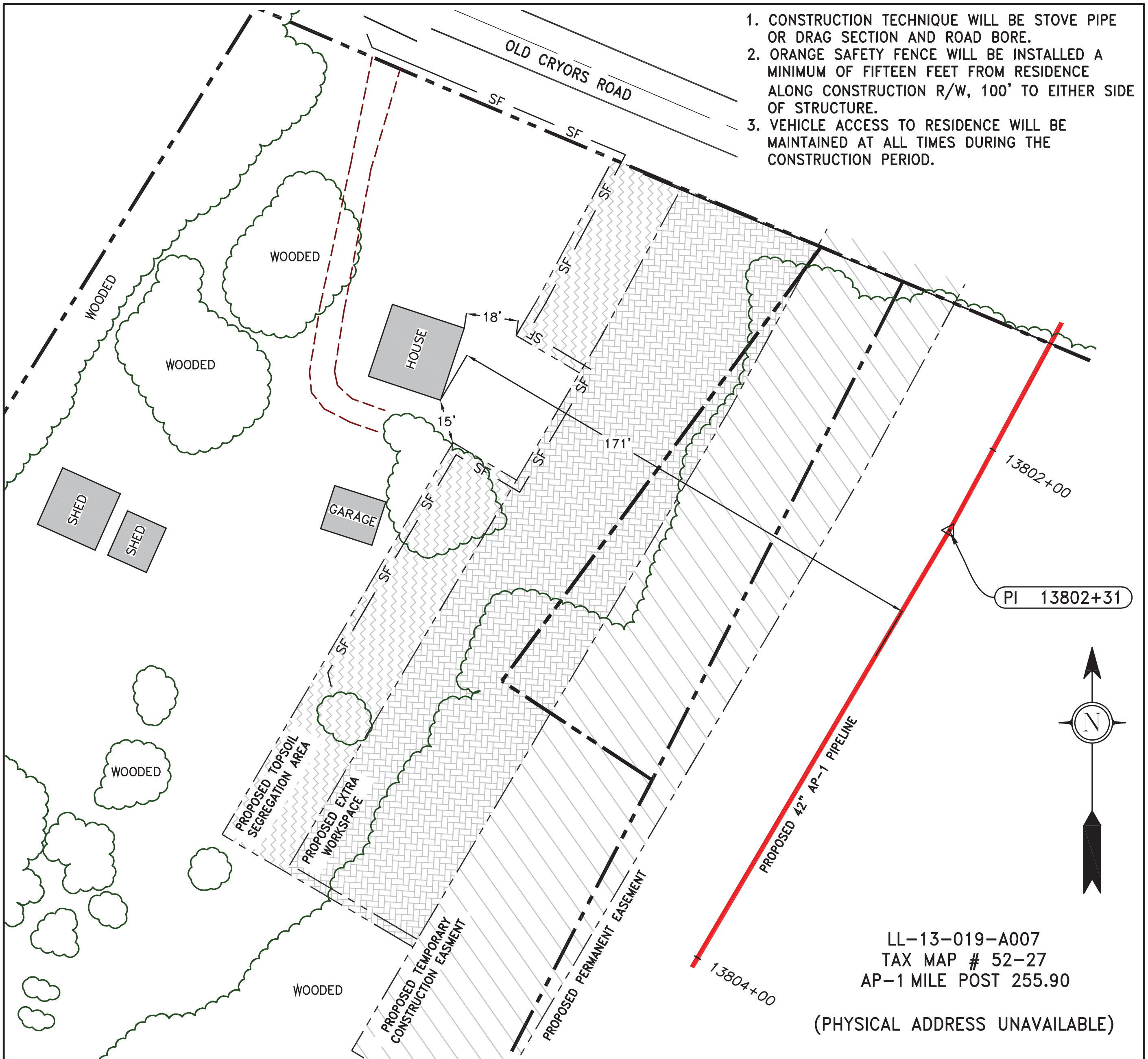
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. JFS | CHKD. DLH | APPD. NET | DATE 5/5/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. C140468
DRAWING NO. LL-13-019-A006 REV 1

GAI CAD FILE: F:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-13-19-A006 HOUSE DETAIL.DWG

5/5/2016 1:21 p.m.

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-13-019-A007
TAX MAP # 52-27
AP-1 MILE POST 255.90

(PHYSICAL ADDRESS UNAVAILABLE)

LEGEND

PROPERTY LINE
PERMANENT EASEMENT
EDGE OF PAVEMENT
SF — SF **ORANGE SAFETY FENCE**
PROPOSED GAS PIPELINE
PROPOSED TEMPORARY WORKSPACE
PROPOSED ADDITIONAL TEMPORARY WORKSPACE

SCALE: 1" = 50'

50' 0 50'

gai consultants 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES DINWIDDIE COUNTY, VIRGINIA	DWN. DGC	CHKD. DLH	APPD. NET	DATE 7/19/16
		SCALE: AS SHOWN			TASK NO. 01
	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. C140468			
		DRAWING NO. LL-13-019-A007			REV 2

GAI CAD FILE: T:\DOMINION\CADD-GIS DATA\HOUSE DETAILS\LL-13-19-A007 HOUSE DETAIL.DWG

7/19/2016 10:21 a.m.

AP-2

FERC's Plans will be followed for Residential Construction, for all Residences located within 50 feet of the construction work area

1. Orange safety fence will be installed at a minimum 15 feet from the residence, and 100 feet along the construction corridor, each direction from residence.
2. Will avoid the removal of mature trees and landscaping within the construction work area, unless necessary for safe operation of equipment, or as specified in the landowner agreements
3. Restore all lawn areas and landscaping immediately following clean up operations or as specified in landowner agreement
4. During landowner negotiations, identify location of septic system and avoid or develop a replacement plan with landowner during construction.

For this project, the following notes will also be applied

a. Where the pipeline centerline is within 25 feet of a residence, the trench will not be excavated until the pipe is ready for installation.

b. Landowner will be notified one week prior to construction on his/her property

c. No refueling or storage of hazardous materials will occur within 200 feet of a private well.

d. Steel plating or other effective means will be provided to allow landowner access to his/her residence should construction or other ground disturbance occur. Required at egress points, landowner driveways, or other private access ways.

e. On public roads, we will follow our traffic management plans that are filed as part of the permit

f. Construction will be limited to daylight hours.

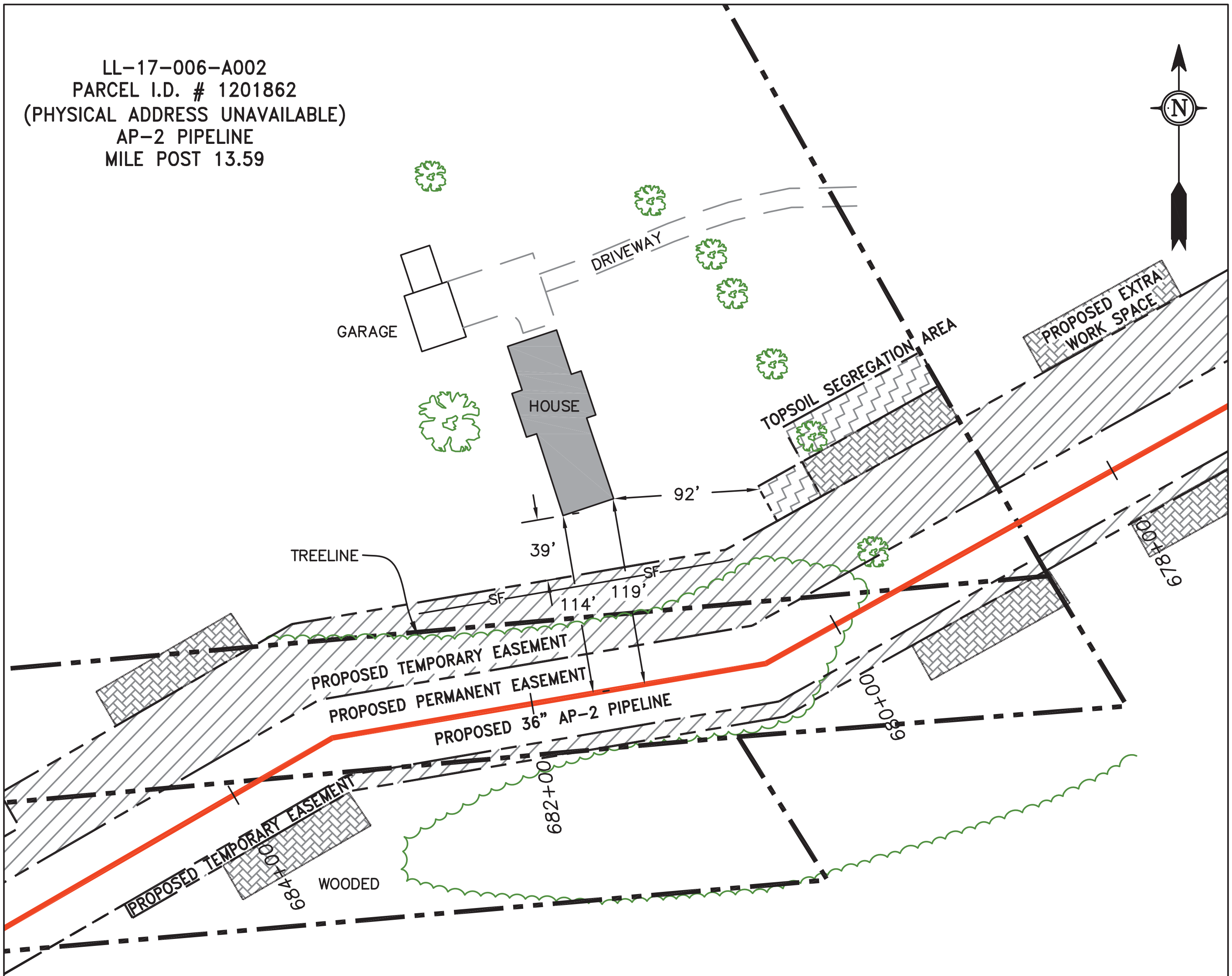
g. Applicant will:

- Ensure piping is welded and installed as quickly as possible to minimize the amount of time a neighborhood is affected by construction;
- Complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting.
- During landowner negotiations, will work with landowner on restoration procedure. These procedures will include seeding mix, tree/shrub planting and hardscape replacement.

gai consultants SOUTHPOINTE OFFICE 6000 TOWNE CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES GENERAL NOTES	DWN. JJP	CHKD. DLH	APPD. NET	DATE 07/28/2016
		SCALE: NONE			TASK NO. 00
	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. C140468			
		DRAWING NO. A001			REV –

GAI CAD FILE: Z:\ENERGY\2014\C140468.00 - DOMINION - SOUTHEAST PIPE\CAD\MASTER ROUTE\DRG\DRAWINGS\HOUSE_SITE_SPECIFIC_GENERAL_NOTES.DWG

7/19/2016 8:44 AM



LEGEND

PROPERTY LINE

PROPOSED PERMANENT EASEMENT

PROPOSED GAS PIPELINE

SF SF **ORANGE SAFETY FENCE**

PROPOSED TEMPORARY R.O.W.

EXTRA WORK SPACE

TOPSOIL SEGREGATION AREA

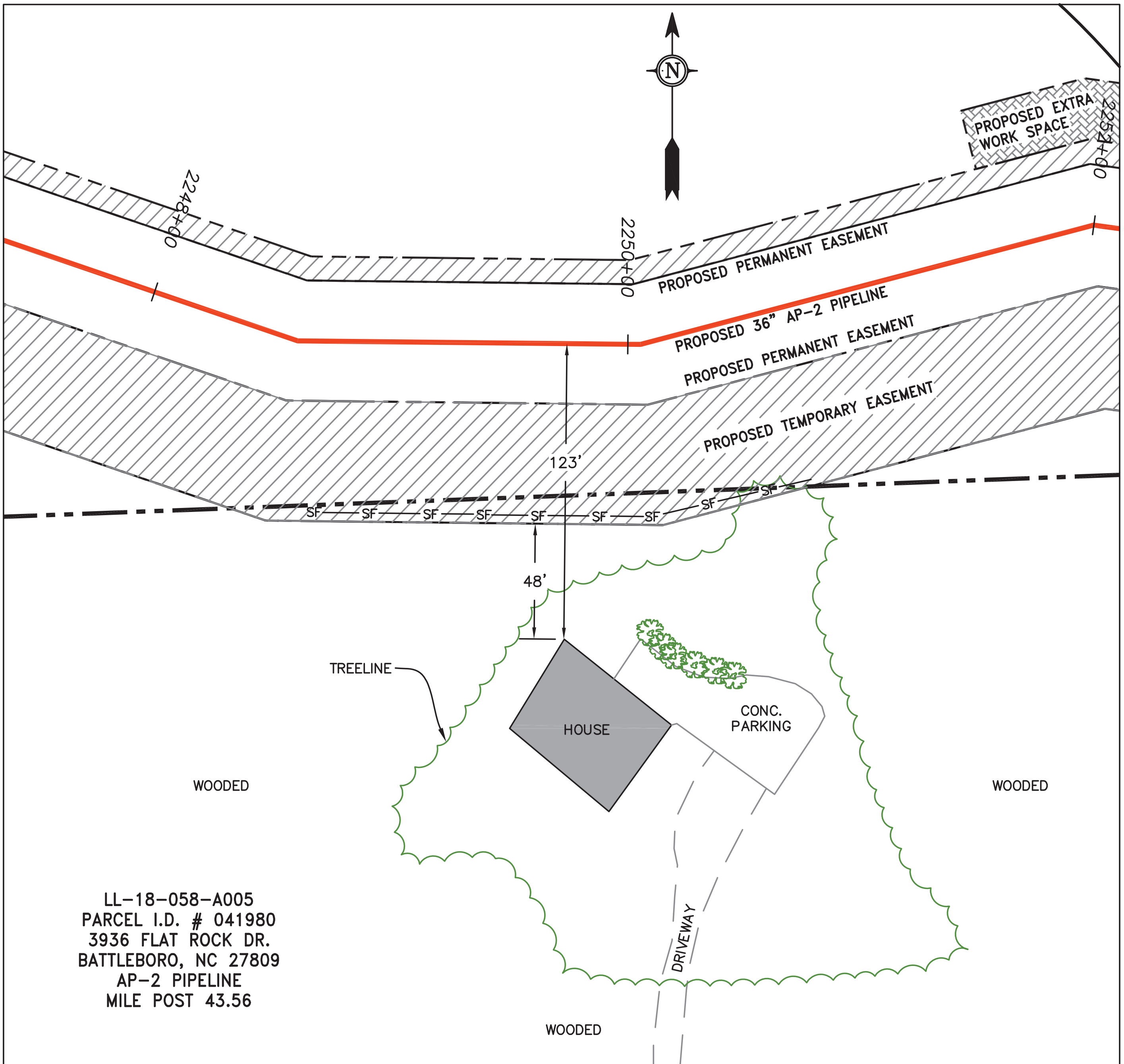
1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSRTUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 100'

100' 0 100'

gai consultants 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	**CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES** HALIFAX COUNTY, NORTH CAROLINA	DWN. BJS CHKD. DLH APPD. NET DATE 7/8/2016 SCALE: AS SHOWN TASK NO. 01
	ATLANTIC COAST PIPELINE LLC **C/O DOMINION TRANSMISSION, INC.** 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 140468 DRAWING NO. LL-17-006-A002 REV –

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 9\SEC 9 HOUSE EXHIBITS.DWG



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — SF ORANGE SAFETY FENCE
- PROPOSED TEMPORARY R.O.W.
- EXTRA WORK SPACE

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSRTUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 60'

60' 0 60'

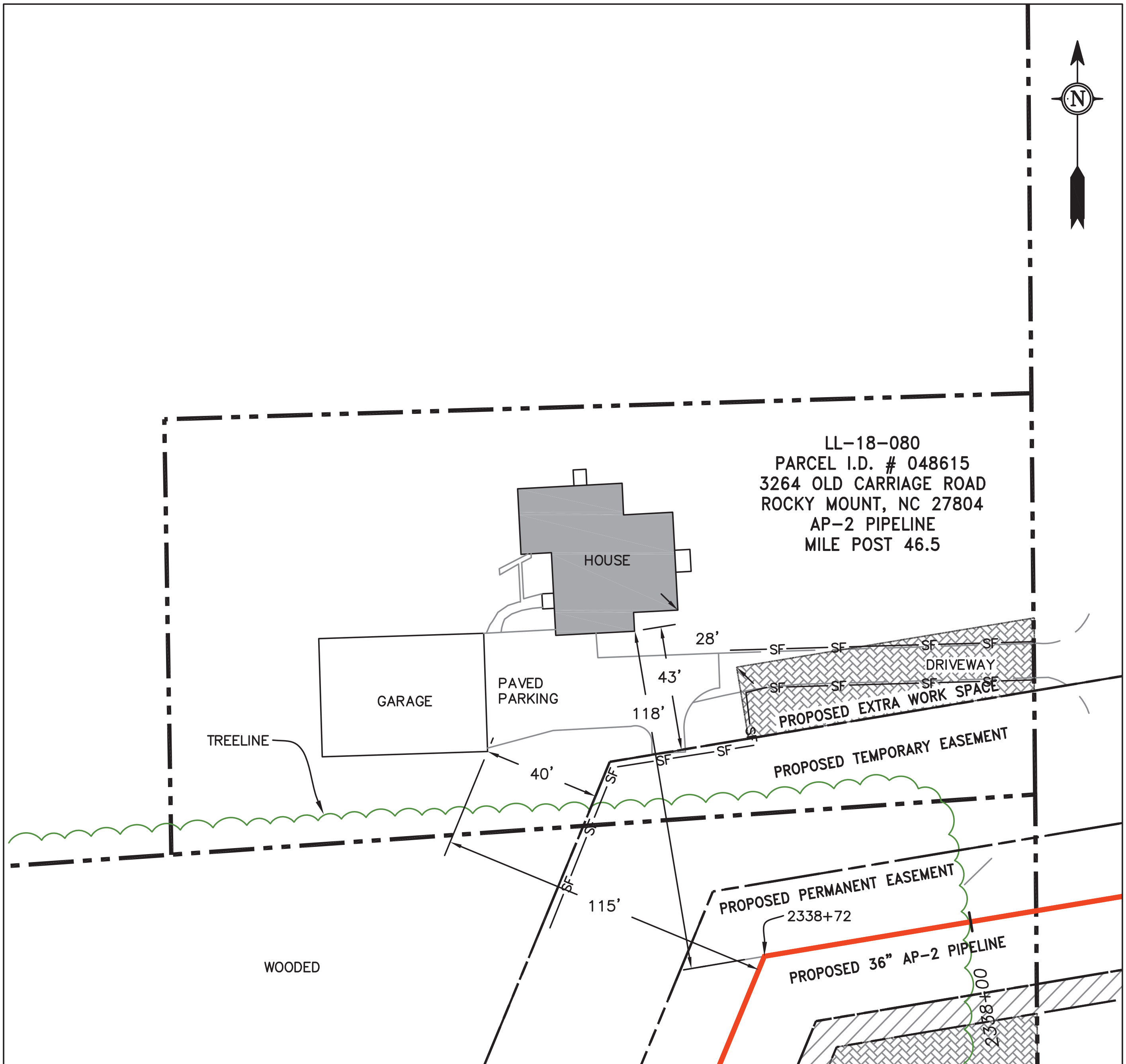
gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
NASH COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. BJS	CHKD. DLH	APPD. NET	DATE 7/8/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-18-058-A005			REV 1

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 9\SEC 9 HOUSE EXHIBITS.DWG



LEGEND

PROPERTY LINE

PROPOSED PERMANENT EASEMENT

PROPOSED GAS PIPELINE

SF — SF ORANGE SAFETY FENCE

PROPOSED TEMPORARY R.O.W.

EXTRA WORK SPACE

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSRTUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 50'

50' 0 50'

gai consultants
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
NASH COUNTY, NORTH CAROLINA

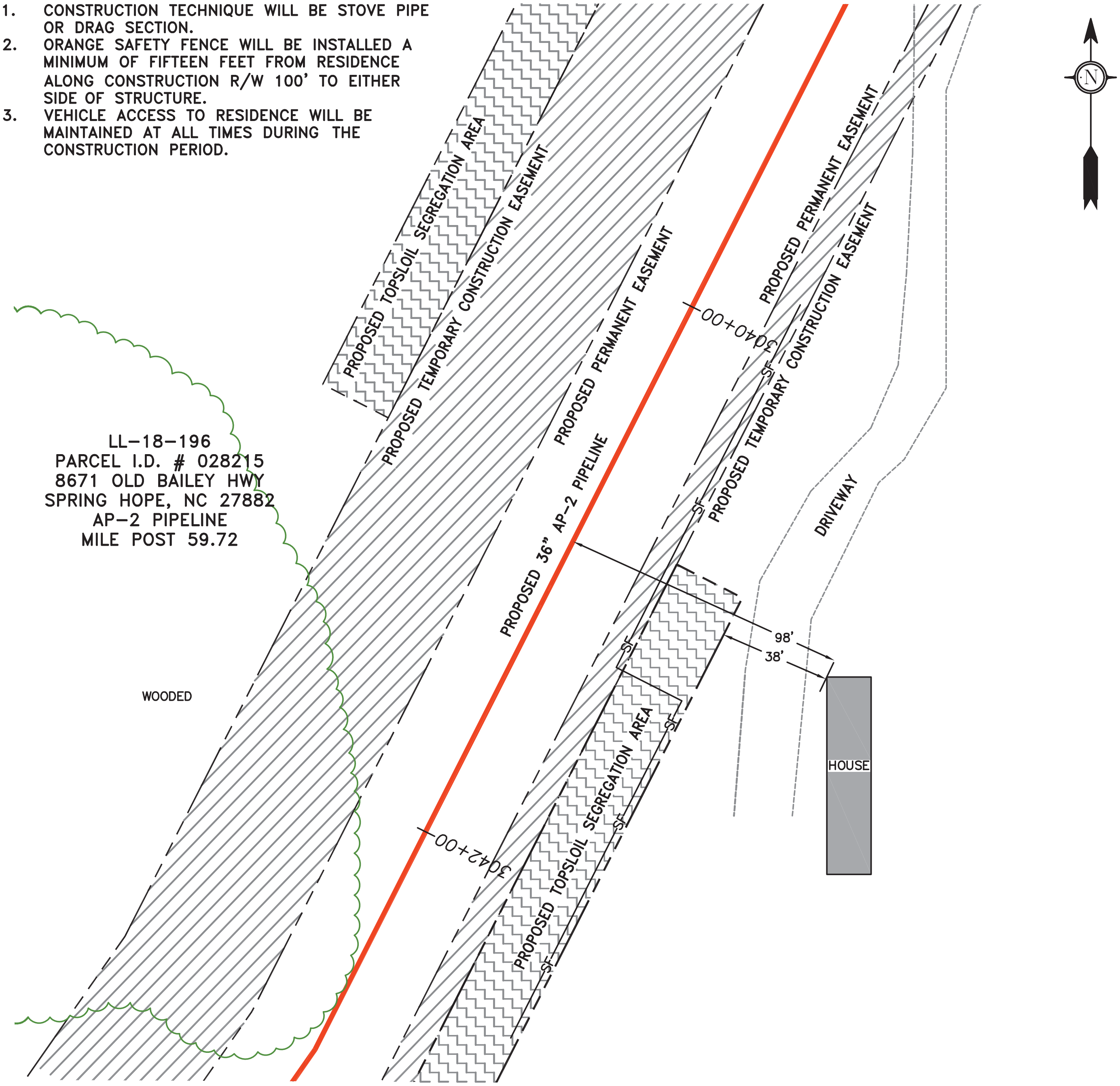
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. BJS	CHKD. DLH	APPD. NET	DATE 7/8/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-18-080			REV –

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 9\SEC 9 HOUSE EXHIBITS.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-18-196
PARCEL I.D. # 028215
8671 OLD BAILEY HWY
SPRING HOPE, NC 27882
AP-2 PIPELINE
MILE POST 59.72



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
NASH COUNTY, NORTH CAROLINA

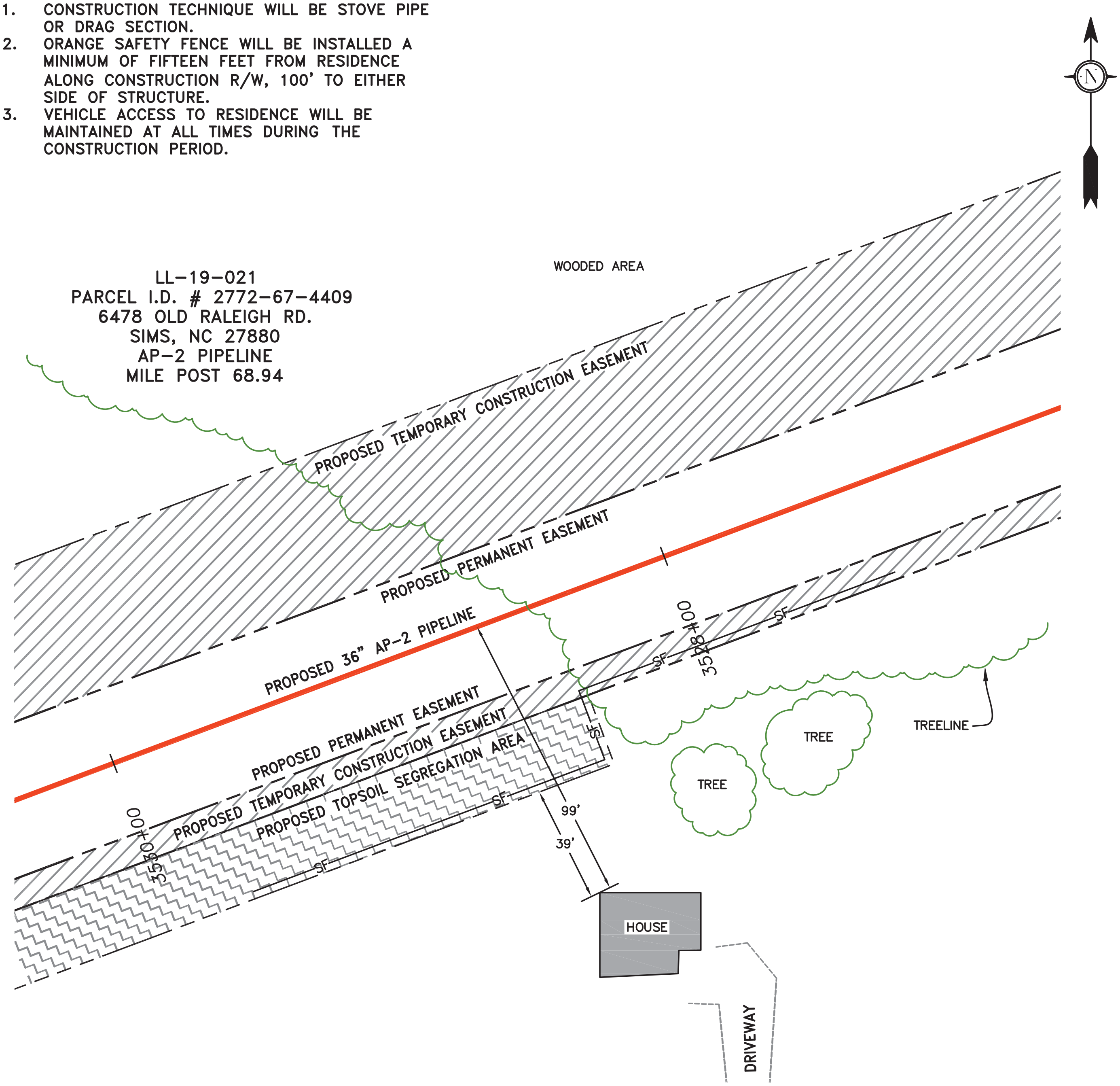
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH CHKD. DLH APPD. NET DATE 7/11/16
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-18-196 REV 3

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 10\HOUSE EXHIBITS\SECTION 10 HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-19-021
PARCEL I.D. # 2772-67-4409
6478 OLD RALEIGH RD.
SIMS, NC 27880
AP-2 PIPELINE
MILE POST 68.94



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

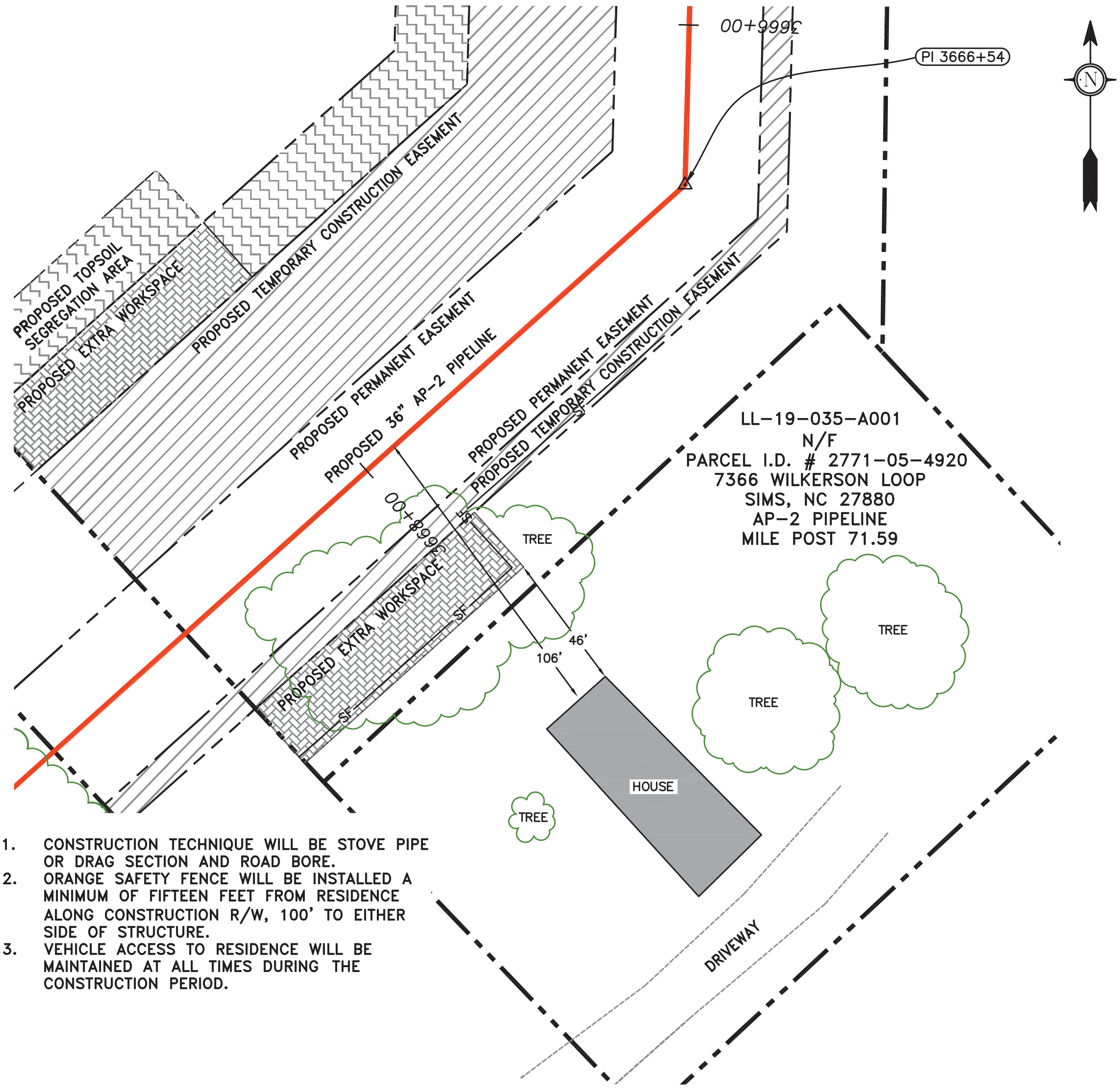
gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
WILSON COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 7/11/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-19-021 | 2 REV

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 10\HOUSE EXHIBITS\SECTION 10 HOUSE EXHIBITS - NO NAMES.DWG



1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LEGEND

—— - - ——	PROPERTY LINE
— — — —	PROPOSED PERMANENT EASEMENT
—— (red)	PROPOSED GAS PIPELINE
—SF—SF—	ORANGE SAFETY FENCE
(hatch)	PROPOSED TEMPORARY R.O.W.
(crosshatch)	EXTRA WORK SPACE
(pattern)	TOPSOIL SEGREGATION AREA

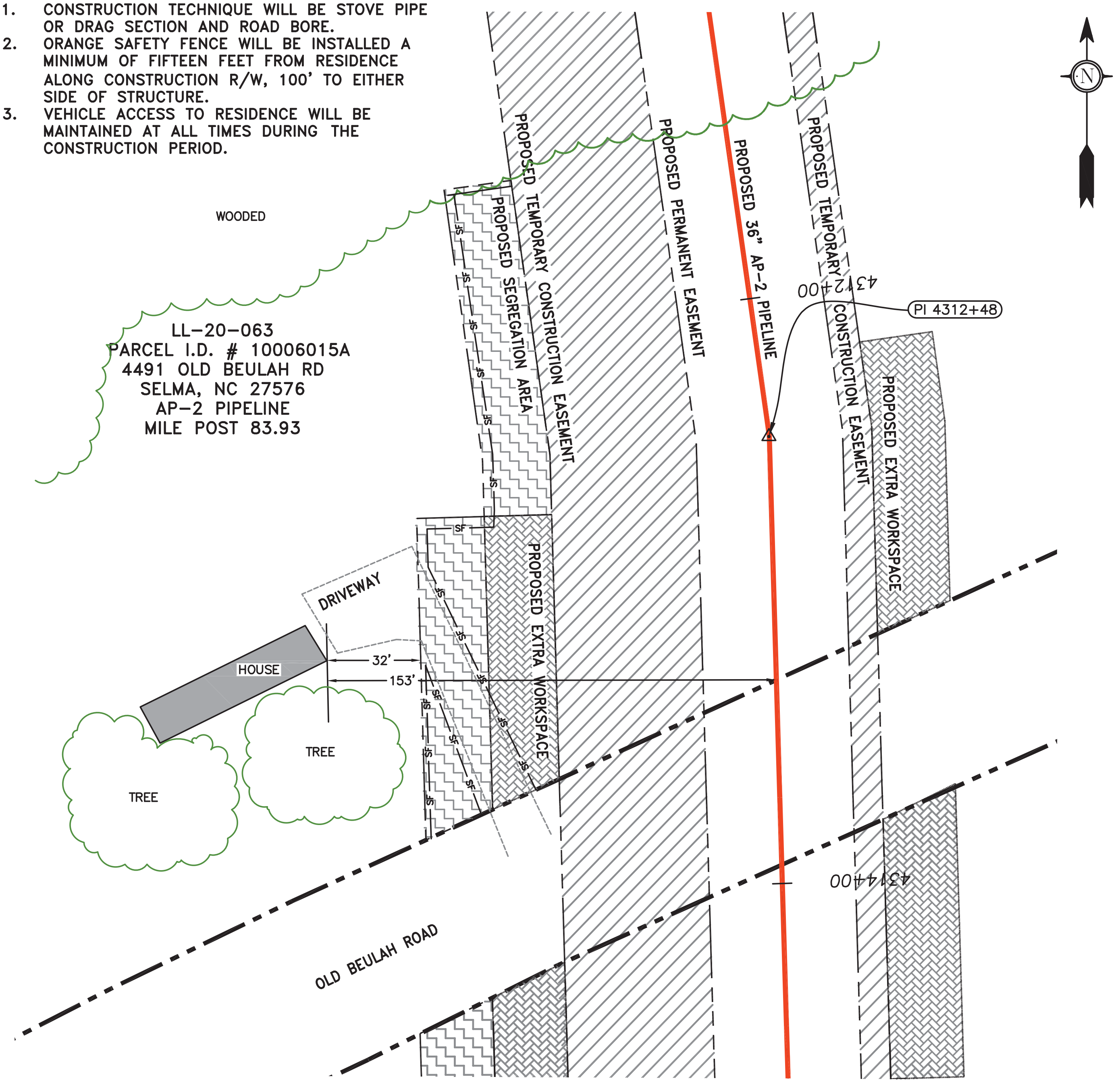
SCALE: 1" = 50'

50' 0 50'

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 10\HOUSE EXHIBITS\SECTION 10 HOUSE EXHIBITS - NO NAMES.DWG

gai consultants 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	**CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES** WILSON COUNTY, NORTH CAROLINA	DWN. CDM CHKD. DLH APPD. NET DATE 7/11/16 SCALE: AS SHOWN TASK NO. 01
	ATLANTIC COAST PIPELINE LLC **C/O DOMINION TRANSMISSION, INC.** 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 140468 DRAWING NO. LL-19-035-A001 REV 1

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
JOHNSTON COUNTY, NORTH CAROLINA

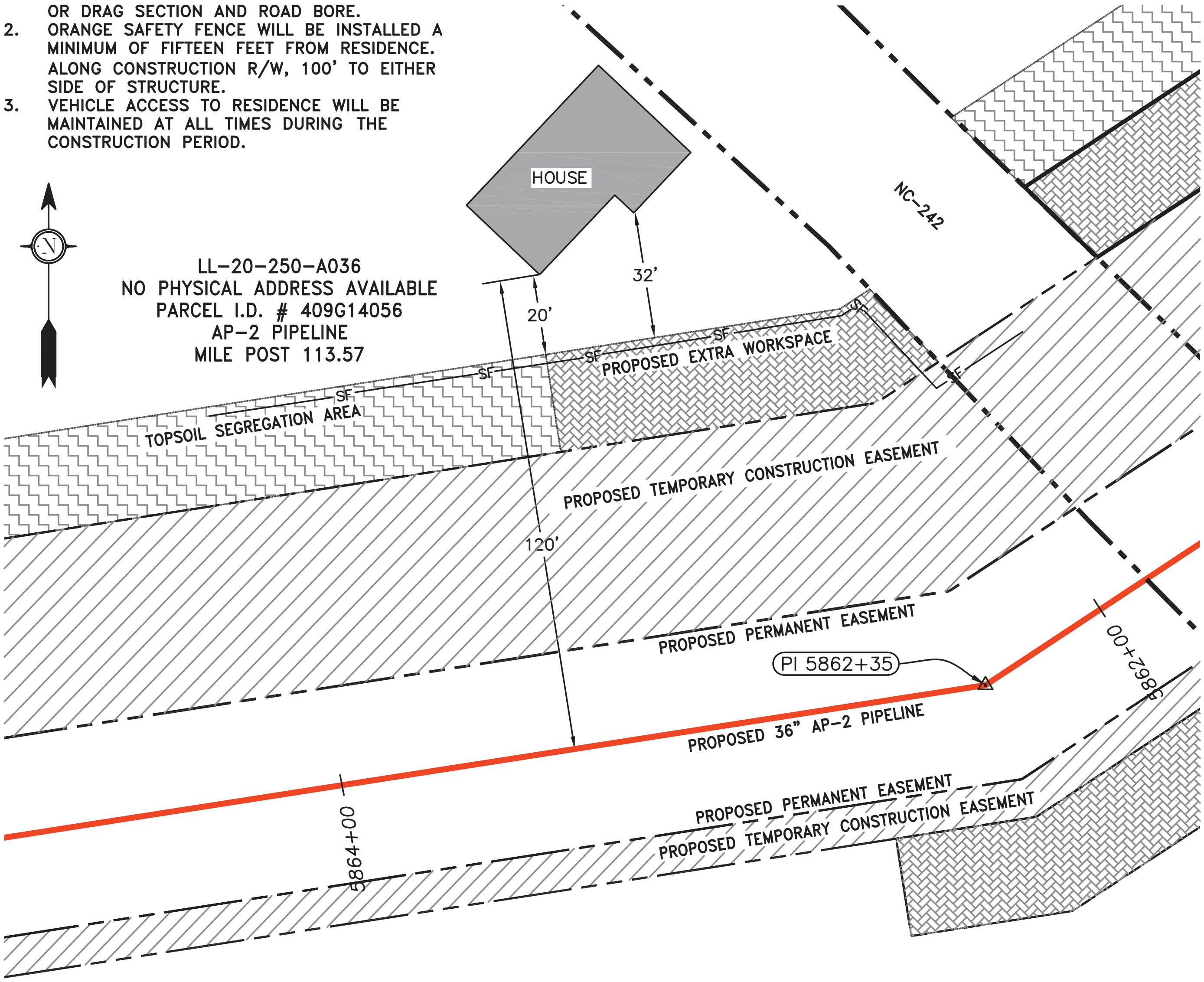
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 7/08/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-20-063			REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 10\HOUSE EXHIBITS\SECTION 10 HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-20-250-A036
NO PHYSICAL ADDRESS AVAILABLE
PARCEL I.D. # 409G14056
AP-2 PIPELINE
MILE POST 113.57



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — SF ORANGE SAFETY FENCE
- PROPOSED TEMPORARY R.O.W.
- EXTRA WORK SPACE
- TOPSOIL SEGREGATION AREA

SCALE: 1" = 40'

40' 0 40'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

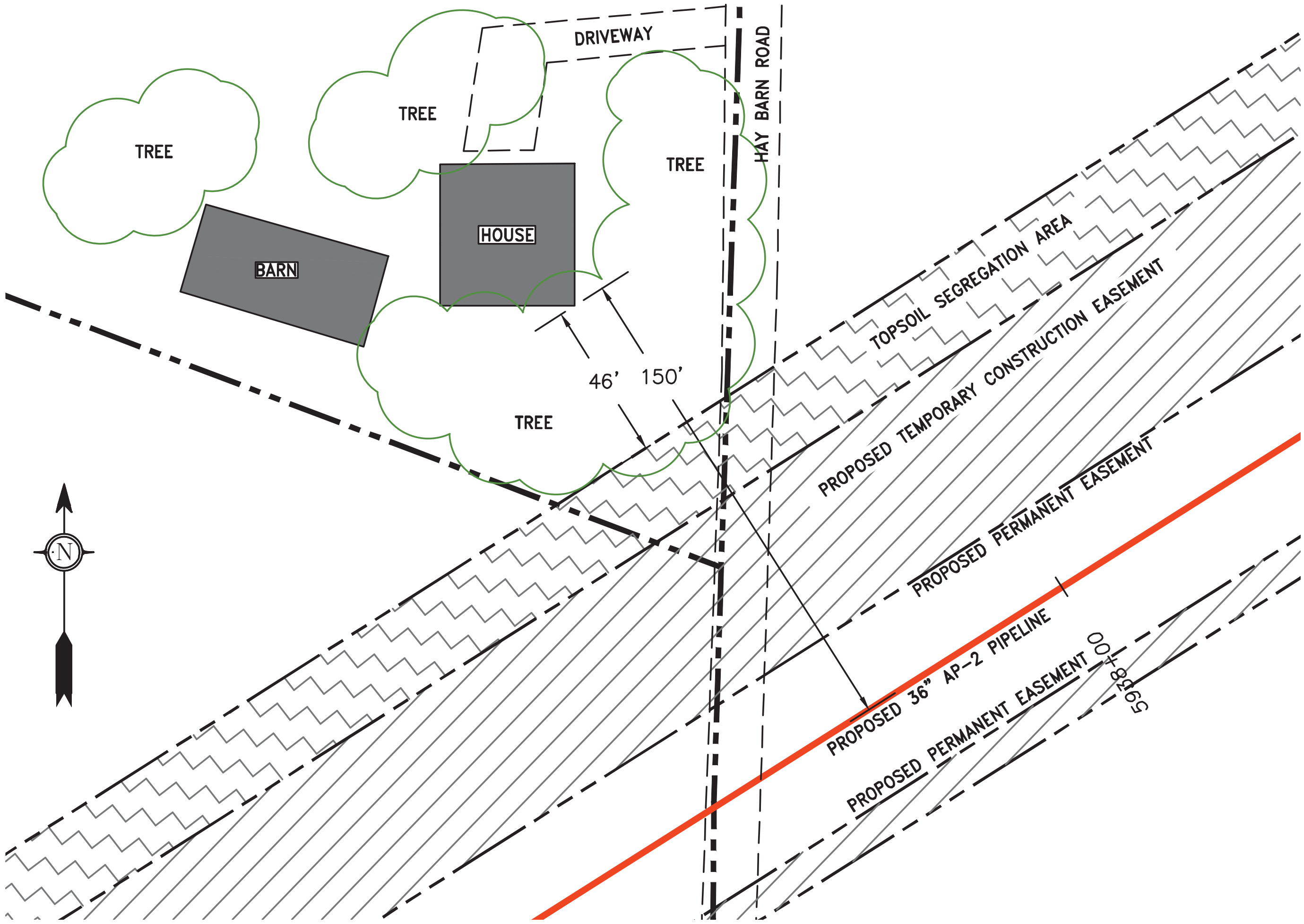
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
JOHNSTON COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GPT	CHKD. DLH	APPD. NET	DATE 7/11/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-20-250-A036			REV –

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS – NO NAMES.DWG

LL-20-400-A001
6178 GODWIN LAKE ROAD
DUNN, NC 28334
PARCEL I.D. #01F13062C
AP-2 PIPELINE
MILE POST 114.98



SCALE: 1" = 50'

50' 0 50'

LEGEND

— – – —	PROPERTY LINE
— — — —	PROPOSED PERMANENT EASEMENT
— (red)	PROPOSED GAS PIPELINE
—SF—SF—	ORANGE SAFETY FENCE
▨	PROPOSED TEMPORARY R.O.W.
▩	EXTRA WORK SPACE
⊓	TOPSOIL SEGREGATION AREA

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
JOHNSTON COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

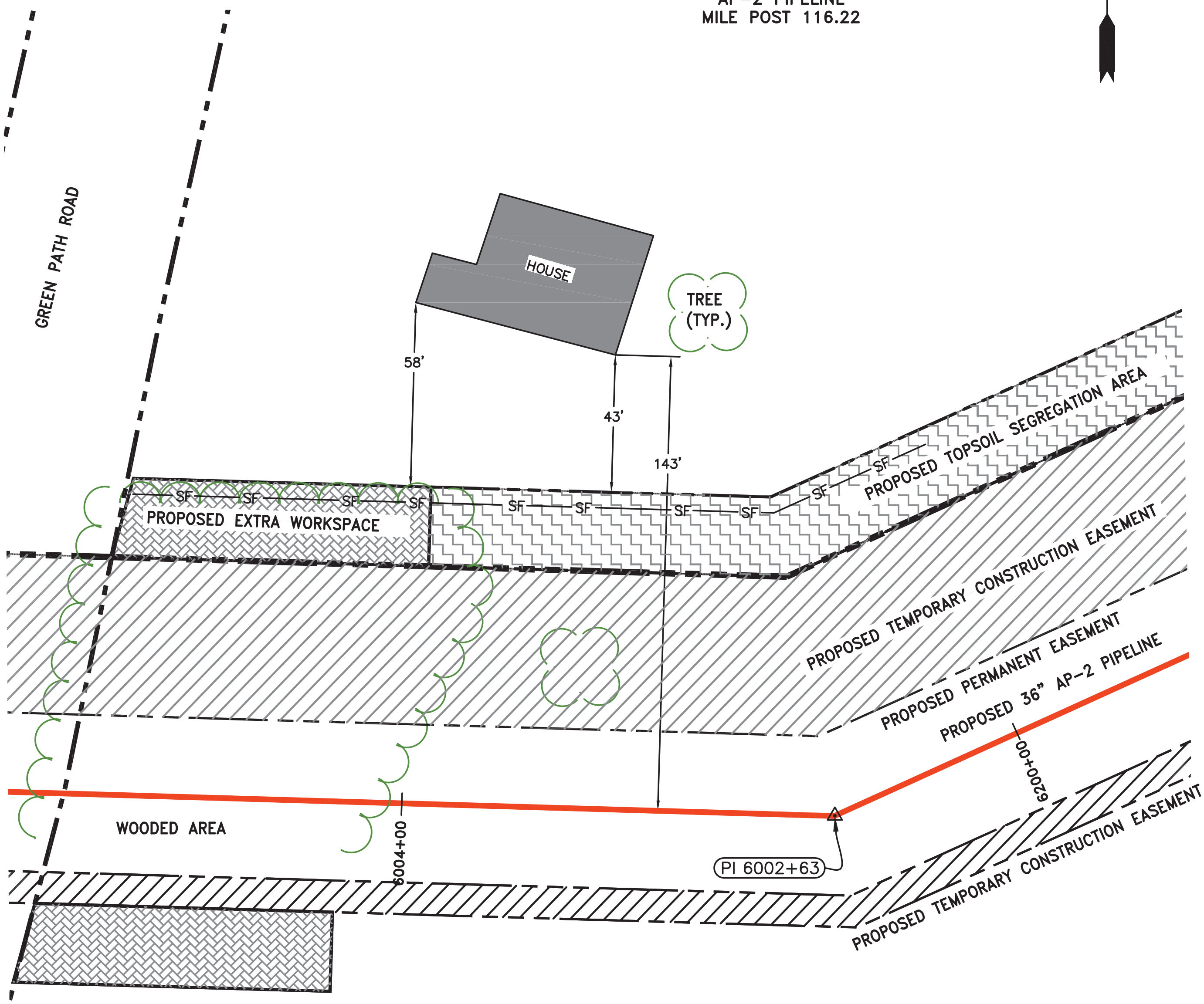
DWN. AKM	CHKD. DLH	APPD. NET	DATE 7/25/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-20-400-A001			REV –

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS - NO NAMES.DWG

7/25/2016 4:26 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-21-015
PARCEL I.D. # 14060428001
(PHYSICAL ADDRESS UNAVAILABLE)
AP-2 PIPELINE
MILE POST 116.22



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

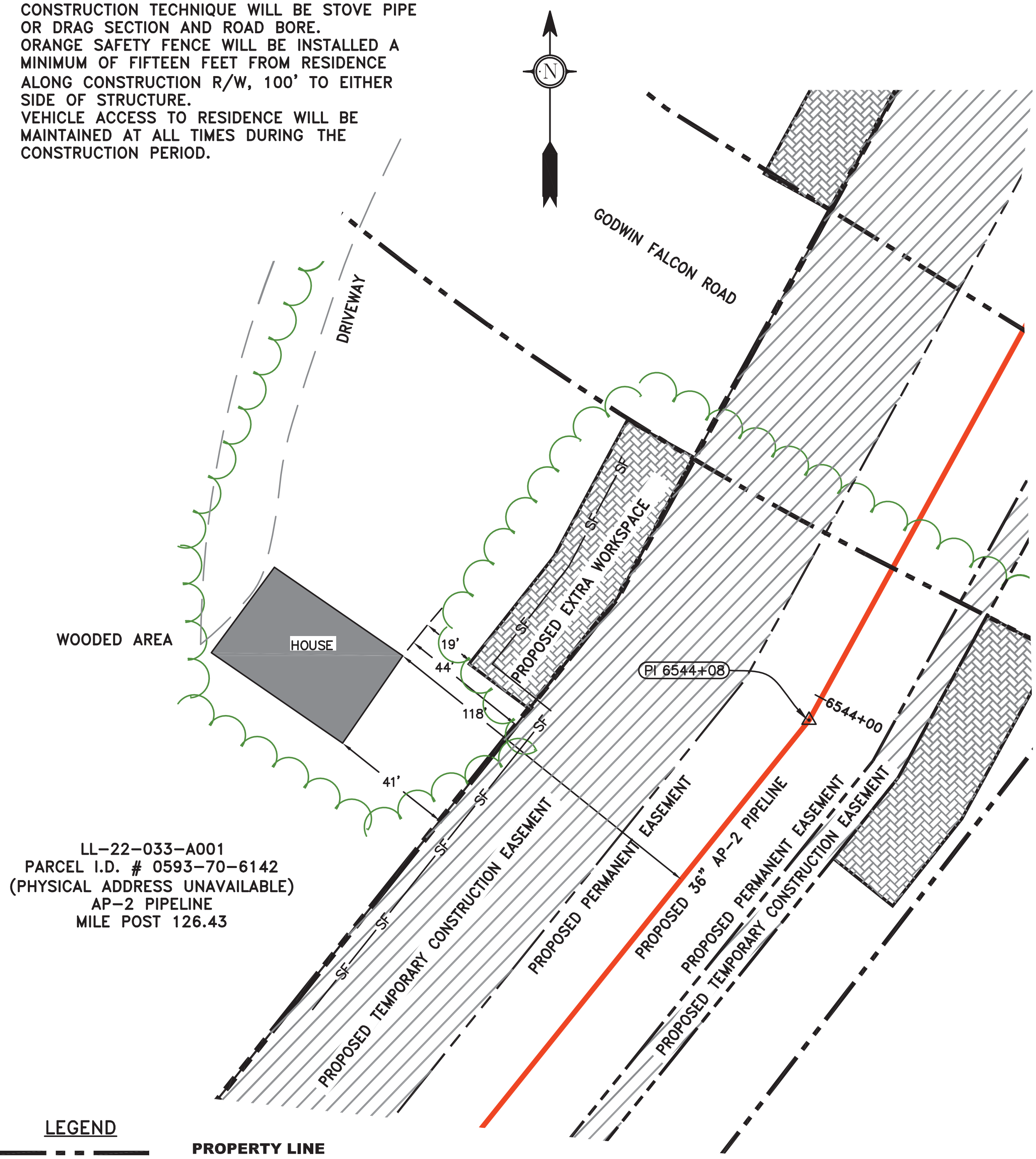
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
SAMPSON COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 4/29/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-21-015			REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF — SF ORANGE SAFETY FENCE

PROPOSED TEMPORARY R.O.W.

EXTRA WORK SPACE

SCALE: 1" = 50'

50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

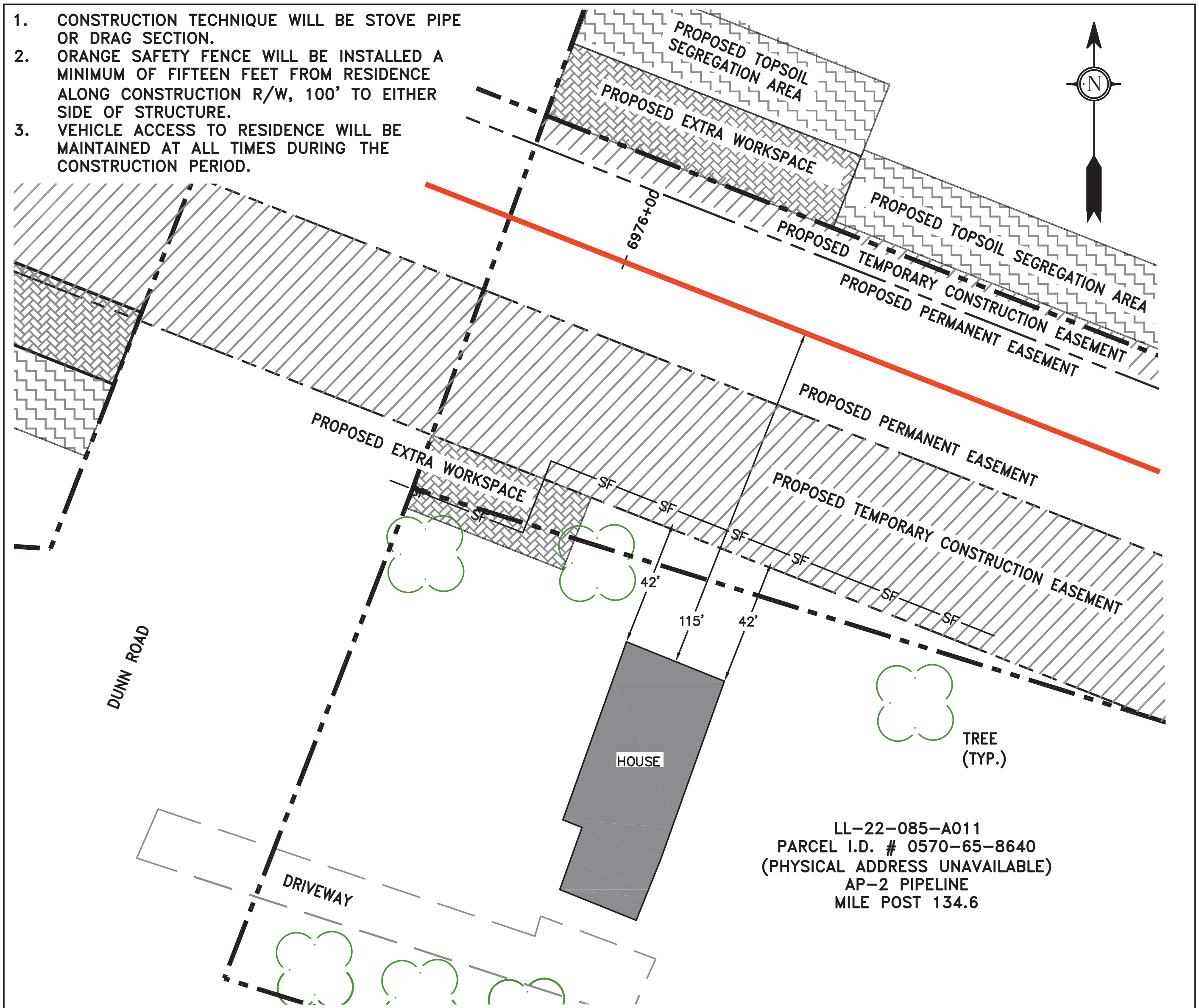
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 4/29/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-22-033-A001			REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-22-085-A011
PARCEL I.D. # 0570-65-8640
(PHYSICAL ADDRESS UNAVAILABLE)
AP-2 PIPELINE
MILE POST 134.6

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

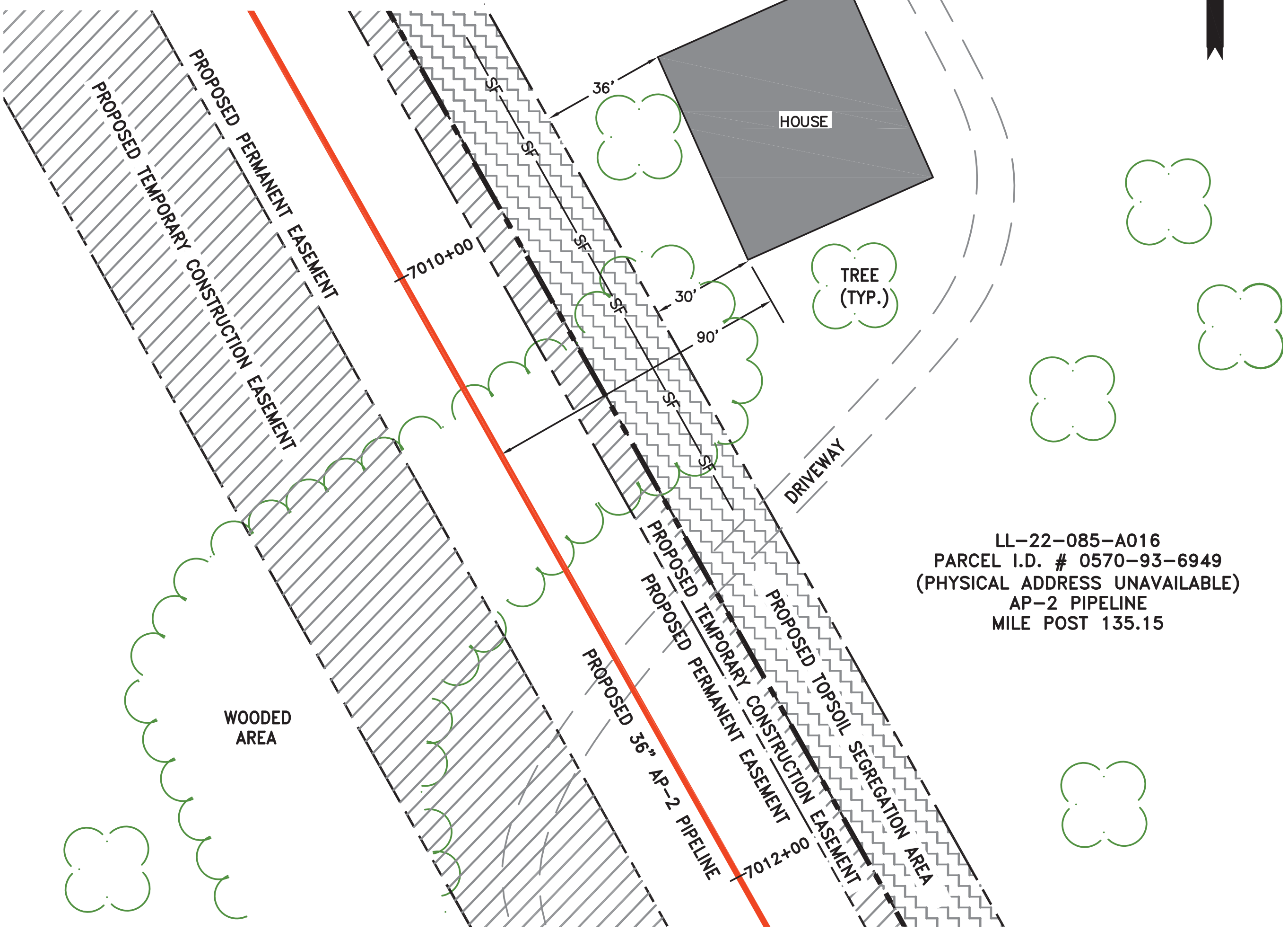
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 4/29/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-22-085-A011 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SEC 11 REROUTE HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LL-22-085-A016
PARCEL I.D. # 0570-93-6949
(PHYSICAL ADDRESS UNAVAILABLE)
AP-2 PIPELINE
MILE POST 135.15

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF — SF ORANGE SAFETY FENCE

PROPOSED TEMPORARY R.O.W.

TOPSOIL SEGREGATION AREA

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

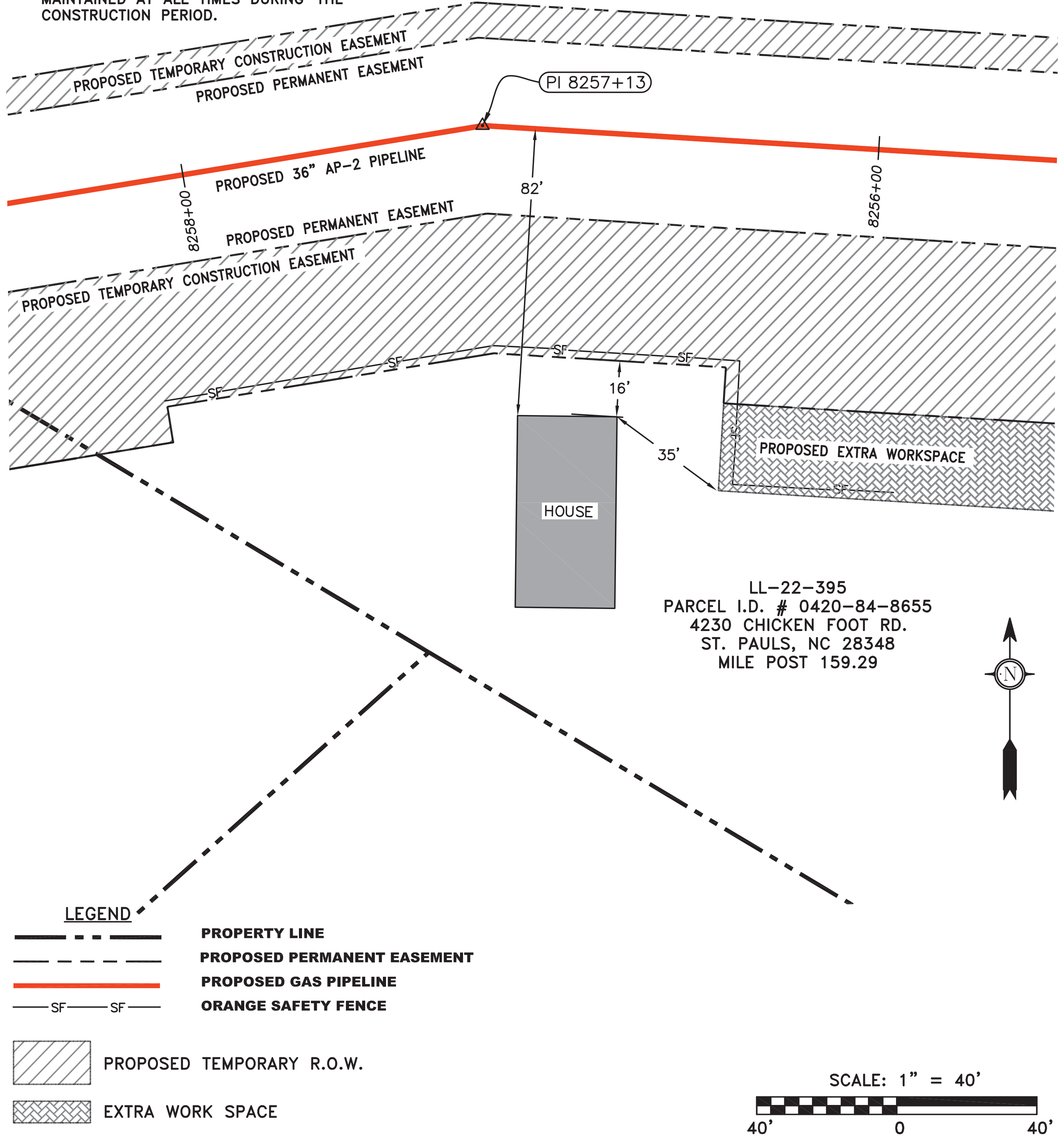
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 4/29/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-22-085-A016 REV 2

GAI CAD FILE: R:\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS - NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

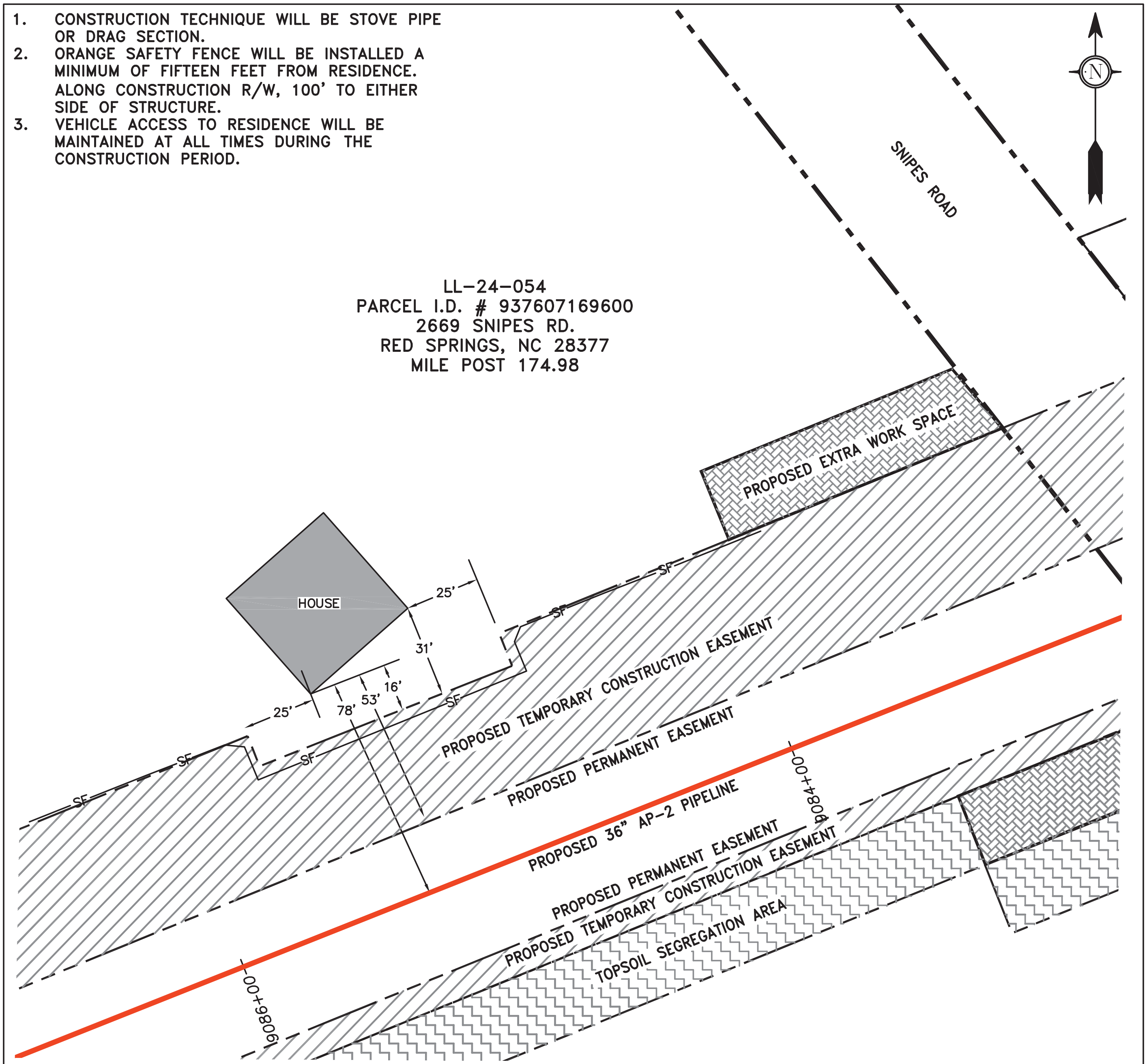
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 6/25/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-22-395			REV 2

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS – NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF — SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA

SCALE: 1" = 40'
40' 0 40'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

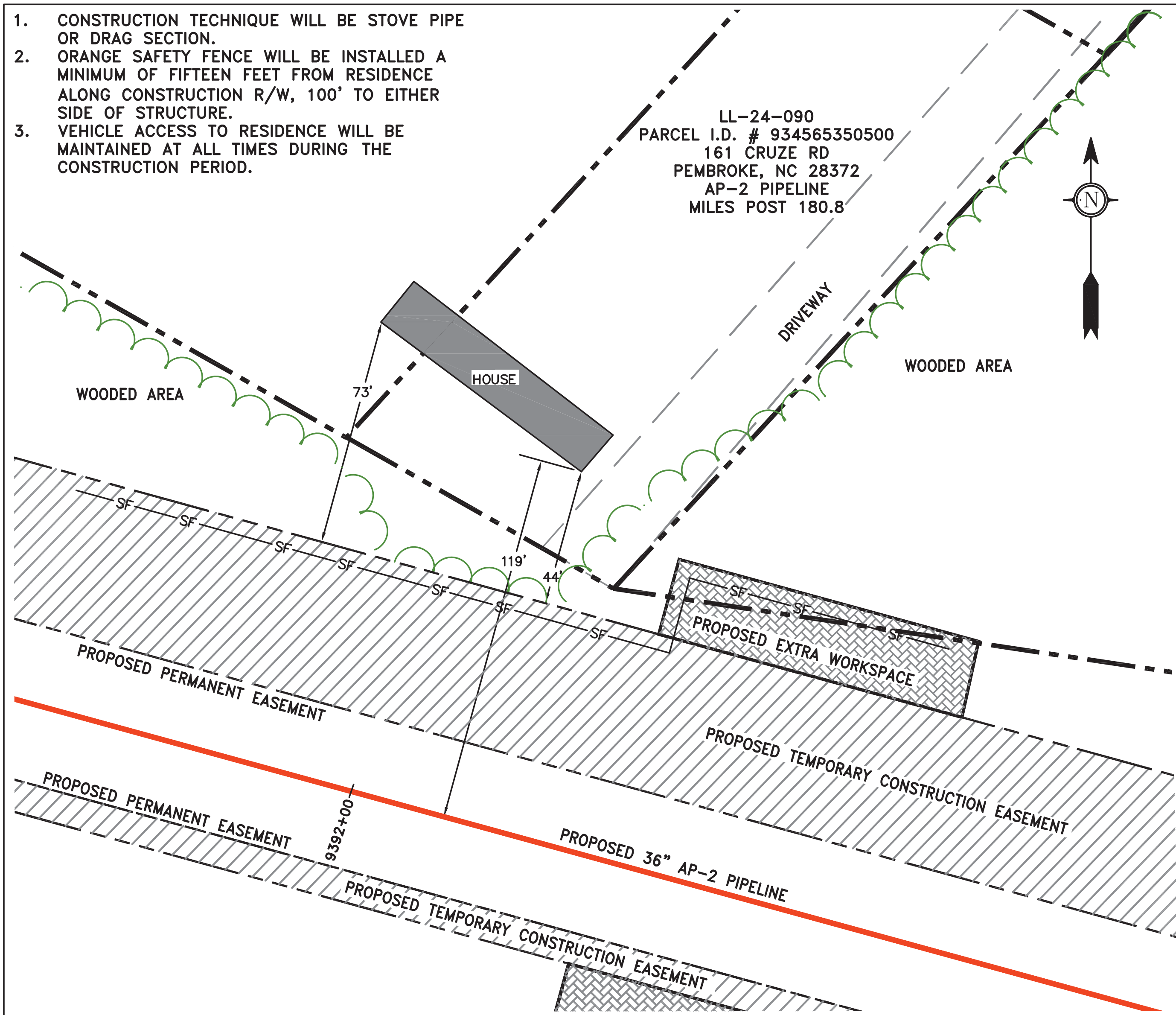
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CUMBERLAND COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 7/12/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-24-054 | 2 REV

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS – NO NAMES.DWG

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF SF ORANGE SAFETY FENCE
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE

SCALE: 1" = 50'
50' 0 50'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
ROBESON COUNTY, NORTH CAROLINA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 7/12/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-24-090 | 2 REV

GAI CAD FILE: R:\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 11\HOUSE EXHIBITS\SECT 11 REROUTE HOUSE EXHIBITS – NO NAMES.DWG

AP-3

FERC's Plans will be followed for Residential Construction, for all Residences located within 50 feet of the construction work area

1. Orange safety fence will be installed at a minimum 15 feet from the residence, and 100 feet along the construction corridor, each direction from residence.
2. Will avoid the removal of mature trees and landscaping within the construction work area, unless necessary for safe operation of equipment, or as specified in the landowner agreements
3. Restore all lawn areas and landscaping immediately following clean up operations or as specified in landowner agreement
4. During landowner negotiations, identify location of septic system and avoid or develop a replacement plan with landowner during construction.

For this project, the following notes will also be applied

a. Where the pipeline centerline is within 25 feet of a residence, the trench will not be excavated until the pipe is ready for installation.

b. Landowner will be notified one week prior to construction on his/her property

c. No refueling or storage of hazardous materials will occur within 200 feet of a private well.

d. Steel plating or other effective means will be provided to allow landowner access to his/her residence should construction or other ground disturbance occur. Required at egress points, landowner driveways, or other private access ways.

e. On public roads, we will follow our traffic management plans that are filed as part of the permit

f. Construction will be limited to daylight hours.

g. Applicant will:

- Ensure piping is welded and installed as quickly as possible to minimize the amount of time a neighborhood is affected by construction;
- Complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting.
- During landowner negotiations, will work with landowner on restoration procedure. These procedures will include seeding mix, tree/shrub planting and hardscape replacement.

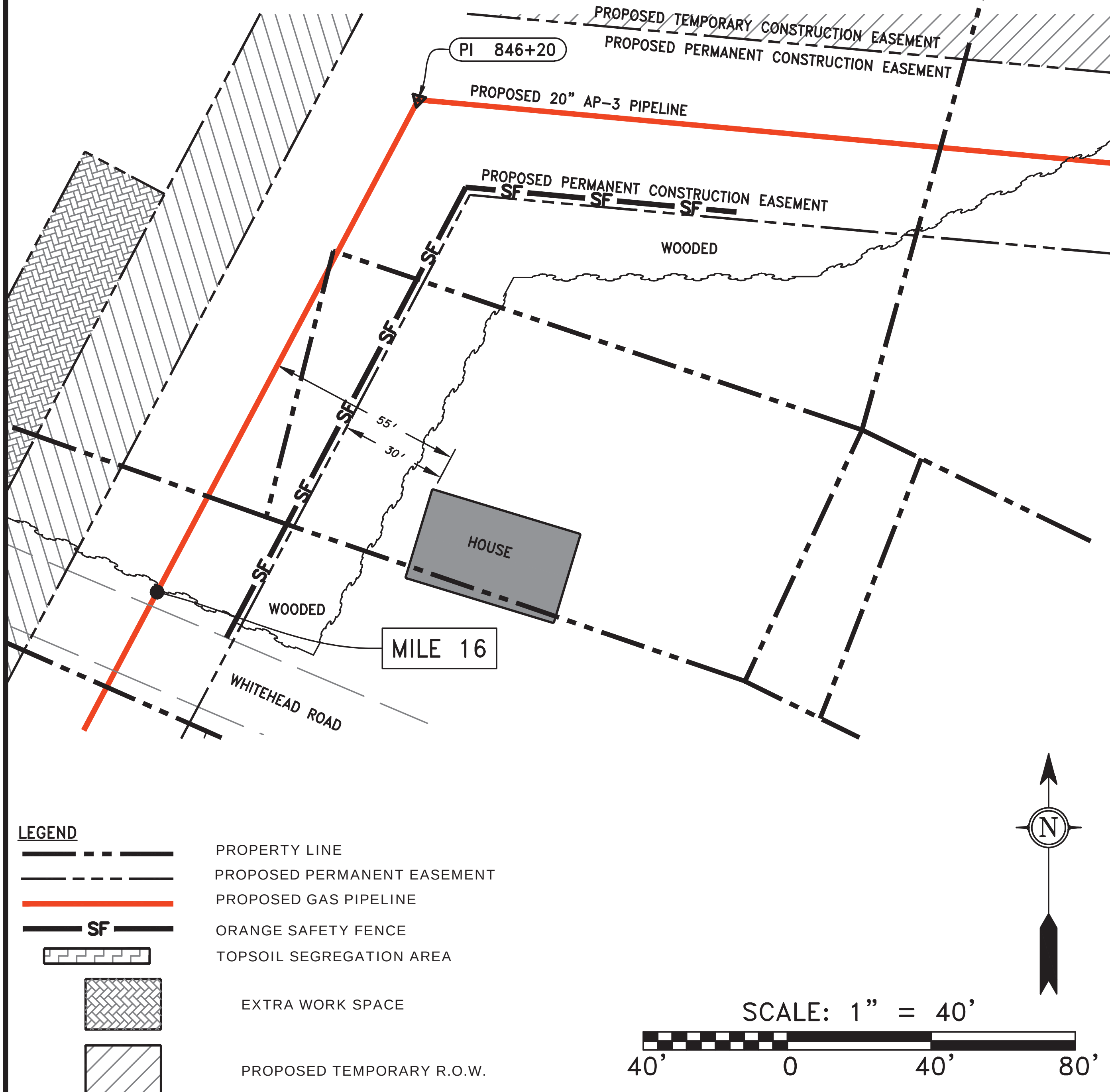
gai consultants SOUTHPOINTE OFFICE 6000 TOWNE CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES GENERAL NOTES	DWN. JJP	CHKD. DLH	APPD. NET	DATE 07/28/2016
		SCALE: NONE			TASK NO. 00
	ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. C140468 DRAWING NO. A001			REV –

GAI CAD FILE: Z:\ENERGY\2014\C140468.00 – DOMINION – SOUTHEAST PIPE\CAD\MASTER ROUTE\DRG\DRAWINGS\HOUSE_SITE_SPECIFIC_GENERAL_NOTES.DWG

7/19/2016 8:44 AM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-25-001-B022
PO BOX 122
BRANCHVILLE, VIRGINIA 23828
TAX MAP # 110-24
MILE POST 16.02



LEGEND

	PROPERTY LINE
	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
SF	ORANGE SAFETY FENCE
	TOPSOIL SEGREGATION AREA
	EXTRA WORK SPACE
	PROPOSED TEMPORARY R.O.W.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
SOUTHAMPTON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

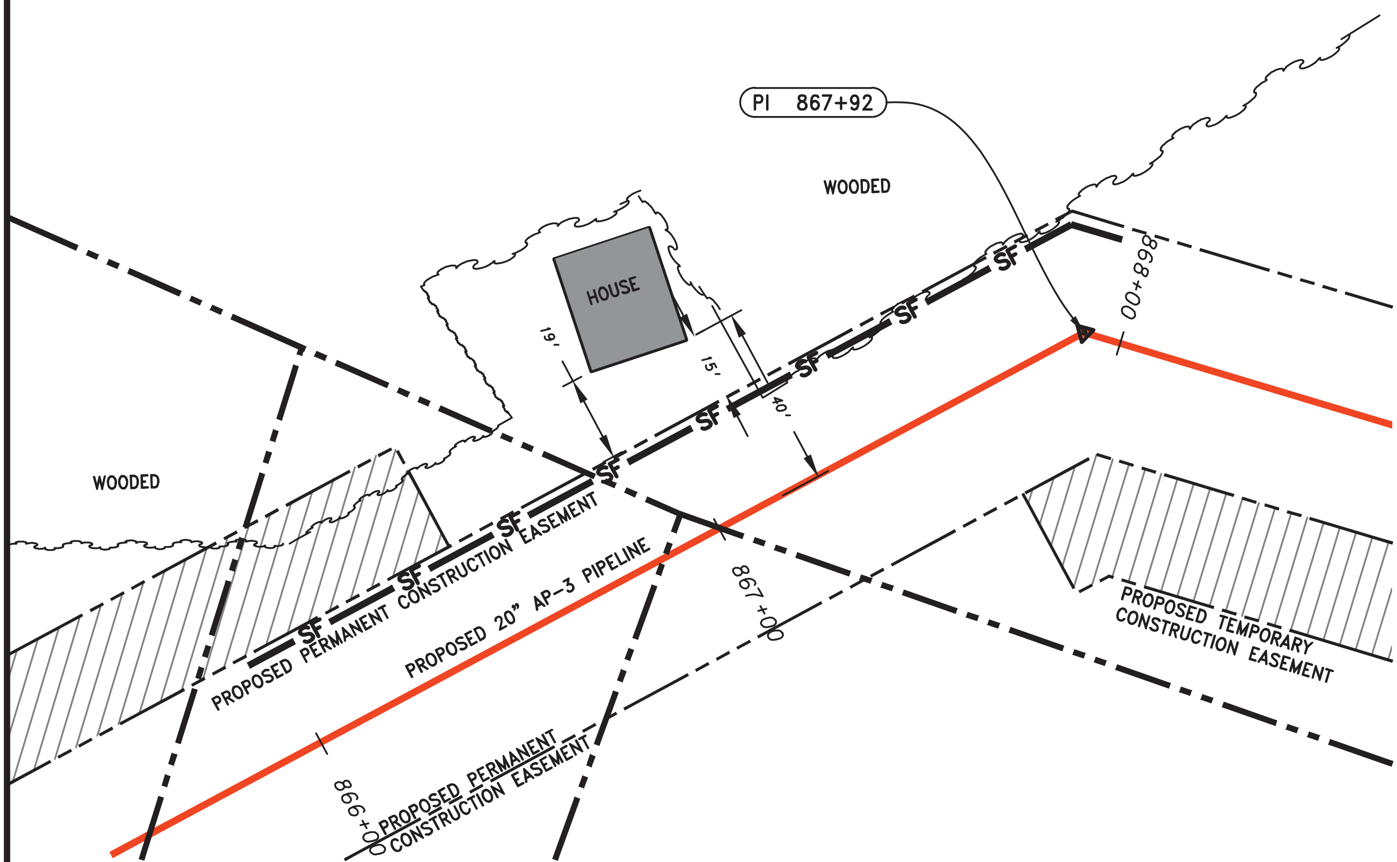
DWN. RDC | CHKD. DLH | APPD. NET | DATE 6/24/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-25-001-B022 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 06 - SOUTHEAST PIPELINE (SECTION 7)\3 - CAD DRAWINGS\BUILDING CONFLICTS EXHIBITS\2665-07 SPREAD-7 - BUILDING CONFLICT EXHIBITS.DWG

6/24/2016 12:16 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-25-001-B029
820 GLORIA PL
VIRGINIA BEACH, VIRGINIA 23454
TAX MAP # 111-1
MILE POST 16.37



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
SOUTHAMPTON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/24/2016
SCALE: AS SHOWN			TASK NO. 01

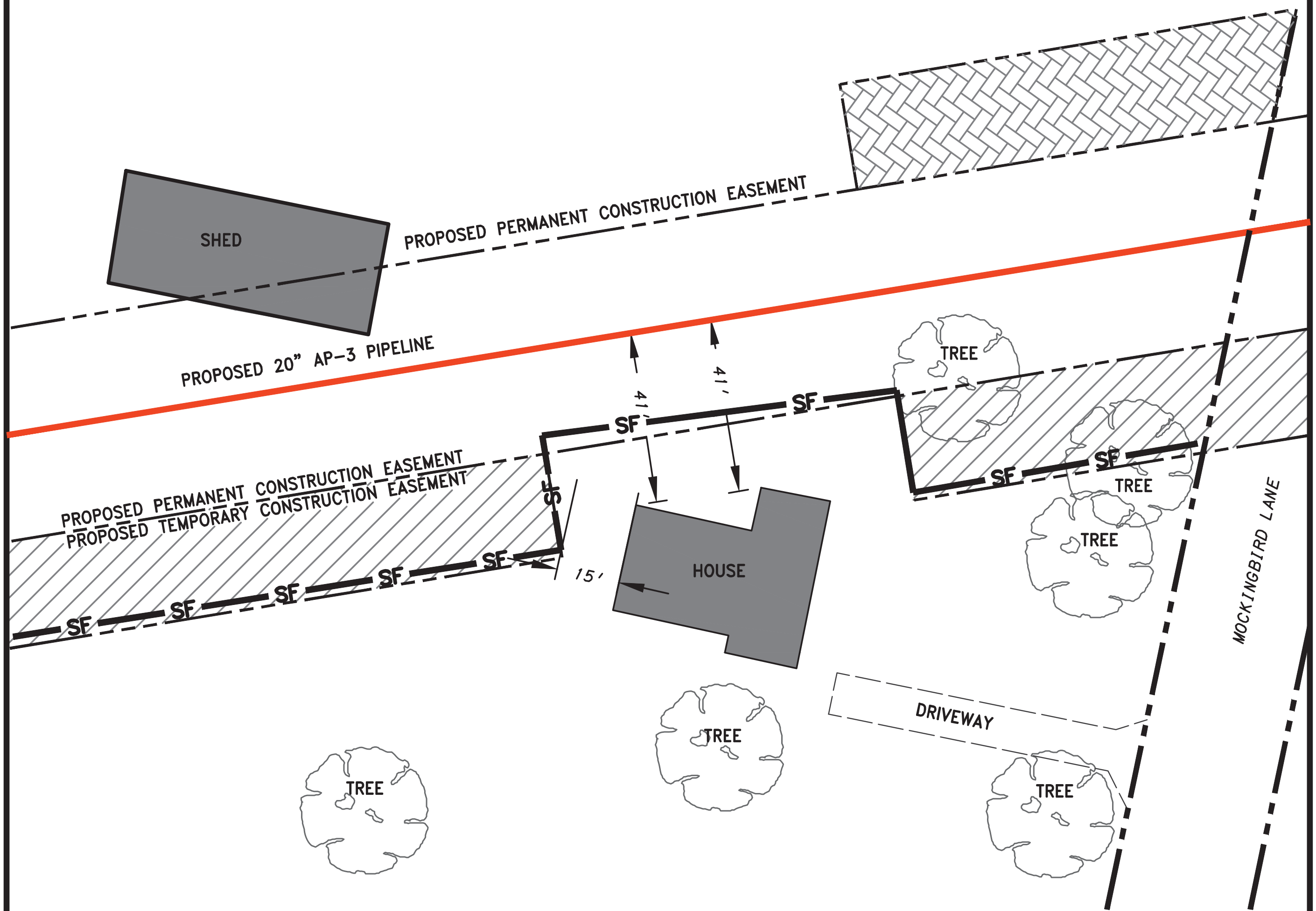
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-25-001-B029 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 06 - SOUTHEAST PIPELINE (SECTION 7)\3 - CAD DRAWINGS\BUILDING CONFLICTS EXHIBITS\2665-07 SPREAD-7 - BUILDING CONFLICT EXHIBITS.DWG

7/1/2016 2:48 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-26-060-A068
4124 MOCKINGBIRD LANE
SUFFOLK, VIRGINIA 23434
TAX MAP # 252953000
AP-3 PIPELINE
MILE POST 61.88



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/2016
SCALE: AS SHOWN			TASK NO. 01

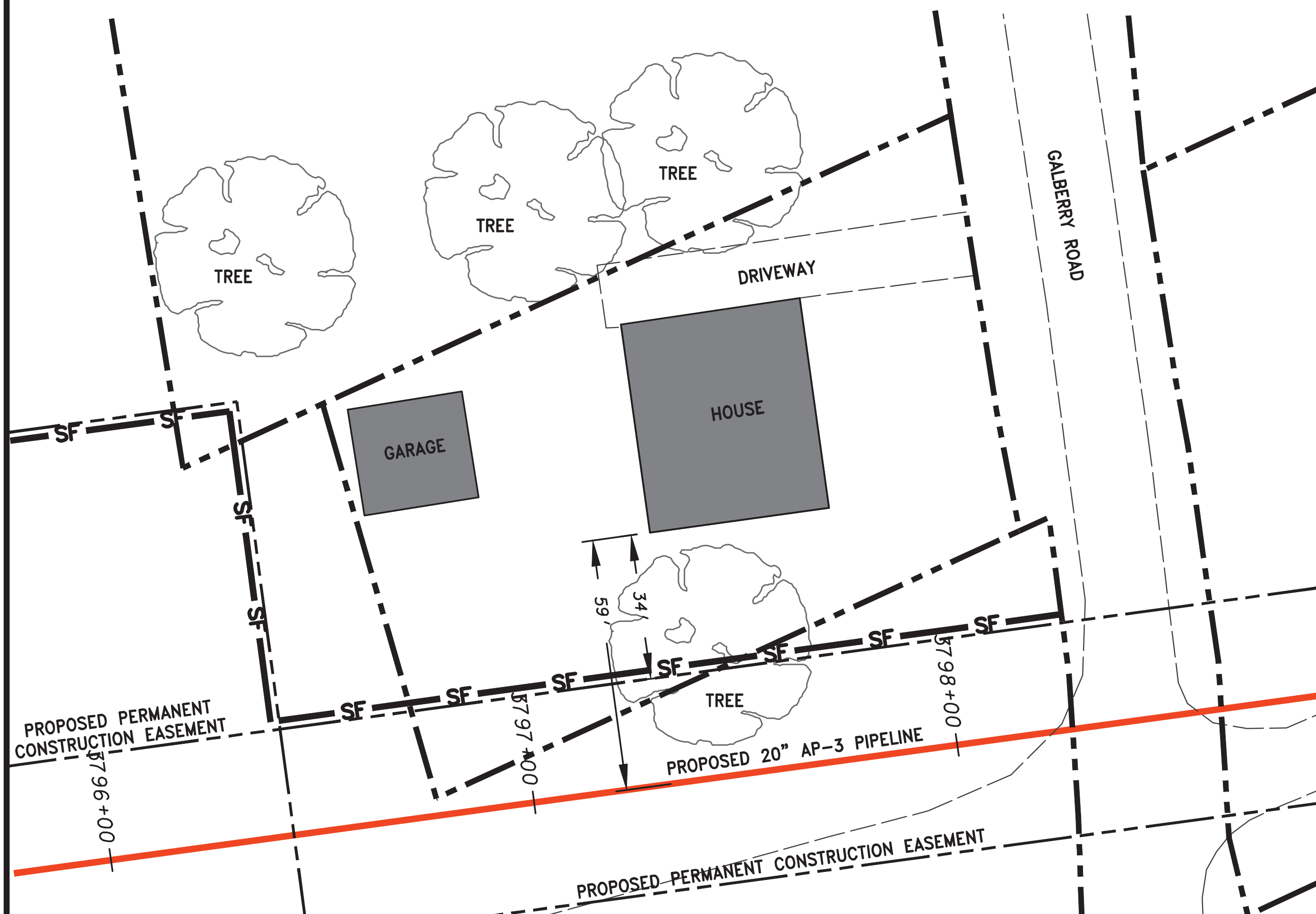
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-26-060-A068 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-26-060-A068.DWG

7/18/2016 12:20 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-026-A009
3321 GALBERRY ROAD
CHESAPEAKE, VIRGINIA 23323-1401
TAX MAP # 0330000001712
AP-3 PIPELINE
MILE POST 77.6



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/19/16
SCALE: AS SHOWN			TASK NO. 01

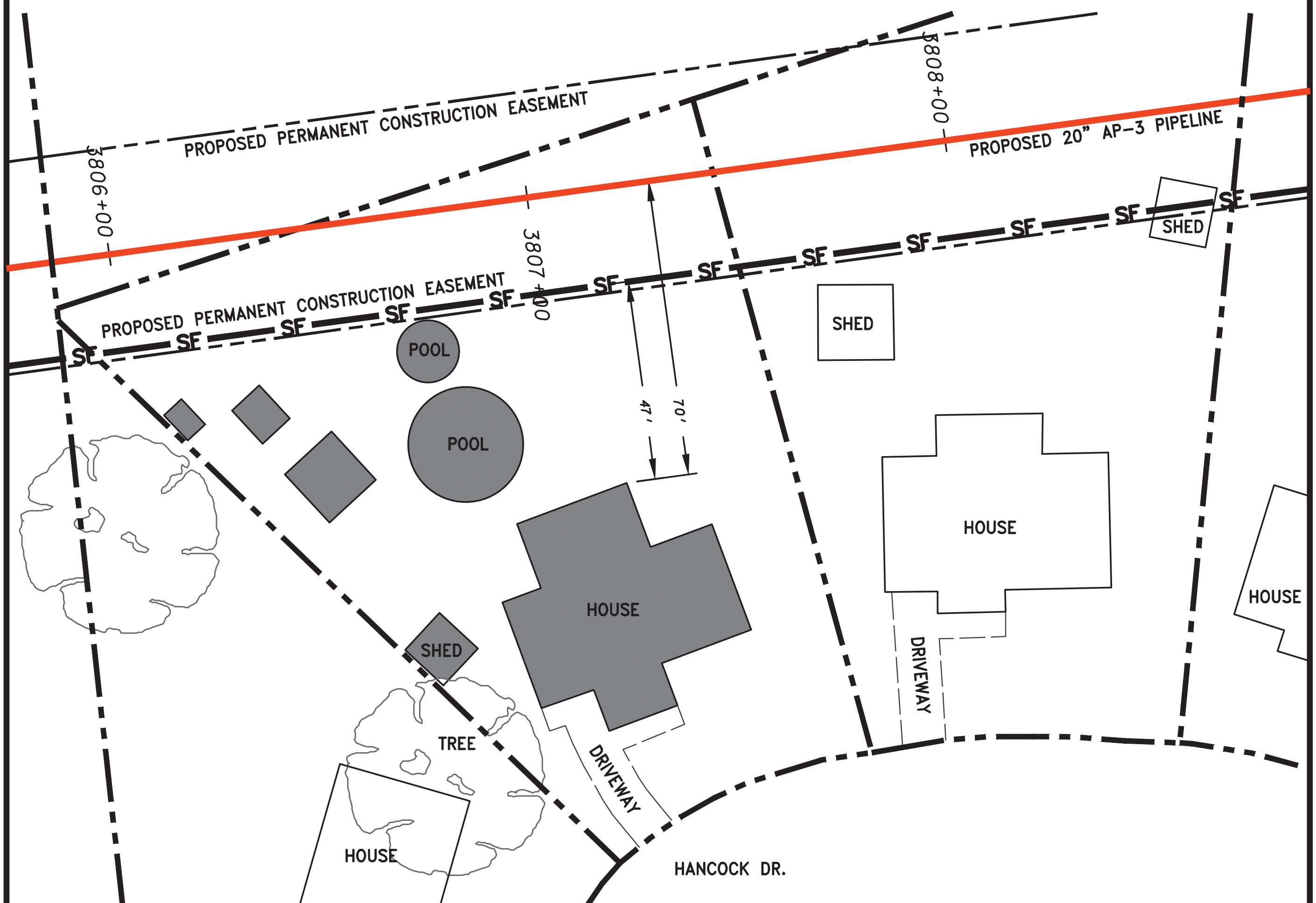
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-026-A009 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-026-A009.DWG

7/19/2016 12:28 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-026-A026
3261 HANCOCK DRIVE
CHESAPEAKE, VIRGINIA 23323-1937
TAX MAP # 0331007000270
AP-3 PIPELINE
MILE POST 77.8



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF — ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

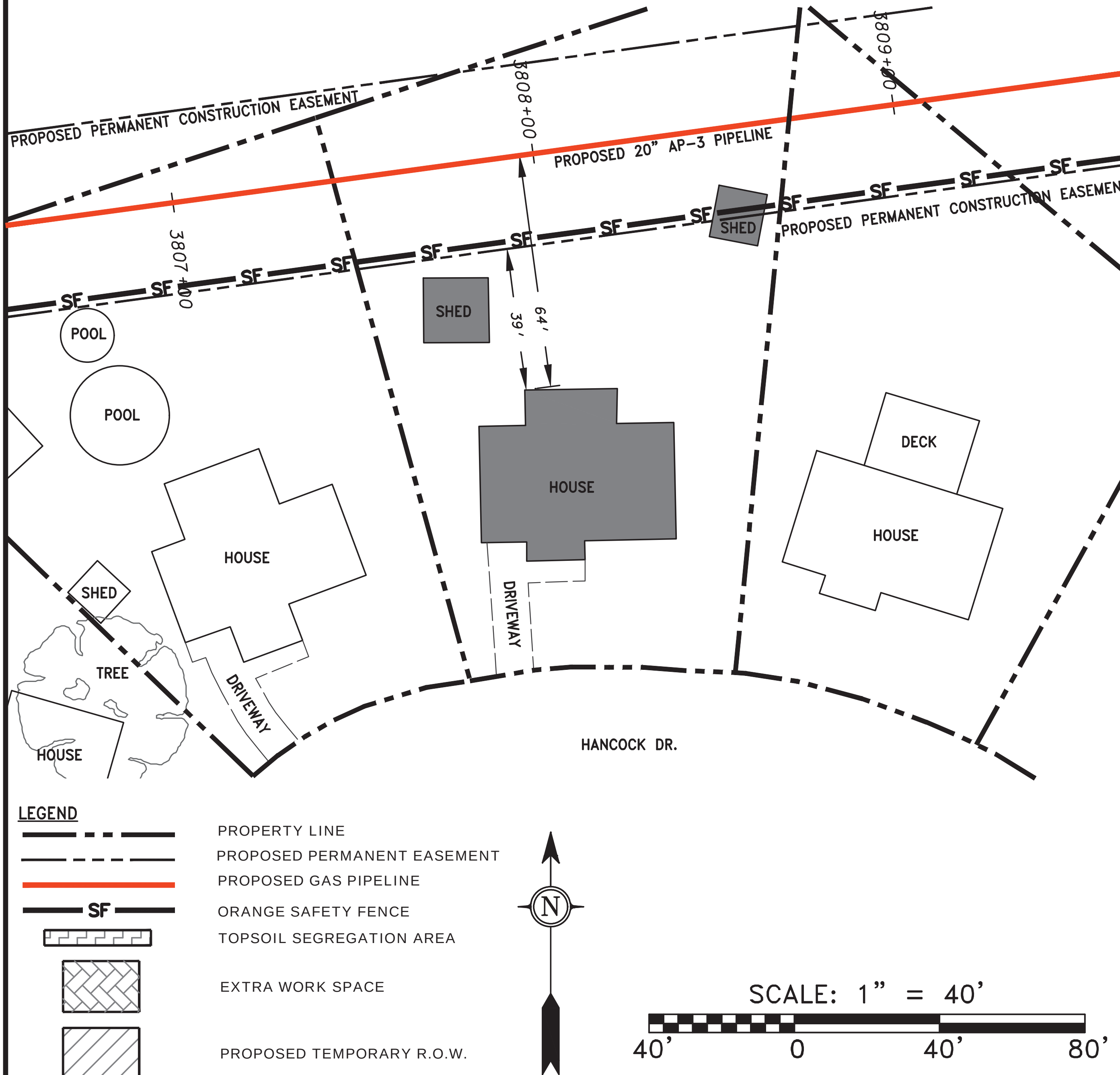
gai consultants SOUTHPOINTE OFFICE 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	mbe monaloh basin engineers 300 BUSINESS CENTER DRIVE PITTSBURGH, PA 15205 412-788-2433	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES CITY OF CHESAPEAKE, VIRGINIA ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	DWN. RDC	CHKD. DLH	APPD. NET
			DATE 7/19/16	SCALE: AS SHOWN	TASK NO. 01
			PROJECT NO./DASH NO. 140468	DRAWING NO. LL-27-026-A026	REV —

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-026-A026.DWG

7/19/2016 12:33 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-026-A027
3257 HANCOCK DRIVE
CHESAPEAKE, VIRGINIA 23323-1937
TAX MAP # 0331007000260
AP-3 PIPELINE
MILE POST 77.8



gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/19/16
SCALE: AS SHOWN			TASK NO. 01

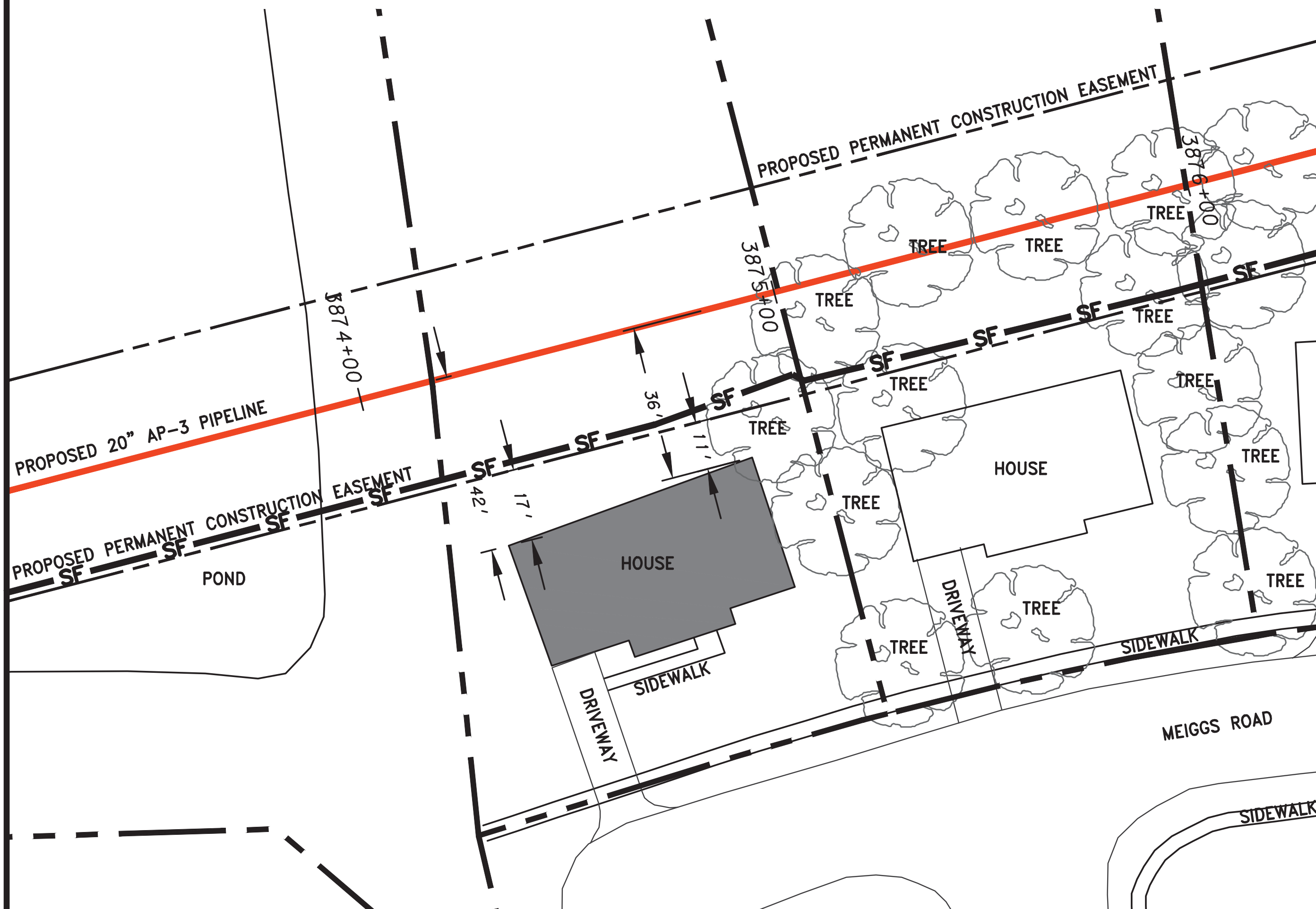
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-026-A027 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-026-A027.DWG

7/19/2016 12:42 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-058
5611 BRIAR OAKS LANE, APT 311
RALEIGH, NC 27612
TAX MAP # 0343011000010
AP-3 PIPELINE
MILE POST 79.10



LEGEND

	PROPERTY LINE
	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
SF	ORANGE SAFETY FENCE
	TOPSOIL SEGREGATION AREA
	EXTRA WORK SPACE
	PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
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412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

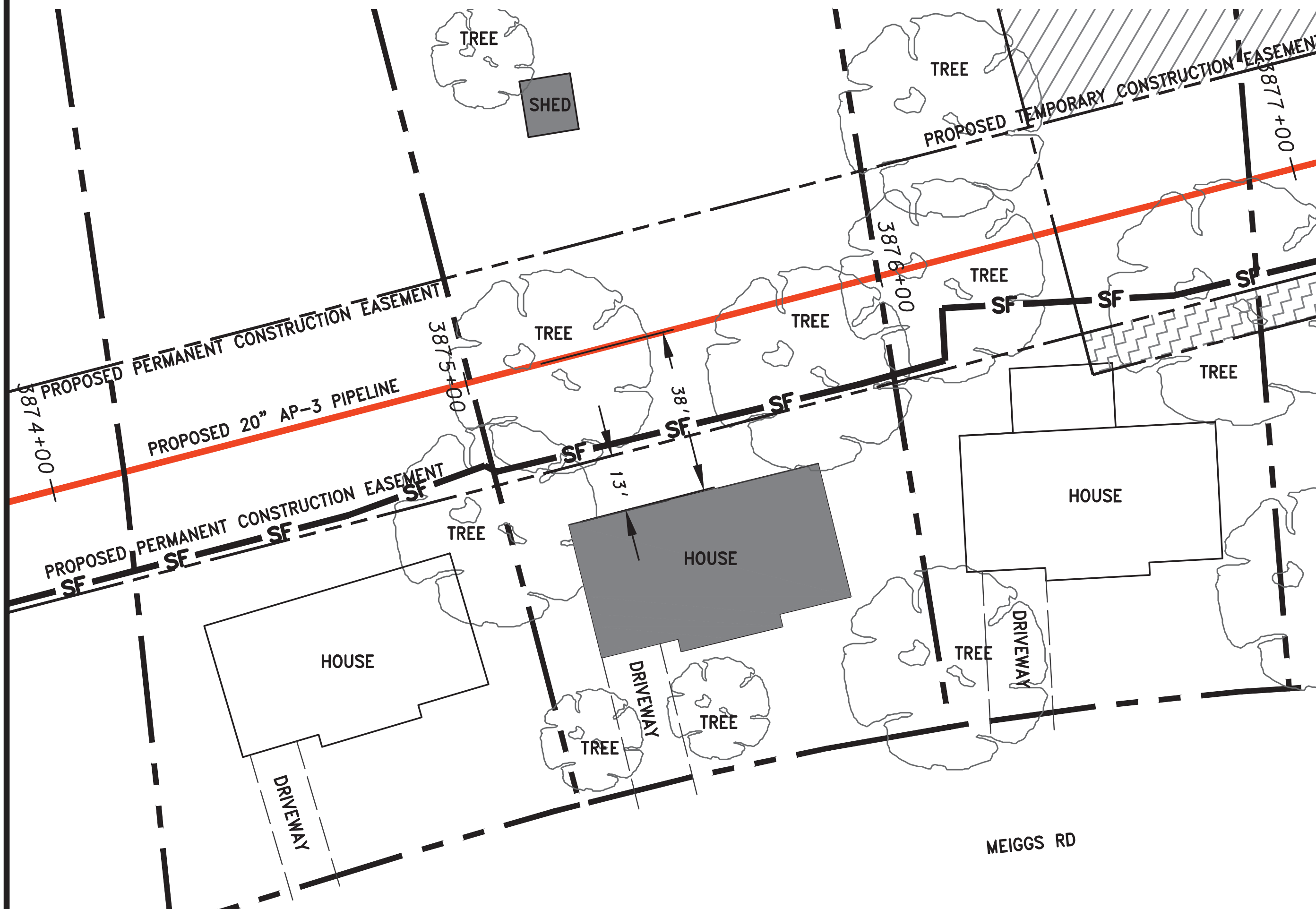
DWN. RDC CHKD. DLH APPD. NET DATE 7/18/2016
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-058 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-058.DWG

7/18/2016 12:38 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-060
2536 MEIGGS RD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343011000020
AP-3 PIPELINE
MILE POST 79.11



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01

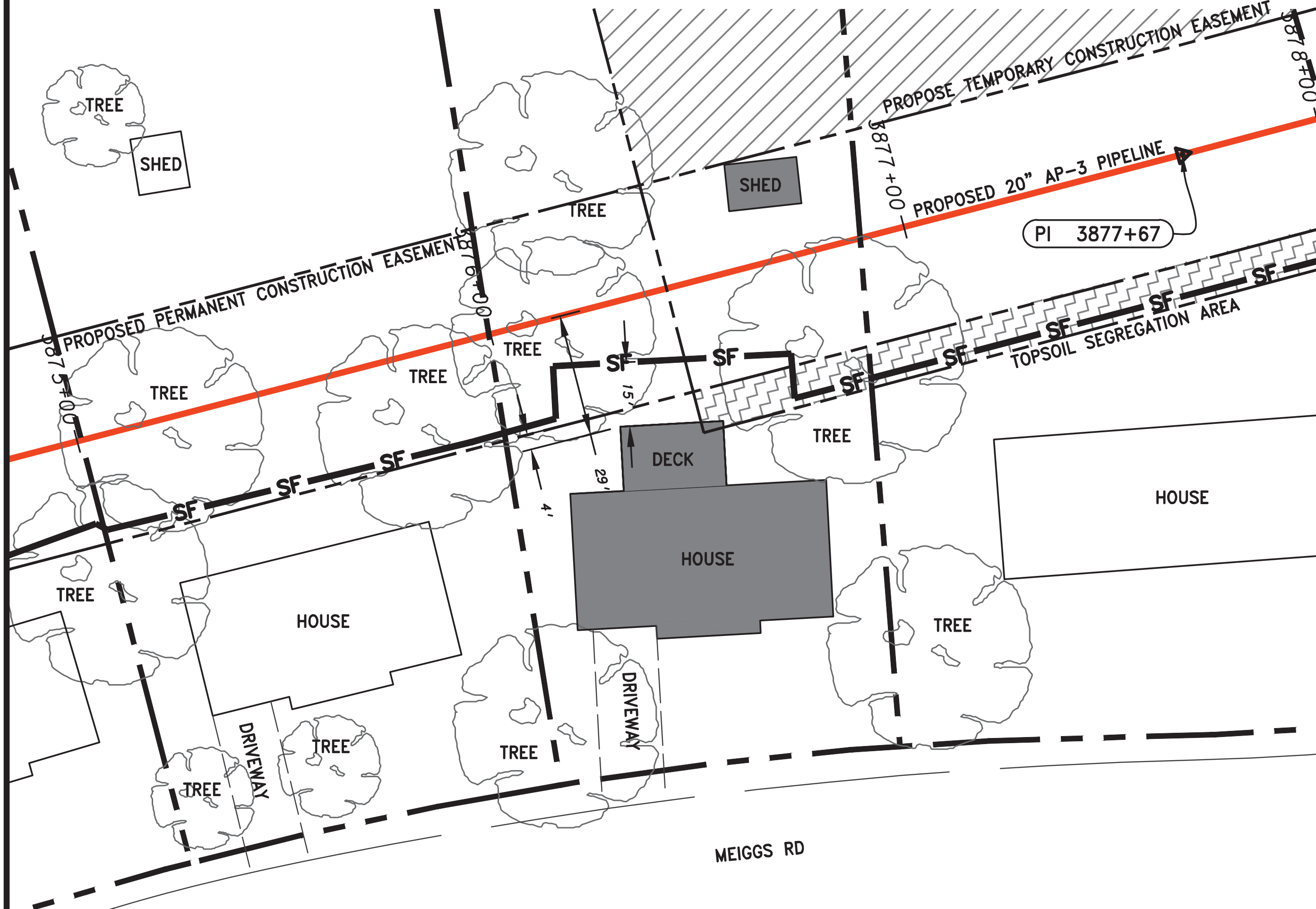
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-060
REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-060.DWG

7/18/2016 12:35 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-062
2532 MEIGGS RD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343011000030
AP-3 PIPELINE
MILE POST 79.13



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

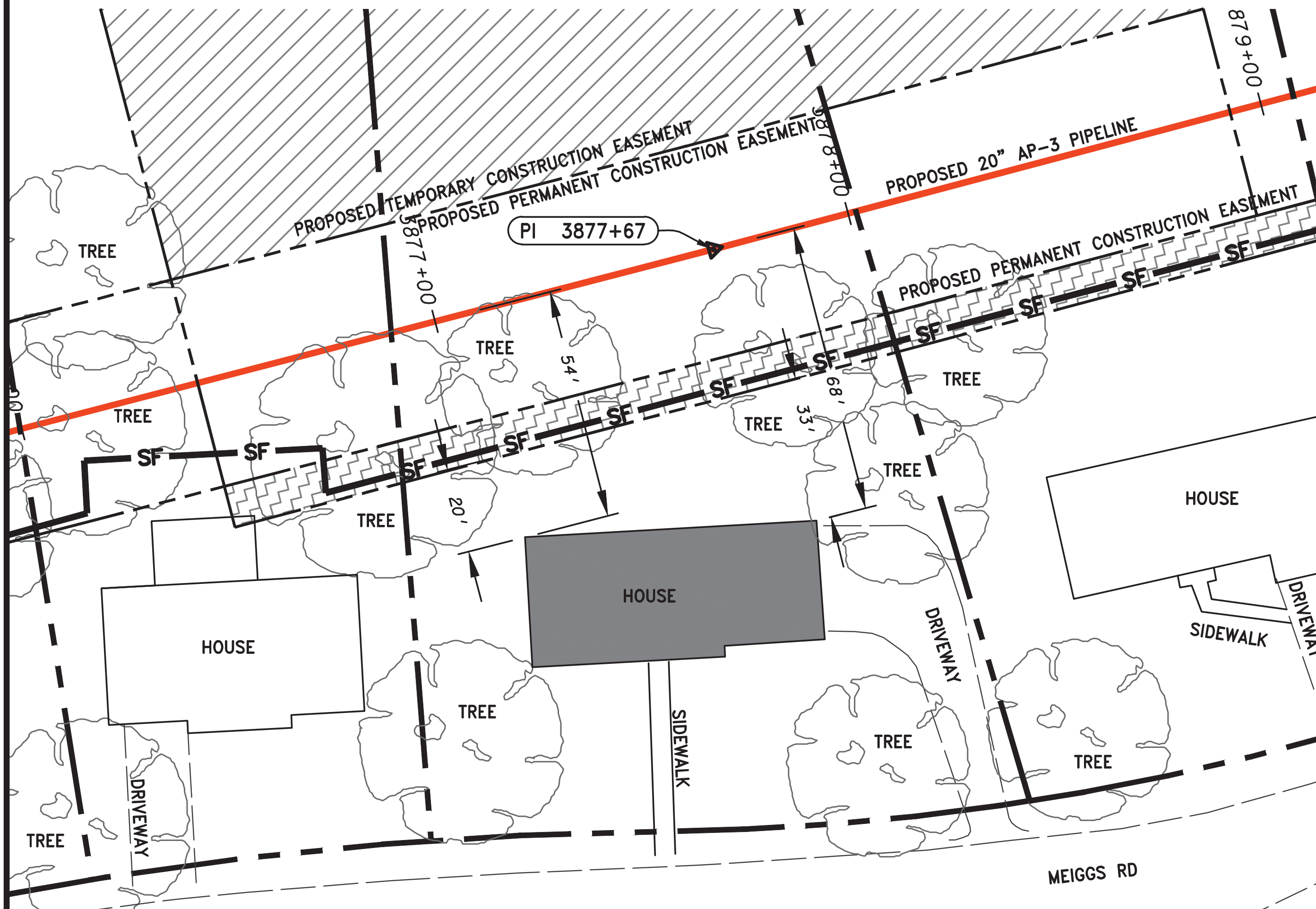
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-062
REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-062.DWG

7/18/2016 12:44 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-064
121 CREEFS RIDGE ROAD
MANTEO, NORTH CAROLINA 27954
TAX MAP # 0343005000200
AP-3 PIPELINE
MILE POST 79.14



LEGEND

PROPERTY LINE

PROPOSED PERMANENT EASEMENT

PROPOSED GAS PIPELINE

SF ORANGE SAFETY FENCE

TOPSOIL SEGREGATION AREA

EXTRA WORK SPACE

PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

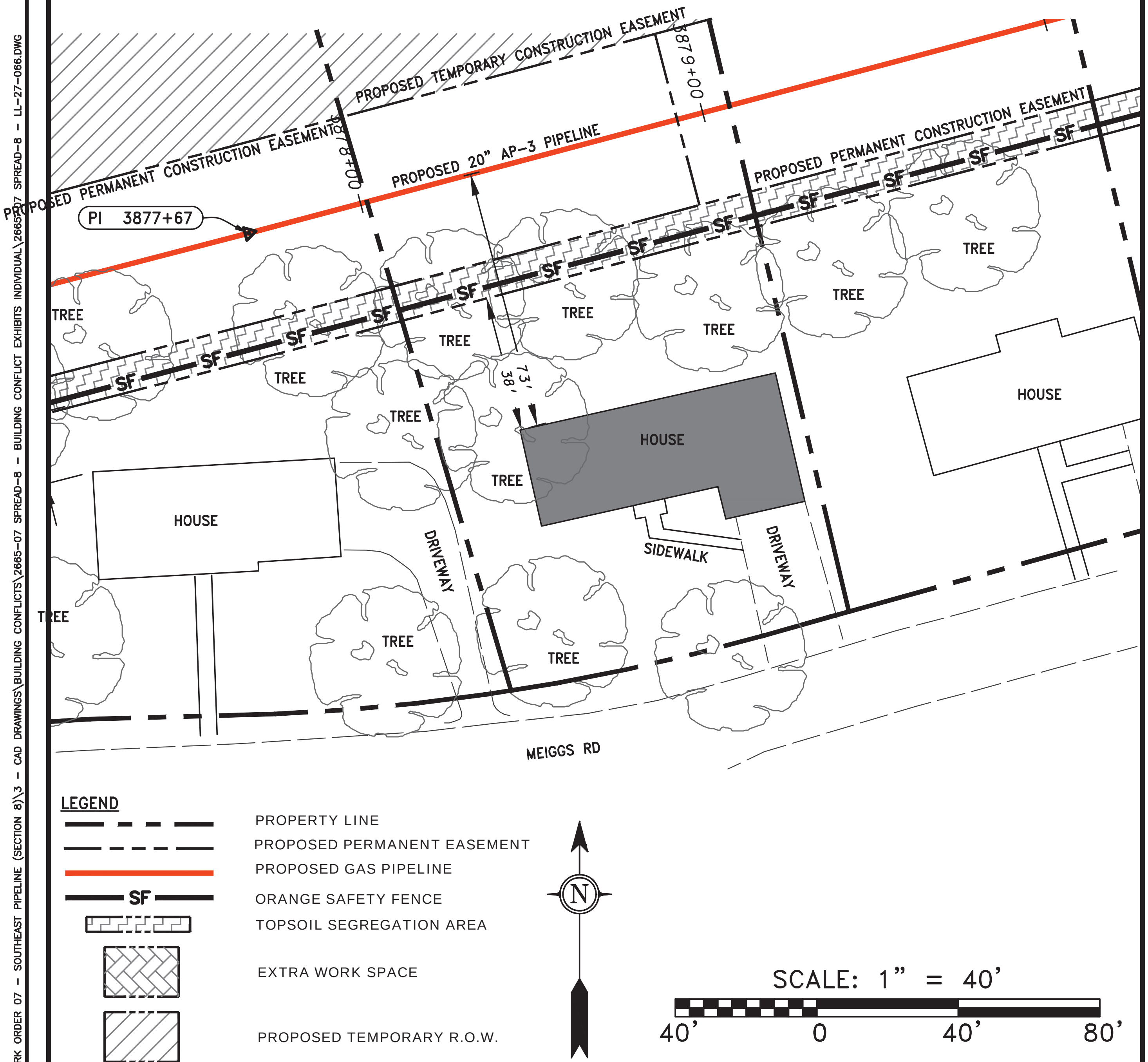
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-064
REV -

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-064.DWG

7/18/2016 12:49 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-066
2524 MEIGGS ROAD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343005000210
AP-3 PIPELINE
MILE POST 79.14



GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-066.DWG

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CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

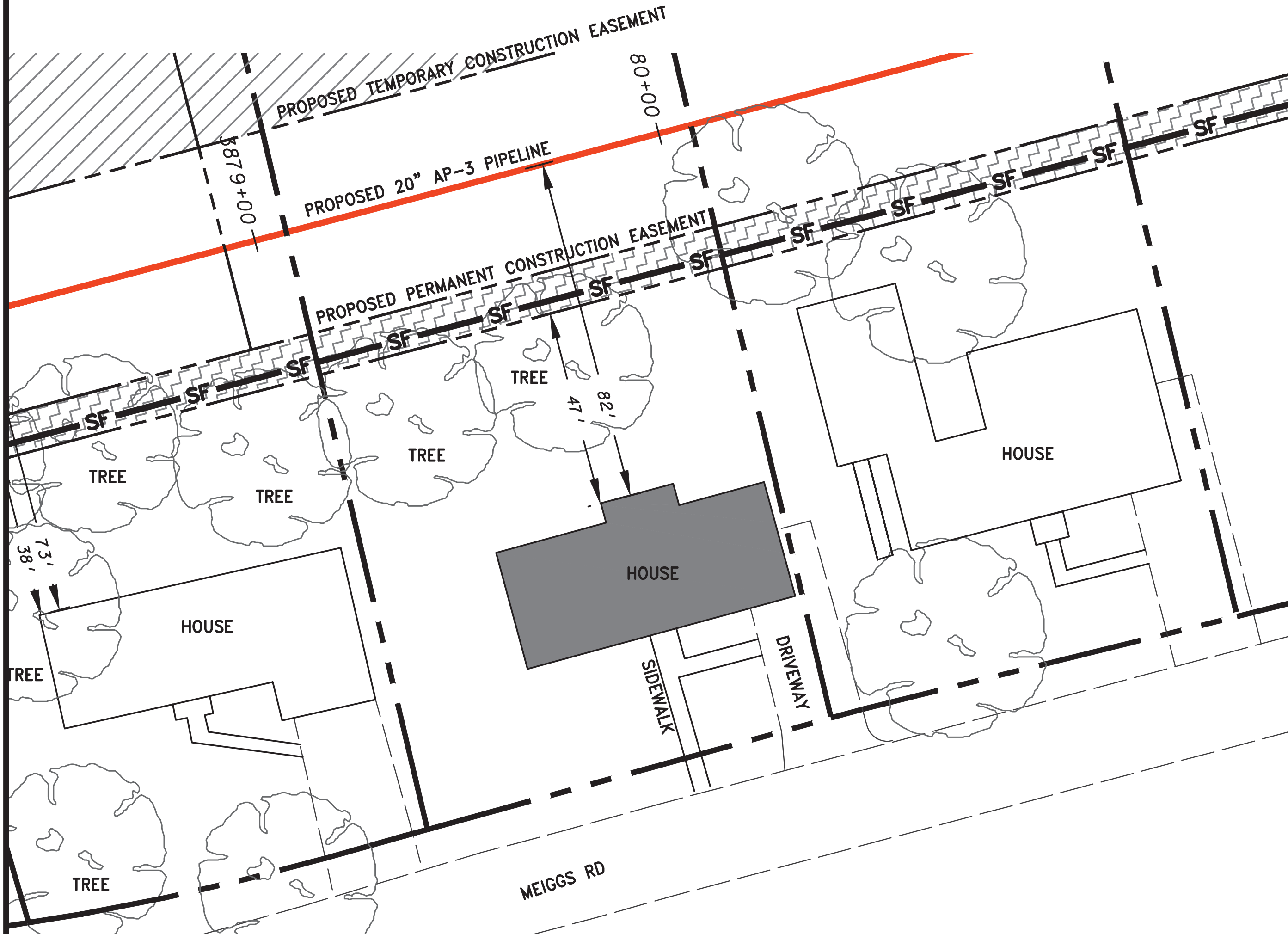
ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/22/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-066			REV –

7/22/2016 2:01 PM

1. CONSTRUCTION TECHNIQUE WILL BE HORIZONTAL DIRECTIONAL DRILL.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-068
2520 MEIGGS ROAD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343005000220
AP-3 PIPELINE
MILE POST 79.15



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
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CANONSBURG, PA 15317
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mbe monaloh basin engineers
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412-788-2433

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/22/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-068 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-068.DWG

7/22/2016 2:25 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

LL-27-070
2516 MEIGGS RD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343005000230
AP-3 PIPELINE
MILE POST 79.20

LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF ORANGE SAFETY FENCE
- TOPSOIL SEGREGATION AREA
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
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724-873-3545

mbe monaloh basin engineers
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PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16

SCALE: AS SHOWN | TASK NO. 01

PROJECT NO./DASH NO. 140468

DRAWING NO. LL-27-070

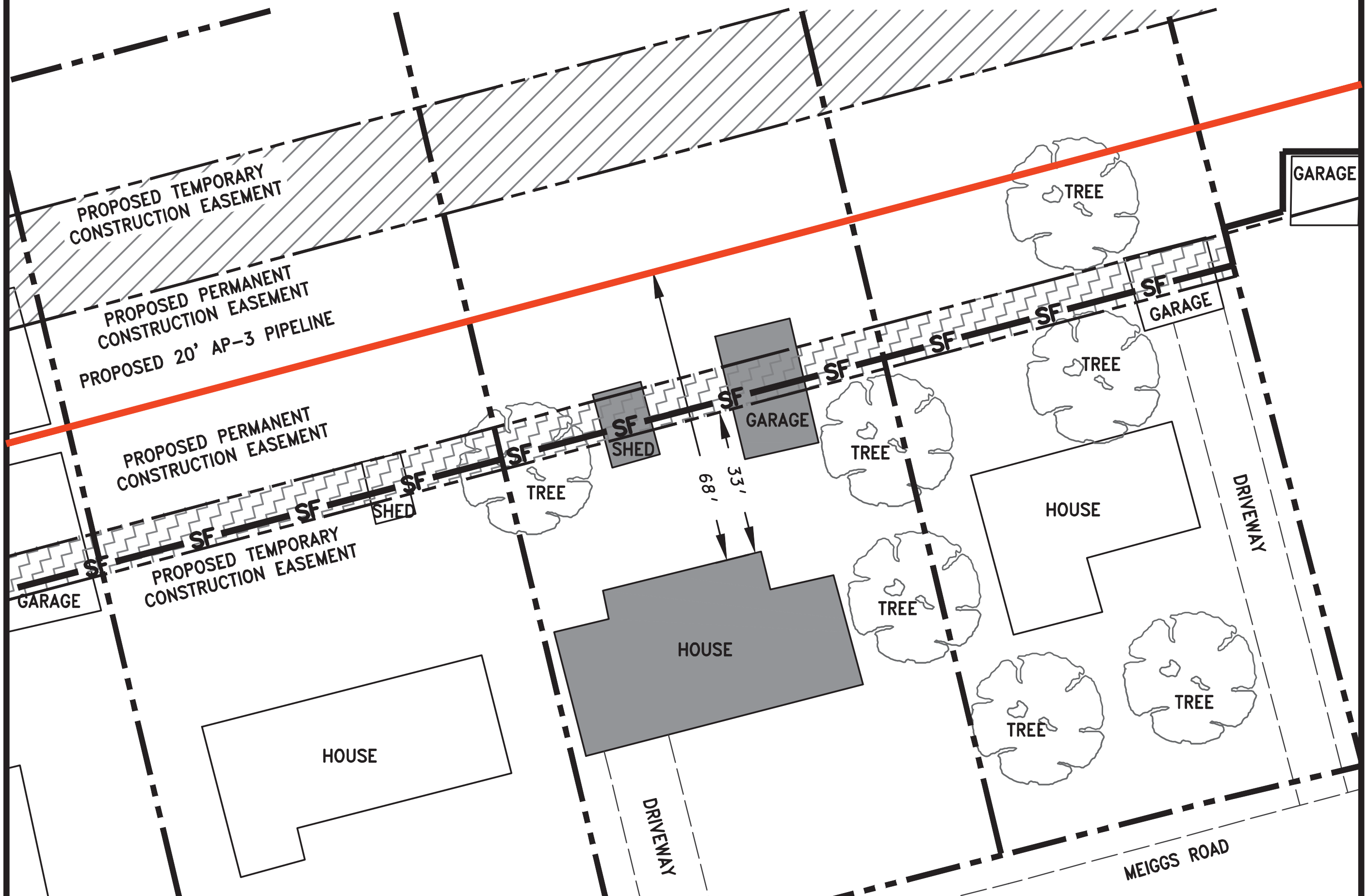
REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-070.DWG

7/18/2016 12:53 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-075
2508 MEIGGS ROAD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343004000250
AP-3 PIPELINE
MILE POST 79.24



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

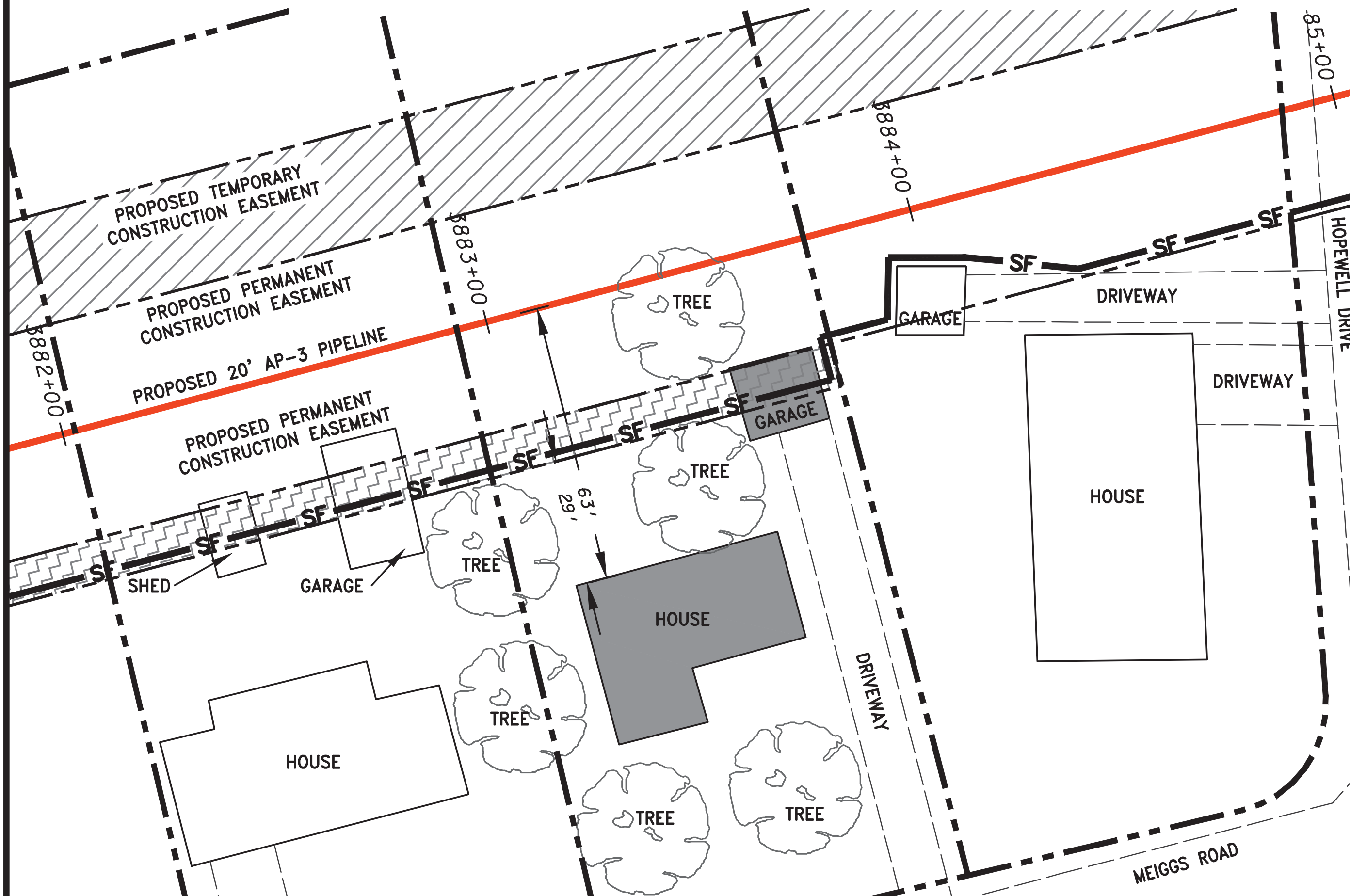
DWN. RDC CHKD. DLH APPD. NET DATE 7/18/16
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-075 REV 1

GAI CAD FILE: J:\2665 -GAI WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-075.DWG

7/18/2016 4:33 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-076
2504 MEIGGS ROAD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343004000260
AP-3 PIPELINE
MILE POST 79.26



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF ORANGE SAFETY FENCE
- TOPSOIL SEGREGATION AREA
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
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724-873-3545

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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

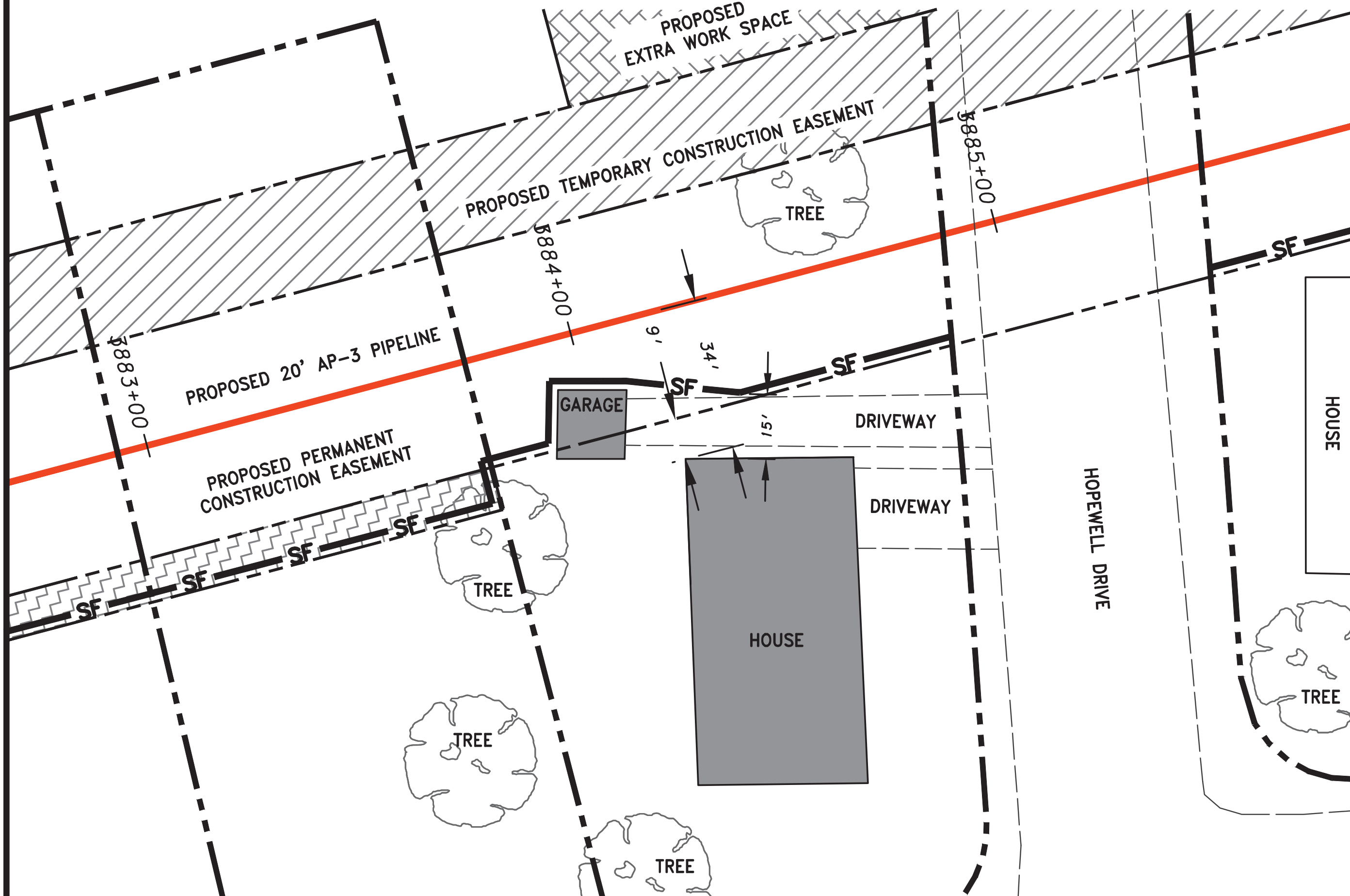
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-076 | 1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-076.DWG

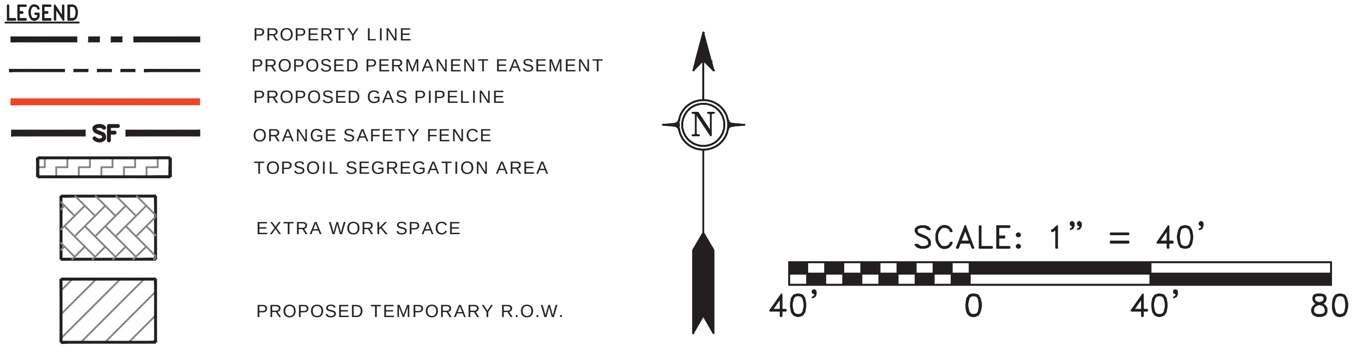
7/18/2016 12:59 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-078
700 HOPEWELL DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 343004000270
AP-3 PIPELINE
MILE POST 79.27



LEGEND



gai consultants
SOUTHPOINTE OFFICE
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CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

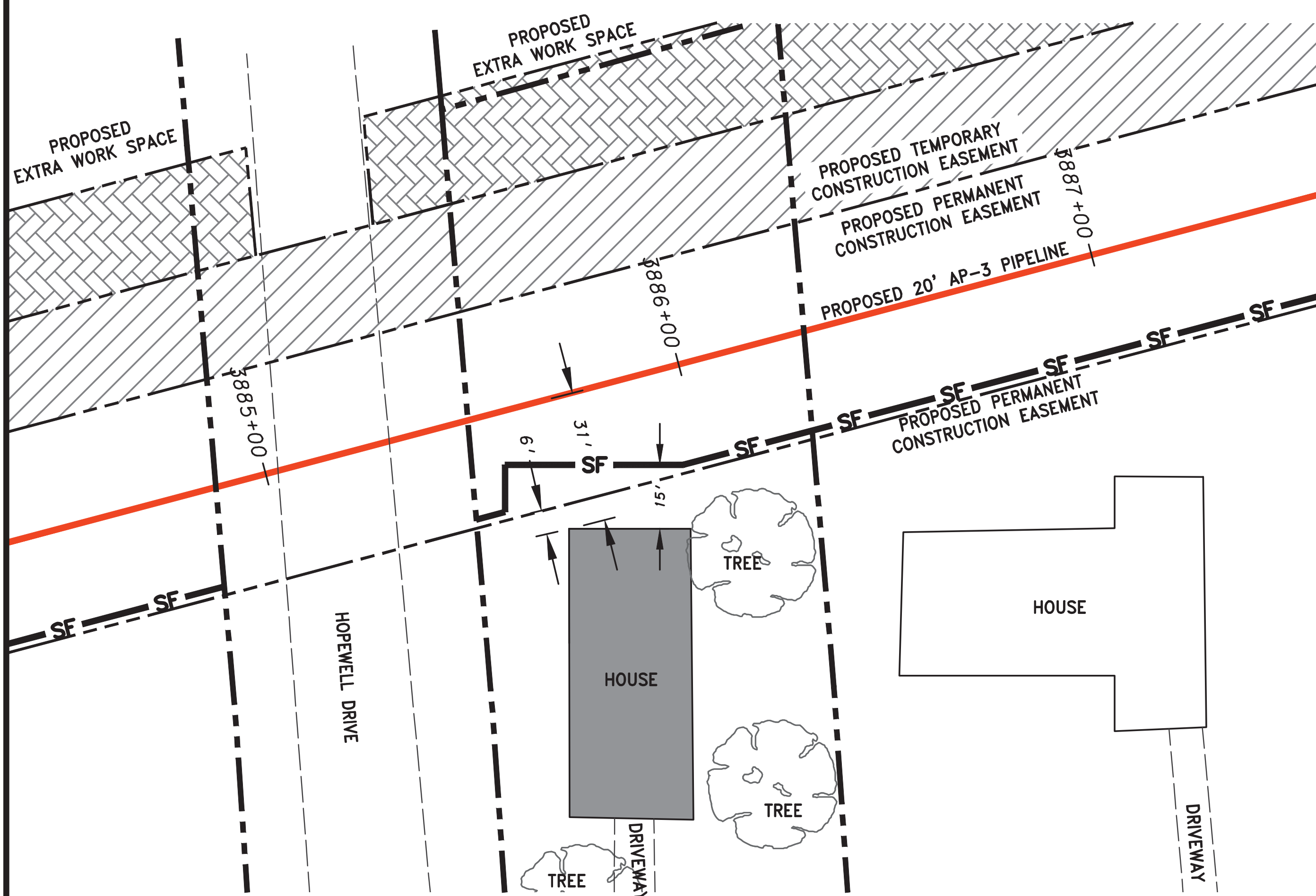
DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-078			REV 1

GAI CAD FILE: J:\2665 -GAI WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-078.DWG

7/18/2016 4:56 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-080
701 HOPEWELL DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343004000290
AP-3 PIPELINE
MILE POST 79.31



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

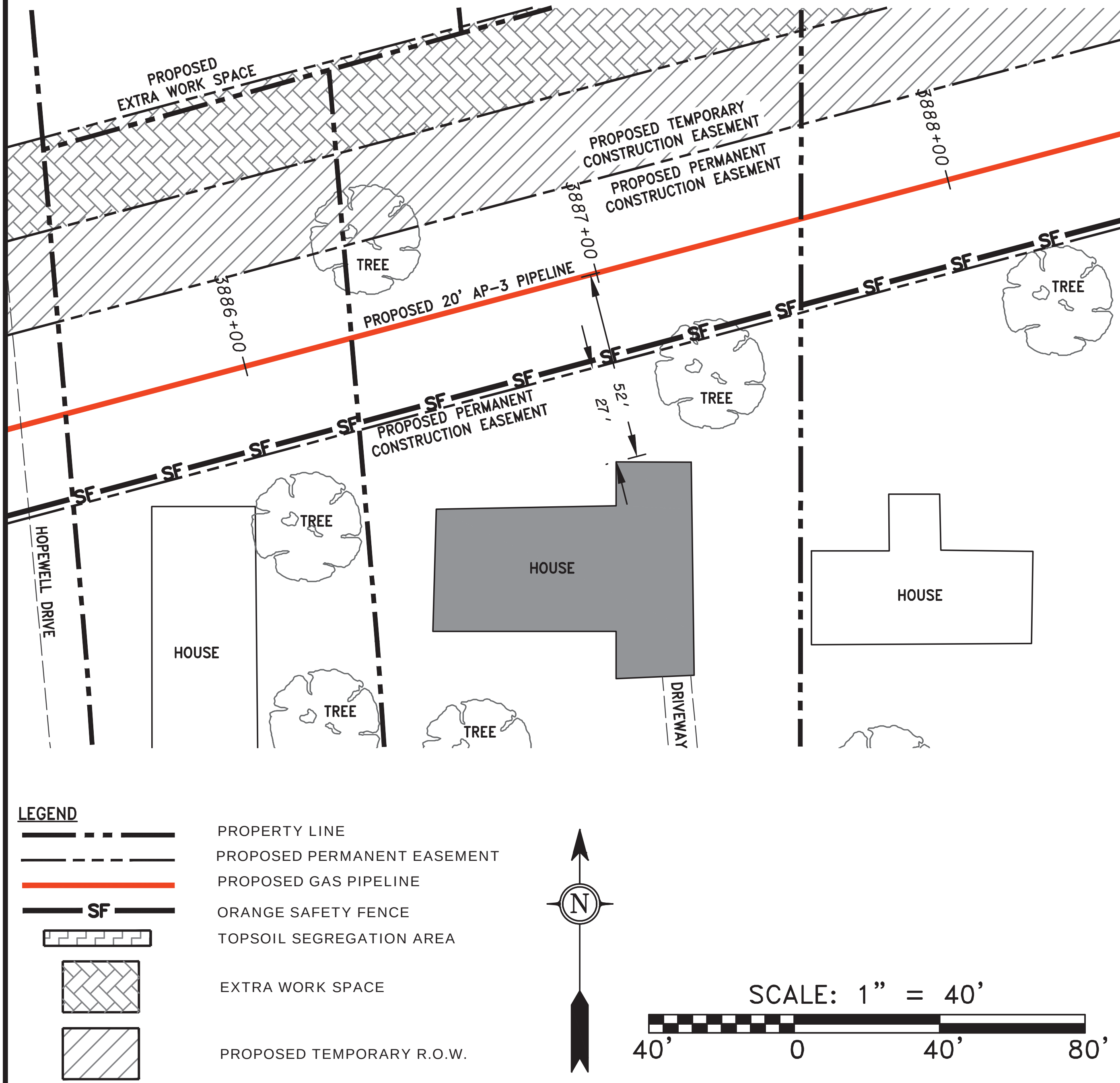
DWN. RDC CHKD. DLH APPD. NET DATE 7/18/16
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-080 1 REV

GAI CAD FILE: J:\2665 -GAI WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-080.DWG

7/18/2016 1:09 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-082
2412 MEIGGS ROAD
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343005000300
AP-3 PIPELINE
MILE POST 79.33



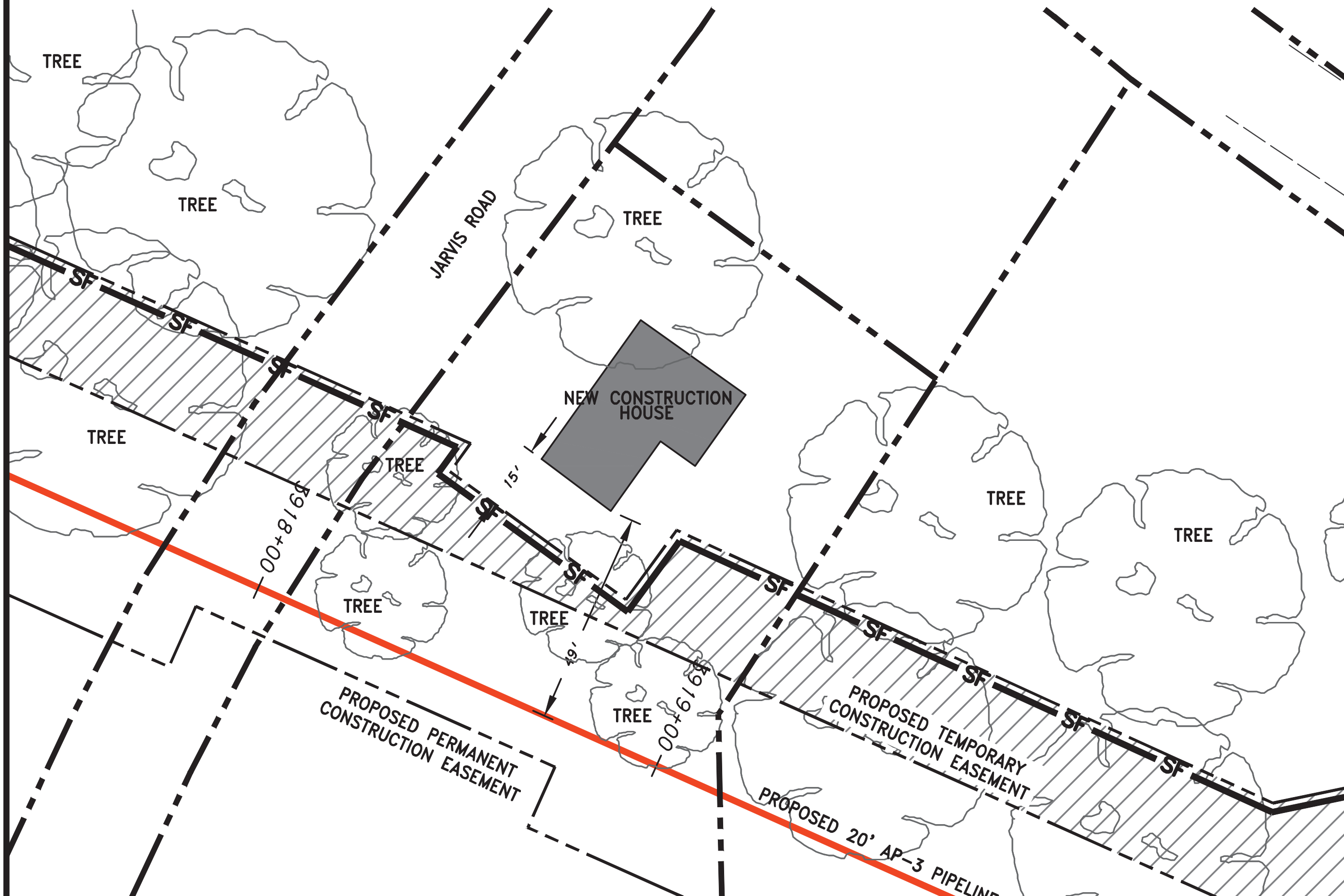
GAI CAD FILE: J:\2665 –GAI\WORK ORDER 07 – SOUTHEAST PIPELINE (SECTION 8)\3 – CAD DRAWINGS\BUILDING CONFLICTS\2665–07 SPREAD–8 – BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665–07 SPREAD–8 – LL–27–082.DWG

gai consultants SOUTHPOINTE OFFICE 6000 TOWN CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	mbe monaloh basin engineers 300 BUSINESS CENTER DRIVE PITTSBURGH, PA 15205 412-788-2433	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES CITY OF CHESAPEAKE, VIRGINIA ATLANTIC COAST PIPELINE LLC C/O DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	DWN. RDC CHKD. DLH APPD. NET DATE 7/18/16 SCALE: AS SHOWN TASK NO. 01 PROJECT NO./DASH NO. 140468 DRAWING NO. LL–27–082 REV 1

7/18/2016 1:13 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-134.1
2525 OCONEE AVE #101
VIRGINIA BEACH, VA 23454-3997
TAX MAP # 0340000001831
AP-3 PIPELINE
MILE POST 79.94



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

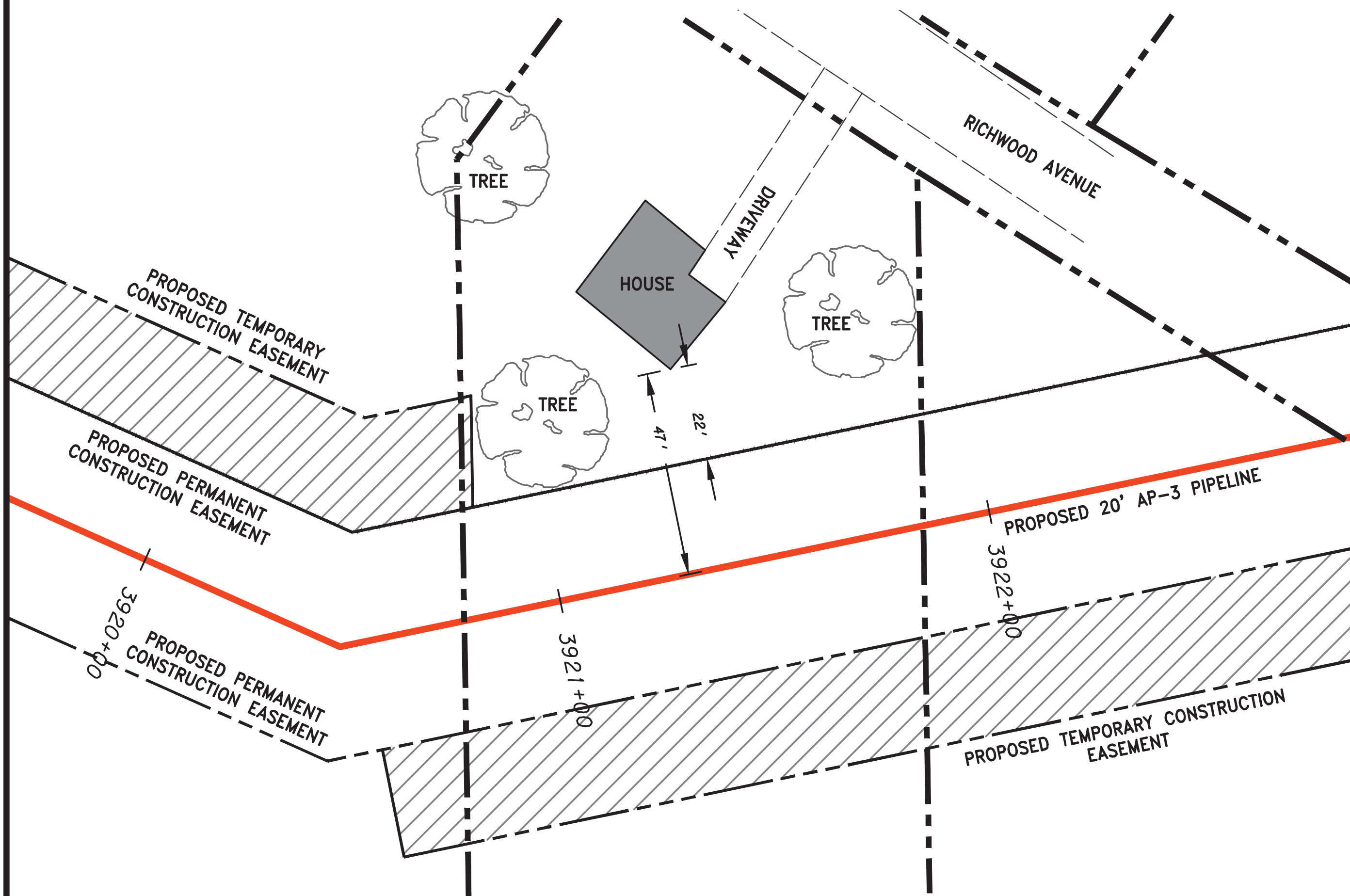
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-134.1 | 1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-134.1.DWG

7/18/2016 1:18 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL–27–138
508 BAYLOR ST. STE. #B3
CHESAPEAKE, VIRGINIA 23320
TAX MAP # 0340000001820
AP–3 PIPELINE
MILE POST 79.99



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724–873–3545

mbe
monaloh basin engineers
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PITTSBURGH, PA 15205
412–788–2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

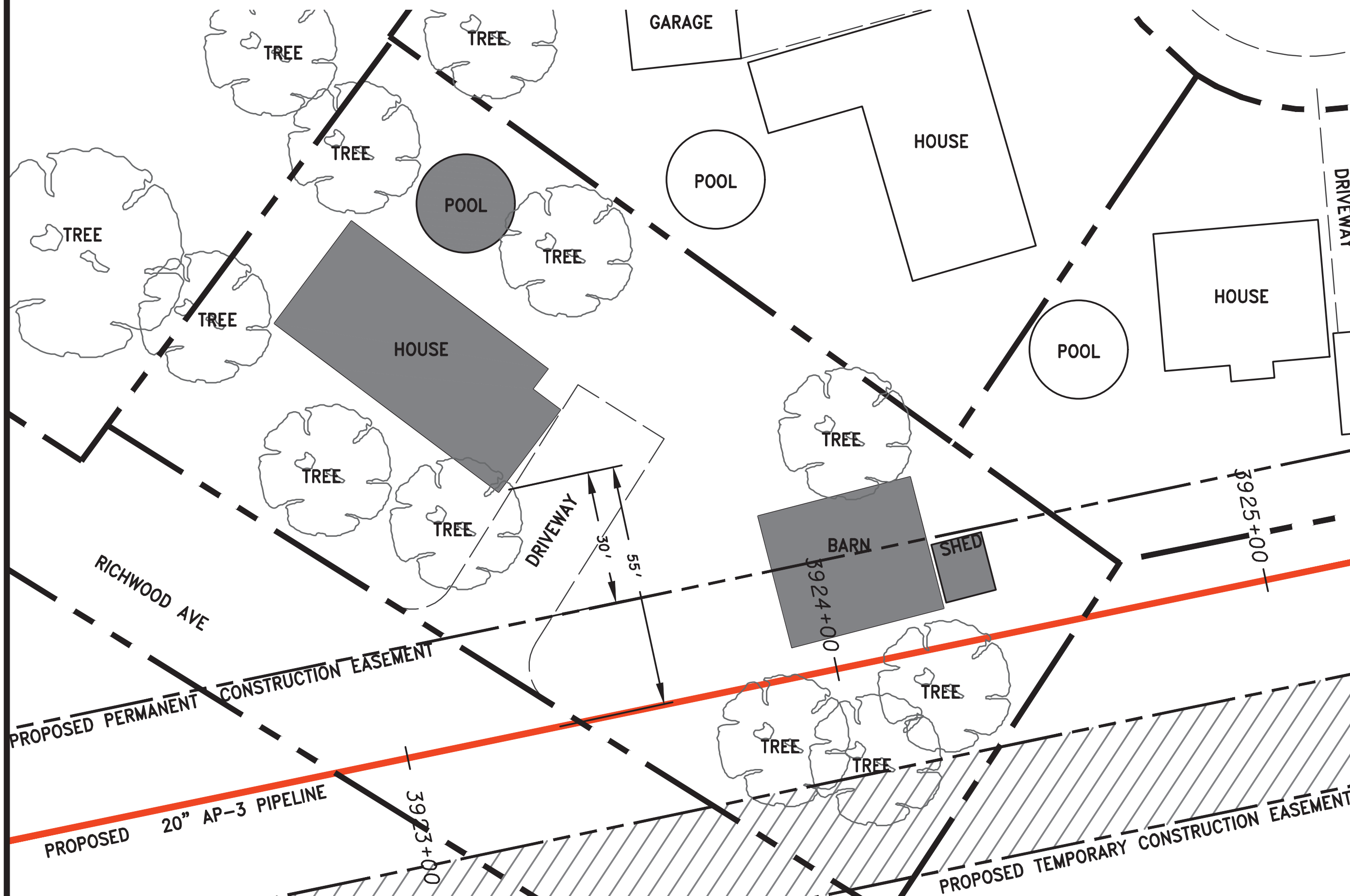
DWN. RDC CHKD. DLH APPD. NET DATE 7/18/16
SCALE: AS SHOWN TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL–27–138 1 REV

GAI CAD FILE: J:\2665 –GAI\WORK ORDER 07 – SOUTHEAST PIPELINE (SECTION 8)\3 – CAD DRAWINGS\BUILDING CONFLICTS\2665–07 SPREAD–8 – BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665–07 SPREAD–8 – LL–27–138.DWG

7/18/2016 1:32 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-137-A002
PSC 814 #524
FPO, AE 09865-9998
TAX MAP # 0343013000001
AP-3 PIPELINE
MILE POST 80.04



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
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412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

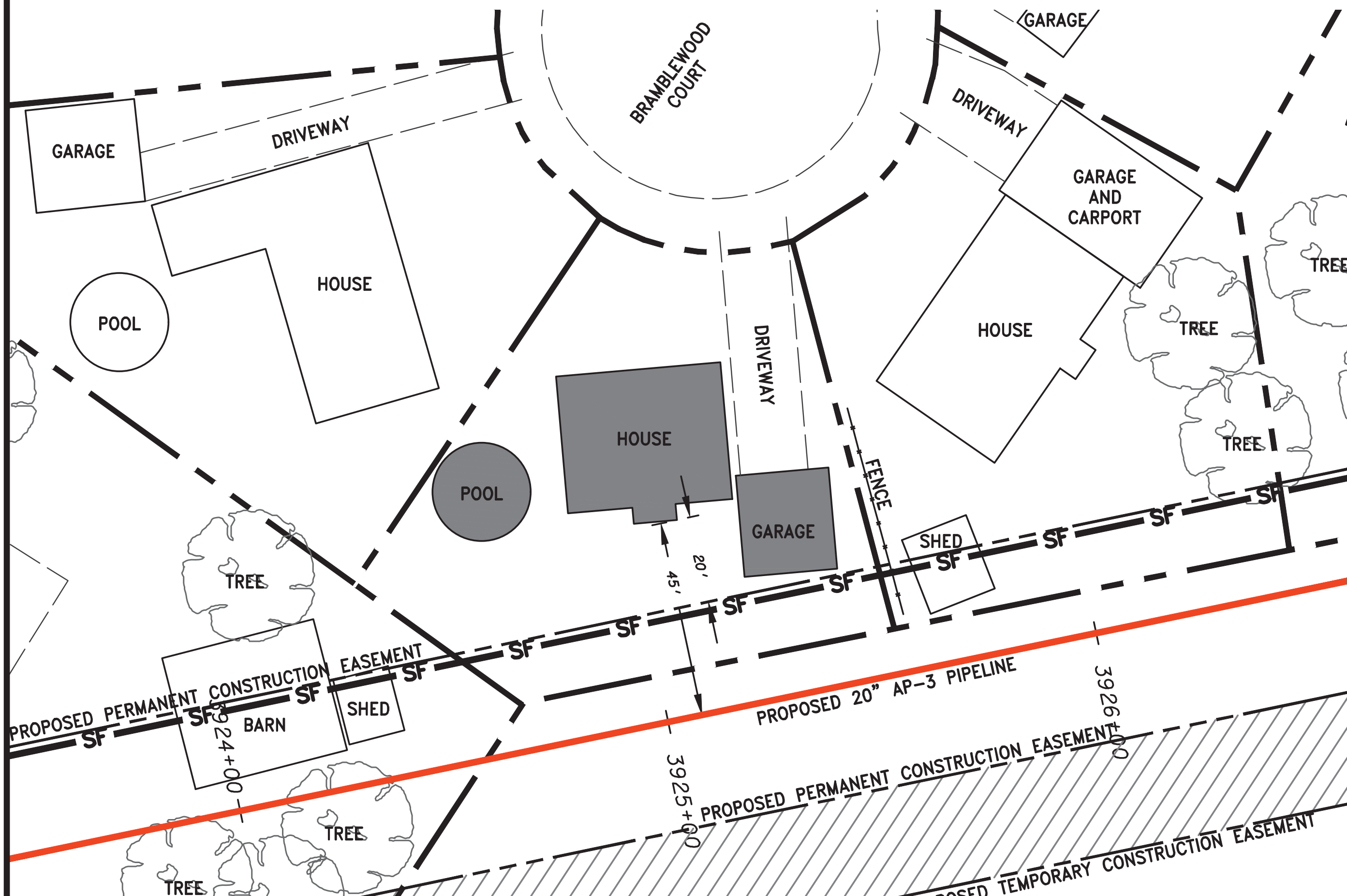
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-137-A002 REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-137-A002.DWG

7/18/2016 1:23 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A001
1201 BRAMBLEWOOD CT
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000090
AP-3 PIPELINE
MILE POST 80.06



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

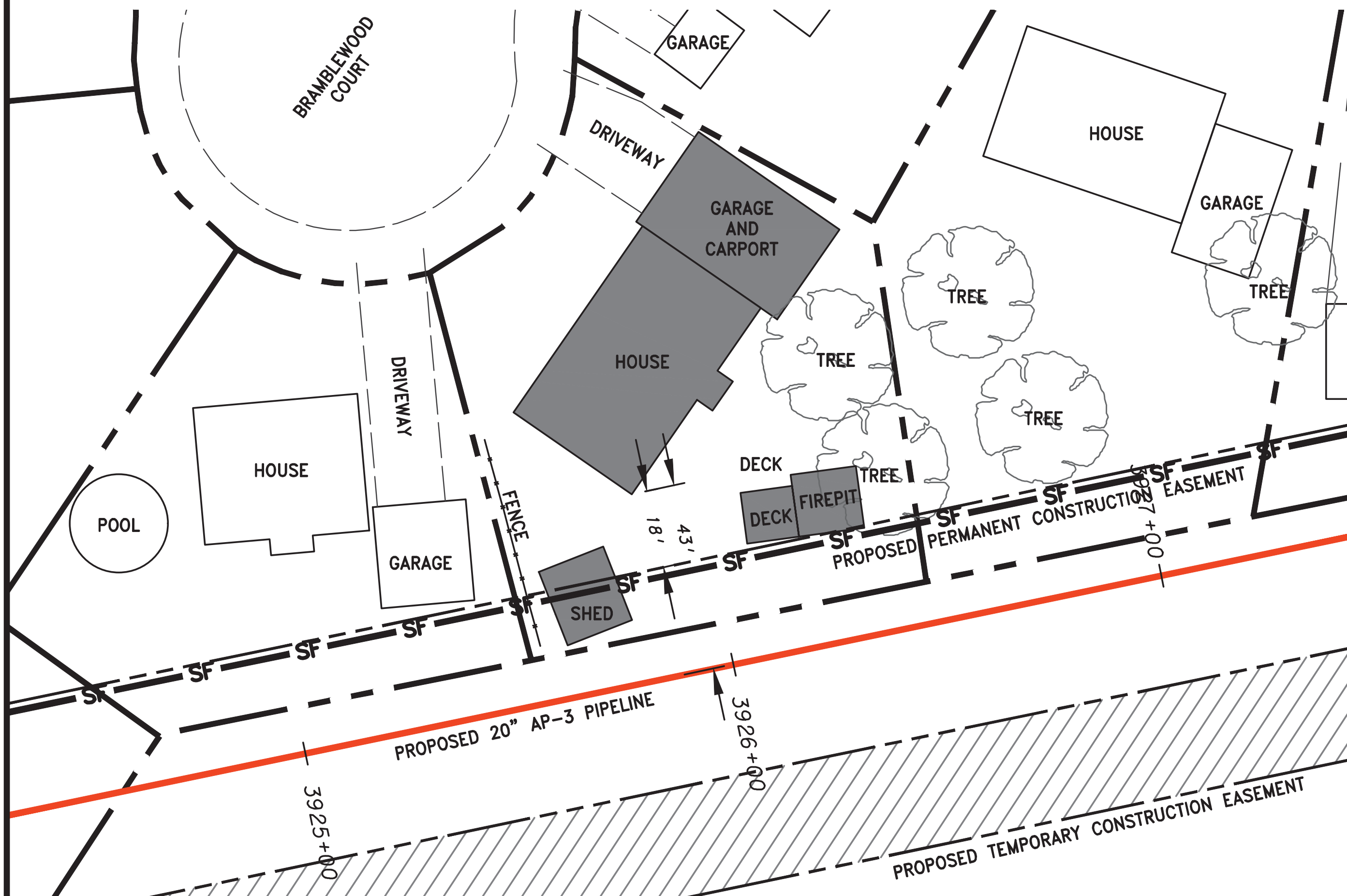
DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A001			REV –

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A001.DWG

7/18/2016 1:39 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A002
1205 BRAMBLEWOOD CT
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000100
AP-3 PIPELINE
MILE POST 80.07



LEGEND

	PROPERTY LINE
	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
SF	ORANGE SAFETY FENCE
	TOPSOIL SEGREGATION AREA
	EXTRA WORK SPACE
	PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

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SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

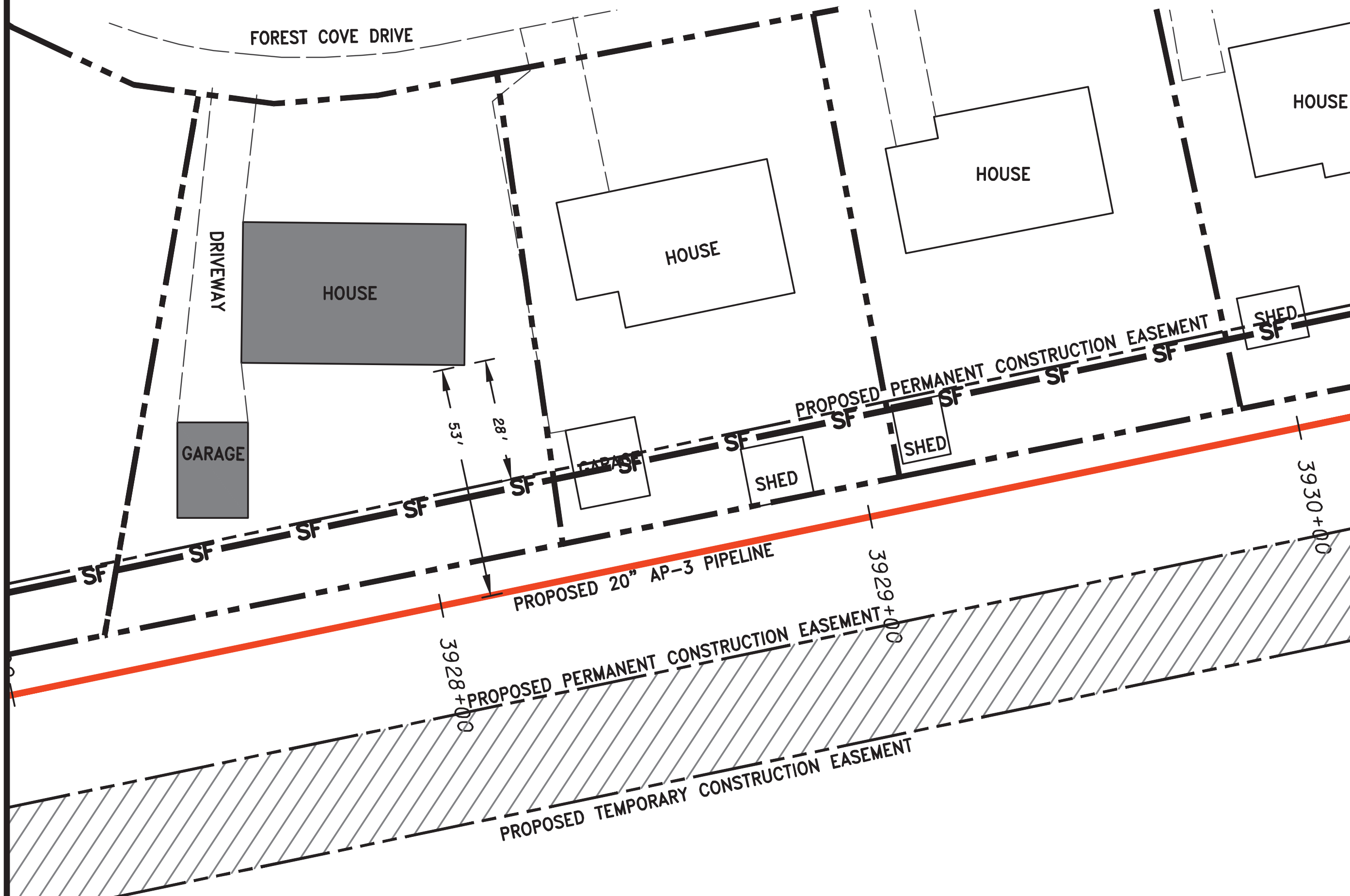
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A002 | REV -

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A002.DWG

7/18/2016 1:45 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A005
1537 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000130
AP-3 PIPELINE
MILE POST 80.11



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01

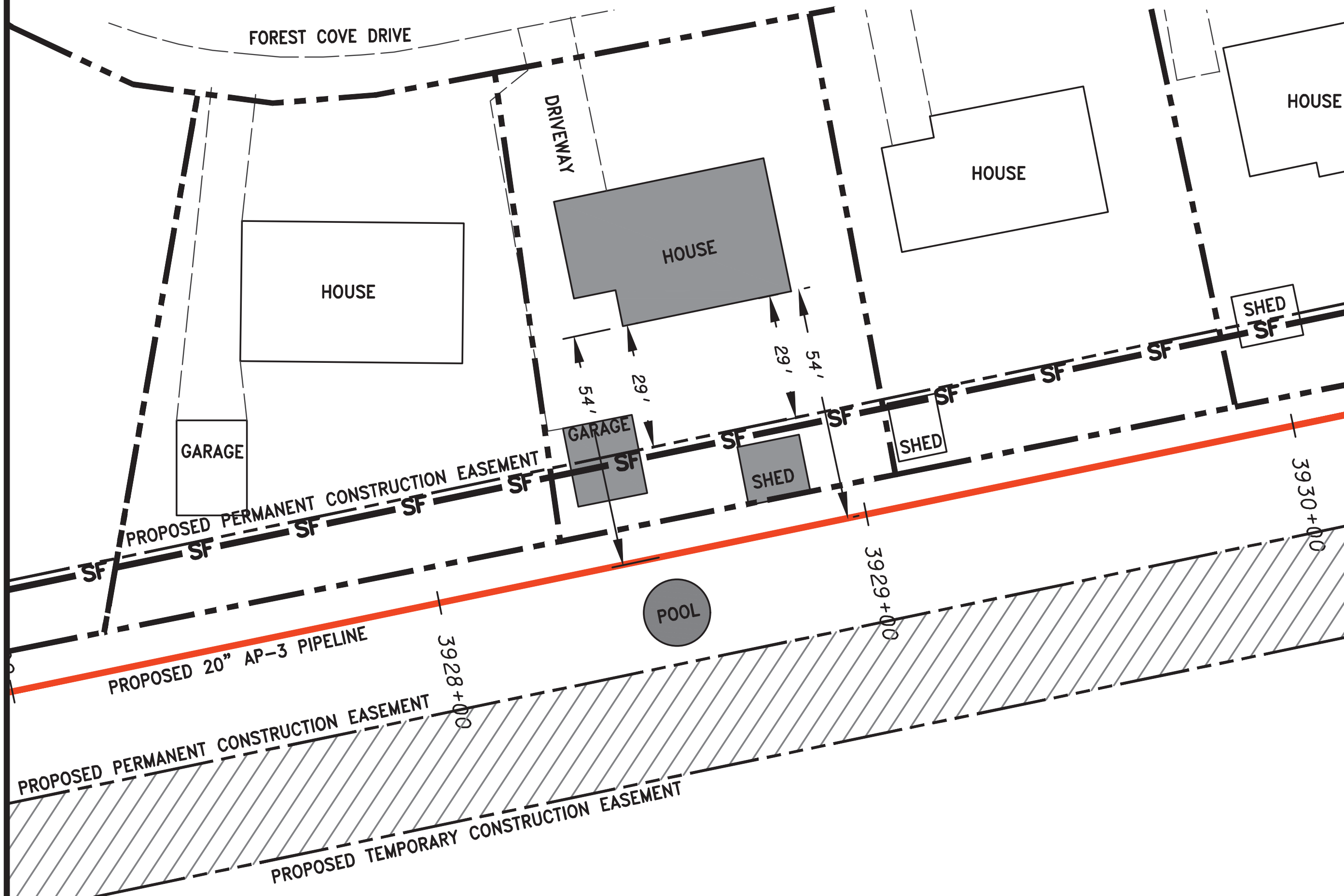
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A005 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A005.DWG

7/18/2016 1:48 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL–27–142–A007
322 EVANSVILLE RD
BERWICK, PA 18603
TAX MAP # 0343013000140
AP–3 PIPELINE
MILE POST 80.13



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724–873–3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412–788–2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

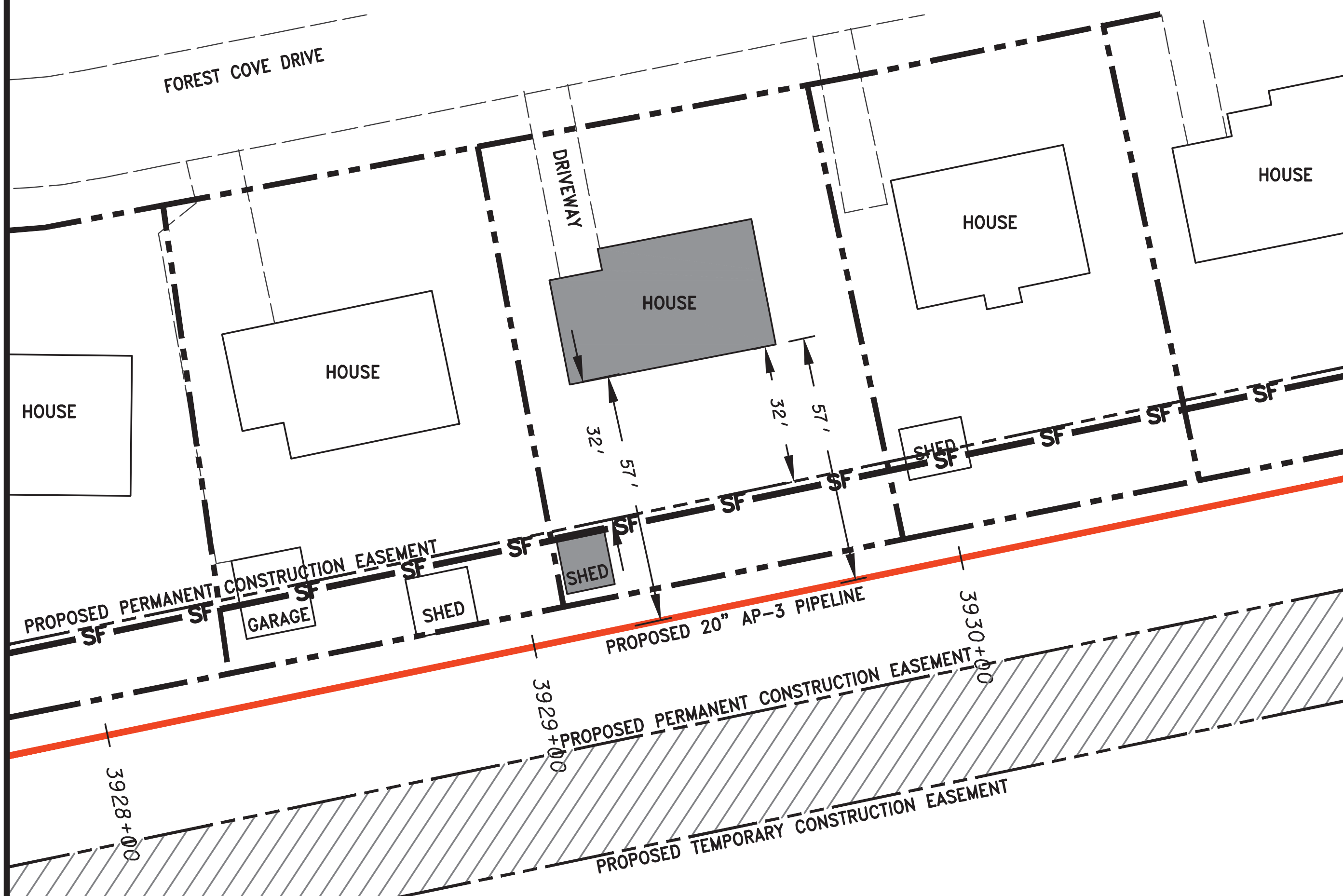
DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL–27–142–A007			1 REV

GAI CAD FILE: J:\2665 –GAI\WORK ORDER 07 – SOUTHEAST PIPELINE (SECTION 8)\3 – CAD DRAWINGS\BUILDING CONFLICTS\2665–07 SPREAD–8 – BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665–07 SPREAD–8 – LL–27–142–A007.DWG

7/18/2016 1:53 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A009
1533 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000150
AP-3 PIPELINE
MILE POST 80.14



LEGEND

- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- SF — ORANGE SAFETY FENCE
- TOPSOIL SEGREGATION AREA
- EXTRA WORK SPACE
- PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01

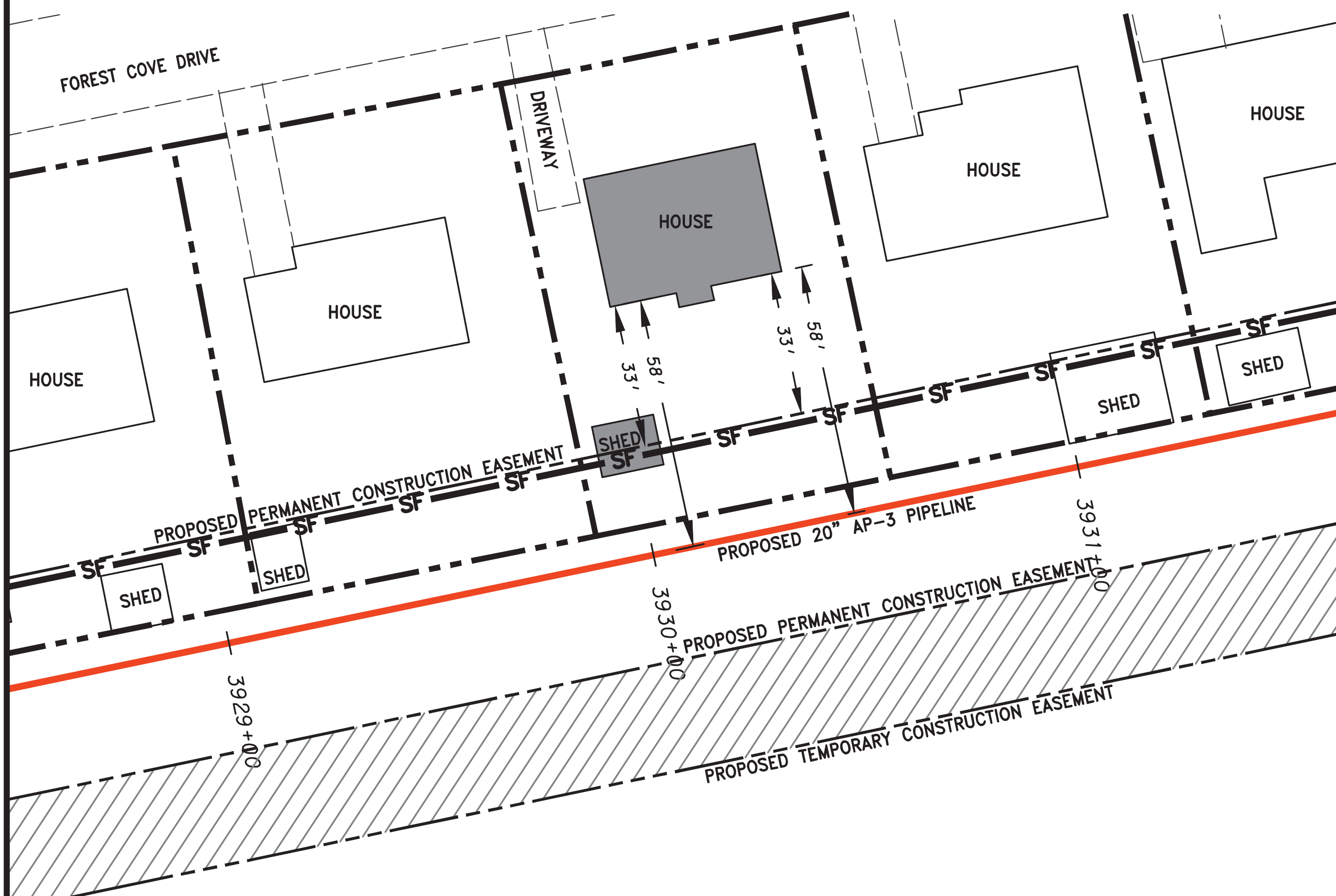
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A009 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A009.DWG

7/18/2016 1:59 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A011
1531 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000160
AP-3 PIPELINE
MILE POST 80.16



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
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C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

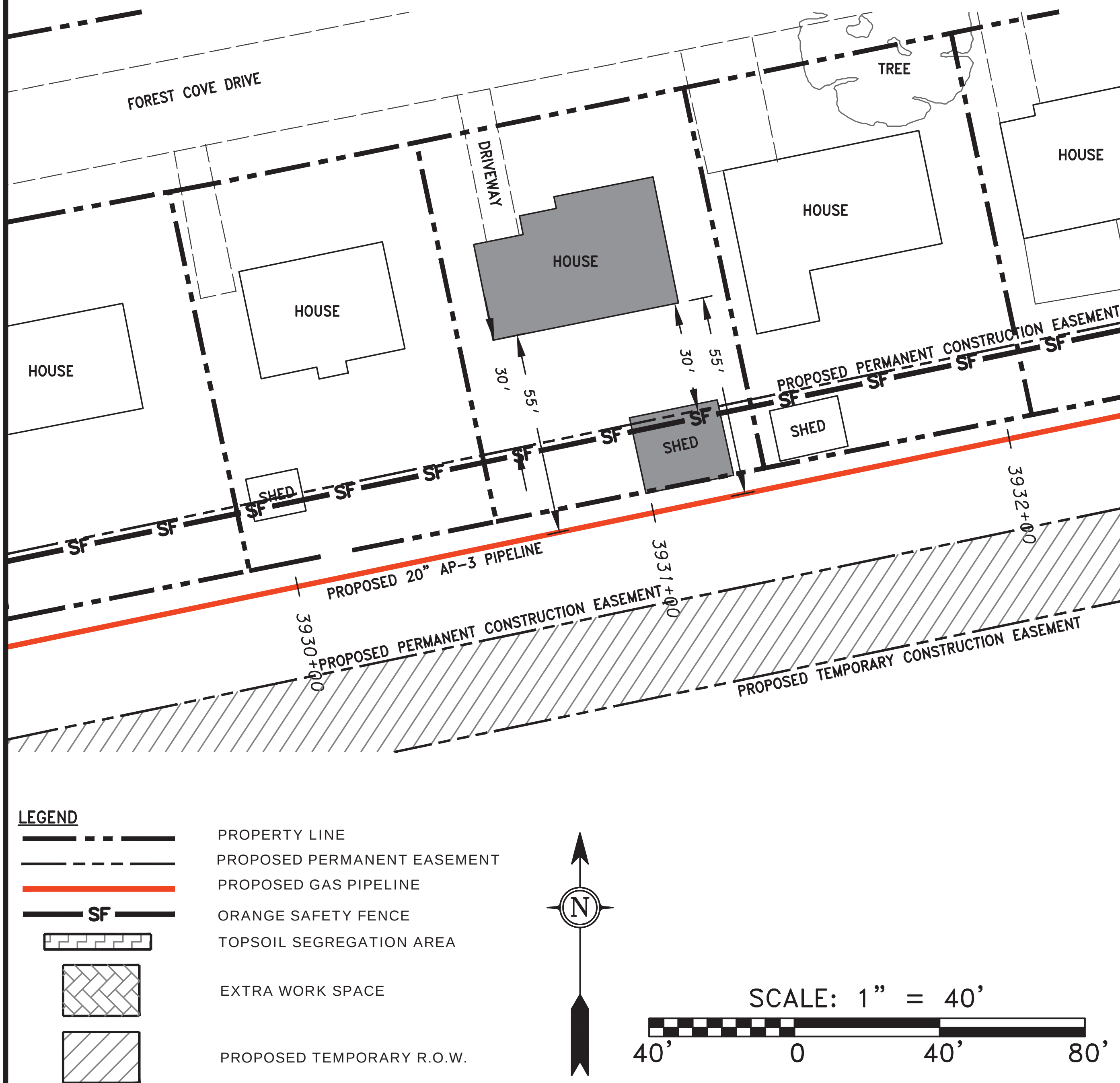
DWN. RDC	CHKD. DLH	APPD. NET	DATE 7/18/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A011			REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A011.DWG

7/18/2016 2:01 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A013
1529 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000170
AP-3 PIPELINE
MILE POST 80.17



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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

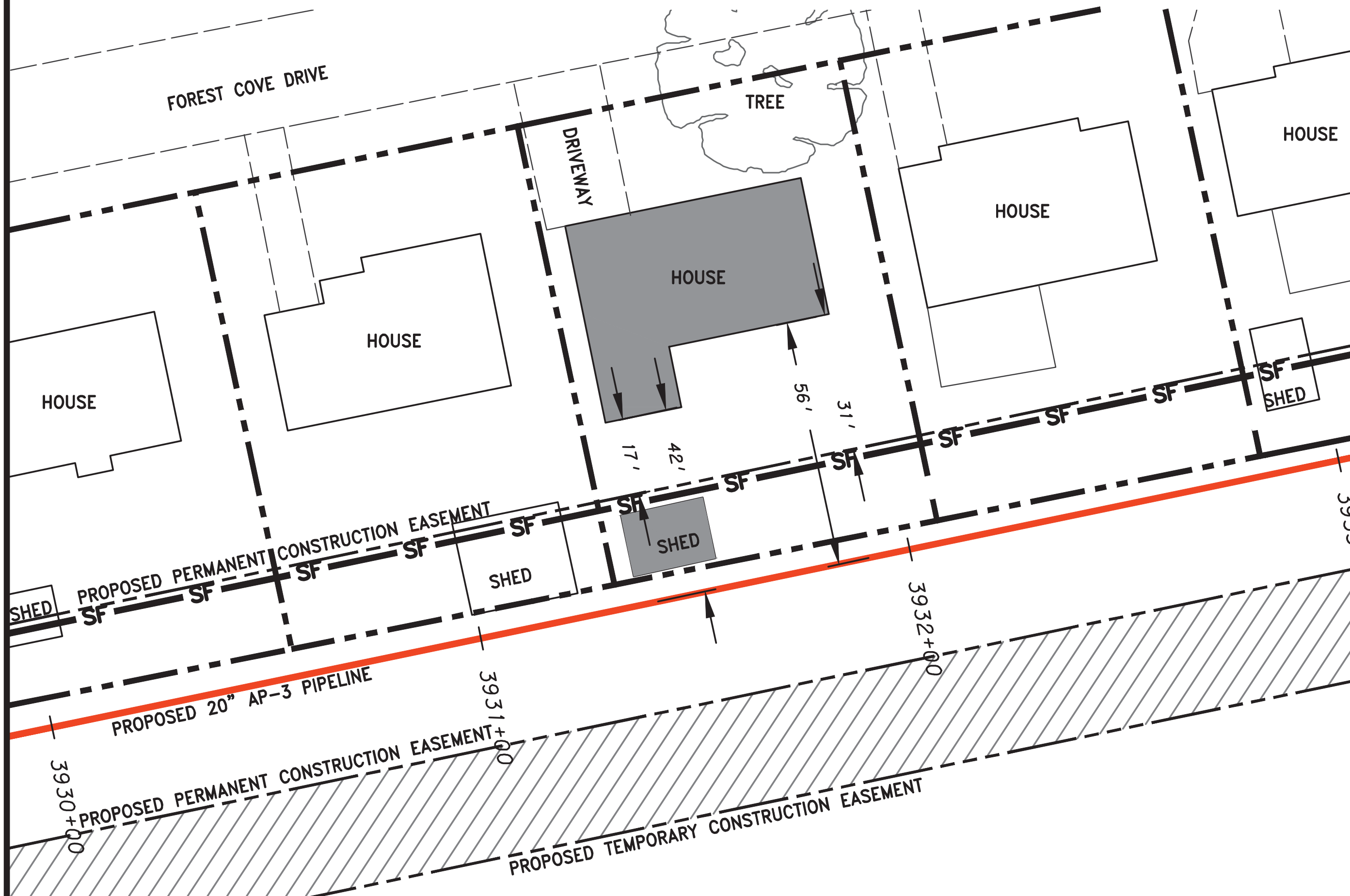
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A013 | REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A013.DWG

7/18/2016 2:03 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A015
1527 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343013000180
AP-3 PIPELINE
MILE POST 80.19



LEGEND

PROPERTY LINE

PROPOSED PERMANENT EASEMENT

PROPOSED GAS PIPELINE

SF ORANGE SAFETY FENCE

TOPSOIL SEGREGATION AREA

EXTRA WORK SPACE

PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/23/2016
SCALE: AS SHOWN			TASK NO. 01

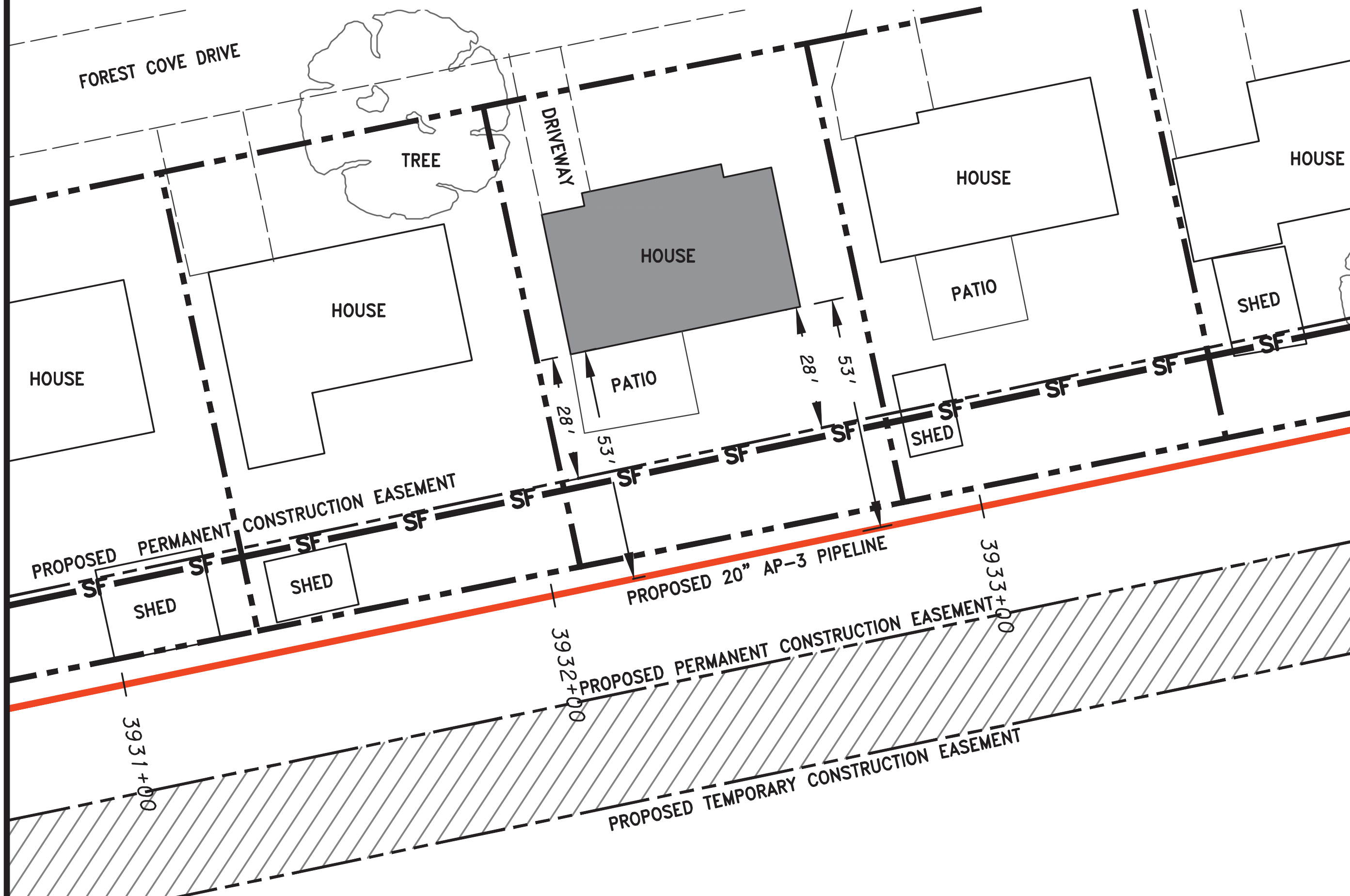
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A015 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A015.DWG

6/28/2016 1:06 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A016
1525 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000010
AP-3 PIPELINE
MILE POST 80.20



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
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CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

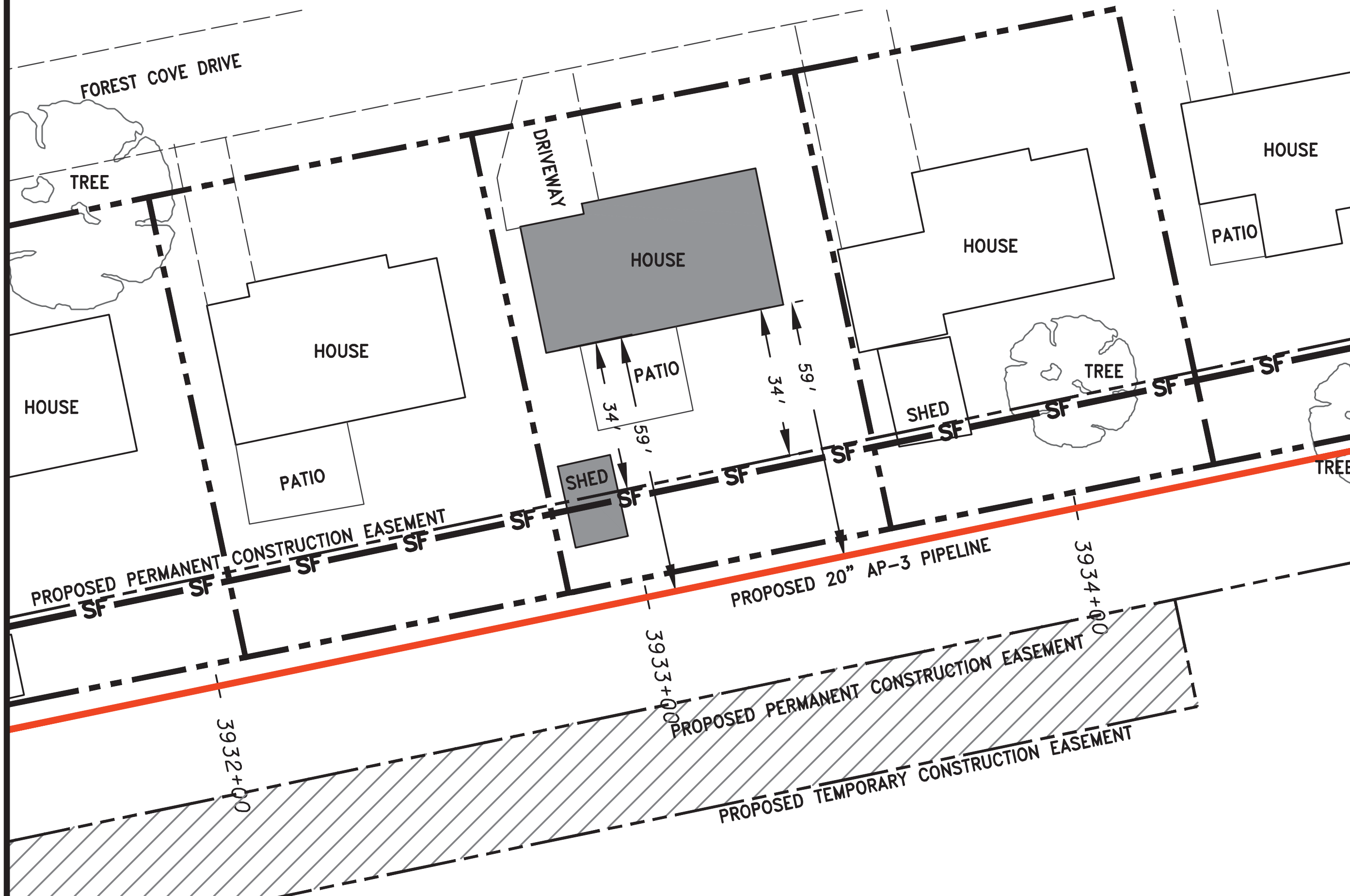
DWN. RDC | CHKD. DLH | APPD. NET | DATE 6/23/2016
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A016 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A016.DWG

6/28/2016 1:04 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWELINE R/W.

LL-27-142-A018
1523 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000020
AP-3 PIPELINE
MILE POST 80.21



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
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CANONSBURG, PA 15317
724-873-3545

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monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

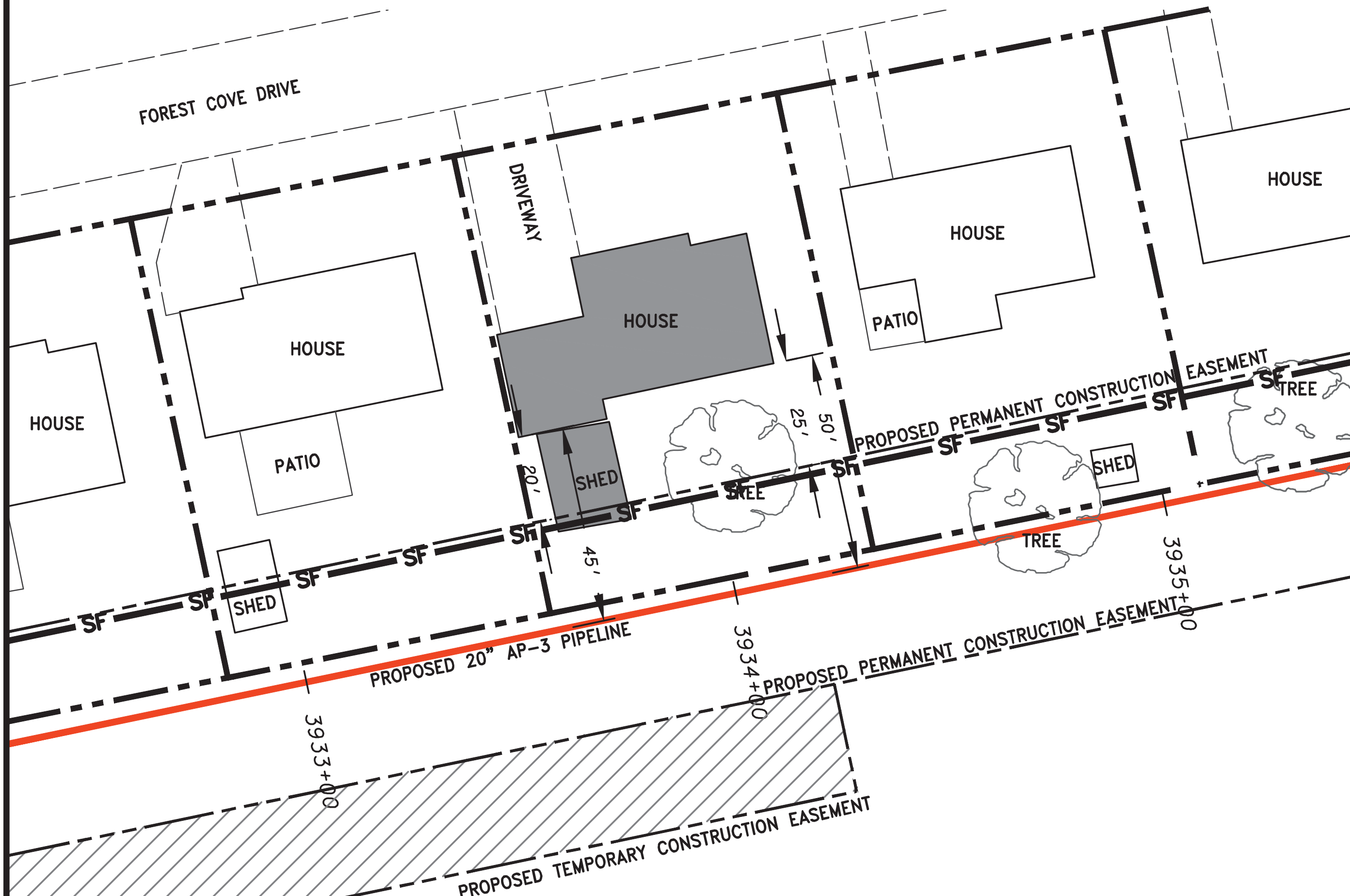
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A018 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A018.DWG

7/18/2016 2:07 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A020
1521 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000030
AP-3 PIPELINE
MILE POST 80.23



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
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PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

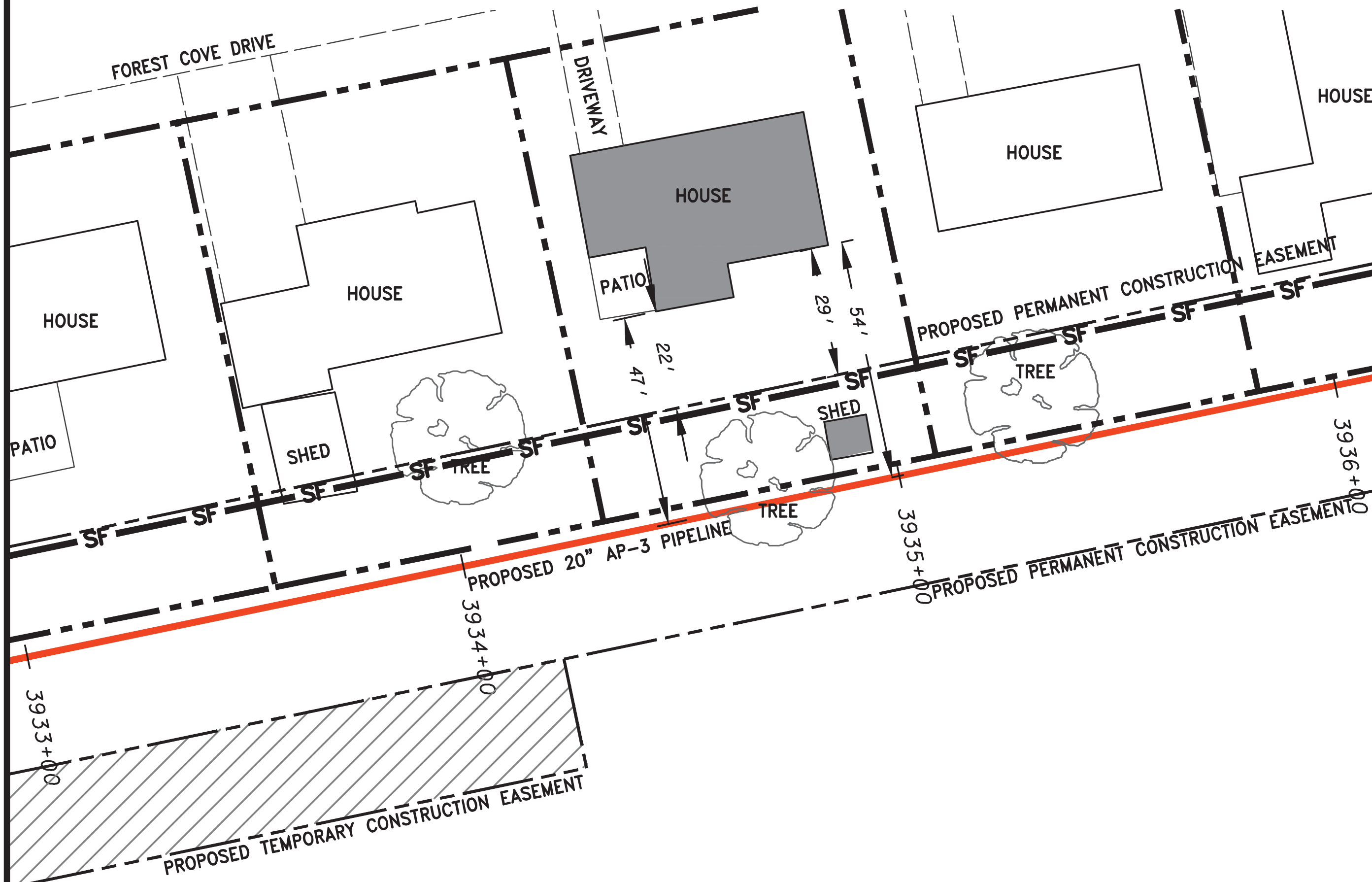
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/23/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A020			1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A020.DWG

6/28/2016 1:02 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A022
1519 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000040
AP-3 PIPELINE
MILE POST 80.24



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

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mbe monaloh basin engineers
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PITTSBURGH, PA 15205
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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

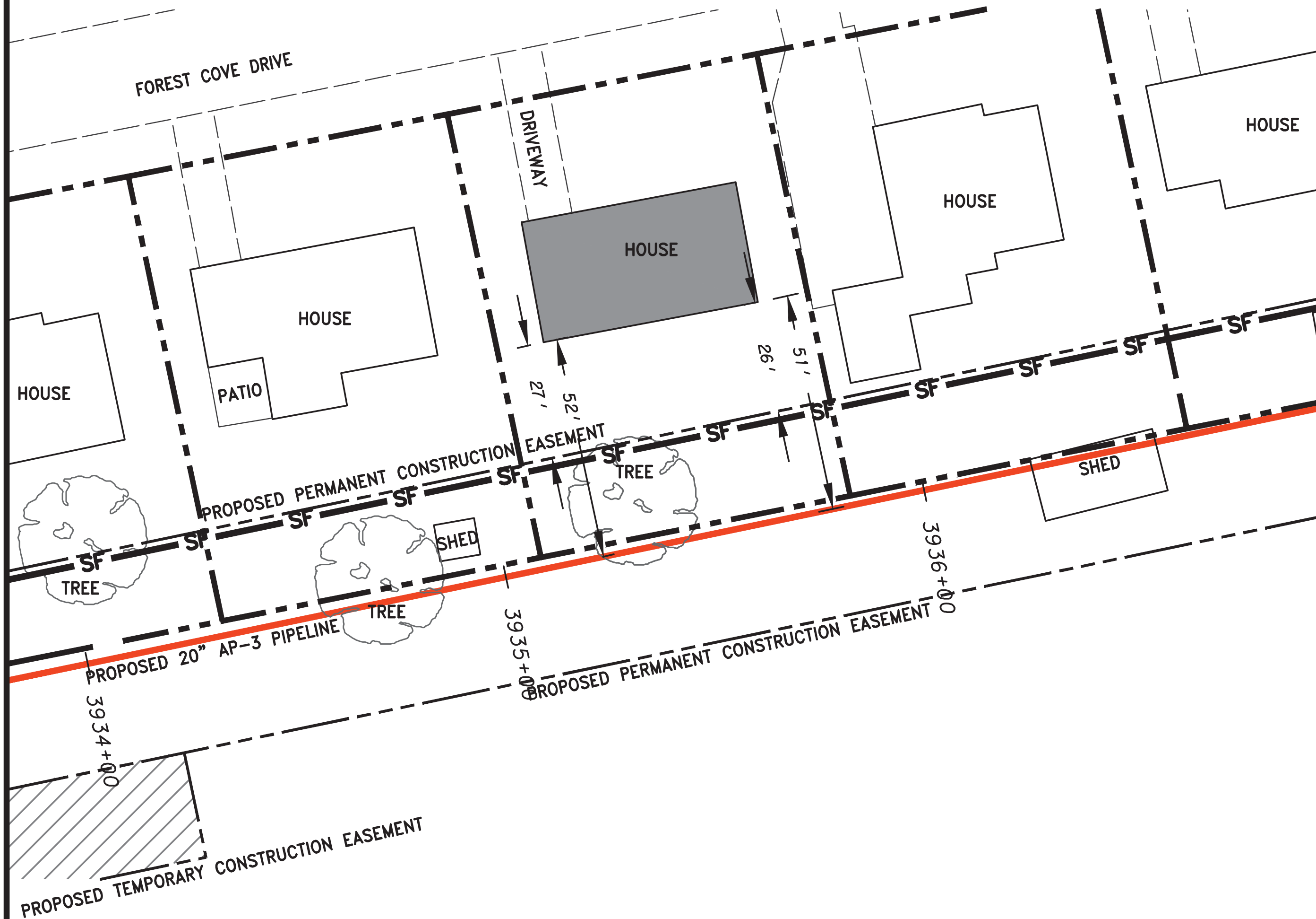
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A022 1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A022.DWG

7/18/2016 2:11 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A024
1517 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000050
AP-3 PIPELINE
MILE POST 80.26



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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6000 TOWN CENTER BLVD.
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724-873-3545

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monaloh basin engineers
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412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

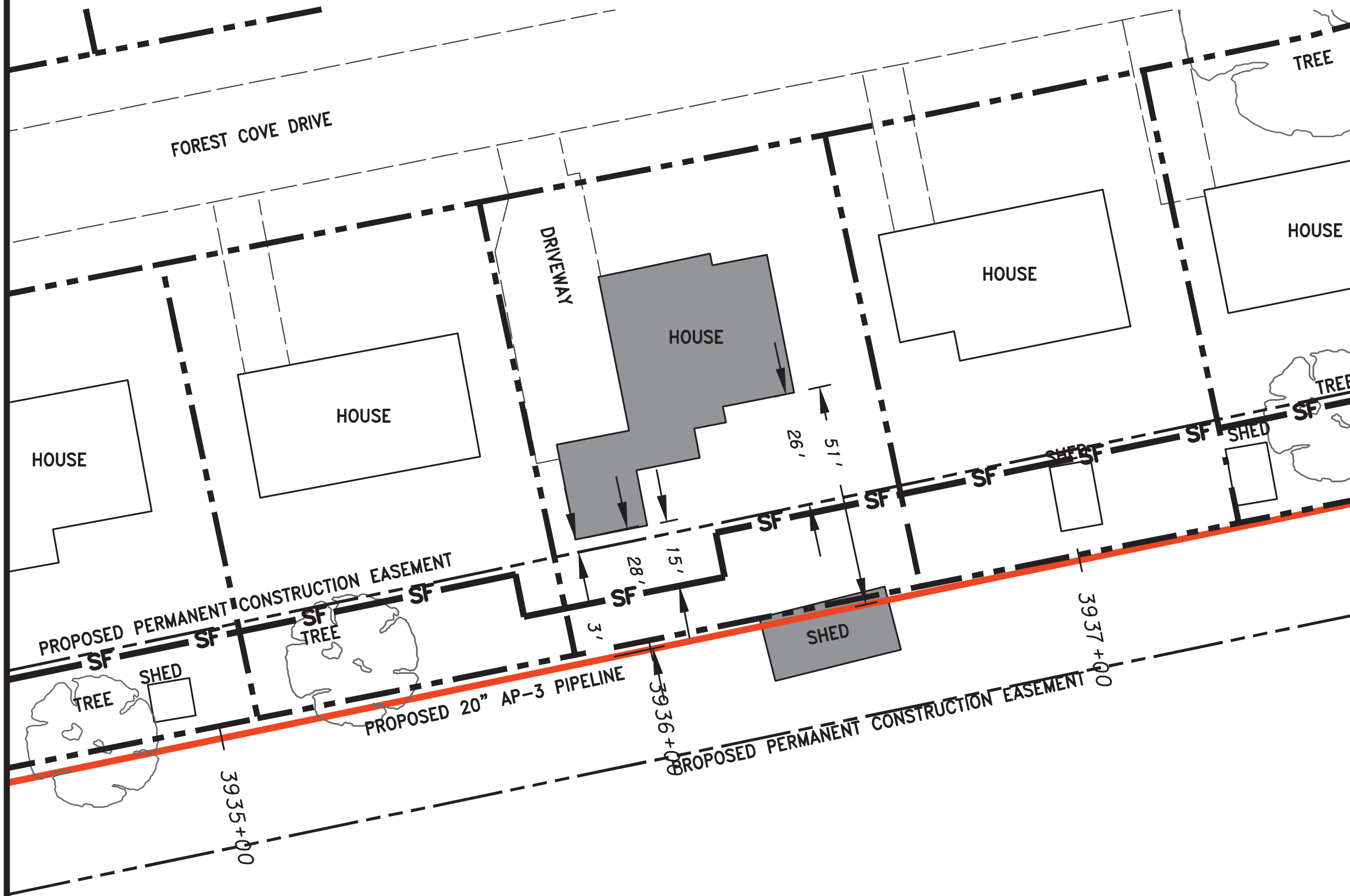
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/23/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A024			1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A024.DWG

6/28/2016 12:59 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A026
1515 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000060
AP-3 PIPELINE
MILE POST 80.27



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe
monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

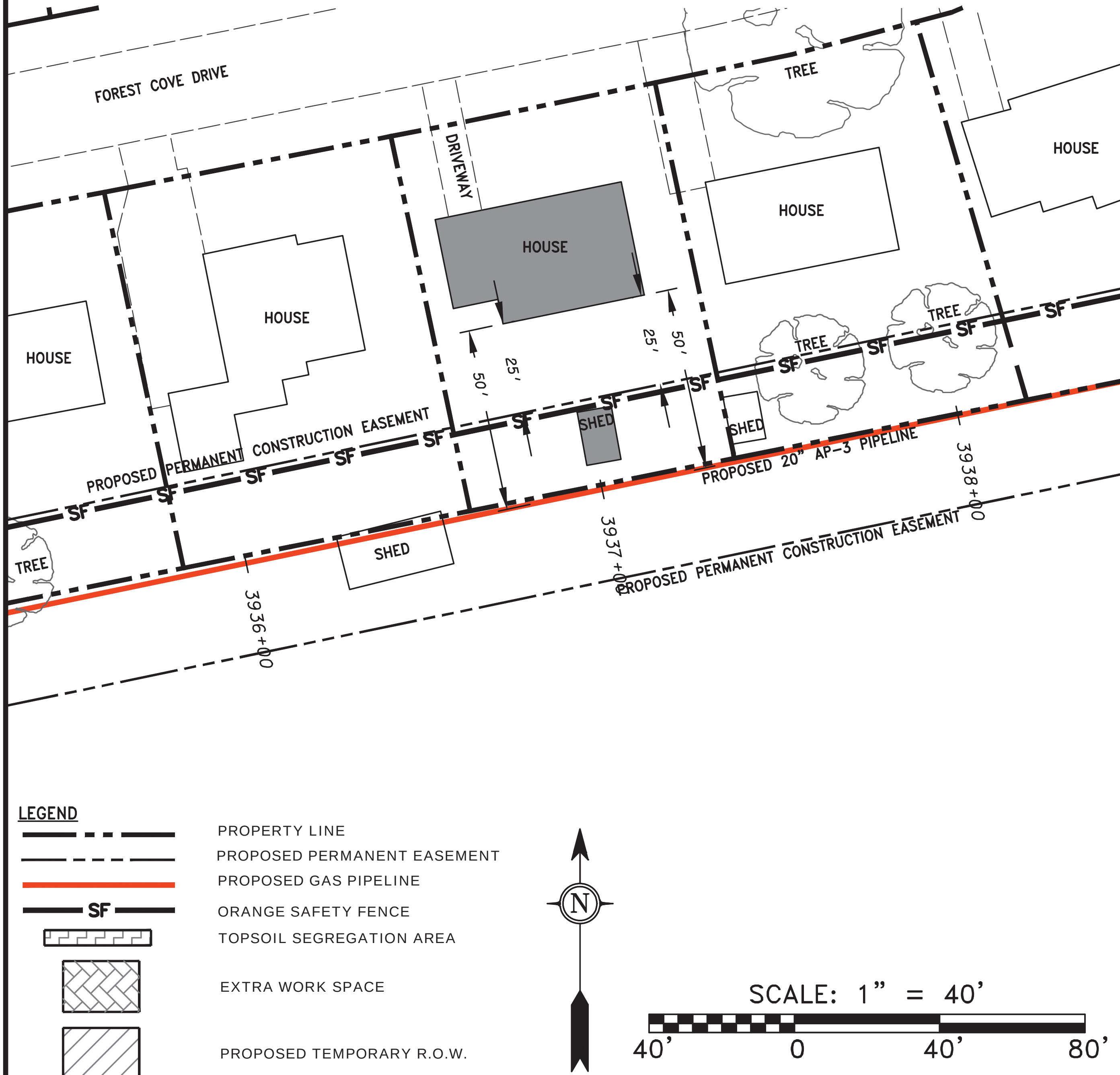
DWN. RDC | CHKD. DLH | APPD. NET | DATE 7/18/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A026 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A026.DWG

7/18/2016 2:15 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A028
4576 SCHOONER BLVD
SUFFOLK, VIRGINIA 23435
TAX MAP # 0343017000070
AP-3 PIPELINE
MILE POST 80.29



gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

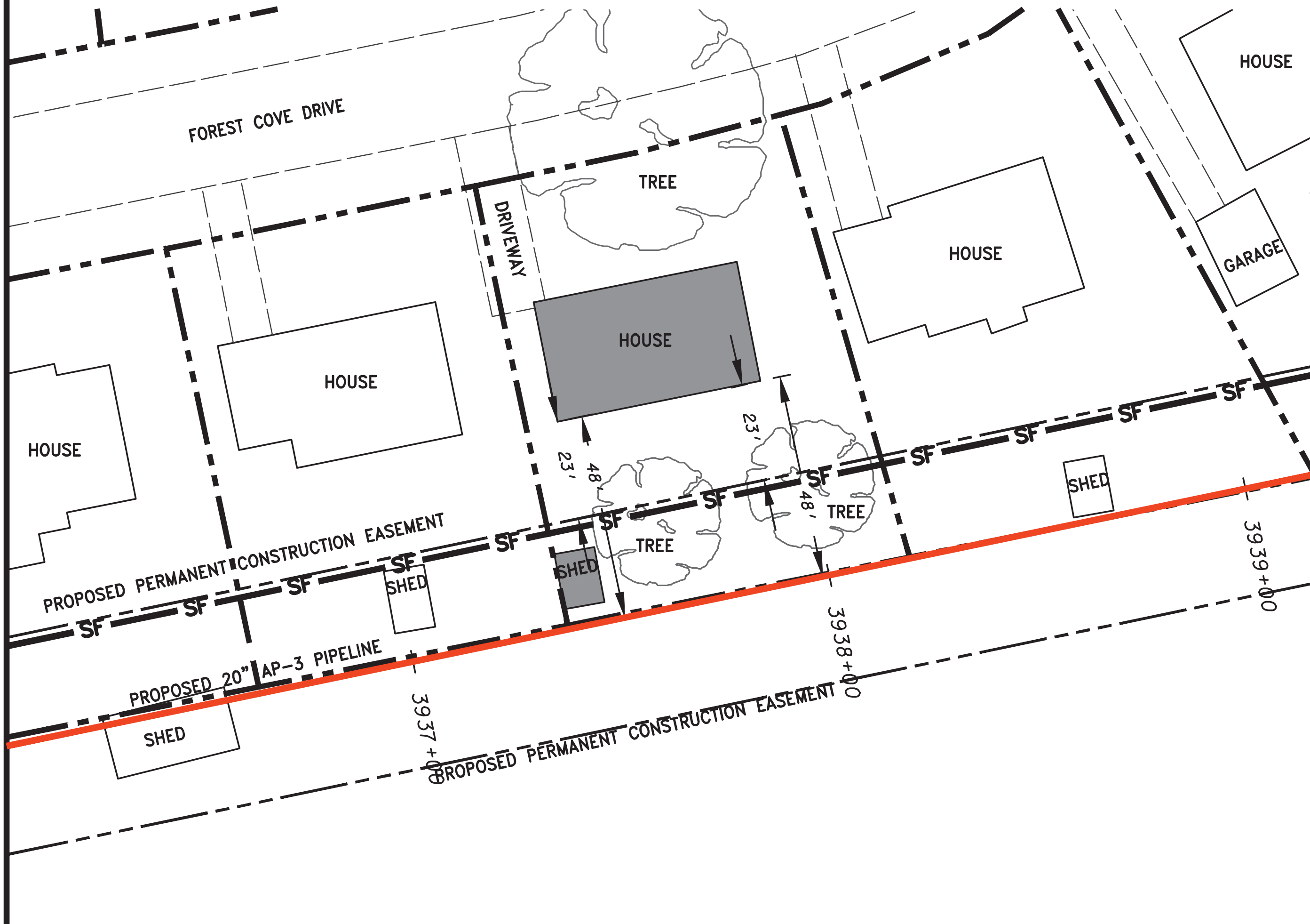
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/23/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A028			1 REV

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A028.DWG

7/5/2016 8:01 AM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A029
1511 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000080
AP-3 PIPELINE
MILE POST 80.30



LEGEND

	PROPERTY LINE
	PROPOSED PERMANENT EASEMENT
	PROPOSED GAS PIPELINE
SF	ORANGE SAFETY FENCE
	TOPSOIL SEGREGATION AREA
	EXTRA WORK SPACE
	PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/23/2016
SCALE: AS SHOWN			TASK NO. 01

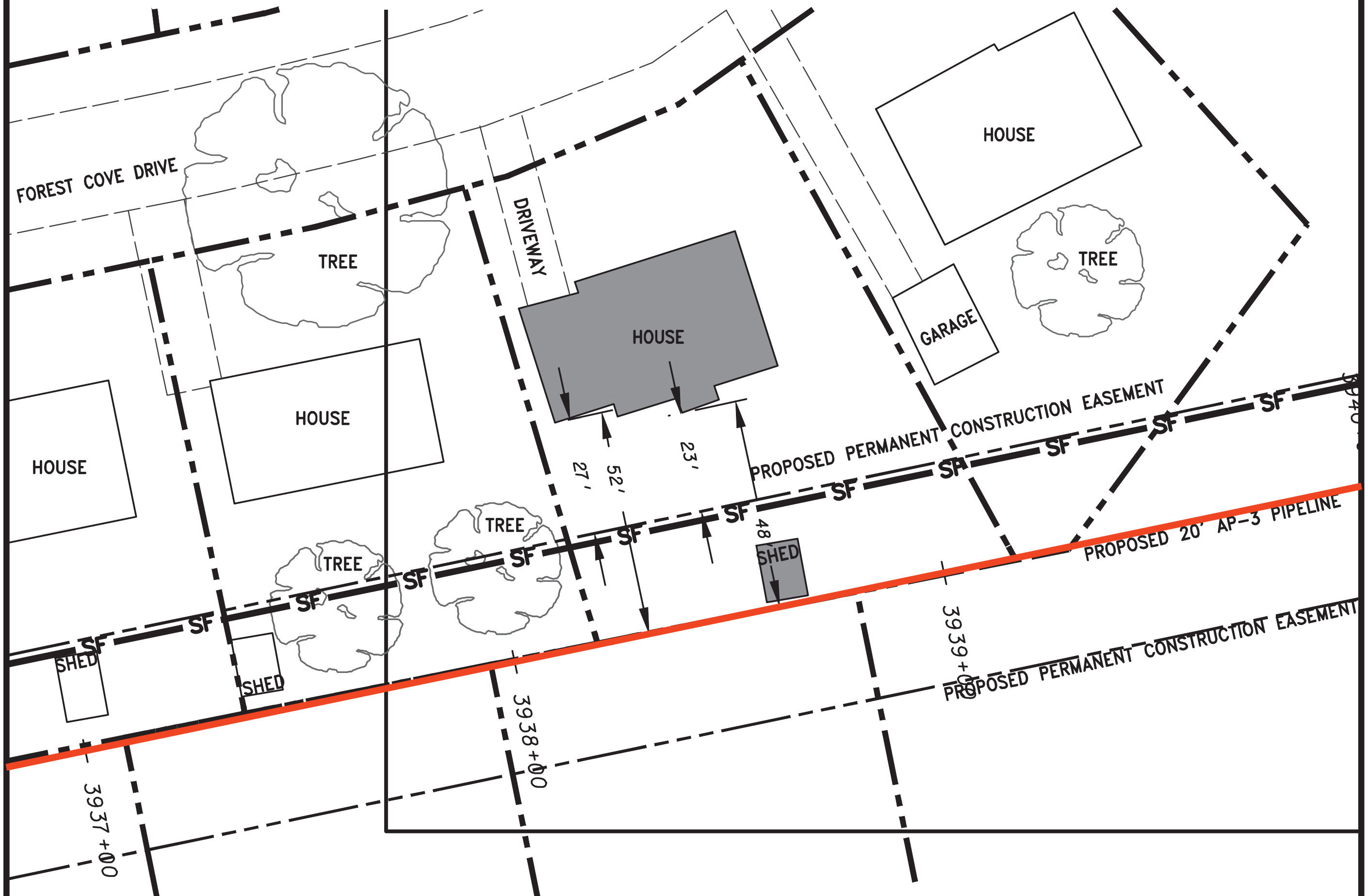
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-27-142-A029 REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A029.DWG

6/28/2016 12:52 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A031
1509 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000090
AP-3 PIPELINE
MILE POST 80.32



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'
40' 0 40' 80'

gai consultants
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CANONSBURG, PA 15317
724-873-3545

mbe monaloh basin engineers
300 BUSINESS CENTER DRIVE
PITTSBURGH, PA 15205
412-788-2433

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

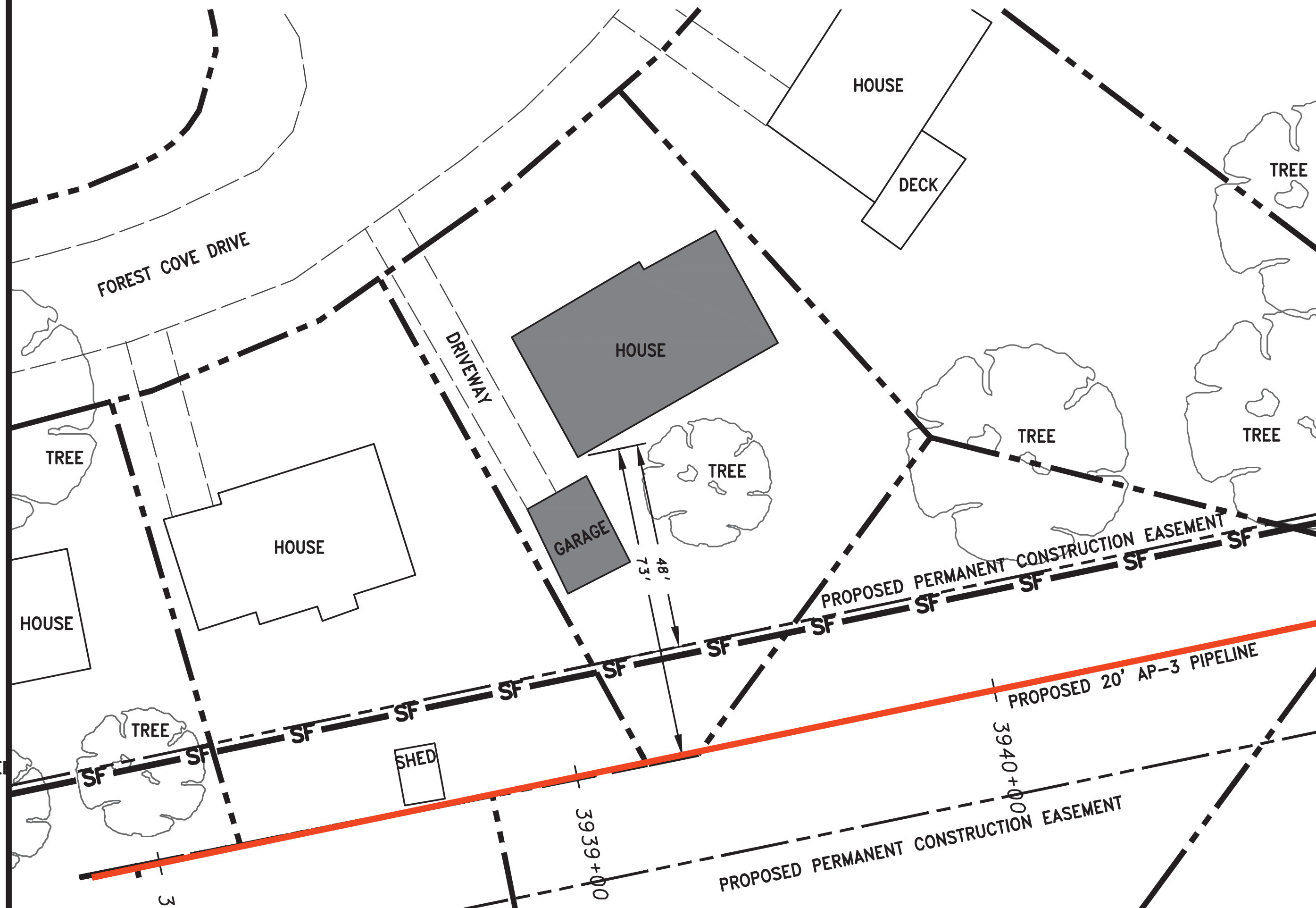
DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/28/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A031			REV 1

GAI CAD FILE: J:\2665 –GAI WORK ORDER 07 – SOUTHEAST PIPELINE (SECTION 8)\3 – CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 – BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 – LL-27-142-A031.DWG

6/28/2016 12:49 PM

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. PIPELINE LOD IS WITHIN POWERLINE R/W.

LL-27-142-A032
1507 FOREST COVE DRIVE
CHESAPEAKE, VIRGINIA 23323
TAX MAP # 0343017000090
AP-3 PIPELINE
MILE POST 80.32



LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
SF ORANGE SAFETY FENCE
TOPSOIL SEGREGATION AREA
EXTRA WORK SPACE
PROPOSED TEMPORARY R.O.W.

N

SCALE: 1" = 40'

40' 0 40' 80'

gai consultants
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724-873-3545

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monaloh basin engineers
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CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
CITY OF CHESAPEAKE, VIRGINIA

ATLANTIC COAST PIPELINE LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. RDC	CHKD. DLH	APPD. NET	DATE 6/22/2016
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-27-142-A032			REV 1

GAI CAD FILE: J:\2665 -GAI\WORK ORDER 07 - SOUTHEAST PIPELINE (SECTION 8)\3 - CAD DRAWINGS\BUILDING CONFLICTS\2665-07 SPREAD-8 - BUILDING CONFLICT EXHIBITS INDIVIDUAL\2665-07 SPREAD-8 - LL-27-142-A032.DWG

7/5/2016 8:14 AM

SUPPLY HEADER PROJECT

TL-636

FERC's Plans will be followed for Residential Construction, for all Residences located within 50 feet of the construction work area

1. Orange safety fence will be installed at a minimum 15 feet from the residence, and 100 feet along the construction corridor, each direction from residence.
2. Will avoid the removal of mature trees and landscaping within the construction work area, unless necessary for safe operation of equipment, or as specified in the landowner agreements
3. Restore all lawn areas and landscaping immediately following clean up operations or as specified in landowner agreement
4. During landowner negotiations, identify location of septic system and avoid or develop a replacement plan with landowner during construction.

For this project, the following notes will also be applied

a. Where the pipeline centerline is within 25 feet of a residence, the trench will not be excavated until the pipe is ready for installation.

b. Landowner will be notified one week prior to construction on his/her property

c. No refueling or storage of hazardous materials will occur within 200 feet of a private well.

d. Steel plating or other effective means will be provided to allow landowner access to his/her residence should construction or other ground disturbance occur. Required at egress points, landowner driveways, or other private access ways.

e. On public roads, we will follow our traffic management plans that are filed as part of the permit

f. Construction will be limited to daylight hours.

g. Applicant will:

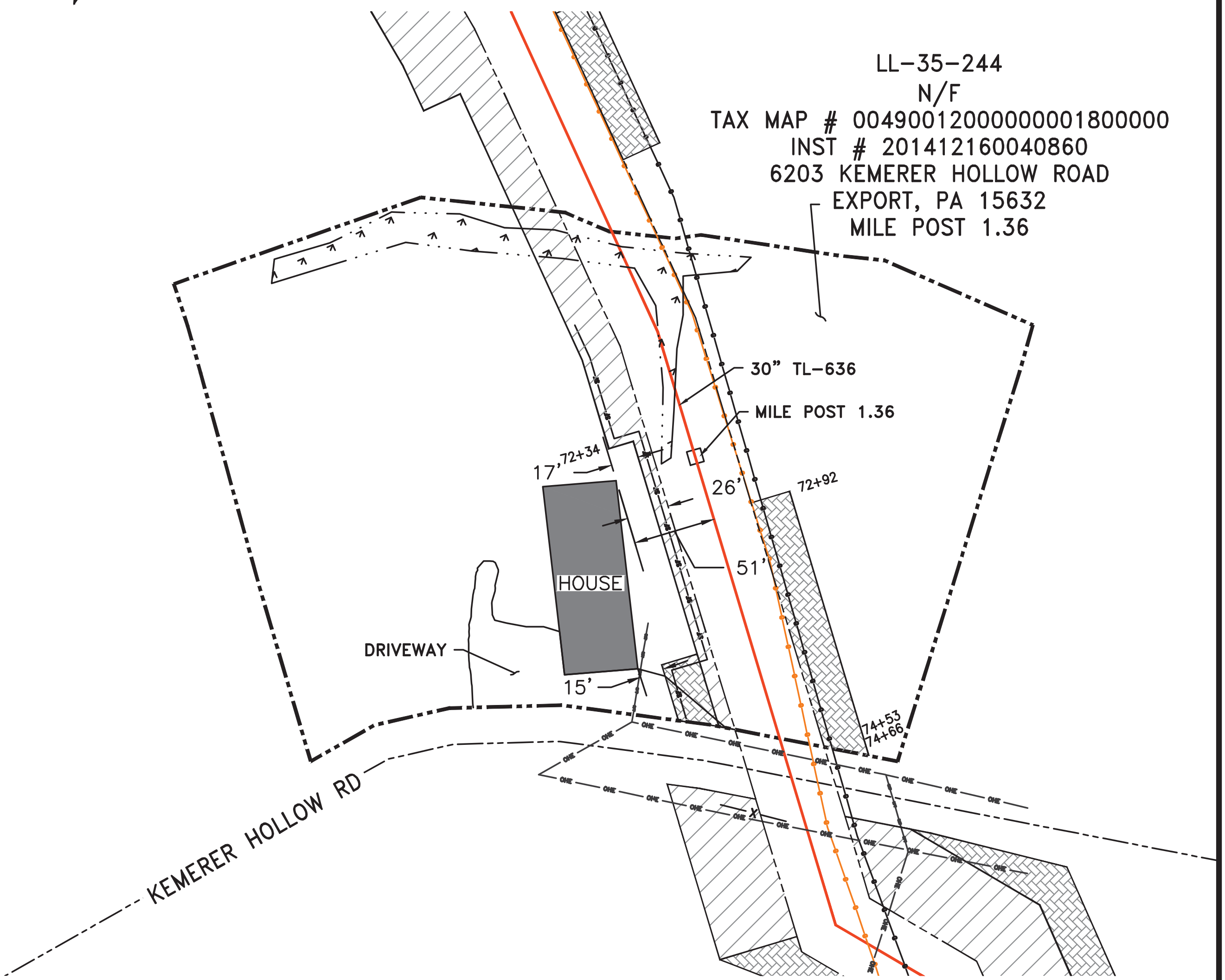
- Ensure piping is welded and installed as quickly as possible to minimize the amount of time a neighborhood is affected by construction;
- Complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting.
- During landowner negotiations, will work with landowner on restoration procedure. These procedures will include seeding mix, tree/shrub planting and hardscape replacement.

gai consultants SOUTHPOINTE OFFICE 6000 TOWNE CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES GENERAL NOTES	DWN. JJP	CHKD. DLH	APPD. NET
		DATE 07/28/2016	SCALE: NONE	TASK NO. 00
	DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 141330.01	DRAWING NO. A001	REV –

GAI CAD FILE: Z:\ENERGY\2014\C141330.01 - DTI - SUPPLY HEADER - SUR\CAD\SURV C141330.01\CONSTRUCTION_ALIGNMENT - PA\DWG\HOUSE EXHIBITS\C141330-01-000-00-A011_HOUSE EXHIBIT_LL-35-244.DWG

LEGEND

PROPERTY LINE	EXTRA WORK SPACE
PROPOSED PERMANENT EASEMENT	PROPOSED TEMPORARY R.O.W.
PROPOSED GAS PIPELINE	TOPSOIL SEGREGATION AREA
PROPOSED GAS PIPELINE (NO GROUND SURVEY)	
EXISTING ROADS	
ORANGE SAFETY FENCE	
WATER WELL	



NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 100'

100' 0 100' 200'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

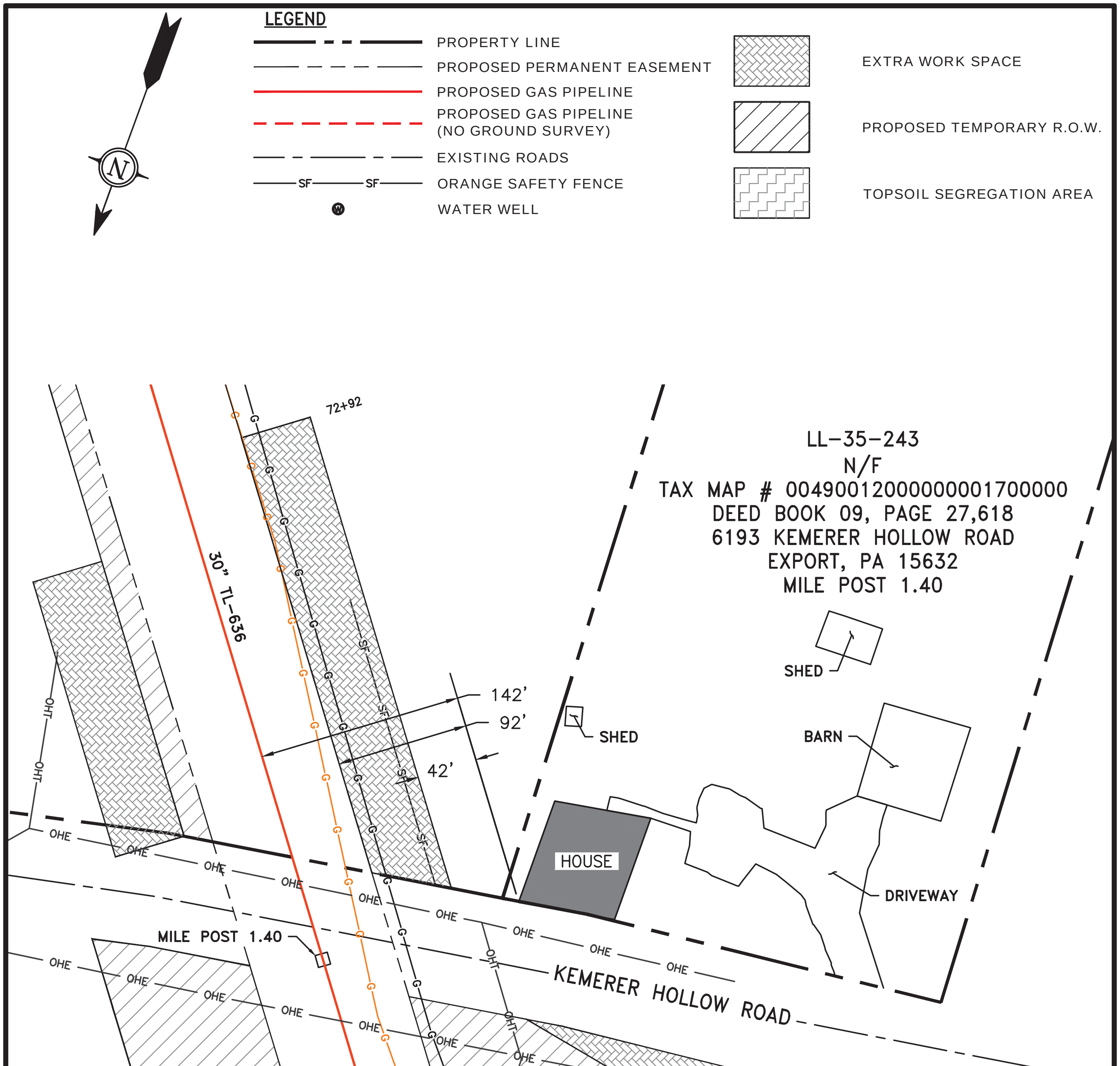
CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
WESTMORELAND COUNTY, PENNSYLVANIA

DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN.	CHKD.	APPD.	DATE
ACE	DLH	NET	7/15/16

SCALE: AS SHOWN
TASK NO. 05
PROJECT NO./DASH NO. 141330.01
DRAWING NO. LL-35-244
REV –

7/15/2016 4:24 PM



NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 50'

50' 0 50' 100'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES
WESTMORELAND COUNTY, PENNSYLVANIA

DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. ACE	CHKD. DLH	APPD. NET	DATE 7/15/16
SCALE: AS SHOWN			TASK NO. 05
PROJECT NO./DASH NO. 141330.01			
DRAWING NO. LL-35-243			REV –

GAI CAD FILE: Z:\ENERGY\2014\C141330.01 – DTI – SUPPLY HEADER – SUR\CAD\SURV C141330.01\CONSTRUCTION_ALIGNMENT – PA\DWG\HOUSE EXHIBITS\C141330-01-000-00-017_HOUSE EXHIBIT_LL-35-243.DWG

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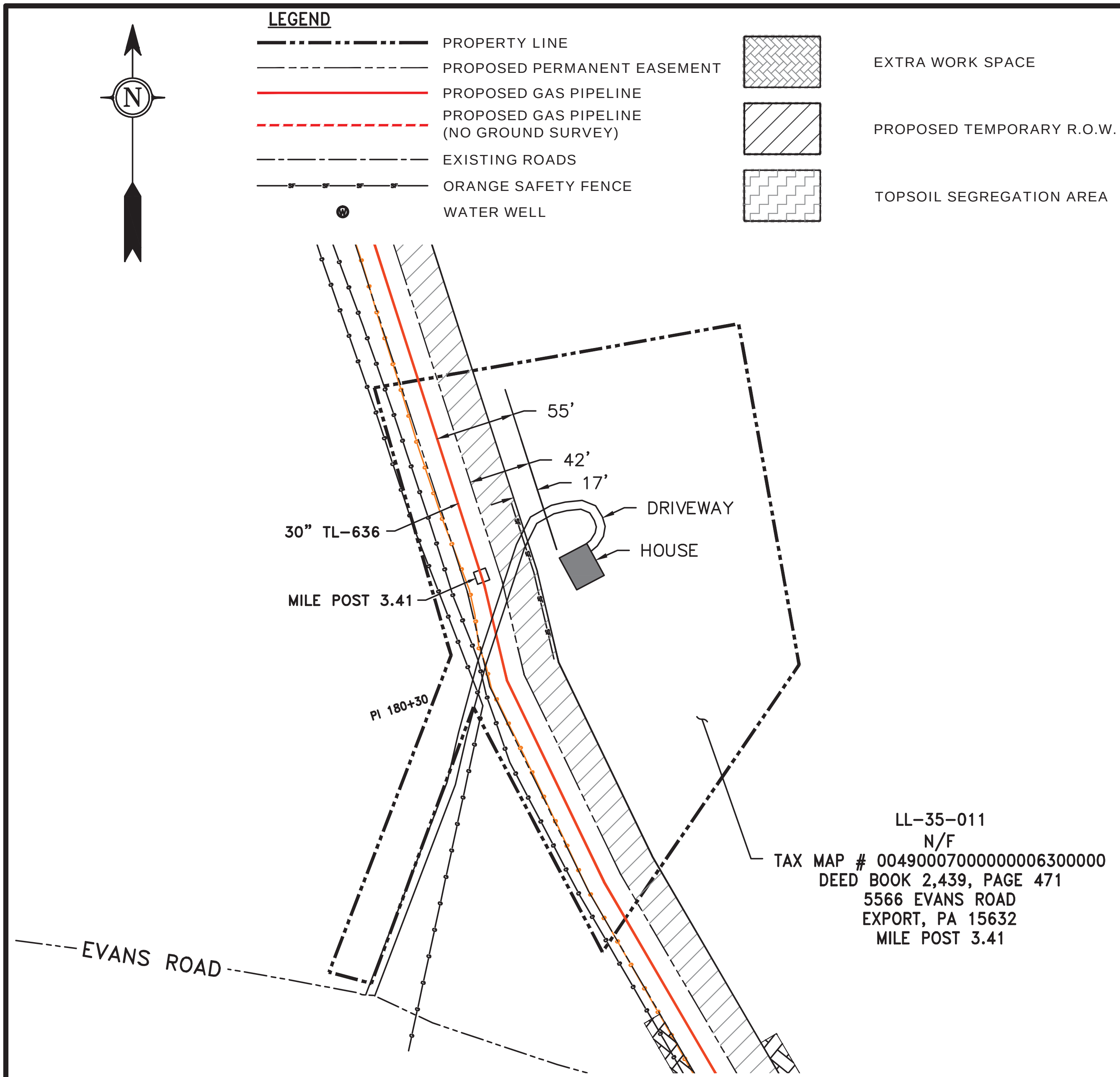


NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 200'

200' 0 200' 400'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES
NEAR RESIDENTIAL STRUCTURES
WESTMORELAND COUNTY, PENNSYLVANIA

DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. ACE	CHKD. DLH	APPD. NET	DATE 7/15/16
SCALE: AS SHOWN			TASK NO. 05

PROJECT NO./DASH NO. 141330.01

DRAWING NO. LL-35-011 REV

GAI CAD FILE: Z:\ENERGY\2014\C141330.01 - DTI - SUPPLY HEADER - SUR\CAD\SURV C141330.01\CONSTRUCTION_ALIGNMENT - PA\DWG\HOUSE EXHIBITS\C141330-01-000-00-A030_HOUSE EXHIBIT_LL-35-011.DWG

7/15/2016 4:22 PM

TL-635

FERC's Plans will be followed for Residential Construction, for all Residences located within 50 feet of the construction work area

1. Orange safety fence will be installed at a minimum 15 feet from the residence, and 100 feet along the construction corridor, each direction from residence.
2. Will avoid the removal of mature trees and landscaping within the construction work area, unless necessary for safe operation of equipment, or as specified in the landowner agreements
3. Restore all lawn areas and landscaping immediately following clean up operations or as specified in landowner agreement
4. During landowner negotiations, identify location of septic system and avoid or develop a replacement plan with landowner during construction.

For this project, the following notes will also be applied

a. Where the pipeline centerline is within 25 feet of a residence, the trench will not be excavated until the pipe is ready for installation.

b. Landowner will be notified one week prior to construction on his/her property

c. No refueling or storage of hazardous materials will occur within 200 feet of a private well.

d. Steel plating or other effective means will be provided to allow landowner access to his/her residence should construction or other ground disturbance occur. Required at egress points, landowner driveways, or other private access ways.

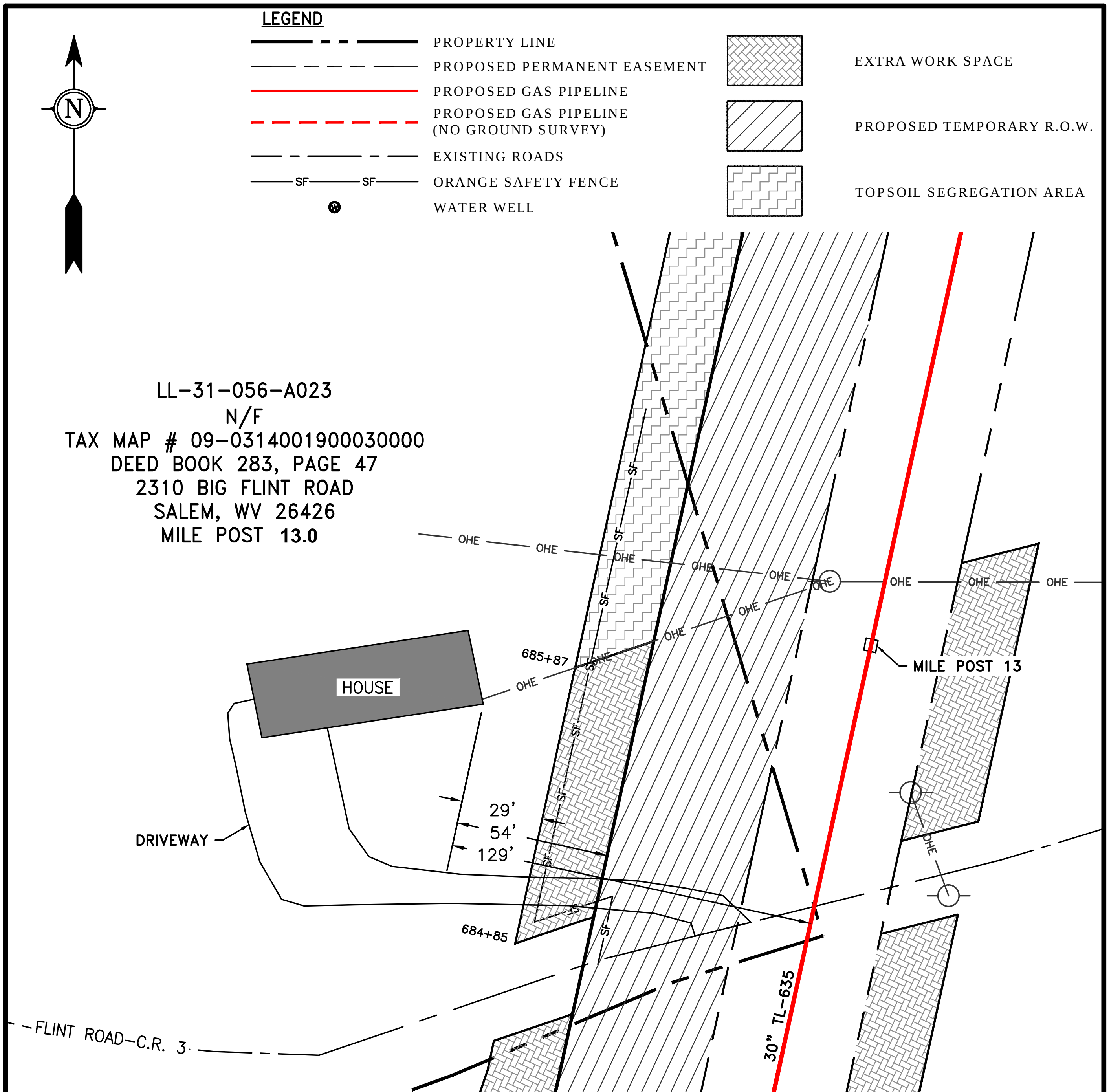
e. On public roads, we will follow our traffic management plans that are filed as part of the permit

f. Construction will be limited to daylight hours.

g. Applicant will:

- Ensure piping is welded and installed as quickly as possible to minimize the amount of time a neighborhood is affected by construction;
- Complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting.
- During landowner negotiations, will work with landowner on restoration procedure. These procedures will include seeding mix, tree/shrub planting and hardscape replacement.

gai consultants SOUTHPOINTE OFFICE 6000 TOWNE CENTER BLVD. CANONSBURG, PA 15317 724-873-3545	**CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL STRUCTURES** GENERAL NOTES	DWN. JJP CHKD. DLH APPD. NET DATE 07/28/2016 SCALE: NONE TASK NO. 00
	DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 141330.01 DRAWING NO. A001 REV



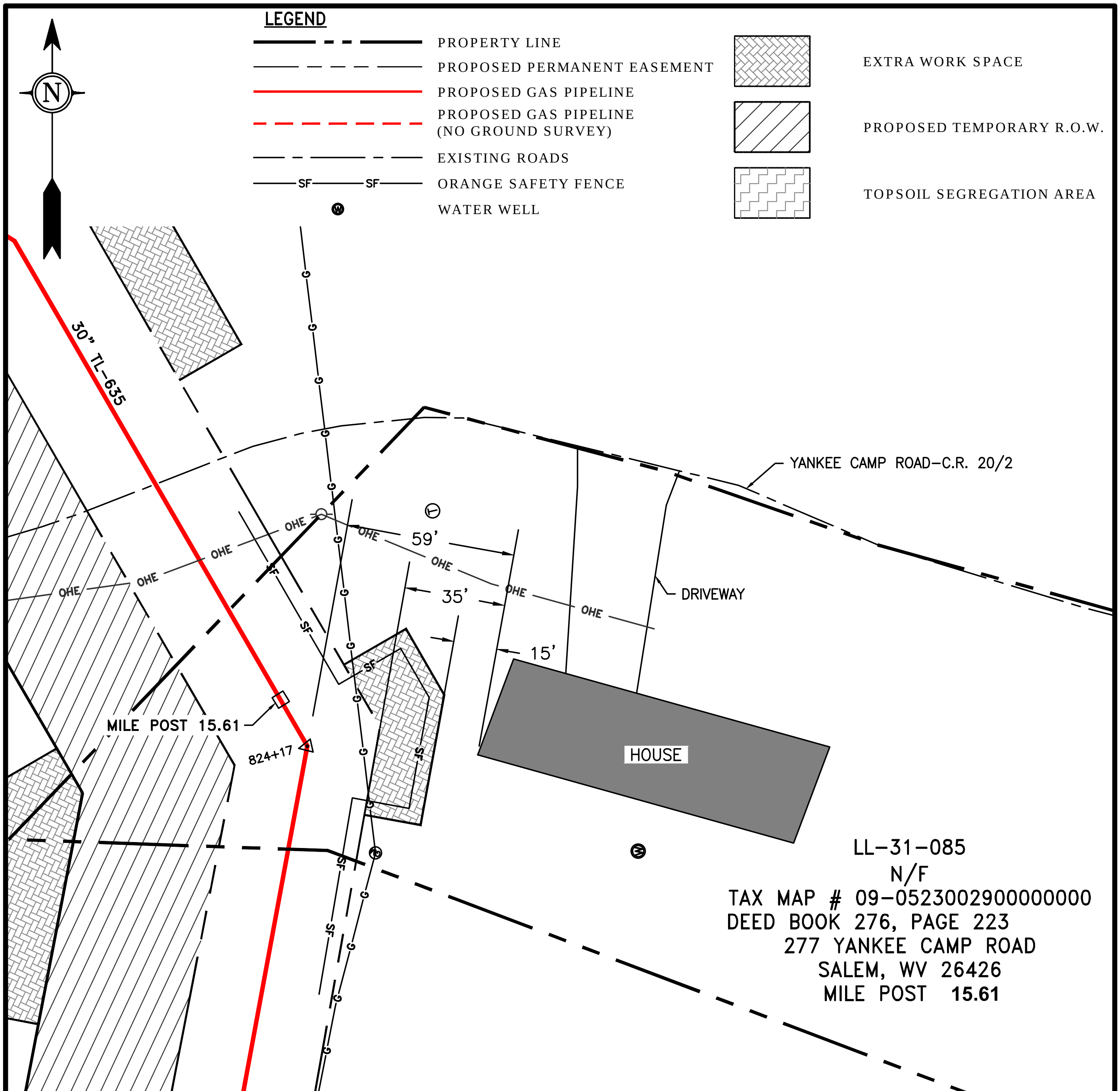
NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 50'

50' 0 50' 100'

gai consultants SOUTHPOINTE OFFICE 6000 TOWN CENTER BLVD. SUITE 300 EAST CANONSBURG, PA 15317 724-873-3545	**CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL DWELLINGS** DODDRIDGE COUNTY, WEST VIRGINIA	DWN. ACE · CHKD. DLH · APPD. NET · DATE 7/22/16 SCALE: AS SHOWN · TASK NO. 05
	DOMINION TRANSMISSION, INC. 445 W. MAIN STREET CLARKSBURG, WEST VIRGINIA 26301	PROJECT NO./DASH NO. 141330.01 DRAWING NO. LL-31-056-A023 REV –



NOTES:

1. CONSTRUCTION TECHNIQUE WILL BE STOVE PIPE OR DRAG SECTION AND ROAD BORE.
2. ORANGE SAFETY FENCE WILL BE INSTALLED A MINIMUM OF FIFTEEN FEET FROM RESIDENCE. ALONG CONSTRUCTION R/W, 100' TO EITHER SIDE OF STRUCTURE.
3. VEHICLE ACCESS TO RESIDENCE WILL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

SCALE: 1" = 50'

50' 0 50' 100'

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

CONSTRUCTION TECHNIQUES NEAR RESIDENTIAL DWELLINGS
DODDRIDGE COUNTY, WEST VIRGINIA

DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. ACE	CHKD. DLH	APPD. NET	DATE 7/22/16
SCALE: AS SHOWN			TASK NO. 05

PROJECT NO./DASH NO. 141330.01
DRAWING NO. LL-31-085
REV

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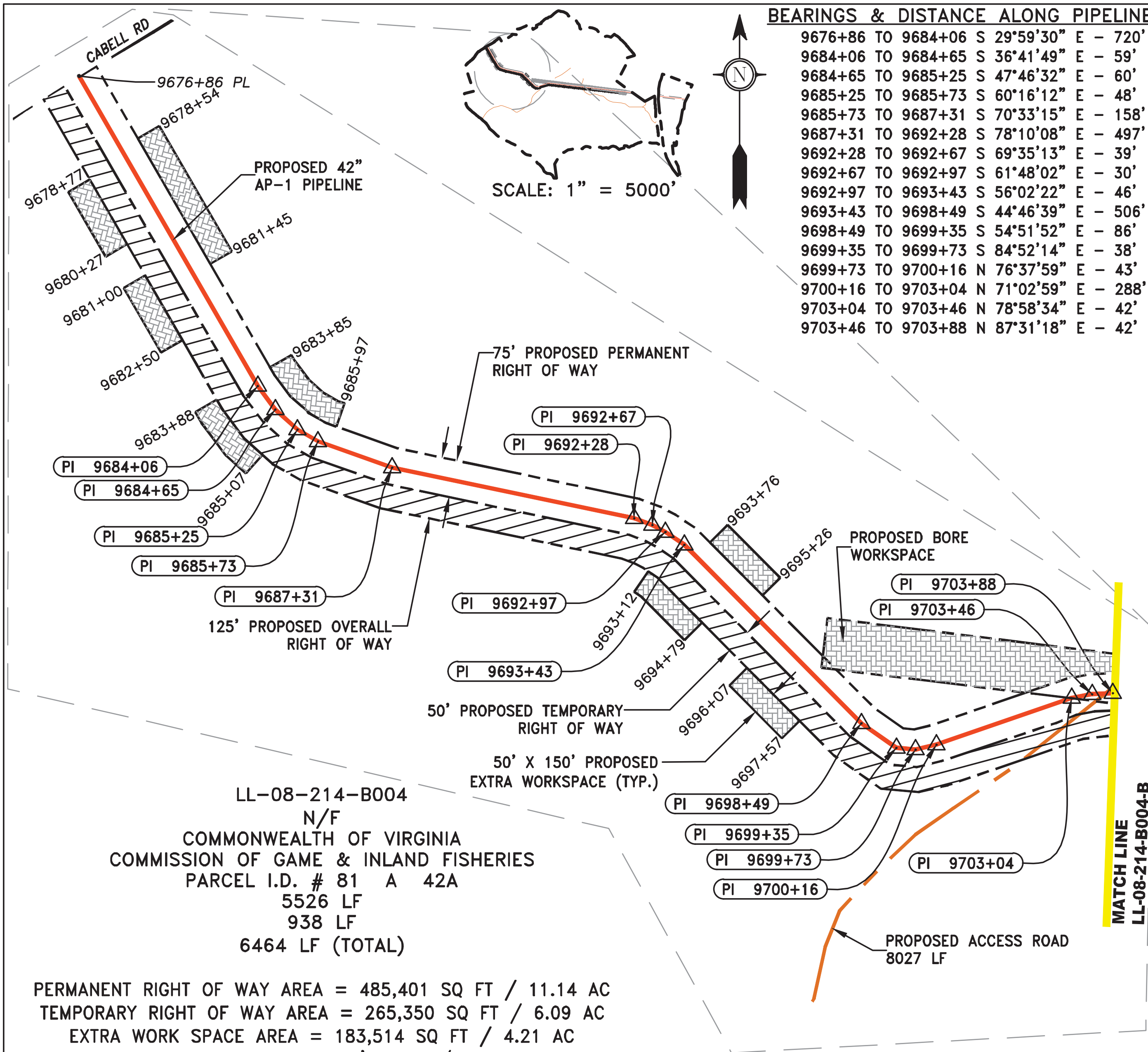
J2 SITE-SPECIFIC CROSSING PLAN FOR THE JAMES RIVER WILDLIFE MANAGEMENT AREA



BEARINGS & DISTANCE ALONG PIPELINE:

9676+86	TO	9684+06	S 29°59'30" E	720'
9684+06	TO	9684+65	S 36°41'49" E	59'
9684+65	TO	9685+25	S 47°46'32" E	60'
9685+25	TO	9685+73	S 60°16'12" E	48'
9685+73	TO	9687+31	S 70°33'15" E	158'
9687+31	TO	9692+28	S 78°10'08" E	497'
9692+28	TO	9692+67	S 69°35'13" E	39'
9692+67	TO	9692+97	S 61°48'02" E	30'
9692+97	TO	9693+43	S 56°02'22" E	46'
9693+43	TO	9698+49	S 44°46'39" E	506'
9698+49	TO	9699+35	S 54°51'52" E	86'
9699+35	TO	9699+73	S 84°52'14" E	38'
9699+73	TO	9700+16	N 76°37'59" E	43'
9700+16	TO	9703+04	N 71°02'59" E	288'
9703+04	TO	9703+46	N 78°58'34" E	42'
9703+46	TO	9703+88	N 87°31'18" E	42'

PERMANENT RIGHT OF WAY AREA = 485,401 SQ FT / 11.14 AC
TEMPORARY RIGHT OF WAY AREA = 265,350 SQ FT / 6.09 AC
EXTRA WORK SPACE AREA = 183,514 SQ FT / 4.21 AC
ACCESS RD, 8,027 LF X 30' WIDTH / 5.53 AC

SCALE: 1" = 300'
300' 0 300'

LEGEND
- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- PROPOSED ACCESS ROAD
- PROPOSED TEMPORARY R.O.W.
- EXTRA WORK SPACE
- TOPSOIL SEGREGATION AREA
- AREA OF NO DISTURBANCE

NOTES:
1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY – UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. ALL STATIONING SHOWN IS SLOPE STATIONING.
3. THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY.
4. PROPERTY BOUNDARIES SHOWN ARE FROM GIS AND TAX RECORDS PROVIDED BY OTHERS.
5. IN ACCORDANCE WITH THE EASEMENT AGREEMENT, GRANTEE SHALL HAVE THE RIGHT TO MODIFY THE LOCATION OF THE PIPELINE WITHIN THE PERMANENT EASEMENT DURING INITIAL CONSTRUCTION.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
CANONSBURG, PA 15317
724-873-3545

RIGHT OF WAY EXHIBIT
COMMONWEALTH OF VA COMMISSION OF GAME & INLAND FISHERIES
NELSON COUNTY, VIRGINIA

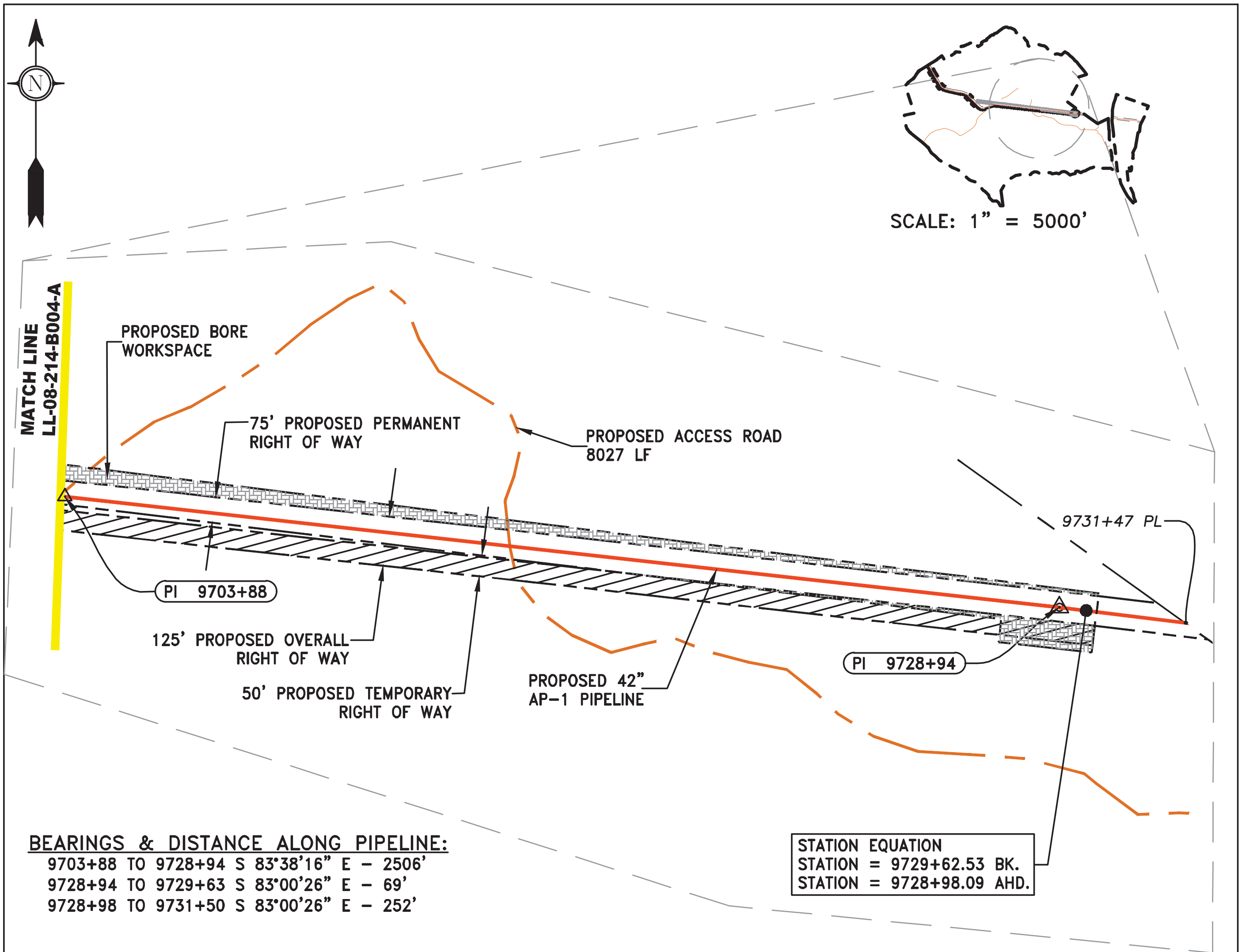
DWN. GAH | CHKD. DLH | APPD. NET | DATE 11/1/16
SCALE: AS SHOWN | TASK NO. 01

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

PROJECT NO./DASH NO. 140468
DRAWING NO. LL-08-214-B004-A 2 REV

GAI CAD FILE: \\TTG-FS1\THRASHER\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 4\PROPERTY EXHIBITS\SECT 4 PROP EXHIBITS 193-194 (21-22).DWG

11/2/2016 7:55 AM



BEARINGS & DISTANCE ALONG PIPELINE:

9703+88 TO 9728+94 S 83°38'16" E – 2506'
9728+94 TO 9729+63 S 83°00'26" E – 69'
9728+98 TO 9731+50 S 83°00'26" E – 252'

LL–08–214–B004
N/F
COMMONWEALTH OF VIRGINIA
COMMISSION OF GAME & INLAND FISHERIES
PARCEL I.D. # 81 A 42A
5526 LF
938 LF
6464 LF (TOTAL)

SCALE: 1" = 300'

300' 0 300'

PERMANENT RIGHT OF WAY AREA = 485,401 SQ FT / 11.14 AC
TEMPORARY RIGHT OF WAY AREA = 265,350 SQ FT / 6.09 AC
EXTRA WORK SPACE AREA = 183,514 SQ FT / 4.21 AC
ACCESS RD, 8,027 LF X 30' WIDTH / 5.53 AC

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
PROPOSED ACCESS ROAD
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA
AREA OF NO DISTURBANCE

NOTES:

1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY – UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. ALL STATIONING SHOWN IS SLOPE STATIONING.
3. THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY.
4. PROPERTY BOUNDARIES SHOWN ARE FROM GIS AND TAX RECORDS PROVIDED BY OTHERS.
5. IN ACCORDANCE WITH THE EASEMENT AGREEMENT, GRANTEE SHALL HAVE THE RIGHT TO MODIFY THE LOCATION OF THE PIPELINE WITHIN THE PERMANENT EASEMENT DURING INITIAL CONSTRUCTION.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
CANONSBURG, PA 15317
724–873–3545

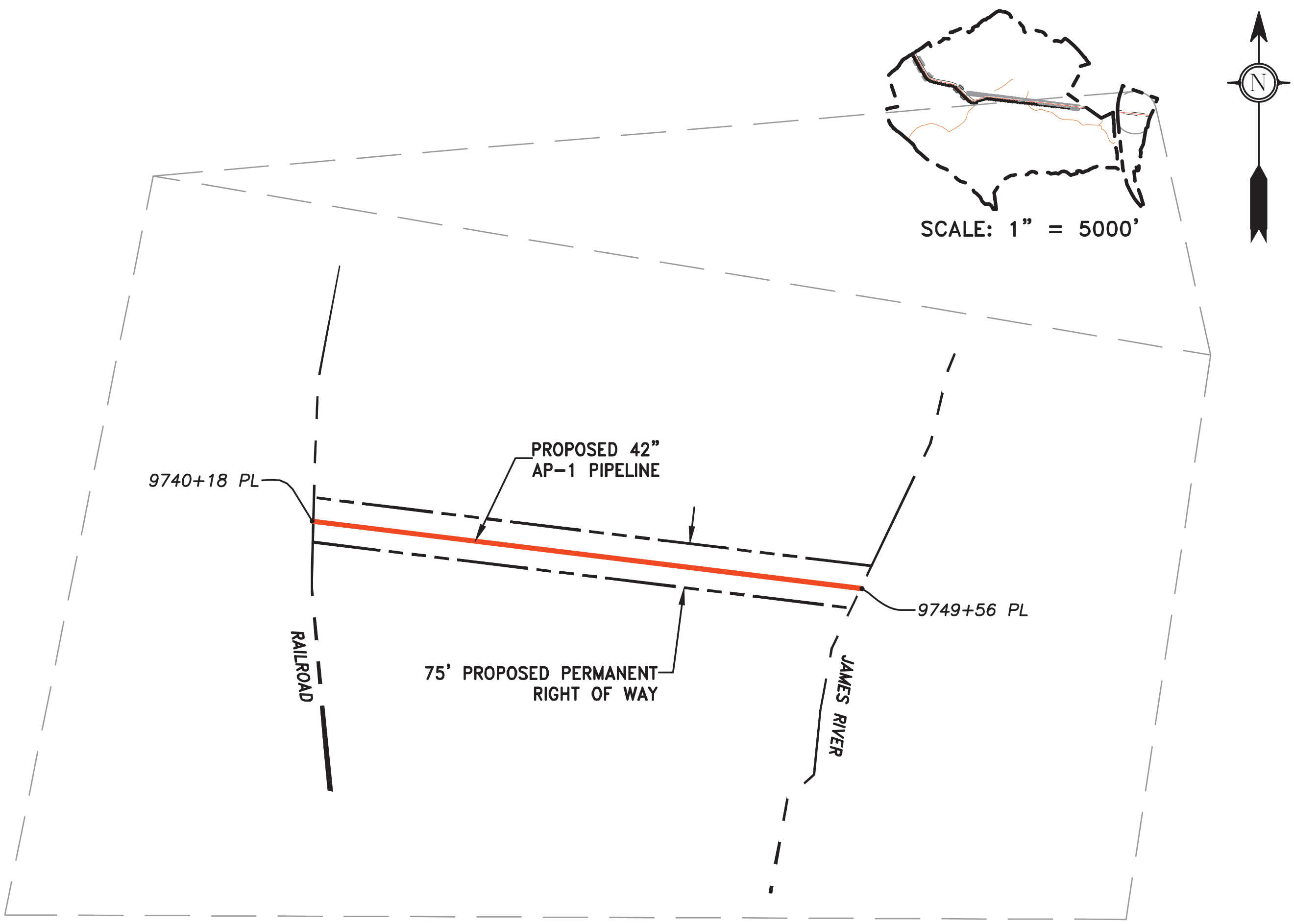
RIGHT OF WAY EXHIBIT
COMMONWEALTH OF VA COMMISSION OF GAME & INLAND FISHERIES
NELSON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH	CHKD. DLH	APPD. NET	DATE 11/1/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL–08–214–B004–B			REV 2

GAI CAD FILE: \\TTG-FS1\THRASHER\050-5159 – GIA, INC. – GAI – THRASHER – SERP – MAPPING\SURVEY\DRAWING\SEC 4\PROPERTY EXHIBITS\SECT 4 PROP EXHIBITS 193–194 (21–22).DWG

11/2/2016 7:47 AM



BEARINGS & DISTANCE ALONG PIPELINE:
9740+18 TO 9749+56 S 83°00'26" E - 938'

LL-08-214-B004
N/F
COMMONWEALTH OF VIRGINIA
COMMISSION OF GAME & INLAND FISHERIES
PARCEL I.D. # 81 A 42A
5526 LF
938 LF
6464 LF (TOTAL)

SCALE: 1" = 300'
300' 0 300'

PERMANENT RIGHT OF WAY AREA = 485,401 SQ FT / 11.14 AC
TEMPORARY RIGHT OF WAY AREA = 265,350 SQ FT / 6.09 AC
EXTRA WORK SPACE AREA = 183,514 SQ FT / 4.21 AC
ACCESS RD, 8,027 LF X 30' WIDTH / 5.53 AC

LEGEND
- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED GAS PIPELINE
- PROPOSED ACCESS ROAD
- PROPOSED TEMPORARY R.O.W.
- EXTRA WORK SPACE
- TOPSOIL SEGREGATION AREA
- AREA OF NO DISTURBANCE

NOTES:
1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY - UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. ALL STATIONING SHOWN IS SLOPE STATIONING.
3. THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY.
4. PROPERTY BOUNDARIES SHOWN ARE FROM GIS AND TAX RECORDS PROVIDED BY OTHERS.
5. IN ACCORDANCE WITH THE EASEMENT AGREEMENT, GRANTEE SHALL HAVE THE RIGHT TO MODIFY THE LOCATION OF THE PIPELINE WITHIN THE PERMANENT EASEMENT DURING INITIAL CONSTRUCTION.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
CANONSBURG, PA 15317
724-873-3545

RIGHT OF WAY EXHIBIT
COMMONWEALTH OF VA COMMISSION OF GAME & INLAND FISHERIES
NELSON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

DWN. GAH | CHKD. DLH | APPD. NET | DATE 11/1/16
SCALE: AS SHOWN | TASK NO. 01
PROJECT NO./DASH NO. 140468
DRAWING NO. LL-08-214-B004-C 2 REV

GAI CAD FILE: \\TTG-FS1\THRASHER\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 4\PROPERTY EXHIBITS\SECT 4 PROP EXHIBITS 193-194 (21-22).DWG

11/2/2016 7:52 AM

LL-08-086-B021
N/F
VA. GAME COMMISSION
ATTN. LAND COORDINATOR
PARCEL I.D. # 81 A 42
127,230 SF

ACCESS ROAD, 4,241 LF X 30' WIDTH / 2.92 AC

SCALE: 1" = 500'

500' 0 500'

LEGEND

PROPERTY LINE
PROPOSED PERMANENT EASEMENT
PROPOSED GAS PIPELINE
PROPOSED ACCESS ROAD
PROPOSED TEMPORARY R.O.W.
EXTRA WORK SPACE
TOPSOIL SEGREGATION AREA
AREA OF NO DISTURBANCE

NOTES:

1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY – UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. ALL STATIONING SHOWN IS SLOPE STATIONING.
3. THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY.
4. PROPERTY BOUNDARIES SHOWN ARE FROM GIS AND TAX RECORDS PROVIDED BY OTHERS.
5. IN ACCORDANCE WITH THE EASEMENT AGREEMENT, GRANTEE SHALL HAVE THE RIGHT TO MODIFY THE LOCATION OF THE PIPELINE WITHIN THE PERMANENT EASEMENT DURING INITIAL CONSTRUCTION.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
CANONSBURG, PA 15317
724-873-3545

RIGHT OF WAY EXHIBIT
VA GAME COMMISSION ATTN. LAND COORDINATOR
BUCKINGHAM COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 W. MAIN STREET
CLARKSBURG, WEST VIRGINIA 26301

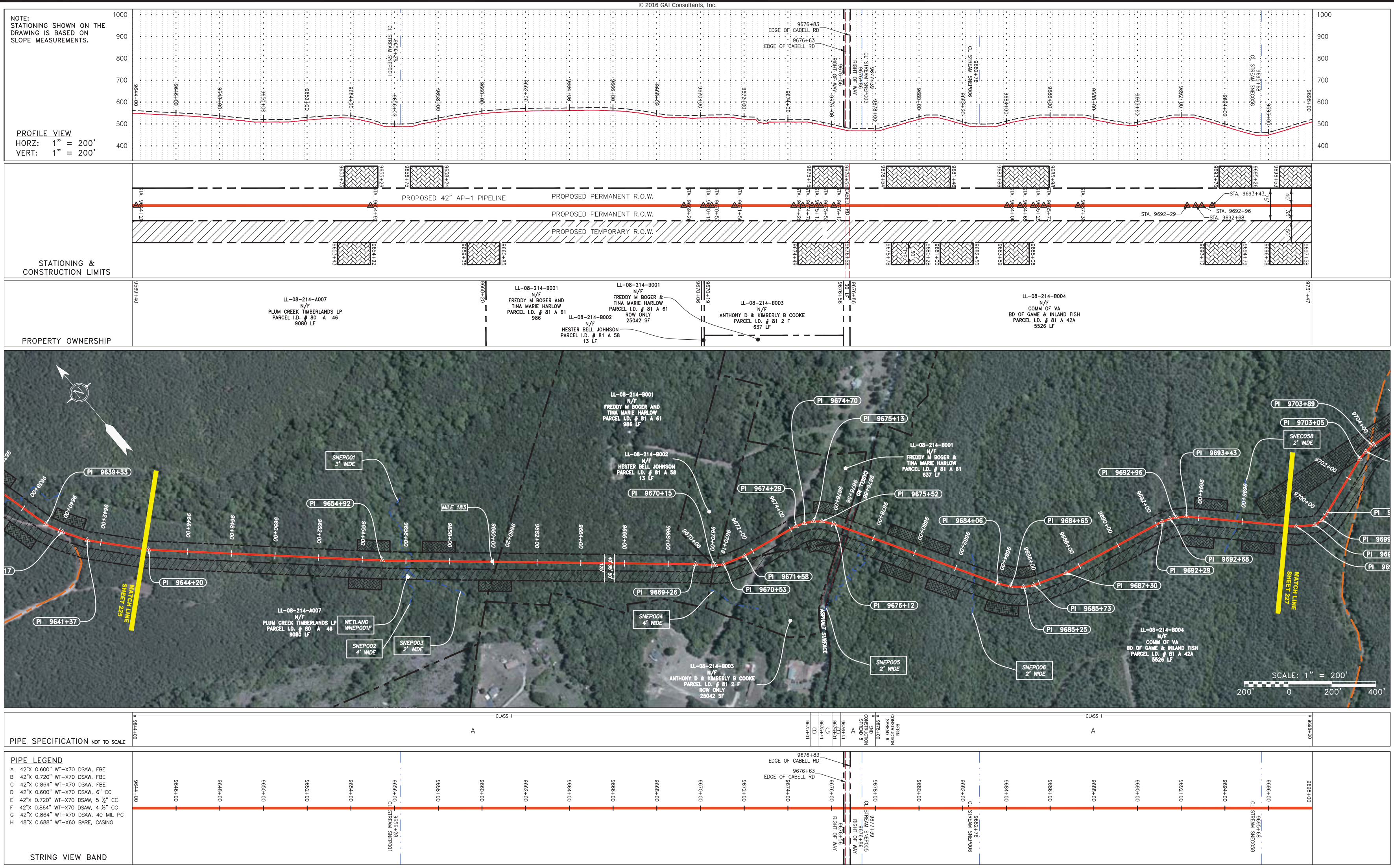
DWN. GAH	CHKD. DLH	APPD. NET	DATE 11/1/16
SCALE: AS SHOWN			TASK NO. 01
PROJECT NO./DASH NO. 140468			
DRAWING NO. LL-08-086-B021			REV –

GAI CAD FILE: \\TTG-FS1\THRASHER\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 4\PROPERTY EXHIBITS\SECT 4 PROP EXHIBITS 193-194 (21-22).DWG

11/2/2016 10:44 AM

J2-5

NOTE:
STATIONING SHOWN ON THE DRAWING IS BASED ON SLOPE MEASUREMENTS.



PIPE LEGEND
A 42"x 0.600" WT-X70 DSAW, FBE
B 42"x 0.720" WT-X70 DSAW, FBE
C 42"x 0.864" WT-X70 DSAW, FBE
D 42"x 0.600" WT-X70 DSAW, 6" CC
E 42"x 0.720" WT-X70 DSAW, 5 ½" CC
F 42"x 0.864" WT-X70 DSAW, 4 ½" CC
G 42"x 0.864" WT-X70 DSAW, 40 MIL PC
H 48"x 0.688" WT-X60 BARE, CASING

LEGEND

- PROPERTY LINE
- FENCE
- STREAM
- EXISTING GAS PIPELINE
- OVERHEAD UTILITY LINES
- PROPOSED GAS PIPELINE
- PROPOSED GAS PIPELINE (NO GROUND SURVEY)
- STORM SEWER
- WATER LINE
- SANITARY SEWER
- EDGE OF GRAVEL
- PROPOSED PERMANENT EASEMENT
- UTILITY POLE
- PROPOSED TEMPORARY R.O.W.
- EXTRA WORK SPACE
- WETLAND (COLOR SHOWN TO PROVIDE CLARITY ONLY)
- TOPSOIL SEGREGATION AREA
- AREA OF NO DISTURBANCE

NOTES:

1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY - UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. CONTOURS AND TOPOGRAPHIC FEATURES WERE DERIVED BY AN ON THE GROUND SURVEY PERFORMED BY THE THRASHER GROUP, INC. ON 06-25-2014 THRU 08-26-2014 GPS SUB-METER ACCURACY.
3. AERIAL IMAGERY IS TAKEN FROM A SPRING 2015 FLIGHT BY KUCERA INTERNATIONAL INC.
4. THE PROPERTY LINES SHOWN ARE BASED ON GIS & TAX ASSEMENT RECORDS (PROVIDED BY OTHERS). GAI & THE THRASHER GROUP MAKE NO GUARANTEE EITHER EXPRESSED OR IMPLIED AS TO THE ACCURACY OF THE RECORDS AS SHOWN ON THESE DRAWINGS.
5. WETLAND DATA SHOWN ON THE DRAWINGS WAS PROVIDED BY NRG.
6. THESE DRAWINGS ARE NOT INTENDED TO PROVIDE EROSION AND SEDIMENTATION CONTROL REQUIREMENTS. SEE EROSION AND SEDIMENTATION CONTROL PLANS FOR COMPLETE REQUIREMENTS AND BMP LOCATIONS.
7. ALL STATIONING SHOWN IS SLOPE STATIONING.

REVISIONS

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION

9/14/16

42" AP-1 PIPELINE
CONSTRUCTION ALIGNMENT STA 9644+00 TO 9698+00
NELSON COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WEST VIRGINIA, 26301

SCALE: AS SHOWN
DATE: 09/09/16
DRAWN: GPT
CHECKED: DLH
APPROVED: NET

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO.	
140468	
TASK NO. 005	SUB TASK NO. 00
GROUP ID D	DRAWING NO. E226
226 OF 344	

GAI CAD FILE NO. \\TTG-FS1\THRASHER\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 4\SEC 4 SHEETS - 223-227 (17-21).DWG

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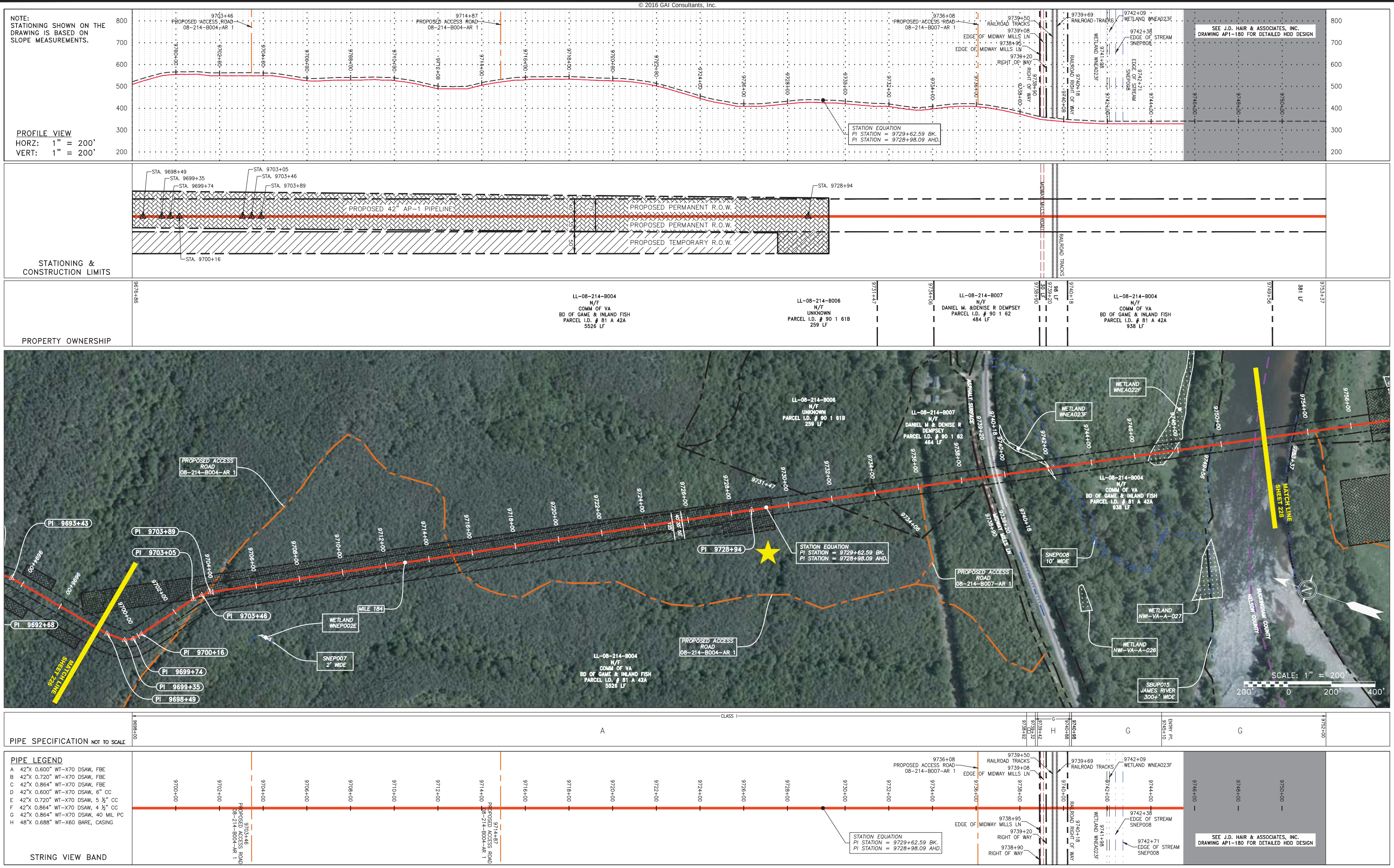
NOTE:
STATIONING SHOWN ON THE DRAWING IS BASED ON SLOPE MEASUREMENTS.

PROFILE VIEW
HORZ: 1" = 200'
VERT: 1" = 200'



LEGEND

PROPERTY LINE	STORM SEWER	PROPOSED TEMPORARY R.O.W.	
FENCE	WATER LINE	EXTRA WORK SPACE	
STREAM	SANITARY SEWER	WETLAND (COLOR SHOWN TO PROVIDE CLARITY ONLY)	
EXISTING GAS PIPELINE	EDGE OF GRAVEL	TOPSOIL SEGREGATION AREA	
OVERHEAD UTILITY LINES	PROPOSED PERMANENT EASEMENT	AREA OF NO DISTURBANCE	
PROPOSED GAS PIPELINE	UTILITY POLE		
PROPOSED GAS PIPELINE (NO GROUND SURVEY)			

NOTES:

1. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY - UTM WITH NAD83 DATUM, ZONE 17, US SURVEY FOOT, CENTRAL MERIDAN 81° W
2. CONTOURS AND TOPOGRAPHIC FEATURES WERE DERIVED BY AN ON THE GROUND SURVEY PERFORMED BY THE THRASHER GROUP, INC. ON 06-25-2014 THRU 08-26-2014 GPS SUB-METER ACCURACY.
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7. ALL STATIONING SHOWN IS SLOPE STATIONING.

THIS DRAWING WAS PRODUCED WITH COMPUTER AIDED DRAFTING TECHNOLOGY AND IS SUPPORTED BY ELECTRONIC DRAWING FILES. DO NOT REVISE THIS DRAWING VIA MANUAL DRAFTING METHODS.

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION

REVISIONS

9/14/16

42" AP-1 PIPELINE
CONSTRUCTION ALIGNMENT STA 9698+00 TO 9752+00
NELSON - BUCKINGHAM COUNTY, VIRGINIA

ATLANTIC COAST PIPELINE, LLC
C/O DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WEST VIRGINIA, 26301

SCALE:	AS SHOWN
DATE:	09/09/16
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gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD.
CANONSBURG, PA 15317
724-873-3545

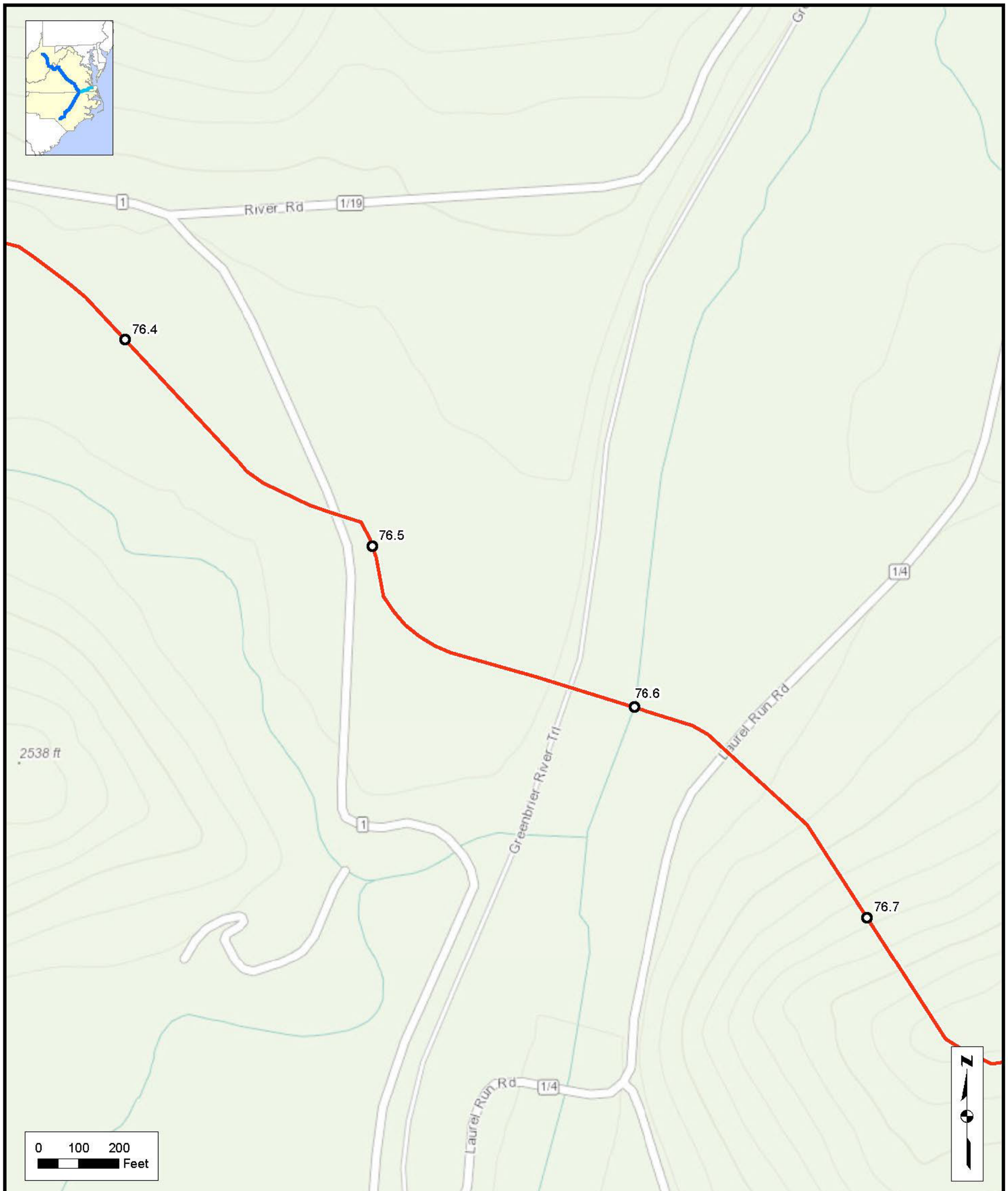
PROJECT NO./DASH NO.	
140468	
TASK NO.	SUB TASK NO.
005	00
GROUP ID	DRAWING NO.
D	E227

227 OF 344

J2-6

GAI CAD FILE NO. \\TTG-FS1\THRASHER\050-5159 - GIA, INC. - GAI - THRASHER - SERP - MAPPING\SURVEY\DRAWING\SEC 4\SEC 4 SHEETS - 223-227 (17-21).DWG

J3 SITE-SPECIFIC CROSSING PLAN FOR THE GREENBRIER RAIL TRAIL



Milepost

Proposed Route

Atlantic Coast Pipeline

Figure 1
Atlantic Coast Pipeline
Greenbrier Rail Trail General Area

ERM

FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Greenbrier_Trail_ACP_Greenbrier_Trail_GenArea.mxd, REVISED: 03/13/2017, SCALE: 1:4,000 DRAWN BY: TAH

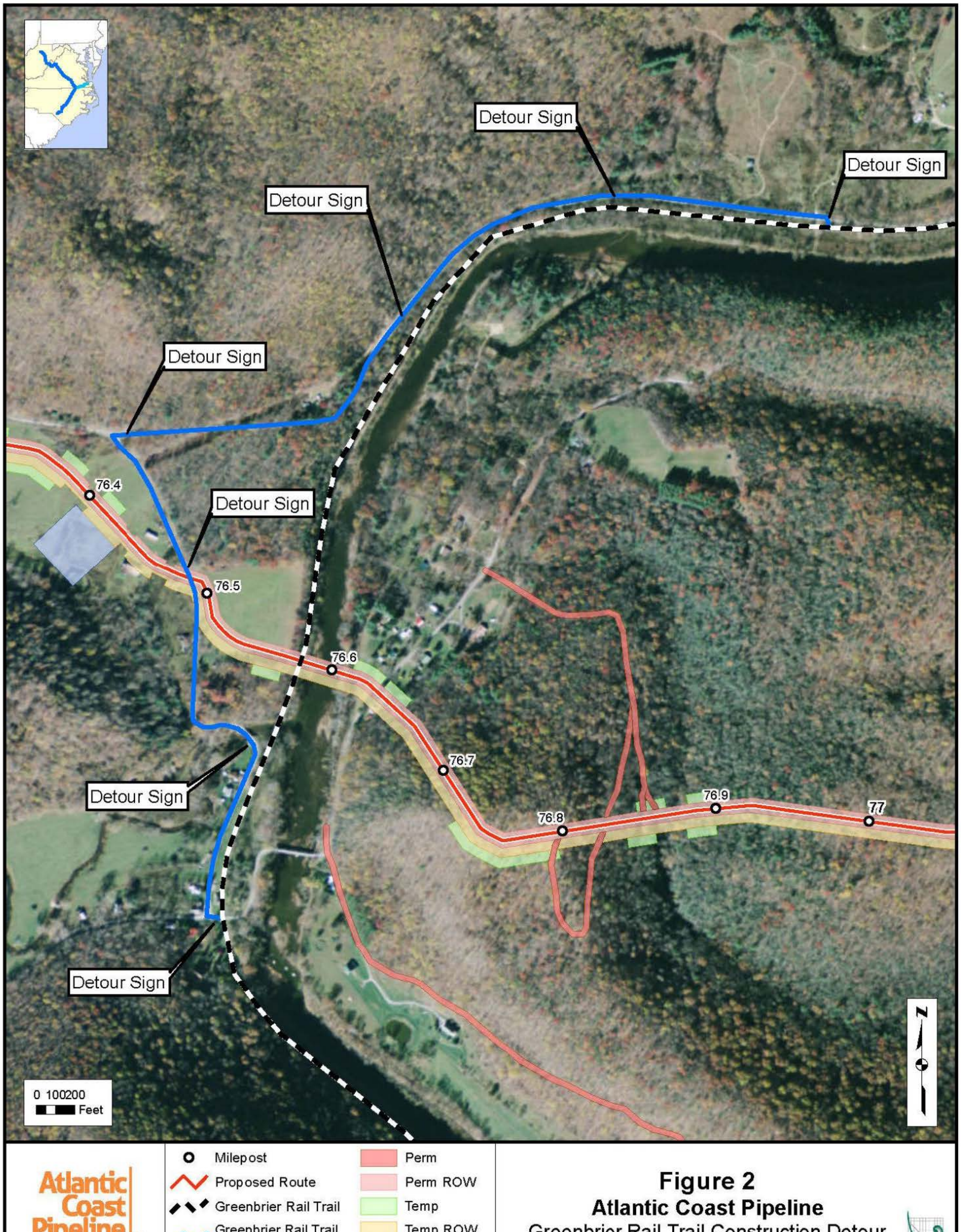
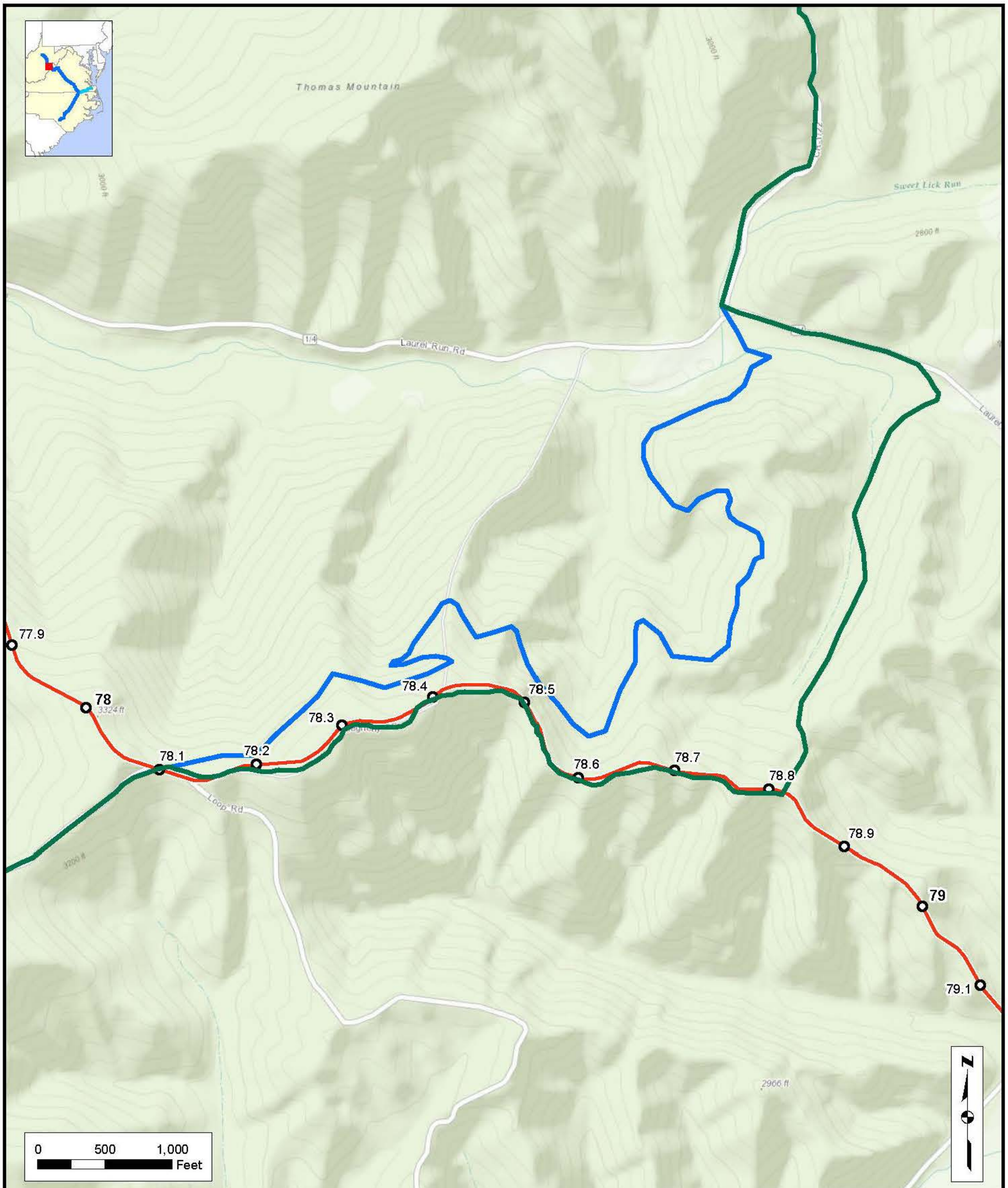


Figure 2
Atlantic Coast Pipeline
Greenbrier Rail Trail Construction Detour

FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Greenbrier_Trail_ACP_Greenbrier_Trail_Construction_Detour.mxd, REVISED: 03/13/2017, SCALE: 1:8,000 DRAWN BY: TAH

J4 SITE-SPECIFIC CROSSING PLAN FOR THE ALLEGHENY TRAIL



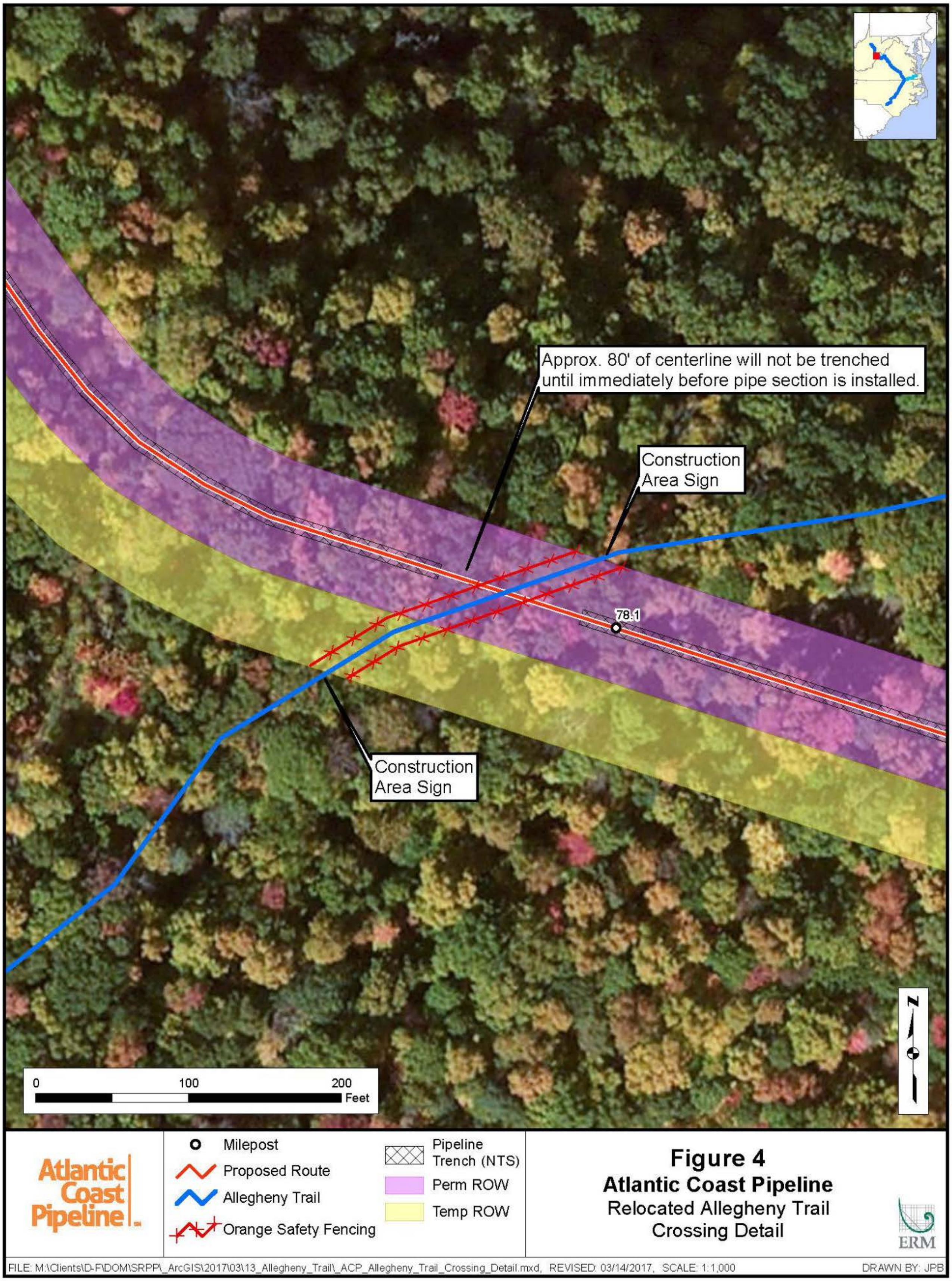
Atlantic Coast Pipeline

- Milepost
- Proposed Pipeline Route
- Current Allegheny Trail
- Relocated Allegheny Trail

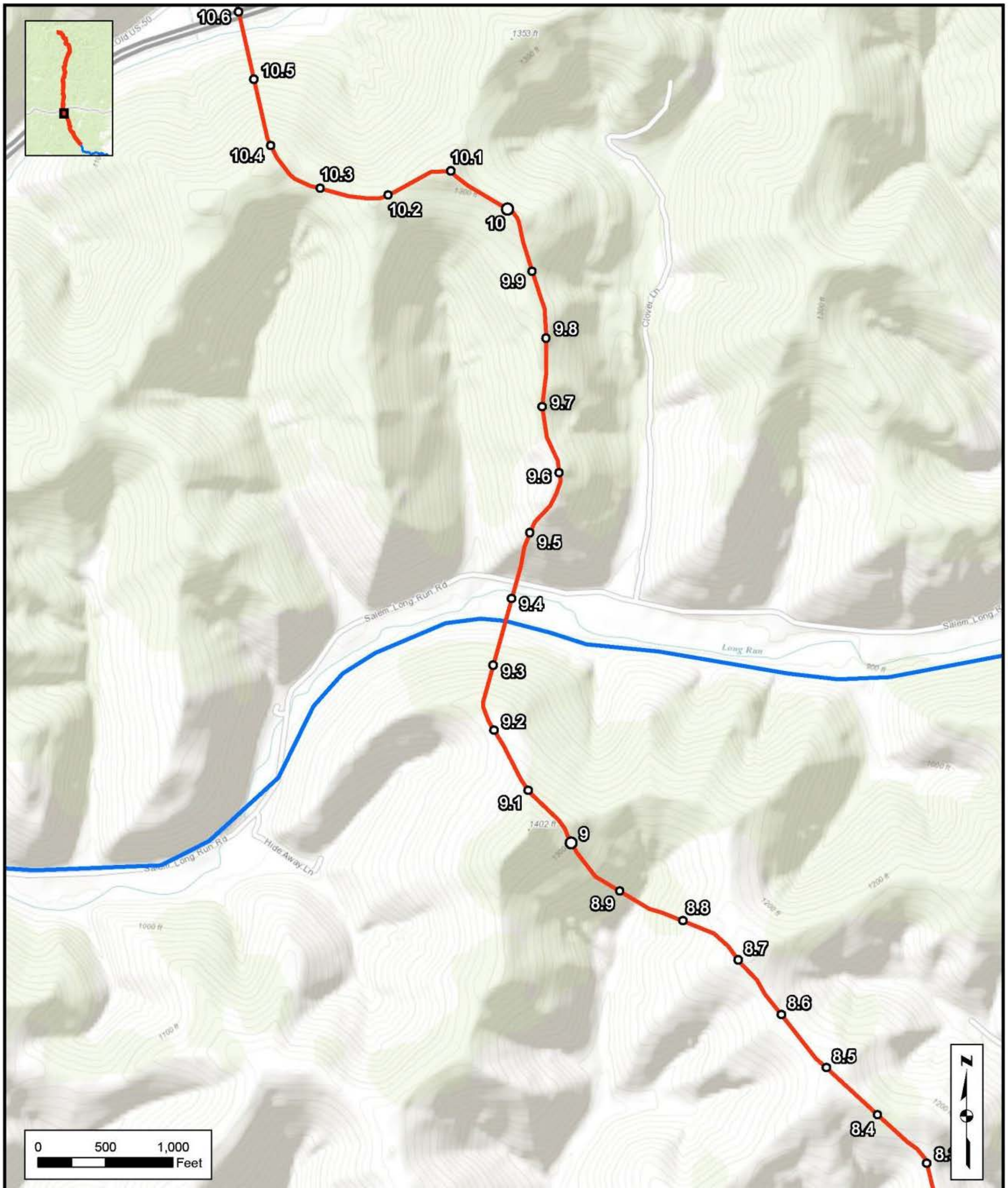
Figure 3
Atlantic Coast Pipeline
Relocated Allegheny Trail - General Area

ERM

FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Allegheny_Trail_ACP_Allegheny_Trail_GenArea.mxd, REVISED: 03/23/2017, SCALE: 1:12,000 DRAWN BY: JPB


Approx. 80' of centerline will not be trenched until immediately before pipe section is installed.
Construction Area Sign
Construction Area Sign
78.1
0
100
200
Feet
Atlantic Coast Pipeline
Milepost
Proposed Route
Allegheny Trail
Orange Safety Fencing
Pipeline Trench (NTS)
Perm ROW
Temp ROW
Figure 4
Atlantic Coast Pipeline
Relocated Allegheny Trail Crossing Detail
ERM
FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Allegheny_Trail_ACP_Allegheny_Trail_Crossing_Detail.mxd, REVISED: 03/14/2017, SCALE: 1:1,000
DRAWN BY: JPB

J5 SITE-SPECIFIC CROSSING PLAN FOR THE NORTH BEND RAIL TRAIL



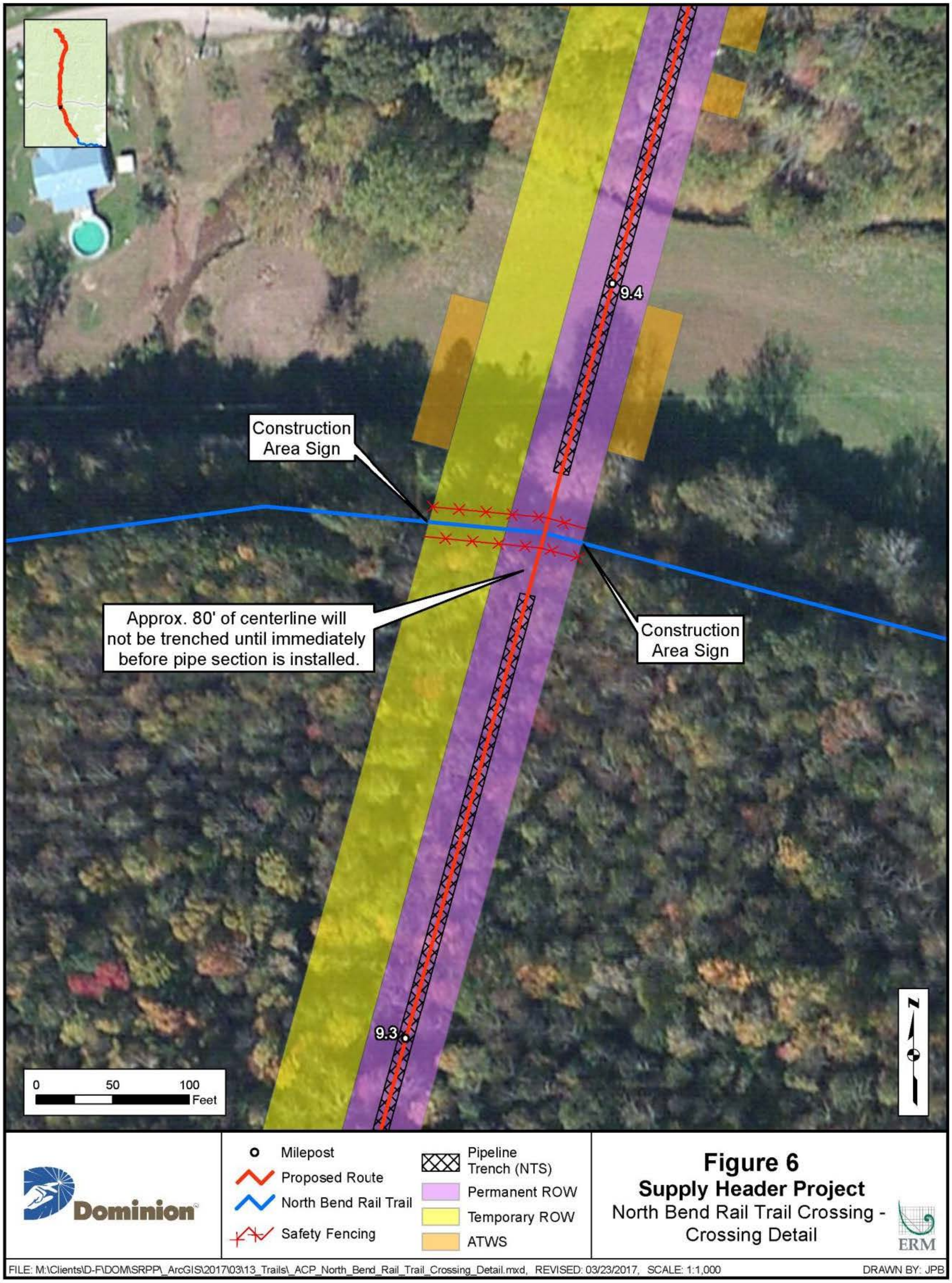
Dominion

Milepost
Proposed Route
North Bend Rail Trail

Figure 5
Supply Header Project
North Bend Rail Trail Crossing - General Location

ERM

FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Trails_ACP_North_Bend_Rail_Trail_GenArea.mxd, REVISED: 03/23/2017, SCALE: 1:12,000 DRAWN BY: JPB


9.4
9.3
Construction Area Sign
Construction Area Sign
Approx. 80' of centerline will not be trenched until immediately before pipe section is installed.
0 50 100 Feet
N
Dominion
Milepost
Proposed Route
North Bend Rail Trail
Safety Fencing
Pipeline Trench (NTS)
Permanent ROW
Temporary ROW
ATWS
Figure 6
Supply Header Project
North Bend Rail Trail Crossing - Crossing Detail
ERM
FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\2017\03\13_Trails_ACP_North_Bend_Rail_Trail_Crossing_Detail.mxd, REVISED: 03/23/2017, SCALE: 1:1,000
DRAWN BY: JPB

APPENDIX K

WATERBODIES CROSSED BY THE
ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Harrison County, WV	AP-1 / 0.0	Tanner Fork	Perennial		6	Temp / Perm ROW	Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Harrison County, WV	AP-1 / 0.0	UNT to Tanner Fork	Perennial	3 (CL)	3	Dam and Pump or Flume	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Harrison County, WV	AP-1 / 0.4	Tanner Fork	Perennial		4	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Harrison County, WV	AP-1 / 0.5	UNT to Tanner Fork	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Harrison and Lewis Counties, WV	AP-1 / 1.1	Kincheloe Creek	Perennial	14 (AR) / 14 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	B1; HQS	Iron and Fecal Coliform	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 1.5	Sand Fork	Perennial	12 (CL)	14	Dam and Pump or Flume	In-stream; Within 1000 feet	B1; HQS	Conditions Not Allowable (CNA)-Biological	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 2.4	UNT to Kincheloe Creek	Intermittent	56 (AR) / 21 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 2.5	Kincheloe Creek	Perennial	45 (AR)	20	Temp AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 3.0	UNT to Hog Camp Run	Perennial		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 3.8	Hog Camp Run	Perennial	11 (AR)	7	Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 4.0	Hog Camp Run	Perennial	41 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 4.0	UNT to Hog Camp Run	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 5.0	Elk Lick	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 5.0	Elk Lick	Intermittent		5	Abuts Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 5.0	UNT to Elk Lick	Intermittent		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 5.7	Turkeypen Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 5.7	UNT to Turkeypen Creek	Intermittent		3	Temp ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 7.2	UNT to Hollick Run	Ephemeral		1	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 7.5	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Lewis County, WV	AP-1 / 7.6	UNT to Hollick Run	Intermittent		4	Compressor Station - Temporary Impact	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 7.7	Hollick Run	Perennial	9 (CL)	9	Compressor Station - Temporary Impact	Within 1000 feet	B1		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	AP-1 / 7.7	Hollick Run	Perennial		6	Compressor Station - Temporary Impact	Within 1000 feet	B1		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Lewis County, WV	AP-1 / 7.7	UNT to Hollick Run	Intermittent		2	Compressor Station - Temporary Impact	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 7.7	UNT to Hollick Run	Intermittent		4	Compressor Station - Temporary Impact	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 7.8	Hollick Run	Perennial		15	Compressor Station - Temporary Impact	Within 1000 feet	B1		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	**AP-1 / 8.2**	**West Fork River**	**Perennial**	**92 (CL)**	**65**	**Cofferdam**	**In-stream; Within 1000 feet**	**A; B1; HQS**	**CNA-Biological, Fecal Coliform, and Polychlorinated Biphenyls (PCB)**	**April 1 to June 30**	**Assume presence of snuffbox (F-E) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Lewis County, WV	AP-1 / 9.4	Broad Run	Perennial	11 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	AP-1 / 9.9	UNT to Broad Run	Intermittent		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 10.2	Broad Run	Perennial		4	Perm AR - Existing Culvert	NA	B1		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	AP-1 / 10.2	UNT to Broad Run	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 10.8	UNT to Sycamore Lick	Ephemeral		2	Temp ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 10.9	Broad Run	Intermittent		3	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 11.8	UNT to Hacker's Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 11.8	UNT to Hacker's Creek	Intermittent		3	Temp ROW	Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 12.5	UNT to West Run	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 12.5	UNT to West Run	Intermittent		1	Temp ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 12.6	West Run	Perennial	14 (CL)	8	Flume or Dam and Pump	In-stream; Within 1000 feet	B1	Iron and Fecal Coliform	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 13.6	UNT to Lifes Run	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 13.8	UNT to Lifes Run	Intermittent		4	Flume or Dam and Pump	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 13.9	UNT to Lifes Run	Intermittent	1 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.2	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Lewis County, WV	AP-1 / 14.3	Lifes Run	Perennial		22	Perm AR - Bridge	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Lewis County, WV	AP-1 / 14.3	Lifes Run	Perennial	20 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	B1	Fecal Coliform and CNA-Biological	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.4	UNT to Lifes Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.5	UNT to Lifes Run	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.8	UNT to Hacker's Creek	Intermittent		4	Temp AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.8	UNT to Hacker's Creek	Intermittent	3 (AR)	5	Perm AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 14.8	UNT to Hacker's Creek	Intermittent	14 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 15.0	UNT to Hacker's Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 15.0	UNT to Hacker's Creek	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 15.3	UNT to Hacker's Creek	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 15.4	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Lewis County, WV	AP-1 / 15.5	UNT to Hacker's Creek	Intermittent	14 (AR)	4	Perm AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 15.5	UNT to Hacker's Creek	Intermittent		2	Perm AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 15.5	UNT to Hacker's Creek	Perennial	13 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	**AP-1 / 15.6**	**Hacker's Creek**	**Perennial**	**30 (AR)**	**30**	**Perm AR - Bridge**	**NA**	**A; B1; HQS**		**April 1 to June 30**	**Assume presence of clubshell (F-E)** **Classified as endangered mussel stream by the WVDNR** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**	**Will adhere to TOYR for work within the waterbody.**	**Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Lewis County, WV	AP-1 / 15.8	UNT to Hacker's Creek	Ephemeral		2	Abuts Perm AR	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 15.9	UNT to Hacker's Creek	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Lewis County, WV	AP-1 / 16.3	UNT to Hacker's Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 16.4	UNT to Hacker's Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Lewis County, WV	AP-1 / 17.2	UNT to Hacker's Creek	Perennial	7 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to A; B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 18.1	Laurel Lick	Intermittent	5 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	B1	CNA-Biological, Iron, and Fecal Coliform	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Lewis County, WV	AP-1 / 18.1	UNT to Laurel Lick	Intermittent		12	Temp ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Lewis County, WV	AP-1 / 19.9	UNT to Buckhannon Run	Intermittent	5 (AR)	5	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 19.9	UNT to Buckhannon Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 20.3	Buckhannon Run	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	B1	CNA-Biological, Iron, and Fecal Coliform	April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Lewis County, WV	AP-1 / 20.6	UNT to Buckhannon Run	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 23.3	Fink Run	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 24.0	UNT to Fink Run	Intermittent	3 (AR) / 4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 24.6	UNT to Brushy Fork	Intermittent	4 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 24.7	UNT to Brushy Fork	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 25.4	UNT to Brushy Fork	Intermittent	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 25.4	UNT to Brushy Fork	Intermittent		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 25.7	Brushy Fork	Intermittent		3	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 25.8	UNT to Brushy Fork	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 25.8	UNT to Brushy Fork	Intermittent		3	Contractor Yard - Temporary Impact	Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 26.0	Brushy Fork	Perennial	16 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 28.4	UNT to Lick Run	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 28.5	UNP to Lick Run	Pond		Pond	Pond	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 29.2	Cutright Run	Perennial	22 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 29.3	UNT to Cutright Run	Intermittent		3	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 29.9	UNT to French Creek	Perennial	6 (CL)	5	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 30.3	UNT to French Creek	Intermittent		5	Abuts Perm AR	NA	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 30.5	UNT to French Creek	Perennial		3	Temp / Perm ROW	Within 1000 feet	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 30.6	UNT to French Creek	Intermittent		5	Perm AR - Existing Culvert	NA	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Upshur County, WV	AP-1 / 30.7	UNT to French Creek	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 30.9	UNT to French Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 31.1	French Creek	Perennial	40 (CL)	40	Cofferdam	In-stream; Within 1000 feet	B2; HQS	Iron	September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 31.7	Buckhannon River	Perennial	91 (CL)	75	Cofferdam	In-stream; Within 1000 feet	A; B2; HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 32.1	UNT to Trubie Run	Intermittent	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 33.0	Trubie Run	Perennial		20	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 33.0	UNT to Trubie Run	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 34.1	UNT to Buckhannon Run	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Upshur County, WV	AP-1 / 34.4	Grassy Run	Perennial	25 (CL)	17	Flume or Dam and Pump	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 35.9	Gravel Run	Perennial	15 (AR)	12	Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 36.1	Gravel Run	Perennial	21 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 36.1	UNT to Gravel Run	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 36.4	Laurel Run	Perennial		15	Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 36.7	UNT to Laurel Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 36.8	Laurel Run	Perennial	21 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.1	UNT to Tenmile Creek	Intermittent	6 (AR)	3	Temp AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.5	UNT to Tenmile Creek	Intermittent		3	Abuts Temp AR	NA	UNT to HQS; UNT to Coldwater (Brook/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 37.8	Tenmile Creek	Perennial	10 (AR) / 17 (CL)	14	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; Coldwater (Brook/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.8	UNP to Tenmile Creek	Pond		Pond	Pond	NA	Unnamed Pond to HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.8	UNT to Tenmile Creek	Perennial		3	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.8	UNT to Tenmile Creek	Perennial		5	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 37.9	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Upshur County, WV	AP-1 / 37.9	UNT to Tenmile Creek	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Upshur County, WV	AP-1 / 39.6	Tenmile Creek	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 40.5	UNT to Leonard Run	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 40.7	UNT to Leonard Run	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 41.3	Right Fork Middle Fork River	Perennial	45 (CL)	32	Flume or Cofferdam	In-stream; Within 1000 feet	B2; HQS; Coldwater (Brook Trout)	Iron	September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 41.4	UNT to Right Fork Middle Fork River	Intermittent		2	Abuts Temp AR	NA	UNT to B2; HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Upshur County, WV	AP-1 / 41.9	Jackson Fork	Perennial		15	Perm AR - Existing Culvert	NA	Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Upshur County, WV	AP-1 / 41.9	UNT to Jackson Fork	Ephemeral	17 (AR)	1	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 45.4	UNT to Jenks Fork	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 45.4	UNT to Jenks Fork	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 47.0	UNT to Long Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 47.1	UNT to Long Run	Intermittent	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 47.4	UNT to Sugar Run	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.2	UNT to Dry Run	Intermittent		3	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 50.4	UNT to Dry Run	Intermittent	55 (AR)	3	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.4	UNT to Dry Run	Intermittent	46 (AR)	3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.4	UNT to Dry Run	Intermittent	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.4	UNT to Dry Run	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 50.5	Dry Run	Intermittent	11 (AR)	9	Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.5	Dry Run	Perennial	23 (CL)	16	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.5	UNT to Dry Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.6	UNT to Dry Run	Intermittent		5	Temp ROW	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 50.7	UNT to Dry Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.7	UNT to Left Fork Buckhannon River	Perennial		10	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 50.8	Dry Run	Intermittent	4 (AR) / 7 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 50.8	UNT to Dry Run	Intermittent	4 (AR)	4	Perm AR	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 50.9	UNT to Dry Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.2	UNT to Lick Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 51.3	UNT to Lick Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 51.4	UNT to Lick Run	Intermittent	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.4	UNT to Lick Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.4	UNT to Lick Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.6	UNT to Lick Run	Intermittent	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.7	UNT to Lick Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.7	UNT to Lick Run	Intermittent		3	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 51.8	UNT to Lick Run	Perennial		7	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 51.8	UNT to Lick Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.1	Beech Run	Perennial	27 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; Coldwater (Brook Trout)	pH	September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.1	Beech Run	Perennial	23 (AR)	25	Perm AR - Existing Culvert	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.1	UNT to Beech Run	Perennial		14	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.1	UNT to Lick Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.4	UNT to Beech Run	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.8	UNT to Beech Run	Intermittent	32 (AR)	3	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 52.8	UNT to Beech Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 53.0	UNT to Beech Run	Intermittent		2	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 54.1	Left Fork Buckhannon River	Perennial	43 (AR)	18	Perm AR	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 54.1	Left Fork Buckhannon River	Perennial		50	Abuts Perm AR	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 54.1	Left Fork Buckhannon River	Perennial	43 (AR)	25	Perm AR	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet)[a]	Construction Method[b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments)[c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 54.1	UNT to Left Fork Buckhannon River	Intermittent	12 (AR)	12	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 54.2	UNT to Left Fork Buckhannon River	Intermittent		10	Abuts Perm AR	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 54.2	UNT to Left Fork Buckhannon River	Perennial		5	Abuts Perm AR	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 54.3	Philips Camp Run	Perennial	29 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 54.3	UNT to Left Fork Buckhannon River	Perennial		22	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 54.5	UNT to Left Fork Buckhannon River	Intermittent		10	Abuts Perm AR	NA	UNT to HQS, UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 55.0	Short Run	Perennial	9 (CL)	13	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.1	Long Run	Intermittent	20 (AR)	20	Perm AR	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.1	UNT to Left Fork Buckhannon River	Perennial	22 (AR)	10	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.3	Long Run	Perennial	13 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.3	UNT to Long Run	Intermittent		8	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.3	UNT to Long Run	Intermittent		3	Abuts Perm AR	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 55.3	UNT to Long Run	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 55.3	UNT to Long Run	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 56.1	UNT to Left Fork Buckhannon River	Intermittent	4 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 56.3	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Randolph County, WV	AP-1 / 56.3	UNT to Left Fork Buckhannon River	Intermittent	8 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 56.3	UNT to Left Fork Buckhannon River	Intermittent		3	Abuts Perm AR	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 56.4	UNT to Sugar Creek	Perennial	5 (AR)	4	Perm AR - Existing Culvert	NA	UNT to HQS		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 56.5	UNT to Back Fork Elk River	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 56.5	UNT to Sugar Creek	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 56.7	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Randolph County, WV	AP-1 / 56.7	UNT to Back Fork Elk River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.0	UNT to Back Fork Elk River	Intermittent	5 (AR) / 5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.1	UNT to Back Fork Elk River	Intermittent	14 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.1	UNT to Left Fork Back Fork Elk River	Intermittent	6 (AR)	10	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.2	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Randolph County, WV	AP-1 / 57.3	Mitchell Run	Intermittent		2	Abuts Perm AR	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.3	Mitchell Run	Perennial		8	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.3	UNT to Back Fork Elk River	Intermittent		2	Temp / Perm ROW	Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.3	UNT to Mitchell Run	Intermittent		6	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.4	UNT to Mitchell Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.4	UNT to Mitchell Run	Intermittent	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.4	UNT to Mitchell Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.5	UNT to Mitchell Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.5	UNT to Mitchell Run	Ephemeral	25 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		7	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		7	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent	5 (AR)	2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent	26 (AR)	9	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		5	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Ephemeral		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		7	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Intermittent		6	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 57.6	UNT to Mitchell Run	Ephemeral		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.7	Mitchell Run	Perennial		20	Perm AR - Existing Culvert	NA	B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 57.7	UNT to Mitchell Run	Intermittent		3	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet)[a]	Construction Method[b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments)[c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 57.7	UNT to Mitchell Run	Ephemeral		2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.7	UNT to Mitchell Run	Ephemeral		2	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 57.7	UNT to Mitchell Run	Intermittent		5	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.1	UNT to Back Fork Elk River	Intermittent	3 (AR)	2	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.1	UNT to Back Fork Elk River	Ephemeral		2	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 58.1	UNT to Back Fork Elk River	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.2	UNT to Back Fork Elk River	Intermittent	2 (AR)	2	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.2	UNT to Back Fork Elk River	Ephemeral		2	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 58.2	Back Fork Elk River	Perennial	12 (CL)	10	Dam and Pump or Flume	In-stream, Within 1000 feet	Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.2	Upper Flint Run	Intermittent		5	Temp ROW	Within 1000 feet	Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 58.3	UNT to Hewett Fork	Ephemeral		2	Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 58.4	UNT to Back Fork Elk River	Intermittent	10 (AR)	7	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 58.5	UNT to Hewett Fork	Intermittent		1	Abuts Perm AR	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 58.7	UNT to Hewett Fork	Intermittent	25 (AR)	5	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 59.4	UNT to Hickorylick Run	Intermittent	27 (AR)	5	Perm AR	NA	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 59.6	UNT to Hewett Fork	Intermittent		2	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 59.7	UNT to Hewett Fork	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 59.7	UNT to Hewett Fork	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 59.7	UNT to Hickorylick Run	Ephemeral	5 (AR)	2	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 60.7	UNT to Valley Fork	Intermittent	8 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 60.7	UNT to Valley Fork	Intermittent	8 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 60.7	Valley Fork	Perennial	51 (CL)	50	Dam and Pump or Flume	In-stream; Within 1000 feet	Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 60.8	UNT to Valley Fork	Ephemeral	3 (AR) / 7 (CL)	3	Flume or Dam and Pump	Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 60.8	UNT to Valley Fork	Ephemeral	9 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 60.9	UNT to Valley Fork	Ephemeral	12 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 60.9	UNT to Valley Fork	Intermittent	34 (AR)	8	Perm AR	NA	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 61.0	UNT to Valley Fork	Ephemeral	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 61.1	UNT to Valley Fork	Ephemeral	6 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook/Brown Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 61.3	UNT to Elk River	Intermittent		5	Temp ROW	Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook/Brown/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 61.7	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Randolph County, WV	AP-1 / 62.0	UNT to Elk River	Intermittent	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook/Brown/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 62.0	UNT to Elk River	Intermittent		4	Temp / Perm ROW	Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook/Brown/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 62.2	UNT to Elk River	Ephemeral		2	Temp ROW	Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook/Brown/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 62.2	UNT to Elk River	Intermittent	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook/Brown/Rainbow Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 62.9	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Randolph County, WV	AP-1 / 63.0	Unnamed pond	Pond		Pond	Pond	NA	NA		NA		NA	
Randolph County, WV	AP-1 / 63.0	UNT to Elkwater Fork	Intermittent		6	Contractor Yard - Temporary Impact	Within 1000 feet	UNT to HQS; UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.2	UNT to Falling Spring Run	Intermittent	6 (AR)	6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.2	UNT to Falling Spring Run	Ephemeral		2	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 63.2	UNT to Falling Spring Run	Intermittent		4	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 63.2	UNT to Falling Spring Run	Ephemeral		4	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 63.3	UNT to Falling Spring Run	Ephemeral	9 (AR)	3	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 63.4	UNT to Falling Spring Run	Intermittent		6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.6	UNT to Falling Spring Run	Ephemeral	6 (AR)	4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 63.7	Falling Spring Run	Perennial		20	Abuts Perm AR	NA	Tributary to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 63.8	Falling Spring Run	Perennial	92 (AR)	12	Perm AR	NA	Tributary to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.8	UNT to Falling Spring Run	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.8	UNT to Falling Spring Run	Intermittent	83 (AR)	2	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.9	UNT to Falling Spring Run	Intermittent		10	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 63.9	UNT to Falling Spring Run	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 64.1	UNT to Falling Spring Run	Ephemeral	12 (AR)	5	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.2	Unnamed Pond	Pond		Pond	Pond	In-stream; Within 1000 feet	NA		NA		NA	
Randolph County, WV	AP-1 / 64.2	Unnamed Pond	Pond		Pond	Pond	In-stream; Within 1000 feet	NA		NA		NA	
Randolph County, WV	AP-1 / 64.2	UNT to Falling Spring Run	Ephemeral	2 (AR)	2	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.3	UNT to Falling Spring Run	Intermittent		6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.4	UNT to Falling Spring Run	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Ephemeral		6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Intermittent	9 (AR)	6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Intermittent		8	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Ephemeral		2	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.5	UNT to Falling Spring Run	Ephemeral		2	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.6	UNT to Falling Spring Run	Intermittent		4	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 64.6	UNT to Falling Spring Run	Intermittent		5	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.6	UNT to Falling Spring Run	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.6	UNT to Falling Spring Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.6	UNT to Falling Spring Run	Ephemeral		1	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.7	UNT to Falling Spring Run	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.7	UNT to Falling Spring Run	Ephemeral		1	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.8	UNT to Falling Spring Run	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.9	UNT to Falling Spring Run	Intermittent		8	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.9	UNT to Falling Spring Run	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 64.9	UNT to Falling Spring Run	Ephemeral	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 64.9	UNT to Falling Spring Run	Ephemeral	1 (AR)	2	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 65.0	UNT to Falling Spring Run	Intermittent		10	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Randolph County, WV	AP-1 / 65.0	UNT to Falling Spring Run	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Randolph County, WV	AP-1 / 65.3	UNT to Mingo Run	Intermittent	19 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 65.4	Mingo Run	Perennial		8	Abuts Perm AR	NA	Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Randolph County, WV	AP-1 / 65.4	UNT to Mingo Run	Intermittent		5	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 65.4	UNT to Mingo Run	Intermittent		5	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 65.5	UNT to Mingo Run	Intermittent	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Randolph County, WV	AP-1 / 65.7	UNT to Mingo Run	Intermittent	17 (AR)	5	Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 66.6	Douglas Fork	Intermittent	6 (AR)	5	Perm AR	NA	Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 66.7	Douglas Fork	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 66.7	Douglas Fork	Intermittent		5	Temp ROW	Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 67.0	UNT to Douglas Fork	Perennial	61 (AR) / 32 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 67.5	Dry Fork	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 68.9	UNT to Big Spring Fork	Intermittent	5 (AR)	5	Perm AR	NA	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 69.1	Big Spring Fork	Perennial		16	Perm AR - Bridge	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 69.2	Big Spring Fork	Perennial	19 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 69.3	Big Spring Fork	Perennial	38 (AR)	35	Perm AR	NA	HQS; Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 69.6	Mill Run	Intermittent	17 (AR)	8	Perm AR	NA	Tributary to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.3	Mill Run	Intermittent	11 (AR)	12	Perm AR	NA	Tributary to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Intermittent		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Intermittent		10	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Ephemeral	40 (AR)	2	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Ephemeral	12 (AR)	1	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Intermittent	6 (AR)	5	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.4	UNT to Mill Run	Intermittent	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Ephemeral		2	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent		8	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent	24 (AR)	3	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Ephemeral		1	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent	3 (AR)	2	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.5	UNT to Mill Run	Intermittent	8 (AR)	6	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 70.8	UNT to Big Spring Fork	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 71.8	UNT to Clover Creek	Ephemeral		4	Perm ROW	Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Ephemeral		4	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Ephemeral		2	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Ephemeral		3	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Intermittent		2	Abuts Long-term AR	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Intermittent		3	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Intermittent		5	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Perennial	2 (AR)	5	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies	Will adhere to TOYR for work within the waterbody.	Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies
Pocahontas County, WV	AP-1 / 71.9	UNT to Slaty Fork	Intermittent		3	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 72.0	Slaty Fork	Intermittent		7	Long-term AR - Existing Culvert	NA	HQS; Tier 3; Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		2	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		2	Abuts Long-term AR	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply. Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		5	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		2	Abuts Long-term AR	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply. Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		2	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		2	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Perennial		9	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent	3 (AR)	2	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent	31 (AR)	2	Long-term AR	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent		6	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Intermittent	13 (AR)	2	Long-term AR	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation
Pocahontas County, WV	AP-1 / 72.0	UNT to Slaty Fork	Perennial		9	Long-term AR - Existing Culvert	NA	UNT to HQS; Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies
Pocahontas County, WV	AP-1 / 72.1	UNT to Old Field Fork	Intermittent		2	Contractor Yard - Temporary Impact	Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 72.3	UNT to Clover Creek	Intermittent		8	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 72.4	UNT to Clover Creek	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 72.5	UNT to Clover Creek	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 72.7	UNT to Clover Creek	Intermittent		12	Abuts Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 72.8	UNT to Clover Creek	Perennial	13 (AR) / 24 (CL)	18	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 72.8	UNT to Clover Creek	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 74.6	Clover Creek	Perennial		30	Perm AR - Existing Culvert	NA	Coldwater (Brook Trout)		September 15 to March 31	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 74.6	UNT to Clover Creek	Perennial	19 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 75.2	UNT to Clover Creek	Intermittent	8 (AR) / 8 (CL)	8	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 75.2	UNT to Clover Creek	Ephemeral		2	Abuts Perm AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 75.5	Clover Creek	Perennial	56 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Coldwater (Brook Trout)		September 15 to March 31	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 75.5	UNT to Clover Creek	Intermittent	8 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 76.0	Glade Run	Perennial	19 (CL)	14	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 76.4	UNT to Glade Run	Intermittent		5	Temporary Water Impoundment	Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Pocahontas County, WV	AP-1 / 76.4	Glade Run	Perennial		10	Temporary Water Impoundment	Within 1000 feet	B1		April 1 to June 30	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 76.5	UNT to Greenbrier River	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 76.6	Greenbrier River	Perennial	180 (CL)	170	Cofferdam	In-stream; Within 1000 feet	B1; HQS		April 1 to June 30	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 76.7	UNT to Greenbrier River	Ephemeral	1 (AR)	1	Perm AR	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 76.8	UNT to Greenbrier River	Ephemeral		5	Perm AR	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 76.9	UNT to Laurel Run	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to HQS; UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 77.1	UNT to Greenbrier River	Ephemeral		4	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 77.1	UNT to Greenbrier River	Ephemeral		4	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 77.3	Mile Branch	Perennial	13 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	B1		April 1 to June 30	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 77.3	UNT to Greenbrier River	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 77.3	UNT to Mile Branch	Intermittent	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to B1		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 77.9	UNT to Greenbrier River	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 78.1	UNT to Little Thorny Creek	Intermittent		6	Abuts Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 78.1	Little Thorny Creek	Perennial		35	Perm AR - Existing Culvert	NA	Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 78.1	Seneca Lake	Pond		Pond	Pond	NA	Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 78.1	UNT to Greenbrier River	Ephemeral		2	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 78.1	UNT to Greenbrier River	Ephemeral	27 (AR)	2	Perm AR - Existing Culvert	NA	UNT to B1; HQS		April 1 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 78.1	UNT to Little Thorny Creek	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 78.1	UNT to Little Thorny Creek	Ephemeral		3	Perm AR - Existing Culvert	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 78.1	UNT to Thorny Creek	Ephemeral	178 (AR)	8	Perm AR	NA	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 79.3	Powder Lick Run	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Pocahontas County, WV	AP-1 / 79.3	Thomas Creek	Perennial	9 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	Coldwater		September 15 to March 31	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 79.8	UNT to Thomas Creek	Intermittent	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 80.9	UNT to Sugar Camp Run	Intermittent		3	Temp ROW	Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 81.0	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Pocahontas County, WV	AP-1 / 81.0	UNT to Sugar Camp Run	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 81.0	Knapp Creek	Perennial		73	Contractor Yard - Temporary Impact	Within 1000 feet	Coldwater		September 15 to March 31	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)	Will adhere to TOYR for work within the waterbody.	If candy darter is listed during life of project, assume presence and implement the FWS' enhanced conservation measures (see section 4.7.1.12)
Pocahontas County, WV	AP-1 / 81.1	UNT to Sugar Camp Run	Intermittent	8 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 81.2	UNT to Sugar Camp Run	Intermittent		5	Abuts Long-term AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 81.2	UNT to Sugar Camp Run	Intermittent		4	Abuts Long-term AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Pocahontas County, WV	AP-1 / 81.5	UNT to Sugar Camp Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	
Pocahontas County, WV	AP-1 / 81.9	UNT to Sugar Camp Run	Ephemeral	2 (AR)	1	Long-term AR	NA	UNT to Coldwater (Brook Trout)		September 15 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Pocahontas County, WV	AP-1 / 82.0	UNT to Shock Run	Perennial	12 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Tier 3; UNT to Coldwater (Brook Trout)		September 15 to March 31	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (WV SGCN; MNF RFSS) and implement conservation measures established in the Biological Evaluation Apply MNF additional erosion control measures from Oct 1-Jun 1 within 100 feet of perennial waterbodies
Highland County, VA	AP-1 / 85.0	UNT to Warwick Run (Townsend Draft)	Perennial	45 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	WQS not assessed; Class I-IV		March 15 to June 30 / October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation This is not a roughhead shiner stream; remove March 15-June 30 TOYR Apply pre-construction aquatic species relocation.
Highland County, VA	AP-1 / 85.1	UNT to Warwick Run (Townsend Draft)	Perennial	10 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	WQS not assessed; Class I-IV		March 15 to June 30 / October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation This is not a roughhead shiner stream; remove March 15-June 30 TOYR Apply pre-construction aquatic species relocation.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Highland County, VA	AP-1 / 85.1	UNT to Warwick Run (Townsend Draft)	Perennial	24 (AR)	14	Long-term AR	NA	WQS not assessed; Class I-IV		March 15 to June 30 / October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation	Will adhere to TOYR for work within the waterbody.	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation This is not a roughhead shiner stream; remove March 15-June 30 TOYR
Highland County, VA	AP-1 / 85.4	Lick Draft	Perennial		20	Abuts Perm AR	NA	Aquatic Life, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply. State Classification should classify this as Class I-IV waters
Highland County, VA	AP-1 / 85.4	Lick Draft	Perennial	11 (AR)	12	Perm AR	NA	Aquatic Life		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	State Classification should classify this as Class I-IV waters
Highland County, VA	AP-1 / 85.4	UNT to Lick Draft	Perennial	10 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	WQS not assessed; Class I-IV		October 1 to March 31	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation
Highland County, VA	AP-1 / 85.4	UNT to Lick Draft	Intermittent	22 (AR)	9	Perm AR	NA	Aquatic Life		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	State Classification should classify this as Class I-IV waters
Highland County, VA	AP-1 / 85.4	Warwick Run (Townsend Draft)	Perennial	80 (AR)	30	Perm AR	NA	Class I-IV		March 15 to June 30 / October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	This is not a roughhead shiner stream; remove March 15-June 30 TOYR
Highland County, VA	AP-1 / 85.5	Lick Draft	Perennial	8 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	WQS not assessed; Class I-IV		October 1 to March 31	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Assume presence of southern water shrew (VA-E; GWNF RFSS) and implement conservation measures outlined in the Biological Evaluation
Highland County, VA	AP-1 / 86.9	Erwin Draft	Perennial		15	Abuts Perm AR	NA	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Highland County, VA	AP-1 / 87.2	Back Creek	Perennial	73 (CL)	70	Cofferdam or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life	Temperature	March 15 to June 30	Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	TOYR also applies to water withdrawals
Highland County, VA	AP-1 / 87.3	Unnamed Pond	Pond		Pond	Pond	In-stream; Within 1000 feet	NA		NA		NA	
Highland County, VA	AP-1 / 88.5	UNT to Back Creek	Ephemeral	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Highland County, VA	AP-1 / 88.8	UNT to Back Creek	Intermittent	9 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocations	Pre-construction aquatic species relocations.	
Highland County, VA	AP-1 / 88.8	UNT to Back Creek	Intermittent	5 (AR)	4	Perm AR - Existing Culvert	NA	UNT to Aquatic Life		NA		NA	
Highland County, VA		UNT to Back Creek	Intermittent	3 (AR)	3	Perm AR	NA	UNT to Aquatic Life		NA		NA	
Highland County, VA	AP-1 / 89.2	UNT to Back Creek	Intermittent		2	Perm AR - Existing Culvert	NA	UNT to Aquatic Life		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Perennial		8	Perm AR - Existing Culvert	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent		3	Perm AR - Existing Culvert	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	6 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	6 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	13 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Perennial	15 (AR)	10	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 89.4	UNT to Jackson River	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of designated trout streams
Highland County, VA	AP-1 / 90.0	Peak Run	Ephemeral	3 (AR) / 2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA		NA	
Highland County, VA	AP-1 / 90.1	UNT to Peak Run	Intermittent	2 (AR)	2	Perm AR - Existing Culvert	NA	UNT to Aquatic Life		NA		NA	
Highland County, VA	AP-1 / 90.4	Peak Run	Perennial	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply pre-construction aquatic species relocation. Provide documentation for the implementation of this TOYR from the applicable state or federal agency or remove.
Highland County, VA	AP-1 / 90.4	UNT to Jackson River	Ephemeral	3 (AR)	3	Perm AR - Existing Culvert	NA	UNT to Aquatic Life, I-IV		October 1 to March 31/March 15 to May 15		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Highland County, VA	AP-1 / 90.8	Stony Run	Perennial	31 (CL)	16	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31/ March 15 to June 30	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Provide documentation for the implementation of the Mar 15-June 30 TOYR from the applicable state or federal agency or remove.
Highland County, VA	AP-1 / 90.8	UNT to Stony Run	Ephemeral	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Highland County, VA	AP-1 / 91.1	Morris Run	Perennial	11 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Provide documentation for the implementation of this TOYR from the applicable state or federal agency or remove.
Highland County, VA	AP-1 / 91.1	UNT to Morris Run	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Highland County, VA	AP-1 / 91.4	Morris Run	Perennial	9 (CL)	8	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		March 15 to June 30	Pre-construction aquatic species relocations	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	Provide documentation for the implementation of this TOYR from the applicable state or federal agency or remove.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Highland County, VA	**AP-1 / 91.5**	**Jackson River**	**Perennial**	**63 (CL)**	**60**	**Cofferdam or Dam and Pump**	**In-stream; Within 1000 feet**	**Aquatic Life, I-IV**	**Escherichia Coli (E. Coli) and Temperature**	**October 1 to March 31/March 15 to May 15/March 15 to June 30**	**Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Assume presence of James spinymussel (VA-E / F-E) and implement VDGIF TOYR (May 15-July 31) Implement VDGIF TOYR for rainbow trout (Mar 15-May 15); and possible brook trout (Oct 1-Mar 31) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Complete mussel surveys and submit results to FWS and VDGIF Apply VDGIF TOYR for James spinymussel May 15-July 31 per VDGIF February 7, 2017 letter; TOYR also applies to water withdrawals. Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Bath County, VA	AP-1 / 91.7	UNT to Jackson River	Intermittent	3 (AR)	2	Perm AR	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Jackson River for all applicable species	Will adhere to TOYR for work within the waterbody.	Apply James spinymussel VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 91.7	UNT to Jackson River	Perennial	6 (AR)	5	Perm AR	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Jackson River for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply James spinymussel VDGIF TOYR (May 15-Jul 31) Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 91.8	UNT to Givens Run	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Bath County, VA	AP-1 / 91.8	UNT to Jackson River	Intermittent		2	Abuts Perm AR	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31	Implement VDGIF TOYR for rainbow trout (Mar 15-May 15); and possible brook trout (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Bath County, VA	AP-1 / 91.9	UNT to Jackson River	Intermittent	2 (AR)	2	Perm AR - Existing Culvert	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31	Implement VDGIF TOYR for rainbow trout (Mar 15-May 15); and possible brook trout (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	Apply James spinymussel VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 91.9	UNT to Jackson River	Intermittent	9 (AR)	4	Perm AR	NA	WQS not assessed, Class I-IV		March 15 to May 15/October 1 to March 31	Implement VDGIF TOYR for rainbow trout (Mar 15-May 15); and possible brook trout (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	Apply James spinymussel VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 92.9	Little Valley Run	Perennial	19 (CL)	11	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF TOYR for brook trout (Oct 1-Mar 31) Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Bath County, VA	AP-1 / 93.0	UNT to Little Valley Run	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	
Bath County, VA	AP-1 / 93.2	UNT to Little Valley Run	Ephemeral	4 (CL)	4	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 93.7	UNT to Muddy Run	Intermittent		2	Long-term AR - Existing Culvert	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 93.7	UNT to Muddy Run	Intermittent	59 (AR)	2	Long-term AR - Existing Culvert	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 93.7	UNT to Muddy Run	Intermittent	29 (AR)	2	Long-term AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 93.7	UNT to Muddy Run	Intermittent		2	Long-term AR - Existing Culvert	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 94.1	Laurel Run	Perennial	7 (CL)	7	Flume or Dam and Pump	In-stream; Within 1000 feet	Impaired; Class I-IV	pH	October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Crossings of Laurel Fork documented in this table do not match information provided in BE; BE only indicates one pipeline crossing and no access road crossings per GWNF comments. Revise this table accordingly.
Bath County, VA	AP-1 / 94.7	UNT to Laurel Run	Intermittent		5	Temp ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply. Confirm if this a tributary to Dry Run or Laurel Run
Bath County, VA	AP-1 / 94.7	UNT to Laurel Run	Intermittent	63 (CL)	5	Flume or Dam and Pump	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Bath County, VA	AP-1 / 95.2	UNT to Dry Run	Ephemeral	9 (CL)	9	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Bath County, VA	AP-1 / 95.5	UNT to Dry Run	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Bath County, VA	AP-1 / 95.5	UNT to Dry Run	Intermittent	48 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Bath County, VA	AP-1 / 95.5	UNT to Dry Run	Intermittent	3 (AR)	3	Perm AR	Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Bath County, VA	AP-1 / 96.3	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	WQS not assessed		NA	Further consultation with FS required		See section 4.4.7; prior to construction, Atlantic should file with the Secretary and the FS for review and concurrence, detailed mapping of the existing conditions and proposed improvements to access road 36-016.AR1, including digital data, a description of the construction and operation impacts, including impacts on the adjacent vegetation communities, potential pond crossings identified in appendix K, and GWNF locally rare species located downslope, and identify the conservation measures that would be implemented to these mitigate potential impacts.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 96.3	Campbell Run	Ephemeral	2 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 96.5	Unnamed Pond	Pond	Pond	Pond	Pond	NA	NA		NA	Further consultation with FS required	NA	See section 4.4.7; prior to construction, Atlantic should file with the Secretary and the FS for review and concurrence, detailed mapping of the existing conditions and proposed improvements to access road 36-016.AR1, including digital data, a description of the construction and operation impacts, including impacts on the adjacent vegetation communities, potential pond crossings identified in appendix K, and GWNF locally rare species located downslope, and identify the conservation measures that would be implemented to these mitigate potential impacts.
Bath County, VA	**AP-1 / 97.8**	**Cowpasture River**	**Perennial**	**106 (CL)**	**90**	**Cofferdam or Dam and Pump**	**In-stream; Within 1000 feet**	**Aquatic Life**		**March 15 to June 30/May 15 to July 31**	**Pending surveys for James spinymussel; if observed, implement VDGIF TOYR (May 15-Jul 31)** **Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30)** **Assume presence yellow lance (F-PT) and implement VDGIF TOYR (May 15-July 31)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody.**	**Complete mussel surveys and submit results to FWS and VDGIF** **Apply pre-construction aquatic species relocation** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Applicant-Prepared BA (1/27/17) lists an access road crossing of Cowpasture River at MP 97.8. Confirm and revise this table accordingly.**
Bath County, VA	AP-1 / 97.8	UNT to Cowpasture River	Perennial	54 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 97.9	UNT to Cowpasture River	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation
Bath County, VA	AP-1 / 98.0	UNT to Cowpasture River	Perennial	11 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 98.3	UNT to Cowpasture River	Perennial	16 (CL)	11	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1)
Bath County, VA	AP-1 / 99.0	UNT to Cowpasture River	Intermittent	15 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Pre-construction aquatic species relocation	NA	Adhere to TOYR for work within the waterbody Apply pre-construction aquatic species relocation
Bath County, VA	AP-1 / 99.0	UNT to Gibson Hollow	Intermittent		4	Temp / Perm ROW	In-stream; Within 1000 feet	Unclassified		NA		NA	
Bath County, VA	AP-1 / 99.0	UNT to Gibson Hollow	Ephemeral		2	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Bath County, VA	AP-1 / 99.2	UNT to Gibson Hollow	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Bath County, VA	AP-1 / 99.3	Gibson Hollow	Perennial	20 (AR)	11	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 99.3	UNT to Gibson Hollow	Ephemeral	9 (AR)	8	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 99.3	UNT to Gibson Hollow	Ephemeral	13 (AR)	5	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 99.3	Gibson Hollow	Perennial	10 (AR) / 10 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Bath County, VA	AP-1 / 99.3	UNT to Gibson Hollow	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Bath County, VA	AP-1 / 99.3	Gibson Hollow	Perennial	15 (AR)	21	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 99.4	UNT to Gibson Hollow	Perennial	4 (AR)	3	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 99.4	UNT to Gibson Hollow	Ephemeral	3 (AR)	3	Perm AR	NA	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 100.4	UNT to White Sulphur Spring	Ephemeral		1	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Bath County, VA	AP-1 / 100.6	White Sulphur Spring Branch	Perennial	9 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 100.7	Stuart Run	Perennial	65 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Confirm that this is roughhead shiner stream; remove TOYR that are not applicable
Bath County, VA	AP-1 / 100.8	UNT to Stuart Run	Ephemeral	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.0	UNT to Stuart Run	Perennial	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.0	UNT to Stuart Run	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.0	UNT to Stuart Run	Ephemeral		5	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.1	UNT to Stuart Run	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.1	UNT to Stuart Run	Perennial		2	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		Pre-construction aquatic species relocations.	No work within waterbody identified; therefore no pre-construction aquatic species relocation required.

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 101.2	UNT to Stuart Run	Intermittent		3	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.3	UNT to Stuart Run	Ephemeral		2	Temp / Perm ROW	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 101.3	UNT to Stuart Run	Ephemeral	2 (CL)	2	Flume or Dam and Pump	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.3	UNT to Stuart Run	Ephemeral		2	Temp / Perm ROW	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 101.5	UNT to Stuart Run	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.5	UNT to Stuart Run	Perennial	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.6	UNT to Stuart Run	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.8	UNT to Stuart Run	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Bath County, VA	AP-1 / 101.9	UNT to Stuart Run	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA			
Bath County, VA	AP-1 / 102.0	UNT to Stuart Run	Ephemeral		4	Perm AR - Existing Culvert	NA	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 102.1	UNT to Stuart Run	Ephemeral	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Bath County, VA	AP-1 / 102.1	UNT to Stuart Run	Intermittent	7 (CL)	6	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Bath County, VA	AP-1 / 102.3	UNT to Stuart Run	Ephemeral		2	Temp ROW	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 102.3	UNT to Stuart Run	Intermittent		5	Temp ROW	Within 1000 feet	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 102.5	UNT to Stuart Run	Intermittent	6 (CL)	5	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Bath County, VA	**AP-1 / 103.1**	**Mill Creek**	**Perennial**	**29 (CL)**	**12**	**Dam and Pump or Flume**	**In-stream; Within 1000 feet**	**Aquatic Life V-VIII**		**NA**	**Assume presence of James spinymussel (VA-E / F-E) and Atlantic pigtoe (VA-T / F-UR) and implement VDGIF TOYR (May 15-July 31)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Stockable trout water** **Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Complete mussel surveys and submit results to FWS and VDGIF** **Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)** **Apply VDGIF TOYR for James spinymussel and Atlantic pigtoe (May 15-Jul 31) based on FWS correspondence** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Bath County, VA	AP-1 / 103.1	UNT to Mill Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete musssel surveys and submit results to FWS and VDGIF Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31) Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 103.6	UNT to Mill Creek	Perennial	5 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1)
Bath County, VA	AP-1 / 103.8	UNT to Mill Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	**AP-1 / 103.9**	**Mill Creek**	**Perennial**	**24 (AR)**	**22**	**Perm AR**	**NA**	**Aquatic Life V-VIII**		**NA**	**Assume presence of James spinymussel (VA-E /F-E) and Atlantic pigtoe (VA-T / F-UR) and implement VDGIF TOYR (May 15-July 31)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Stockable trout water**	**Will adhere to TOYR for work within the waterbody.**	**Complete mussel surveys and submit results to FWS and VDGIF** **Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)** **Apply VDGIF TOYR for James spinymussel and Atlantic pigtoe (May 15-Jul 31) based on FWS correspondence** **Apply enhanced erosion control measures for ESA sensitive waterbodies (see section 4.7.1)**
Bath County, VA	AP-1 / 103.9	UNT to Mill Creek	Perennial	7 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 104.0	UNT to Mill Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31).
Bath County, VA	AP-1 / 104.1	UNT to Mill Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Bath County, VA	AP-1 / 104.4	UNT to Mill Creek	Perennial	7 (CL)	7	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 104.4	UNT to Mill Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 104.5	UNT to Mill Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 104.6	UNT to Mill Creek	Intermittent	8 (CL)	6	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 104.7	UNT to Mill Creek	Intermittent		2	Temp ROW	Within 1000 feet	WQS not assessed		NA		NA	
Bath County, VA	AP-1 / 104.8	UNT to Mill Creek	Intermittent	12 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Bath County, VA	AP-1 / 104.8	UNT to Mill Creek	Perennial	92 (CL)	9	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 105.7	UNT to Mill Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Bath County, VA	AP-1 / 105.7	UNT to Mill Creek	Perennial	3 (CL)	3	Flume or Dam and Pump	Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mill Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Apply James spinymussel and Atlantic pigtoe VDGIF TOYR (May 15-Jul 31). Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 107.1	UNT to Hamilton Branch	Intermittent	8 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.1	UNT to Hamilton Branch	Ephemeral	21 (AR)	3	Perm AR	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 107.3	UNT to Hamilton Branch	Canal/Ditch		Canal/Ditch	Abuts Perm AR	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 107.3	UNT to Hamilton Branch	Ephemeral	1 (CL)	1	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 107.5	UNT to Hamilton Branch	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.5	UNT to Hamilton Branch	Perennial	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.5	UNT to Hamilton Branch	Perennial		2	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 107.5	UNT to Hamilton Branch	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.5	UNT to Hamilton Branch	Perennial	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.7	UNT to Hamilton Branch	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 107.9	UNT to Hamilton Branch	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 108.1	UNT to Hamilton Branch	Intermittent	8 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 108.3	UNT to Hamilton Branch	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 108.3	UNT to Hamilton Branch	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 108.4	Hamilton Branch	Perennial	45 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF
Augusta County, VA	AP-1 / 108.5	UNT to Hamilton Branch	Ephemeral	10 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 108.6	Hamilton Branch	Perennial	29 (AR)	25	Perm AR	NA	Unclassified		NA		NA	Complete mussel surveys and submit results to FWS and VDGIF
Augusta County, VA	AP-1 / 108.6	UNT to Hamilton Branch	Intermittent	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 108.8	Hughart Run	Perennial	19 (CL)	18	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 108.8	UNT to Hughart Run	Pond		Pond	Pond	Within 1000 feet	WQS not assessed		NA		NA	
Augusta County, VA	AP-1 / 108.9	UNT to Hamilton Branch	Intermittent		5	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Augusta County, VA	AP-1 / 109.2	Guy Hollow	Perennial	11 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.2	UNT to Guy Hollow	Intermittent	9 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.2	UNT to Hamilton Branch	Intermittent		2	Contractor Yard - Temporary Impact	Within 1000 feet	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 109.3	UNT to Hamilton Branch	Perennial	9 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.3	UNT to Hamilton Branch	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.3	UNT to Hamilton Branch	Intermittent	6 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 109.5	UNT to Hamilton Branch	Intermittent	9 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.6	UNT to Hamilton Branch	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.7	UNT to Hamilton Branch	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 109.8	UNT to Hamilton Branch	Perennial		6	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 110.1	UNT to Calfpasture River	Perennial	21 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 110.5	UNT to Calfpasture River	Intermittent	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 110.7	Tizzle Branch	Perennial	9 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 110.8	Benson Run	Perennial	20 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 110.8	UNT to Benson Run	Perennial	19 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 110.9	Tim's Draft	Perennial	23 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 111.1	UNT to Tizzle Branch	Perennial		15	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 111.4	Calfpasture River	Perennial	46 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Complete surveys for James spinymussel; if observed implement VDGIF TOYR (May 15-Jul 31) and implement the FWS' enhanced conservation measures (see section 4.7.1) Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Implement roughhead shiner VDGIF TOYR (Mar 15-Jun 30) Remove Oct 1-Mar 31 TOYR if not trout stream; FWS indicates this waterbody has potential to contain James spinymussel. If James spinymussel identified during surveys, apply the VDGIF TOYR (May 15-July 31) and conduct mussel relocation. TOYR would also apply to water withdrawal. the FWS' enhanced conservation measures would also apply to perennial tributaries within 1 mile of this crossing location if also crossed by ACP.
Augusta County, VA	AP-1 / 111.4	White Rock Branch	Intermittent	14 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 111.5	UNT to White Rock Branch	Ephemeral	69 (CL)	14	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 111.5	White Rock Branch	Ephemeral	23 (CL)	14	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 112.1	UNT to Calfpasture River	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Remove TOYR if not trout stream

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 112.2	Calfpasture River	Perennial	65 (CL)	45	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Complete surveys for James spinymussel; if observed implement VDGIF TOYR (May 15-Jul 31) and implement the FWS' enhanced conservation measures (see section 4.7.1) Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Implement roughhead shiner VDGIF TOYR (Mar 15-Jun 30) Remove Oct 1-Mar 31 TOYR if not trout stream; FWS indicates this waterbody has potential to contain James spinymussel. If James spinymussel identified during surveys, apply the VDGIF TOYR (May 15-July 31) and conduct mussel relocation. TOYR would also apply to water withdrawal. the FWS' enhanced conservation measures would also apply to perennial tributaries within 1 mile of this crossing location if also crossed by ACP.
Augusta County, VA	AP-1 / 112.6	UNT to Calfpasture River	Perennial	24 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 113.1	Baker Draft	Perennial	11 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 113.1	UNT to Baker Draft	Perennial		3	Temp / Perm ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 113.1	UNT to Calfpasture River	Intermittent	33 (AR)	8	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31		NA	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 113.3	UNT to Calfpasture River	Perennial	14 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 113.4	UNT to Calfpasture River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 113.5	Calfpasture River	Perennial	31 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Complete surveys for James spinymussel; if observed implement VDGIF TOYR (May 15-Jul 31) and implement the FWS' enhanced conservation measures (see section 4.7.1) Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Implement roughhead shiner VDGIF TOYR (Mar 15-Jun 30) Remove Oct 1-Mar 31 TOYR if not trout stream; FWS indicates this waterbody has potential to contain James spinymussel. If James spinymussel identified during surveys, apply the VDGIF TOYR (May 15-July 31) and conduct mussel relocation. TOYR would also apply to water withdrawal. the FWS' enhanced conservation measures would also apply to perennial tributaries within 1 mile of this crossing location if also crossed by ACP.
Augusta County, VA	AP-1 / 113.5	UNT to Body Lick Branch	Perennial	4 (AR)	4	Perm AR	NA	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 113.9	UNT to Calfpasture River	Perennial	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 113.9	UNT to Calfpasture River	Ephemeral		2	Temp ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		NA	Remove TOYR; does not apply to ephemeral waters
Augusta County, VA	AP-1 / 114.0	UNT to Calfpasture River	Perennial	17 (AR)	4	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream Confirm that pre-construction aquatic species relocation would apply to access road crossing
Augusta County, VA	AP-1 / 114.0	UNT to Calfpasture River	Perennial	2 (AR)	2	Perm AR - Existing Culvert	NA	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream Confirm that pre-construction aquatic species relocation would apply to access road crossing

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 114.1	UNT to Calfpasture River	Ephemeral	1 (AR)	1	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31		NA	Remove TOYR; does not apply to ephemeral waters
Augusta County, VA	AP-1 / 114.2	UNT to Calfpasture River	Ephemeral		1	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31		NA	Remove TOYR; does not apply to ephemeral waters
Augusta County, VA	AP-1 / 115.2	UNT to Cowpasture River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Cowpasture River for all applicable species Pre-construction aquatic species relocation	Pre-construction fish relocation	Adhere to TOYR for work within the waterbody Apply pre-construction aquatic species relocation
Augusta County, VA	AP-1 / 115.2	UNT to Ramsey's Draft	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Pre-construction fish relocation	Adhere to TOYR for work within waterbody.
Augusta County, VA	AP-1 / 115.3	Ramsey's Draft	Perennial	19 (CL)	12	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Pre-construction fish relocation	Adhere to TOYR for work within waterbody.
Augusta County, VA	AP-1 / 115.4	UNT to Calfpasture River	Intermittent	39 (AR) / 3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation. Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 115.7	UNT to Barn Lick Branch	Ephemeral		1	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 115.8	Barn Lick Branch	Perennial	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 116.3	UNT to Calfpasture River	Perennial	12 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR if not trout stream
Augusta County, VA	AP-1 / 116.5	Braley Branch	Perennial	12 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 116.7	Calfpasture River	Perennial	30 (CL)	16	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Complete surveys for James spinymussel; if observed implement VDGIF TOYR (May 15-Jul 31) and implement the FWS' enhanced conservation measures (see section 4.7.1) Assume presence of roughhead shiner (VA SGCN / GWNF RFSS) and implement VDGIF TOYR (Mar 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Implement roughhead shiner VDGIF TOYR (Mar 15-Jun 30) Remove Oct 1-Mar 31 TOYR if not trout stream; FWS indicates this waterbody has potential to contain James spinymussel. If James spinymussel identified during surveys, apply the VDGIF TOYR (May 15-July 31) and conduct mussel relocation. TOYR would also apply to water withdrawal. the FWS' enhanced conservation measures would also apply to perennial tributaries within 1 mile of this crossing location if also crossed by ACP.
Augusta County, VA	AP-1 / 117.1	Dowell's Draft	Perennial	10 (AR) / 10 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 117.2	UNT to Dowell's Draft	Intermittent	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		NA	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Per FS and VDGIF correspondence, this crossing of a tributary to Calfpasture River is within 0.5 mile of Calfpasture River (documented wild brook trout stream); therefore the VDGIF TOYR (Oct 1-Mar 31) would apply and should be implemented. Apply pre-construction aquatic species relocation.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 117.3	East Branch Dowell's Draft	Perennial	10 (AR)	10	Long-term AR	NA	Aquatic Life, I-IV		NA	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	NA	Per FS and VDGIF correspondence, this crossing of a tributary to Calfpasture River is within 0.5 mile of Calfpasture River (documented wild brook trout stream); therefore the VDGIF TOYR (Oct 1-Mar 31) would apply and should be implemented.
Augusta County, VA	AP-1 / 117.7	UNT to East Branch Dowell's Draft	Intermittent	7 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	NA	Per FS and VDGIF correspondence, this crossing of a tributary to Calfpasture River is within 0.5 mile of Calfpasture River (documented wild brook trout stream); therefore the VDGIF TOYR (Oct 1-Mar 31) would apply and should be implemented. Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 120.2	Buckhorn Creek	Ephemeral	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 120.2	Buckhorn Creek	Perennial	25 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 120.2	UNT to Buckhorn Creek	Perennial	25 (AR)	10	Temp AR - Temp Impact	NA	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 120.3	UNT to Buckhorn Creek	Ephemeral	1 (AR)	1	Temp AR - Temp Impact	NA	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 120.4	UNT to Buckhorn Creek	Perennial	29 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 120.6	UNT to Stoutameyer Branch	Intermittent		3	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 120.7	UNT to Stoutameyer Branch	Intermittent		3	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 120.9	UNT to Stoutameyer Branch	Intermittent	4 (AR) / 5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 121.1	Stoutameyer Branch	Perennial	6 (CL)	16	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Augusta County, VA	AP-1 / 122.5	UNT to Jennings Branch	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Remove TOYR; only applies to intermittent and perennial tributaries within 1 river mile of designated trout stream
Augusta County, VA	AP-1 / 122.8	UNT to Jennings Branch	Intermittent	6 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Remove TOYR; only applies to intermittent and perennial tributaries within 1 river mile of designated trout stream
Augusta County, VA	AP-1 / 123.0	UNT to Jennings Branch	Ephemeral	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Augusta County, VA	AP-1 / 123.9	UNT to Elk Run	Intermittent	8 (AR) / 6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 124.0	UNT to Elk Run	Intermittent		3	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 124.1	UNT to Elk Run	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 124.2	UNT to Elk Run	Intermittent		4	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 124.4	UNT to Elk Run	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 125.1	UNT to Elk Run	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 125.8	UNT to Elk Run	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 129.2	Jennings Branch	Perennial	92 (CL)	50	Cofferdam or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF TOYR also applies to water withdrawal
Augusta County, VA	AP-1 / 130.4	Middle River	Perennial	73 (CL)	75	Cofferdam or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF
Augusta County, VA	AP-1 / 138.6	UNT to Folly Mills Creek	Ephemeral	5 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Augusta County, VA	AP-1 / 139.1	Folly Mills Creek	Perennial	26 (CL)	20	Dam and Pump or Flume	In-stream, Within 1000 feet	Aquatic Life V-VIII, Wildlife		NA	Stockable trout stream Pre-construction fish relocation	Pre-construction aquatic species relocations	Complete mussel surveys and provide results to FWS and VDGIF Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)
Augusta County, VA	AP-1 / 139.1	UNT to Folly Mills Creek	Intermittent		6	Temp / Perm ROW	In-stream, Within 1000 feet	Aquatic Life, Wildlife		NA		NA	
Augusta County, VA	AP-1 / 139.6	UNT to Folly Mills Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 140.0	UNT to Folly Mills Creek	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 142.3	UNT to Christians Creek	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 142.5	Christian`s Creek	Perennial	27 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 142.5	UNT to Christian`s Creek	Intermittent		4	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 143.9	UNT to Barterbrook Branch	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 144.0	Barterbrook Branch	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life V-VIII		NA	Stockable trout stream Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)
Augusta County, VA	AP-1 / 145.6	UNT to South River	Perennial	8 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 146.2	UNT to South River	Intermittent	5 (CL)	5	Dam and Pump or Flume	Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 147.5	UNT to South River	Canal/Ditch	21 (CL)	Canal/Ditch	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 148.6	South River	Perennial	46 (CL)	35	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 150.8	UNT to South River	Ephemeral	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 151.5	UNT to the South River	Intermittent	3 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 152.3	UNP to Back Creek	Pond	Pond (AR) / Pond (CL)	Pond	Pond	Within 1000 feet	NA		NA		NA	
Augusta County, VA	AP-1 / 152.4	UNT to Back Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 152.9	Mills Creek	Perennial	33 (CL)	16	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life, I-IV, V-VIII	Benthic-Macroinvertebrate Bioassessments	October 1 to March 31	Stockable trout stream Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; does not apply stockable trout streams; identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)
Augusta County, VA	AP-1 / 152.9	UNT to Mills Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV, V-VIII		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR, does not apply to stockable trout streams; nor to tributaries to stockable trout streams
Augusta County, VA	AP-1 / 153.1	UNT to Mills Creek	Perennial	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV, V-VIII		October 1 to March 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR, does not apply to stockable trout streams; nor to tributaries to stockable trout streams
Augusta County, VA	AP-1 / 153.4	Orebank Creek	Perennial	24 (CL)	13	Dam and Pump or Flume	Within 1000 feet	Aquatic Life, I-IV	pH	October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 153.6	UNT to Back Creek	Perennial	7 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life	Benthic-Macroinvertebrate Bioassessments and E. coli	NA	Pre-construction aquatic species relocation		Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 153.6	UNT to Back Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation		Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 153.7	UNT to Back Creek	Perennial	34 (CL)	10	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Augusta County, VA	AP-1 / 153.7	UNT to Back Creek	Intermittent		4	Temp ATWS / Temp ROW	Within 1000 feet	WQS not assessed		NA		NA	
Augusta County, VA	AP-1 / 153.7	UNT to Laurel Springs Branch	Intermittent	5 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Augusta County, VA	AP-1 / 153.7	UNT to Back Creek	Perennial		12	Temp / Perm ROW / Temp ATWS	Within 1000 feet	WQS not assessed		NA		NA	
Augusta County, VA	AP-1 / 153.8	Back Creek	Perennial	88 (CL)	55	Cofferdam or Dam and Pump	In-stream, Within 1000 feet	Aquatic Life Class V-VIII; Impaired		NA	Stockable trout stream Pre-construction aquatic species relocation		Complete mussel surveys and submit results to FWS and VDGIF Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager)
Augusta County, VA	AP-1 / 153.9	UNT to Back Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Augusta County, VA	AP-1 / 154.2	UNT to Back Creek	Intermittent	5 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 154.4	UNT to Back Creek	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 154.5	UNT to Back Creek	Intermittent	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 154.8	UNT to Back Creek	Intermittent	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 154.9	UNT to Back Creek	Ephemeral	6 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 155.0	UNT to Back Creek	Intermittent	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Augusta County, VA	AP-1 / 155.1	UNT to Back Creek	Ephemeral	11 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 155.2	UNT to Back Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.3	UNT to Back Creek	Intermittent	5 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.3	UNT to Back Creek	Intermittent	6 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.5	UNT to Back Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.6	UNT to Back Creek	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 155.8	UNT to Back Creek	Perennial	11 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.9	UNT to Back Creek	Intermittent	8 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.9	UNT to Back Creek	Intermittent	7 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 155.9	UNT to Back Creek	Intermittent		6	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 155.9	UNT to Back Creek	Perennial		25	Temp / Perm ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Augusta County, VA	AP-1 / 156.0	UNT to Back Creek	Intermittent	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 156.2	UNT to Back Creek	Perennial	5 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 156.4	UNT to Back Creek	Intermittent	3 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 156.6	UNT to South Fork Back Creek	Perennial	18 (CL)	10	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 156.6	UNT to South Fork Back Creek	Intermittent	8 (CL)	7	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 156.7	UNT to South Fork Back Creek	Ephemeral	10 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waterbodies
Augusta County, VA	AP-1 / 156.7	UNT to South Fork Back Creek	Intermittent	28 (CL)	7	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Augusta County, VA	AP-1 / 156.9	UNT to South Fork Back Creek	Ephemeral		6	Temp / Perm ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waterbodies
Augusta County, VA	AP-1 / 156.9	UNT to South Fork Back Creek	Intermittent	7 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 157.0	UNT to South Fork Back Creek	Perennial	6 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 157.0	UNT to South Fork Back Creek	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	
Augusta County, VA	AP-1 / 157.2	UNT to South Fork Back Creek	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Augusta County, VA	AP-1 / 157.4	UNT to South Fork Back Creek	Intermittent		4	Temp ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Augusta County, VA	AP-1 / 157.6	UNT to South Fork Back Creek	Intermittent	6 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	
Augusta County, VA	AP-1 / 157.6	UNT to South Fork Back Creek	Perennial	17 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Augusta County, VA	AP-1 / 157.6	UNT to South Fork Back Creek	Ephemeral	11 (CL)	9	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waterbodies
Augusta County, VA	AP-1 / 157.6	UNT to South Fork Back Creek	Intermittent		13	Temp ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Augusta County, VA	AP-1 / 157.8	UNT to South Fork Back Creek	Intermittent	5 (AR) / 7 (CL)	5	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Nelson County, VA	AP-1 / 158.7	UNT to South Fork Rockfish River	Perennial	3 (CL)	8	Flume or Dam and Pump	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nelson County, VA	AP-1 / 158.8	UNT to South Fork Rockfish River	Intermittent		3	Temp ATWS / Temp ROW	Within 1000 feet	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Nelson County, VA	AP-1 / 158.9	South Fork Rockfish River	Perennial	20 (CL)	16	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life, I-IV, V-VIII	E. Coli and Fecal Coliform	October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Stockable trout stream Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply pre-construction aquatic species relocation Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager) TOYR also applies to water withdrawal
Nelson County, VA	AP-1 / 160.4	Spruce Creek	Perennial	16 (AR)	10	Perm AR	NA	Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	
Nelson County, VA	AP-1 / 161.1	Spruce Creek	Perennial	2 (AR)	10	Perm AR	NA	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	
Nelson County, VA	AP-1 / 161.4	UNT to South Fork Rockfish River	Intermittent	6 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	
Nelson County, VA	AP-1 / 161.8	South Fork Rockfish River	Perennial	10 (AR)	10	Perm AR	NA	Aquatic Life, I-IV, V-VIII		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Stockable trout stream	Will adhere to TOYR for work within the waterbody.	Identify as Class V-VIII stockable trout steam; identify conservation measures to avoid/minimize conflict with stocking and angling activities (Paul Bugas, VDGIF Region IV Aquatic Resources Manager) TOYR also applies to water withdrawal
Nelson County, VA	AP-1 / 161.8	UNT to South Fork Rockfish River	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) for perennial and intermittent tributaries within 1 river mile of designated waterbodies	Will adhere to TOYR for work within the waterbody.	
Nelson County, VA	AP-1 / 162.4	UNT to Spruce Creek	Perennial	6 (CL)	5	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 162.4	Spruce Creek	Perennial	26 (CL)	15	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 162.6	Spruce Creek	Perennial		15	Temp ATWS / Temp ROW	Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Nelson County, VA	AP-1 / 162.6	UNT to Spruce Creek	Perennial		8	Temp ROW	Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Nelson County, VA	AP-1 / 162.8	UNT to Spruce Creek	Ephemeral	13 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Nelson County, VA	AP-1 / 163.0	UNT to Spruce Creek	Intermittent		2	Temp ROW	Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31)	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Nelson County, VA	AP-1 / 163.1	UNT to Spruce Creek	Ephemeral		2	Temp ATWS / Temp ROW	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Nelson County, VA	AP-1 / 163.1	UNT to Spruce Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waterbodies
Nelson County, VA	AP-1 / 163.1	Spruce Creek	Perennial	56 (CL)	16	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Implement VDGIF brook trout TOYR (Oct 1-Mar 31) Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 163.7	South Fork Rockfish River	Perennial	61 (CL)	40	Dam and Pump or Flume	In-stream, Within 1000 feet	Aquatic Life, Wildlife, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	Complete mussel surveys and submit results to FWS and VDGIF

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nelson County, VA	AP-1 / 163.9	UNT to South Fork Rockfish River	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 164.2	UNT to South Fork Rockfish River	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 164.4	UNT to South Fork Rockfish River	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed, Class I-IV		October 1 to March 31	Pre-construction fish relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Nelson County, VA	AP-1 / 165.4	UNT to Rockfish River	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 165.5	UNT to Rockfish River	Perennial	7 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 165.5	UNT to Rockfish River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 165.9	UNT to Rockfish River	Intermittent	11 (CL)	10	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 165.9	UNT to Rockfish River	Perennial	35 (CL)	12	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 166.0	UNT to Rockfish River	Perennial	5 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 166.2	UNT to Rockfish river	Perennial	5 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 166.3	UNT to Rockfish river	Perennial	9 (CL)	9	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 166.7	UNT to Rockfish river	Perennial	9 (CL)	9	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 166.7	UNT to Rockfish River	Intermittent		4	Abuts Perm AR	NA	WQS not assessed		NA		NA	
Nelson County, VA	AP-1 / 166.9	UNT to Rockfish River	Perennial	11 (AR)	10	Perm AR	NA	Unclassified		NA		NA	
Nelson County, VA	AP-1 / 167.8	UNT to Rockfish River	Intermittent	12 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Nelson County, VA	AP-1 / 168.8	Davis Creek	Perennial	22 (CL)	14	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	Complete mussel surveys and provide results to FWS and VDGIF
Nelson County, VA	AP-1 / 168.9	UNT to Davis Creek	Intermittent	9 (CL)	9	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 169.3	Muddy Creek	Perennial	19 (CL)	25	Cofferdam or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	Complete mussel surveys and provide results to FWS and VDGIF
Nelson County, VA	AP-1 / 169.7	UNT to Craig Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 169.9	Craig Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 170.3	UNT to Rockfish River	Perennial	6 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 170.7	UNT to Rockfish River	Intermittent	6 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 171.0	UNT to Rockfish River	Perennial	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nelson County, VA	AP-1 / 171.0	UNT to Rockfish River	Perennial		3	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Nelson County, VA	AP-1 / 171.3	UNT to Rockfish River	Perennial	8 (AR) / 4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 171.6	UNT to Rockfish River	Perennial	9 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 171.7	UNT to Rockfish River	Intermittent	3 (AR)	4	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Nelson County, VA	AP-1 / 172.4	UNT to Rockfish River	Intermittent	10 (CL)	5	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 172.8	UNT to Dutch Creek	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nelson County, VA	AP-1 / 172.9	UNT to Dutch Creek	Intermittent		4	Temp ATWS / Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Nelson County, VA	AP-1 / 173.2	UNT to Falls Run	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 173.2	UNT to Falls Run	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Nelson County, VA	AP-1 / 173.2	UNT to Falls Run	Intermittent	8 (CL)	6	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 175.1	UNT to Dutch Creek	Perennial	21 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 175.6	Dutch Creek	Perennial	17 (AR) / 18 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 175.9	UNT to Dutch Creek	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 176.2	Dutch Creek	Perennial	21 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 177.4	UNT to Beaver Creek	Intermittent		4	Abuts Perm AR	NA	WQS not assessed		NA		NA	
Nelson County, VA	AP-1 / 178.2	UNT to Buffalo Creek	Perennial		4	Abuts Perm AR	NA	WQS not assessed		NA		NA	
Nelson County, VA	AP-1 / 178.9	UNT to Buffalo Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nelson County, VA	AP-1 / 180.2	UNT to Buffalo Creek	Perennial	22 (CL)	12	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 180.5	UNT to Buffalo Creek	Intermittent	8 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 180.9	UNT to Buffalo Creek	Intermittent	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nelson County, VA	AP-1 / 181.5	UNT to Mayo Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)
Nelson County, VA	AP-1 / 181.9	Mayo Creek	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Assume presence of green floater (VA-T) and implement VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30) Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nelson County, VA	AP-1 / 182.6	UNT to Mayo Creek	Intermittent	10 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)
Nelson County, VA	AP-1 / 182.9	UNT to Mayo Creek	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)
Nelson County, VA	AP-1 / 182.9	UNT to Mayo Creek	Perennial		4	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	NA	
Nelson County, VA	AP-1 / 182.9	UNT to Mayo Creek	Perennial		2	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	NA	
Nelson County, VA	AP-1 / 183.3	UNT to Mayo Creek	Perennial	6 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)
Nelson County, VA	AP-1 / 183.4	UNT to Mayo Creek	Intermittent	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Mayo Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30)
Nelson County, VA	AP-1 / 183.7	UNT to Mayo Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nelson County, VA	AP-1 / 184.5	Mayo Creek	Perennial	35 (CL)	10	HDD (Part of James River HDD)	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30/April 15 to June 15 and August 15 to September 30/May 15 to July 31	Assume presence of green floater (VA-T) and implement VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)	No in-stream work planned.	VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30) Remove Mar 15-Jun 30 and May 15-Jul 31 TOYR Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries)
Nelson and Buckingham Counties, VA	AP-1 / 184.7	James River	Perennial	396 (CL)	300+	HDD	Within 1000 feet	Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish and PCB in Fish	March 15 to June 30/April 15 to June 15 and August 15 to September 30/May 15 to July 31	Consult with VDGIF on proposal to not implement green floater TOYR Assume presence of green floater (VA-T) and implement VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30) VDGIF Potential AFSA (above Bosher's Dam) VDGIF TOYR (Mar 15-Jun 30) Potential for marine mammals	No in-stream work planned.	Consult with VDGIF on proposal to not implement green floater TOYR; TOYR also applies to water withdrawal activities Remove May 15-Jul 31 TOYR
Buckingham County, VA	AP-1 / 184.9	UNT to James River	Perennial	21 (AR)	10	Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30/April 15 to June 15 and August 15 to September 30/May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species	Will adhere to TOYR for work within the waterbody.	Complete mussel surveys and submit results to FWS and VDGIFRemove Mar 15-Jun 30 and May 15-Jul 31 TOYR Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Buckingham County, VA	AP-1 / 184.9	UNT to James River	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30/ May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Remove Mar 15-Jun 30 and May 15-Jul 31 TOYR; Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries) Apply green floater VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30)
Buckingham County, VA	AP-1 / 185.0	UNT to James River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove Mar 15-Jun 30 TOYR; Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries) Apply green floater VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30)
Buckingham County, VA	AP-1 / 185.4	UNT to James River	Perennial	14 (AR)	10	Perm AR - Existing Culvert	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30/April 15 to June 15 and August 15 to September 30/May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species	Will adhere to TOYR for work within the waterbody.	Complete mussel surveys and submit results to FWS and VDGIF Remove Mar 15-Jun 30 and May 15-Jul 31 TOYR Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries)
Buckingham County, VA	AP-1 / 185.4	UNT to James River	Intermittent		5	Abuts Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove Mar 15-Jun 30 TOYR; Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries) No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Buckingham County, VA	AP-1 / 185.4	UNT to James River	Intermittent		2	Perm ROW	Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of James River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove Mar 15-Jun 30 TOYR; Under State Classifications - UNT to Potential Anadromous Fish Use Area (TOYR does not apply to tributaries) No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Buckingham County, VA	AP-1 / 186.6	UNT to Sycamore Creek	Ephemeral	1 (CL)	1	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 186.8	UNT to Sycamore Creek	Perennial	7 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA		NA	Apply pre-construction aquatic species relocation.
Buckingham County, VA	AP-1 / 186.8	UNT to Sycamore Creek	Perennial	1 (CL)	1	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA		NA	Apply pre-construction aquatic species relocation.
Buckingham County, VA	AP-1 / 186.8	UNT to Sycamore Creek	Intermittent		5	Temp / Perm ROW	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Buckingham County, VA	AP-1 / 187.3	UNT to Sycamore Creek	Perennial		2	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 187.6	Sycamore Creek	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 187.9	UNT to Sycamore Creek	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 189.1	Walton Fork	Intermittent	3 (AR)	3	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 190.0	UNT to Walton Fork	Intermittent		2	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 190.0	UNT to Walton Fork	Intermittent		3	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 190.1	Walton Fork	Perennial	11 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Buckingham County, VA	AP-1 / 191.0	UNT to Ripley Creek	Perennial	18 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 191.5	UNT to Ripley Creek	Intermittent	4 (CL)	4	Compressor Station - Temporary Impact	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 191.9	UNT to Ripley Creek	Intermittent		2	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 192.2	UNT to North River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Buckingham County, VA	AP-1 / 193.1	UNT to Matthews Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 194.1	North River	Perennial	34 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 194.9	UNT to North River	Intermittent	18 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 195.1	UNT to North River	Perennial	7 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 195.5	UNT to North River	Ephemeral		3	Contractor Yard - Temporary Impact	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 195.5	UNT to North River	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 196.1	UNT to North River	Intermittent	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 196.3	UNT to North River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 196.9	UNT to Slate River	Ephemeral	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 197.1	UNT to Slate River	Perennial	4 (AR)	4	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 197.4	UNT to Slate River	Perennial	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 197.4	UNT to Slate River	Ephemeral		1	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 197.9	Slate River	Perennial	36 (CL)	19	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 198.1	UNT to Slate River	Ephemeral	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 198.1	UNT to Slate River	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 198.1	UNT to Slate River	Ephemeral		1	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 198.3	UNT to Licky Branch	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 198.5	Licky Branch	Perennial	19 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 198.5	UNT to Licky Branch	Intermittent		2	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 199.4	UNT to Licky Creek	Ephemeral		2	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Buckingham County, VA	AP-1 / 200.3	UNT to Pitman Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 201.2	Horsepen Creek	Perennial	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 201.3	UNT to Horsepen Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 201.8	UNT to Horsepen Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 201.8	UNT to Horsepen Creek	Perennial	8 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 202.7	UNT to Willis River	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 203.6	UNT to Willis River	Perennial	12 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 204.2	UNT to Willis River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 204.5	UNT to Willis River	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 204.5	UNT to Willis River	Ephemeral	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 204.7	UNT to Willis River	Perennial	13 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 204.8	UNT to Willis River	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.1	Willis River	Perennial	28 (AR)	25	Temp AR - Temp Impact	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 205.1	Willis River	Perennial	24 (CL)	30	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.2	UNT to Willis River	Intermittent	3 (AR) / 7 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.6	UNT to Little Willis River	Ephemeral		3	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 205.7	UNT to Little Willis River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.7	UNT to Little Willis River	Perennial	10 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.7	UNT to Little Willis River	Intermittent		4	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 205.9	UNT to Little Willis River	Perennial	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 205.9	UNT to Little Willis River	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 206.1	UNT to Willis River	Perennial	6 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 206.5	UNT to Willis River	Intermittent		1	Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 206.9	UNT to Willis River	Perennial	8 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 207.1	UNT to Bishop Creek	Intermittent		2	Temp ROW	Within 1000 feet	Unclassified		NA		NA	

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Buckingham County, VA	AP-1 / 207.2	UNT to Bishop Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 207.3	UNT to Bishop Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 207.3	UNT to Bishop Creek	Intermittent	10 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 207.4	UNT to Bishop Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 207.8	Bishop Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 208.2	UNT to Little Willis River	Perennial	34 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 208.6	UNT to Little Willis River	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 208.9	UNT to Little Willis River	Ephemeral	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 209.1	UNT to Little Willis River	Ephemeral	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 209.1	UNT to Little Willis River	Ephemeral		4	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 209.2	UNT to Little Willis River	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 209.5	Little Willis River	Perennial	15 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 210.0	UNT to Gills Creek	Canal/Ditch	16 (CL)	Canal/Ditch	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 210.0	UNT to Gills Creek	Canal/Ditch		Canal/Ditch	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 210.2	Gills Creek	Perennial	11 (CL)	12	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 211.0	UNT to Little Willis River	Ephemeral	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 211.0	UNT to Perkins Creek	Ephemeral		2	Perm AR - Existing Culvert	NA	Unclassified		NA		NA	
Buckingham County, VA	AP-1 / 211.4	Perkins Creek	Perennial	25 (CL)	13	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Buckingham County, VA	AP-1 / 211.7	UNT to Perkins Creek	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 212.0	UNT to Perkins Creek	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 212.2	UNT to Perkins Creek	Intermittent	9 (CL)	12	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 212.4	UNT to Perkins Creek	Intermittent	14 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 212.9	UNT to Little Willis River	Ephemeral	4 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 213.0	UNT to Little Willis River	Ephemeral		3	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 213.7	UNT to Dry Creek	Ephemeral	6 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 213.9	UNT to Dry Creek	Intermittent		5	Temp ROW	NA	Unclassified		NA		NA	

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Cumberland County, VA	AP-1 / 214.0	UNT to Dry Creek	Intermittent		2	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 214.0	UNT to Dry Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 214.0	UNT to Dry Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 214.0	UNT to Dry Creek	Intermittent		2	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 214.2	UNT to Dry Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 214.3	UNT to Dry Creek	Intermittent	6 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 214.5	UNT to Dry Creek	Ephemeral	6 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 214.6	UNT to Dry Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 214.8	Dry Creek	Perennial	15 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Cumberland County, VA	AP-1 / 215.0	UNT to Dry Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.1	UNT to Dry Creek	Ephemeral	4 (CL)	4	Flume or Dam and Pump	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.1	UNT to Dry Creek	Intermittent		3	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.2	Dry Creek	Perennial	10 (CL)	9	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 215.2	UNT to Dry Creek	Ephemeral		1	Temp / Perm ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.4	UNT to Dry Creek	Ephemeral	4 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.9	UNT to Green Creek	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.9	UNT to Green Creek	Intermittent		4	Temp / Perm ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 215.9	UNT to Green Creek	Ephemeral		2	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 216.2	UNT to Green Creek	Perennial	10 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 216.8	UNT to Green Creek	Perennial	7 (CL)	5	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 217.0	UNT to Green Creek	Intermittent	7 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 217.4	UNT to Green Creek	Intermittent		2	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 217.6	UNT to Green Creek	Intermittent		2	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 217.6	UNT to Green Creek	Perennial	9 (CL)	5	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 217.6	UNT to Green Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 218.1	UNT to Green Creek	Perennial	18 (CL)	10	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 218.1	UNT to Green Creek	Ephemeral	1 (CL)	1	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 218.2	UNT to Green Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 218.4	UNT to Green Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 218.6	UNT to Green Creek	Ephemeral		2	Temp / Perm ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 218.7	UNT to Green Creek	Intermittent	3 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 218.8	Green Creek	Perennial	14 (AR)	14	Temp AR - Temp Impact	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 219.2	UNT to Green Creek	Perennial	39 (CL)	15	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 219.4	Green Creek	Perennial	43 (CL)	18	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Cumberland County, VA	AP-1 / 219.4	UNT to Green Creek	Ephemeral		1	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 219.5	UNT to Green Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 219.6	UNT to Green Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland County, VA	AP-1 / 219.8	UNT to Green Creek	Intermittent		3	Temp ROW	NA	Unclassified		NA		NA	
Cumberland County, VA	AP-1 / 219.8	UNT to Green Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Cumberland and Prince Edward Counties, VA	**AP-1 / 220.8**	**Appomattox River**	**Perennial**	**106 (CL)**	**100**	**Cofferdam**	**In-stream; Within 1000 feet**	**Aquatic Life**		**May 15 to July 31**	**Assume presence of Atlantic pigtoe (VA-T; F-UR) and implement VDGIF TOYR (May 15-Jul 31)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**TOYR applies to water withdrawal activities** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Prince Edward County, VA	AP-1 / 221.6	UNT to Appomattox River	Perennial	9 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species Apply the FWS' enhanced conservation measures at perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply the FWS' enhanced conservation measures at perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Prince Edward County, VA	AP-1 / 221.7	UNT to Appomattox River	Ephemeral	2 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Prince Edward County, VA	AP-1 / 221.8	UNT to Appomattox River	Perennial	14 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species Apply the FWS' enhanced conservation measures at perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply the FWS' enhanced conservation measures at perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Prince Edward County, VA	AP-1 / 222.0	UNT to Appomattox River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species
Prince Edward County, VA	AP-1 / 222.1	UNT to Appomattox River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Appomattox River for all applicable species
Prince Edward County, VA	AP-1 / 222.2	UNT to Appomattox River	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of Appomattox River
Prince Edward County, VA	AP-1 / 222.4	UNT to Appomattox River	Perennial	14 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of Appomattox River
Prince Edward County, VA	AP-1 / 222.5	UNT to Appomattox River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Prince Edward County, VA	AP-1 / 222.6	UNT to Appomattox River	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 223.2	Little Saylers Creek	Perennial	32 (CL)	25	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF
Prince Edward County, VA	AP-1 / 223.4	UNT to Little Saylers Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 223.8	UNT to Little Saylers Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 223.9	UNT to Little Saylers Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 223.9	UNT to Little Saylers Creek	Intermittent		4	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Prince Edward County, VA	AP-1 / 224.1	UNT to Little Saylers Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 225.2	UNT to Little Saylers Creek	Intermittent	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Prince Edward County, VA	AP-1 / 225.5	UNT to Little Saylers Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 226.6	Saylers Creek	Perennial	12 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 227.2	UNT to Ellis Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 227.6	UNT to Ellis Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 227.8	UNT to Ellis Creek	Ephemeral	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 228.2	Ellis Creek	Perennial	5 (CL)	18	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 228.6	UNT to Ellis Creek	Intermittent		2	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 228.8	UNT to Flat Creek	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 229.0	UNT to Flat Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 229.2	Flat Creek	Perennial	38 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 229.9	UNT to Flat Creek	Ephemeral		2	Temp / Perm ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 230.7	Little Creek	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 230.7	UNT to Little Creek	Perennial		3	Temp ROW	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 230.9	UNT to Little Creek	Ephemeral	2 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 231.0	UNT to Little Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA		NA	
Nottoway County, VA	AP-1 / 231.8	UNT to West Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nottoway County, VA	AP-1 / 231.8	UNT to West Creek	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 231.9	UNT to West Creek	Intermittent	7 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 232.0	UNT to West Creek	Perennial		3	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 232.0	West Creek	Perennial	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 232.2	UNT to West Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 232.4	UNT to West Creek	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 232.4	UNT to West Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 232.7	West Creek	Perennial	11 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 232.8	UNT to West Creek	Intermittent		1	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 233.0	UNT to West Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 233.0	UNT to West Creek	Ephemeral	3 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 233.1	UNT to West Creek	Ephemeral	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 233.1	UNT to West Creek	Ephemeral		3	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 233.4	UNT to Little West Creek	Perennial	8 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 234.2	Little West Creek	Perennial	21 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 234.3	UNT to Little West Creek	Intermittent	14 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 235.1	UNT to Deep Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 235.2	UNT to Deep Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 235.5	UNT to Deep Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 235.7	UNT to Deep Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 235.7	UNT to Deep Creek	Ephemeral	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 236.0	Deep Creek	Perennial	26 (CL)	35	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 236.1	UNT to Deep Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 236.2	UNT to Deep Creek	Perennial	12 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nottoway County, VA	AP-1 / 236.5	UNT to Deep Creek	Intermittent	21 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 236.9	UNT to Deep Creek	Intermittent		2	Perm AR	NA	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 236.9	UNT to Deep Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 237.0	UNT to Deep Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 237.4	UNT to Deep Creek	Perennial	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 238.2	UNT to Winningham Creek	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 238.6	Winningham Creek	Perennial	28 (CL)	50	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 238.8	UNT to Winningham Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 239.1	UNT to Winningham Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 239.9	UNT to Woody Creek	Perennial	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 239.9	UNT to Woody Creek	Ephemeral	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 240.0	UNP to Woody Creek	Pond		Pond	Pond	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 240.6	Woody Creek	Perennial	11 (CL)	17	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 241.5	UNT to Watson Creek	Ephemeral	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 241.6	Watson Creek	Perennial	10 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 242.6	UNT to Cellar Creek	Perennial	6 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 242.9	Cellar Creek	Perennial	14 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 242.9	UNT to Cellar Creek	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 243.6	UNT to Cellar Creek	Intermittent		2	Temp / Perm ROW	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Nottoway County, VA	AP-1 / 243.6	UNT to Cellar Creek	Intermittent	3 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nottoway County, VA	AP-1 / 243.6	UNT to Cellar Creek	Intermittent	1 (CL)	1	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Nottoway County, VA	AP-1 / 244.1	Lees Creek	Perennial	9 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 244.1	UNT to Lees Creek	Perennial		2	Temp / Perm ROW	In-stream; Within 1000 feet	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet)[a]	Construction Method[b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments)[c]	FERC Recommended Conditions
Nottoway County, VA	AP-1 / 244.4	UNT to Lees Creek	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 244.5	UNT to Lees Creek	Perennial	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 244.7	UNT to Lees Creek	Perennial	5 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
Nottoway County, VA	AP-1 / 244.9	UNT to Less Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 245.1	UNT to Less Creek	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 245.4	UNT to Bland Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 245.4	UNT to Bland Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 245.5	UNT to Bland Creek	Perennial	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 245.6	UNT to Bland Creek	Perennial	16 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 245.6	UNT to Bland Creek	Ephemeral		2	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 246.0	UNT to Bland Creek	Perennial	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 247.0	UNT to Lake Lee	Intermittent	5 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 247.2	UNT to Bland Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 247.8	UNT to Butterwood Creek	Ephemeral	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Nottoway County, VA	AP-1 / 248.2	UNT to Twin Lakes	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Nottoway County, VA	AP-1 / 248.4	UNT to Twin Lakes	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Nottoway County, VA	AP-1 / 248.6	UNT to Twin Lakes	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Dinwiddie County, VA	AP-1 / 249.1	Butterwood Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 249.1	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 249.6	UNT to Butterwood Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 249.7	UNT to Butterwood Creek	Intermittent	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Dinwiddie County, VA	AP-1 / 249.9	UNT to Butterwood Creek	Intermittent	8 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 250.2	UNT to Butterwood Creek	Ephemeral	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 250.5	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 250.7	UNT to Butterwood Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 251.2	UNT to Butterwood Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 251.5	UNT to Butterwood Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on June 16, 2017 Supplemental Filing, no potential for listed species at this crossing; therefore, remove VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30)
Dinwiddie County, VA	AP-1 / 251.7	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 251.8	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 252.0	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 252.1	UNT to Butterwood Creek	Ephemeral	4 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 252.6	UNT to Butterwood Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; does not apply to ephemeral waters
Dinwiddie County, VA	AP-1 / 252.7	UNT to Butterwood Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Butterwood Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Dinwiddie County, VA	AP-1 / 253.7	Butterwood Creek	Wetland-Waterbody Complex			Open Cut	**In-stream; Within 1000 feet**	**Aquatic Life**		**March 15 to June 30**	**Assume presence of Roanoke logperch (F-E) and implement VDGIF TOYR (Mar 15-Jun 30)** **Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Complete mussel and Roanoke logperch surveys and submit results to FWS and VDGIF** **Confirm that pre-construction aquatic species relocation would apply to open cut crossing** **Provide an HDD frac-out analysis for Butterwood Creek crossing**
Dinwiddie County, VA	AP-1 / 253.9	UNT to Butterwood Creek	Canal/Ditch	10 (CL)	Canal/Ditch	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Butterwood Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Dinwiddie County, VA	AP-1 / 254.0	UNT to Butterwood Creek	Intermittent	24 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Butterwood Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Dinwiddie County, VA	AP-1 / 254.3	UNT to Butterwood Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Butterwood Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Dinwiddie County, VA	AP-1 / 254.4	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	UNT to Aquatic Life		NA		NA	
Dinwiddie County, VA	AP-1 / 254.5	UNT to Butterwood Creek	Intermittent		5	Temp ROW	Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Butterwood Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Dinwiddie County, VA	AP-1 / 254.9	UNT to Butterwood Creek	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of Butterwood Creek
Dinwiddie County, VA	AP-1 / 255.0	UNT to Butterwood Creek	Intermittent	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to perennial and intermittent tributaries within 1 river mile upstream of Butterwood Creek
Dinwiddie County, VA	AP-1 / 255.9	UNT to Beaver Pond Creek	Intermittent	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Dinwiddie County, VA	AP-1 / 256.2	Beaver Pond Creek	Perennial	18 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on Applicant-Prepared BA, Roanoke logperch habitat considered unsuitable. Confirm survey results and remove TOYR if habitat considered unsuitable.
Dinwiddie County, VA	AP-1 / 256.7	UNT to Beaver Pond Creek	Perennial	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Based on Applicant-Prepared BA, Roanoke logperch habitat considered unsuitable. Confirm survey results and remove TOYR if habitat considered unsuitable.
Dinwiddie County, VA	AP-1 / 256.8	UNT to Beaver Pond Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Dinwiddie County, VA	AP-1 / 259.3	Beaver Pond Creek	Perennial	7 (CL)	4	Open Cut	In-stream; Within 1000 feet	Aquatic Life		March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Confirm that pre-construction aquatic species relocation would apply to open cut crossing Based on Applicant-Prepared BA, Roanoke logperch habitat considered unsuitable. Confirm survey results and remove TOYR if habitat considered unsuitable.
Dinwiddie County, VA	AP-1 / 259.9	Ditch	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Dinwiddie County, VA	AP-1 / 260.3	UNT to Tommeheton Creek	Intermittent	18 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Dinwiddie and Brunswick Counties, VA	**AP-1 / 260.7**	**Nottoway River**	**Perennial**	**96 (CL)**	**55**	**Cofferdam**	**In-stream; Within 1000 feet**	**Aquatic Life, Migratory fish Spawning and Nursery**		**February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30**	**Assume presence of Roanoke logperch (F-E) and implement VDGIF TOYR (Mar 15-Jun 30) Assume presence of Atlantic pigtoe (VA-T; F-UR) and yellow lance (F-PT) and implement VDGIF TOYR (May 15-Jul 31) Assume presence of dwarf wedgemussel (F-E) and implement VDGIF TOYR (Mar 15-May 31 and Aug 15-Oct 15) VDGIF AFSA TOYR (Feb 15-Jun 30) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Complete Roanoke logperch surveys and submit results to FWS and VDGIF Provide an HDD frac-out analysis for this crossing of the Nottoway River; if feasible, implement the HDD method. If not feasible, coordinate with FWS and VDGIF on appropriate construction timing window (Atlantic has proposed July 2019) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Remove Apr 15-Jun 15 and Aug 15-Sept 30 VDGIF TOYR**
Brunswick County, VA	AP-1 / 260.8	UNT to Nottoway River	Ephemeral	7 (CL)	6	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR, not applicable to ephemeral waters
Brunswick County, VA	AP-1 / 261.3	UNT to Nottoway River	Ephemeral	1 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR, not applicable to ephemeral waters
Brunswick County, VA	AP-1 / 261.5	UNT to Nottoway River	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Atlantic pigtoe and yellow lance (May 15-Jul 31) Apply VDGIF TOYR for dwarf wedgemussel (Mar 15-May 31 and Aug 15-Oct 15)
Brunswick County, VA	AP-1 / 261.8	Miry Run	Perennial	7 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 262.5	Hickory Run	Perennial	8 (CL)	8	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 262.6	UNT to Hickory Run	Intermittent	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 262.9	UNT to Hickory Run	Perennial	3 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 263.8	UNT to Hickory Run	Ephemeral		4	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 264.6	UNT to Great Branch	Perennial	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 264.7	UNT to Great Branch	Perennial	13 (AR)	10	Perm AR	NA	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 264.7	UNT to Great Branch	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 265.1	UNT to Great Branch	Perennial	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 265.1	UNT to Great Branch	Intermittent		3	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 265.1	UNT to Great Branch	Perennial	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 265.4	UNT to Great Branch	Intermittent	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Brunswick County, VA	AP-1 / 265.6	UNT to Great Branch	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 265.6	UNT to Great Branch	Perennial	1 (CL)	1	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 265.8	UNT to Great Branch	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 266.1	UNT to Waqua Creek	Perennial	8 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Brunswick County, VA	AP-1 / 266.3	UNT to Waqua Creek	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Brunswick County, VA	AP-1 / 266.8	UNT to Waqua Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 266.9	UNT to Waqua Creek	Intermittent	4 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Brunswick County, VA	**AP-1 / 267.4**	**Waqua Creek**	**Perennial**	**38 (CL)**	**27**	**Flume or Cofferdam**	**In-stream; Within 1000 feet**	**Aquatic Life**		**March 15 to June 30**	**Consult with VDGIF regarding proposed instream activities during VDGIF TOYR** **Assume presence of Roanoke logperch (F-E) and implement VDGIF TOYR (Mar 15-Jun 30)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations. Presence is assumed for the Roanoke logperch due to suitable habitat and conservation measures as outlined in the EIS and BA will be implemented.**	**Consult with VDGIF regarding proposed installation of bridge support during Roanoke logperch TOYR** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Brunswick County, VA	AP-1 / 267.5	UNT to Waqua Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Brunswick County, VA	AP-1 / 267.9	Big Branch	Perennial	16 (CL)	15	Flume or Dam and Pump	In-stream; Within 1000 feet	Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1.)
Brunswick County, VA	AP-1 / 268.7	UNT to Waqua Creek	Perennial	1 (CL)	1	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Brunswick County, VA	AP-1 / 268.8	UNT to Waqua Creek	Perennial	6 (CL)	4	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations	
Brunswick County, VA	AP-1 / 269.0	UNT to Waqua Creek	Intermittent		2	Temp / Perm ROW	In-stream, Within 1000 feet	WQS not assessed		March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Waqua Creek for all applicable species	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Brunswick County, VA	AP-1 / 270.0	UNT to Beaver Branch	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 270.5	Beaver Branch	Perennial	7 (CL)	7	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 270.8	UNT to Beaver Branch	Intermittent	3 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 271.6	UNT to Sturgeon Creek	Intermittent	3 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply VDGIF TOYR for Atlantic pigtoe (May 15-Jul 31)
Brunswick County, VA	AP-1 / 271.9	UNT to Sturgeon Creek	Intermittent	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply VDGIF TOYR for Atlantic pigtoe (May 15-Jul 31)
Brunswick County, VA	AP-1 / 271.9	UNT to Sturgeon Creek	Perennial	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life		May 15 to July 31/ April 15 to June 15 and August 15 to September 30/ March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Remove Apr 15-Jun 15 and Aug 15-Sept 30 TOYR

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Brunswick County, VA	**AP-1 / 272.0**	**Sturgeon Creek**	**Perennial**	**42 (CL)**	**40**	**Flume or Dam and Pump**	**In-stream; Within 1000 feet**	**Aquatic Life**		**May 15 to July 31/ April 15 to June 15 and August 15 to September 30/ March 15 to June 30**	**Consult with VDGIF regarding proposed instream activities during VDGIF TOYR** **Assume presence of Roanoke logperch (F-E) and implement VDGIF TOYR (Mar 15-Jun 30)** **Assume presence for Atlantic pigtoe (VA-T; F-UR) and implement VDGIF TOYR (May 15-Jul 31)** **Assume presence of dwarf wedgemussel (F-E) and implement VDGIF TOYR (Mar 15-Jul 31 and Aug 15-Oct 15)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Pre-construction aquatic species relocation**	**Pre-construction aquatic species relocations.**	**Consult with VDGIF regarding proposed installation of bridge support during Roanoke logperch TOYR, and construction of crossing during the Atlantic pigtoe and dwarf wedgemussel TOYR; confirm with FWS and VDGIF when mussel relocations should occur** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Remove Apr 15-Jun 15 and Aug 15-Sept 30 TOYR; implement Mar 15-July 31 and Aug 15-Oct 15 TOYR for dwarf wedgemussel**
Brunswick County, VA	AP-1 / 272.6	UNT to Spring Branch	Intermittent		2	Temp ROW	Within 1000 feet	Unclassified		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Pre-construction aquatic species relocation	NA	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Brunswick County, VA	AP-1 / 272.9	UNT to Spring Branch	Intermittent	5 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply VDGIF TOYR for Atlantic pigtoe (May 15-Jul 31)
Brunswick County, VA	AP-1 / 272.9	UNT to Spring Branch	Intermittent		3	Temp ROW	Within 1000 feet	Unclassified		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Pre-construction aquatic species relocation	NA	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Brunswick County, VA	AP-1 / 273.0	Spring Branch	Perennial	9 (CL)	6	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Pre-construction fish relocation	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply VDGIF TOYR for Atlantic pigtoe (May 15-Jul 31) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Brunswick County, VA	AP-1 / 273.0	UNT to Spring Branch	Perennial		3	Temp ROW	Within 1000 feet	WQS not assessed		NA		NA	
Brunswick County, VA	AP-1 / 274.1	UNT to Spring Branch	Intermittent	1 (CL)	1	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Brunswick County, VA	AP-1 / 274.3	Spring Branch	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Sturgeon Creek for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	Apply VDGIF TOYR for Roanoke logperch (Mar 15-Jun 30) Apply VDGIF TOYR for Atlantic pigtoe (May 15-Jul 31) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Brunswick County, VA	AP-1 / 274.8	UNT to Flatrock Branch	Ephemeral		2	Contractor Yard - Temporary Impact	Within 1000 feet	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 274.9	Reedy Creek	Perennial		2	Temp / Perm ROW	In-stream, Within 1000 feet	WQS not assessed		NA		NA	
Brunswick County, VA	AP-1 / 274.9	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Brunswick County, VA	AP-1 / 276.1	UNT t o Brunswick County Pond	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 276.2	UNT t o Brunswick County Pond	Intermittent	3 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 276.3	UNT to Reedy Creek	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 276.7	UNT to Reedy Creek	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 276.7	UNT to Reedy Creek	Perennial		1	Temp / Perm ROW	Within 1000 feet	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 276.8	UNT t o Brunswick County Pond	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 277.0	UNT t o Brunswick County Pond	Perennial	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 277.4	UNT to Reedy Creek	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 277.6	UNT to Brunswick County Pond	Perennial	10 (CL)	12	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 277.6	UNT to Brunswick County Pond	Intermittent		3	Temp ROW	Within 1000 feet	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 277.9	UNT to Reedy Creek	Perennial	2 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Brunswick County, VA	AP-1 / 278.3	UNT to Reedy Creek	Intermittent	2 (CL)	2	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Brunswick County, VA	AP-1 / 278.3	UNT to Reedy Creek	Perennial	5 (CL)	3	Flume or Dam and Pump	In-stream, Within 1000 feet	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
Brunswick County, VA	AP-1 / 278.6	UNT to Reedy Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 278.9	UNT to Reedy Creek	Perennial	10 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 278.9	UNT to Reedy Creek	Perennial	5 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 279.3	UNT to Reedy Creek	Perennial	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 279.3	UNT to Reedy Creek	Perennial	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 279.7	UNT to Reedy Creek	Perennial	9 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 280.1	UNT to Reedy Creek	Intermittent	3 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Brunswick County, VA	AP-1 / 280.2	UNT to Reedy Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 280.4	UNT to Reedy Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 280.5	UNT to Reedy Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Brunswick County, VA	AP-1 / 281.5	UNT to Reedy Creek	Intermittent	5 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 282.5	Greensville Creek	Intermittent	5 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 282.7	UNT to Greensville Creek	Intermittent	5 (AR)	5	Perm AR	NA	Unclassified		NA		NA	
Brunswick County, VA	AP-1 / 282.9	UNT to Greensville Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 283.0	Greensville Creek	Perennial	13 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 283.2	UNT to Greensville Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 283.3	UNT to Greensville Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 283.4	UNT to Greensville Creek	Canal/Ditch	11 (CL)	Canal/Ditch	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Greensville County, VA	AP-1 / 284.2	UNT to Greensville Creek	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 285.0	UNT to Greensville Creek	Intermittent	19 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 285.7	UNT to Meadows Branch	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 285.9	UNT to Meherrin River	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30) Apply VDGIF TOYR for Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Greensville County, VA	AP-1 / 286.2	UNT to Meherrin River	Intermittent		3	Temp ROW	Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Greensville County, VA	AP-1 / 286.2	UNT to Meherrin River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30) Apply VDGIF TOYR for Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Greensville County, VA	**AP-1 / 286.3**	**Meherrin River**	**Perennial**	**183 (CL)**	**115**	**Cofferdam**	**In-stream; Within 1000 feet**	**Aquatic Life, Migratory fish Spawning and Nursery**		**February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30**	**Consult with VDGIF regarding proposal to not adhere to TOYR for green floater** **Assume presence of green floater (VA-T) and implement VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30)** **Assume presence of Atlantic pigtoe (VA-T; F-UR) and implement VDGIF TOYR (May 15-Jul 31)** **VDGIF AFSA TOYR (Feb 15-Jun 30)** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)** **Pre-construction aquatic species relocation**	**Pre-construction aquatic species relocations.**	**Consult with VDGIF regarding proposal to not adhere to TOYR for green floater; confirm proposed construction timing in regard to Atlantic pigtoe TOYR - if proposed timing is August 2019, it would not conflict with the Atlantic pigtoe TOYR. Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Greensville County, VA	AP-1 / 286.6	UNT to Meherrin River	Intermittent		4	Perm AR - Existing Culvert	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species	Will adhere to TOYR for work within the waterbody.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30) Apply VDGIF TOYR for Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Greensville County, VA	AP-1 / 286.8	UNT to Meherrin River	Intermittent	11 (CL)	9	Open Cut	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species	Will adhere to TOYR for work within the waterbody.	Apply VDGIF TOYR for green floater (Apr 15-Jun 15 and Aug 15-Sept 30) Apply VDGIF TOYR for Atlantic pigtoe VDGIF TOYR (May 15-Jul 31)
Greensville County, VA	AP-1 / 287.0	UNT to Meherrin River	Perennial	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Meherrin River for all applicable species Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)
Greensville County, VA	AP-1 / 288.5	Falling Run	Intermittent	8 (CL)	8	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 288.5	UNT to Falling Run	Ephemeral	12 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA		NA	
Greensville County, VA	AP-1 / 288.8	UNT to Falling Run	Intermittent	5 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 290.0	UNT to Fountains Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Fountains Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 290.4	UNT to Fountains Creek	Canal/Ditch	1 (CL)	Canal/Ditch	Flume or Dam and Pump	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Fountains Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation.
Greensville County, VA	AP-1 / 290.4	UNT to Fountains Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waters
Greensville County, VA	AP-1 / 293.4	UNT to Mill Swamp	Canal/Ditch	6 (CL)	Canal/Ditch	Flume or Dam and Pump	Within 1000 feet	Unclassified		NA		NA	
Greensville County, VA	AP-1 / 293.7	Unnamed Pond	Pond	Pond	Pond	Pond	Within 1000 feet	NA		NA		NA	

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Greensville County, VA	AP-1 / 295.7	UNT to Camey Swamp	Intermittent	6 (CL)	4	Open Cut	In-stream; Within 1000 feet	Unclassified		NA			
Greensville County, VA	AP-1 / 296.9	UNT to Fountains Creek	Perennial	13 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Fountains Creek for all applicable species Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 297.6	UNT to Fountains Creek	Perennial		2	Perm AR	NA	WQS not assessed		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	
Greensville County, VA	AP-1 / 297.6	UNT to Fountains Creek	Intermittent	5 (AR)	5	Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Fountains Creek for all applicable species	Will adhere to TOYR for work within the waterbody.	
Greensville County, VA	AP-1 / 298.6	Unnamed Pond	Pond		Pond	Pond	Within 1000 feet	NA		NA		NA	
Greensville County, VA	AP-1 / 299.4	Fountains Creek	Perennial	19 (CL)	15	Open Cut	In-stream; Within 1000 feet	Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	VDGIF AFSA TOYR (Feb 15-Jun 30)	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 299.4	Fountains Creek	Perennial	12 (CL)	12	Open Cut	In-stream; Within 1000 feet	Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	VDGIF AFSA TOYR (Feb 15-Jun 30)	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 299.6	Fountains Creek	Intermittent	30 (CL)	20	Dam and Pump or Flume	In-stream; Within 1000 feet	Aquatic Life, Migratory fish Spawning and Nursery	E. Coli, Dissolved Oxygen, and Mercury in Fish	February 15 to June 30	VDGIF AFSA TOYR (Feb 15-Jun 30) Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Greensville County, VA	AP-1 / 299.6	Fountains Creek	Perennial	29 (CL)	40	Open Cut	In-stream; Within 1000 feet	Aquatic Life, Migratory fish Spawning and Nursery	E. Coli, Dissolved Oxygen, and Mercury in Fish	February 15 to June 30	VDGIF AFSA TOYR (Feb 15-Jun 30)	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	
Northampton County, NC	AP-2 / 0.4	Jacks Swamp	Intermittent	6 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Northampton County, NC	AP-2 / 1.1	UNT to Jacks Swamp	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Northampton County, NC	AP-2 / 1.9	Jacks Swamp	Perennial	30 (CL)	15	Open Cut	In-stream; Within 1000 feet	C, NSW		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Northampton County, NC	AP-2 / 8.3	UNT to Trouble Field Creek	Intermittent		5	Abuts Perm AR	NA	C		NA		NA	
Northampton County, NC	AP-2 / 8.5	UNT to Trouble Field Creek	Perennial	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Northampton County, NC	AP-2 / 8.5	UNT to Trouble Field Creek	Perennial		10	Perm AR - Existing Culvert	NA	C		NA		NA	
Northampton County, NC	AP-2 / 8.8	UNT to Trouble Field Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Northampton County, NC	AP-2 / 9.6	UNT to Roanoke RIver	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)

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County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Northampton and Halifax Counties, NC	**AP-2 / 9.8**	**Roanoke River**	**Perennial**	**355 (CL)**	**360**	**HDD**	**Within 1000 feet**	**AFSA, PNA, C**		**February 1 to June 30/August 15 through November 15/April 15 to June 15 and August 15 to September 30/May 15 to July 31**	**Assume presence of Atlantic pigtoe (NC-E; F-UR) and green floater (NC-E)** **Assume presence of Chowanoke crayfish (NC SGCN; F-UR)** **Assume presence of Atlantic sturgeon (F-E) and shortnose sturgeon (F-E)** **Atlantic sturgeon Carolina DPS PCH** **Implement AFSA TOYR/Atlantic sturgeon moratorium (Feb 1-Jun 30 and Aug 15-Nov 15)** **Implement PNA TOYR (Feb 15-Sept 30)**	**No in-stream work planned.**	**Remove Apr 15-June 15 and Aug 15 to Sept 30, and May 15-July 31 TOYR; these apply to VA waters only** **Based on NCWRC comments, classify this waterbody as inland PNA, and apply TOYR of Feb 15-Sept 30**
Halifax County, NC	AP-2 / 11.4	UNT to Mush Island Gut	Intermittent	13 (CL)	8	Dam and Pump or Flume	In-stream, Within 1000 feet	C				NA	
Halifax County, NC	AP-2 / 11.8	Mush Island Gut	Pond	Pond (CL)	Pond	Pond	In-stream; Within 1000 feet	NA		NA		NA	
Halifax County, NC	AP-2 / 11.9	UNT to Mush Island Gut	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 11.9	UNT to Mush Island Gut	Intermittent	9 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 12.4	UNT to Mush Island Gut	Intermittent	7 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 12.4	UNT to Mush Island Gut	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 13.3	Mush Island Gut	Intermittent	5 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 13.6	UNT to Roanoke River	Perennial	9 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 13.9	UNT to Roanoke River	Intermittent	8 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 14.0	UNT to Roanoke River	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 14.1	UNT to Roanoke River	Perennial	13 (CL)	10	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 14.1	UNT to Roanoke RIver	Perennial		6	Temp ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 14.4	UNT to the Roanoke River	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 14.7	UNT to the Roanoke River	Perennial	10 (CL)	6	Dam and Pump or Flume	In-stream, Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 15.3	Little Quankey Creek	Wetland-Waterbody Complex			Open Cut	In-stream; Within 1000 feet	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Conduct aquatic species relocation; there are no TOYR that apply to this waterbody.
Halifax County, NC	AP-2 / 15.4	UNT to Little Quankey Creek	Perennial		12	Temp / Perm ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 16.9	Quankey Creek	Perennial	18 (CL)	20	Dam and Pump or Flume	In-stream, Within 1000 feet	C		NA	Conduct aquatic species relocation	Pre-construction aquatic species relocations	
Halifax County, NC	AP-2 / 17.2	Unnamed Pond	Pond	Pond	Pond	Pond	In-stream, Within 1000 feet	C		NA		NA	

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Halifax County, NC	AP-2 / 17.2	UNT to Quankey Creek	Intermittent	9 (CL)	3	Dam and Pump or Flume	In-stream, Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 17.4	UNT to Quankey Creek	Intermittent		3	Flume or Dam and Pump	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 18.2	UNT to Marsh Swamp	Ephemeral		2	Temp / Perm ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 18.3	UNT to Marsh Swamp	Intermittent		6	Temp / Perm ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 18.5	UNT to Marsh Swamp	Perennial	12 (CL)	9	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 18.6	UNT to Marsh Swamp	Perennial		12	Contractor Yard - Temporary Impact	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 20.1	Marsh Swamp	Perennial	15 (CL)	15	Open Cut	In-stream; Within 1000 feet	C, Sw, NSW		NA		NA	
Halifax County, NC	AP-2 / 20.5	UNT to Marsh Swamp	Intermittent	6 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 21.0	UNT to Marsh Swamp	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 22.8	UNT to Beaverdam Swamp	Intermittent	5 (CL)	5	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 23.1	Beaverdam Swamp	Perennial	63 (CL)	45	Open Cut	In-stream; Within 1000 feet	C, Sw, NSW		NA	Pending additional survey	NA	Complete aquatic species surveys and submit results to FWS and NCWRC If waterbody is determined to be suitable habitat for Carolina madtom, or Carolina madtom or Neuse River waterdog are observed during surveys, conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see sections 4.7.1.7 and 4.7.1.11)
Halifax County, NC	AP-2 / 23.3	UNT to Beaverdam Swamp	Intermittent	4 (CL)	3	Flume or Dam and Pump	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 23.6	UNT to Beaverdam Swamp	Intermittent	4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 24.0	UNT to Beaverdam Swamp	Perennial	5 (CL)	5	Flume or Dam and Pump	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 25.0	UNT to Beaverdam Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 26.6	UNT to Burnt Coat Swamp	Perennial	9 (CL)	8	Open Cut	In-stream; Within 1000 feet	C, Sw, NSW		NA	Conduct aquatic species relocation	NA	Confirm this is a UNT to Burnt Coat Swamp or Burnt Coat Swamp proper; Applicant-Prepared BA (1/27/17) indicates this is not a tributary Conduct aquatic species relocation
Halifax County, NC	AP-2 / 26.9	UNT to Burnt Coat Swamp	Intermittent	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	

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Halifax County, NC	AP-2 / 27.4	Jacket Swamp	Perennial	28 (CL)	25	Open Cut	In-stream; Within 1000 feet	C		NA	Pending additional survey	NA	Complete aquatic species surveys and submit results to FWS and NCWRC If waterbody is determined to be suitable habitat for Carolina madtom, or Carolina madtom or Neuse River waterdog are observed during surveys, conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see sections 4.7.1.7 and 4.7.1.11)
Halifax County, NC	AP-2 / 27.7	UNT to Jacket Swamp	Intermittent	5 (CL)	5	Open Cut	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 28.9	UNT to Breeches Swamp	Perennial	4 (CL)	4	Dam and Pump or Flume	In-stream, Within 1000 feet	C				NA	
Halifax County, NC	AP-2 / 29.8	Breeches Swamp	Perennial	16 (CL)	15	Open Cut	In-stream; Within 1000 feet	C, Sw, NSW		NA		NA	
Halifax County, NC	AP-2 / 30.6	UNT to Rocky Swamp	Intermittent		6	Temp / Perm ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 31.0	UNT to Rocky Swamp	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 31.2	UNT to Rocky Swamp	Intermittent		4	Perm ROW	Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 31.2	UNT to Rocky Swamp	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 32.0	Rocky Swamp	Wetland-Waterbody Complex			Open Cut	No blasting allowed	WS-IV, NSW		NA	No blasting	NA	
Halifax County, NC	AP-2 / 32.7	UNT to Rocky Swamp	Intermittent	7 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 32.8	UNT to Rocky Swamp	Intermittent	9 (CL)	6	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Halifax County, NC	AP-2 / 33.5	UNT to Fishing Creek	Perennial		4	Perm AR - Existing Culvert	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Halifax County, NC	AP-2 / 33.7	UNT to Fishing Creek	Perennial	8 (CL)	8	HDD (Part of Fishing Creek HDD)	Within 1000 feet	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-foot ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback

Appendix K-1

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Halifax and Nash Counties, NC	**AP-2 / 33.9**	**Fishing Creek**	**Perennial**	**104 (CL)**	**40**	**HDD**	**Within 1000 feet**	**AFSA, WSIV, NSW**		**February 15 to June 30**	**Assume presence of Carolina madtom (NC-T; F-UR) Assume presence of Neuse River waterdog (NC-SC; F-UR) Assume presence of North Carolina spiny crayfish (NC-SC) Assume presence of Tar River spinymussel (F-E), yellow lance (NC-E; F-PT), and Atlantic pigtoe (NC-E; F-UR) Assume presence of state-listed mussel species Apply AFSA TOYR (Feb 15-Jun 30) Adopt HDD crossing technique**	**No in-stream work planned. HDD crossing method adopted.**	
Nash County, NC	AP-2 / 34.8	UNT to Fishing Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA	Implement 100-ft ATWS setback	NA	Implement 100-ft ATWS setback
Nash County, NC	AP-2 / 34.8	UNT to Fishing Creek	Intermittent		3	Perm ROW	NA	C		NA		NA	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Nash County, NC	AP-2 / 35.1	UNT to Fishing Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 37.0	Black Swamp	Wetland-Waterbody Complex			Open Cut	NA	WS-IV, NSW		NA		NA	
Nash County, NC	AP-2 / 39.7	UNT to Swift Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 39.9	UNT to Swift Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 40.3	UNT to Swift Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback
Nash County, NC	**AP-2 / 40.6**	**Swift Creek**	**Perennial**	**126 (CL)**	**130**	**HDD**	**NA**	**AFSA, C, NSW**		**February 15 to June 30**	**Assume presence of Carolina madtom (NC-T; F-UR) Assume presence of Neuse River waterdog (NC-SC; F-UR) Assume presence of North Carolina spiny crayfish (NC-SC) Assume presence of Tar River spinymussel (F-E), yellow lance (NC-E; F-PT), Atlantic pigtoe (NC-E; F-UR), and green floater (NC-E) Apply AFSA TOYR (Feb 15-Jun 30) Adopt HDD crossing technique**	**No in-stream work planned. HDD crossing method adopted.**	
Nash County, NC	AP-2 / 40.9	UNT to Flat Rock Branch	Perennial	9 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 41.6	UNT to Flat Rock Branch	Perennial	7 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 41.7	UNT to Flat Rock Branch	Perennial	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 42.0	UNT to Flat Rock Branch	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 42.1	UNT to Flat Rock Branch	Perennial	68 (CL)	10	Open Cut	NA	C, NSW		NA		NA	

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nash County, NC	AP-2 / 42.2	UNT to Flat Rock Branch	Perennial	9 (CL)	4	Open Cut	NA	C		NA		NA	
Nash County, NC	AP-2 / 42.8	UNT to Flat Rock Branch	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 43.7	Flat Rock Branch	Wetland-Waterbody Complex			Open Cut	NA	C		NA	Pre-construction mussel or aquatic species relocation	Pre-construction mussel or aquatic species relocation	
Nash County, NC	AP-2 / 44.0	UNT to Flat Rock Branch	Intermittent		3	Perm ROW	NA	C		NA		NA	
Nash County, NC	AP-2 / 44.4	Flat Rock Branch	Perennial	6 (CL)	8	Open Cut	NA	C, NSW		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of banded sunfish (NC-SR)	Pre-construction aquatic species relocations.	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Nash County, NC	AP-2 / 44.8	Flat Rock Branch	Perennial	7 (CL)	6	Open Cut	NA	C, NSW		NA	Pending additional survey	NA	Complete aquatic species surveys and submit results to FWS and NCWRC If waterbody is determined to be suitable habitat for Carolina madtom, or Carolina madtom are observed during surveys, conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11) If other ESA species are observed during surveys, contact FWS NC Field Office to discuss appropriate conservation measures
Nash County, NC	AP-2 / 47.2	UNT to Pig Basket Creek	Perennial	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 47.6	Pig Basket Creek	Perennial	30 (CL)	25	Open Cut	NA	C, NSW		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of mimic shiner (NC-SR), and banded sunfish (NC-SR) and conduct aquatic species relocation	Pre-construction aquatic species relocations.	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Nash County, NC	AP-2 / 47.6	UNT to Pig Basket Creek	Intermittent	9 (CL)	9	Open Cut	NA	C		NA		NA	
Nash County, NC	AP-2 / 48.7	Stony Creek	Perennial	10 (CL)	10	Open Cut	NA	C		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of North Carolina spiny crayfish (NC-SC) Assume presence of mimic shiner (NC-SR), and banded sunfish (NC-SR) Conduct aquatic species relocation	Pre-construction aquatic species relocations.	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Nash County, NC	AP-2 / 48.7	UNT to Stony Creek	Intermittent	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nash County, NC	AP-2 / 49.2	UNT to Stony Creek	Perennial		4	Temp ROW	NA	C		NA		NA	
Nash County, NC	AP-2 / 49.5	UNT to Stony Creek	Perennial	8 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 50.2	UNT to Stony Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 50.2	UNT to Stony Creek	Perennial	19 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 50.8	UNT to Stony Creek	Perennial	4 (CL)	4	Flume or Dam and Pump	NA	C		NA		NA	
Nash County, NC	AP-2 / 51.5	UNT to Stony Creek	Perennial	17 (CL)	8	Dam and Pump or Flume	NA	WSIV, NSW		NA		NA	
Nash County, NC	AP-2 / 51.6	UNT to Stony Creek	Perennial	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 53.3	UNT to Little Sapony Creek	Perennial	24 (CL)	10	Open Cut	NA	C		NA	Assume presence of banded sunfish (NC-SR) and conduct aquatic species relocation	NA	Complete aquatic species surveys and submit results to FWS and NCWRC Conduct aquatic species relocation
Nash County, NC	AP-2 / 54.0	Little Sapony Creek	Wetland-Waterbody Complex			Open Cut	NA	WS-IV, NSW		NA	Assume presence of mimic shiner (NC-SR), ironcolor shiner (NC-SR), and banded sunfish Conduct aquatic species relocation Pending additional survey	Pending survey	Complete aquatic species surveys and submit results to FWS and NCWRC If surveys indicate suitable habitat for Carolina madtom, but no individuals are observed, assume presence of Carolina madtom and conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody If Carolina madtom, or ESA-listed or under review mussel species are observed during survey, contact FWS NC Field Office to discuss appropriate conservation measures
Nash County, NC	AP-2 / 54.9	UNT to Sapony Creek	Perennial	8 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 56.1	UNT to Sapony Creek	Perennial	14 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 56.3	Sapony Creek	Perennial	38 (CL)	20	Open Cut	NA	WSIV, NSW		NA	Pending additional survey Assume presence of mimic shiner (NC-SR), ironcolor shiner (NC-SR), and banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Complete aquatic species surveys and submit results to FWS and NCWRC If waterbody is determined to be suitable habitat for Carolina madtom, or Carolina madtom are observed during surveys, conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11) If either ESA species are observed during surveys, contact FWS NC Field Office to discuss appropriate conservation measures
Nash County, NC	AP-2 / 56.6	UNT to Sapony Creek	Perennial	24 (CL)	10	Open Cut	NA	C		NA		NA	
Nash County, NC	AP-2 / 57.0	UNT to Sapony Creek	Intermittent	10 (CL)	7	Open Cut	NA	C		NA		NA	
Nash County, NC	AP-2 / 58.8	UNT to Tar River	Perennial	3 (CL)	3	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Apply AFSA TOYR (Feb 15-Jun 30) Implement 100-ft ATWS setback
Nash County, NC	AP-2 / 59.1	UNT to Tar River	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 59.1	UNT to Tar River	Intermittent	8 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Nash County, NC	**AP-2 / 59.4**	**Tar River**	**Perennial**	**159 (CL)**	**130**	**HDD**	**NA**	**AFSA, WSIV, NSW**		**February 15 to June 30**	**Assume presence of Neuse River waterdog (NC-SC; F-UR), Carolina madtom (NC-T; F-UR), and North Carolina spiny crayfish (NC-SC) Assume presence of Atlantic pigtoe (NC-E; F-UR) Assume presence of state-listed mussel species Adopt HDD crossing technique**	**HDD crossing method adopted.**	**Per NCWRC, due to the Rocky Mount Mills Dam and Tar River Reservoir, the Tar River does not support anadromous fish at the crossing location; therefore the AFSA TOYR would not apply and can be removed**
Nash County, NC	AP-2 / 60.4	UNT to Tar River	Ephemeral	3 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 61.9	UNT to Toisnot Swamp	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 62.7	UNT to Toisnot Swamp	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 62.8	Toisnot Swamp	Wetland-Waterbody Complex			Open Cut	NA	WSIII, NSW		NA	Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Nash County, NC	AP-2 / 62.8	Toisnot Swamp	Pond		Pond	Pond	NA	WSIII, NSW		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of blackbanded sunfish (NC-SR) and ironcolor shiner (NC-SR) Conduct aquatic species relocation	NA	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Nash County, NC	AP-2 / 62.9	Toisnot Swamp	Pond		Pond	Pond	NA	WSIII, NSW		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of blackbanded sunfish (NC-SR) and ironcolor shiner (NC-SR) Conduct aquatic species relocation	NA	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Nash County, NC	AP-2 / 63.0	UNT to Toisnot Swamp	Ephemeral	4 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 63.3	UNT to Beaverdam Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 63.3	UNT to Beaverdam Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 63.5	UNT to Beaverdam Creek	Ephemeral	6 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 64.5	UNT to Bloomers Swamp	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 64.6	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Nash County, NC	AP-2 / 65.1	UNT to Bloomery Swamp	Perennial	8 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 65.2	UNT to Bloomery Swamp	Perennial	6 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Nash County, NC	AP-2 / 65.6	UNT to Juniper Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	

Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Wilson County, NC	AP-2 / 66.1	UNT to Juniper Creek	Perennial	9 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 66.3	UNT to Juniper Creek	Intermittent	8 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 66.9	Millstone Creek	Perennial	5 (CL)	10	Open Cut	NA	C		NA	Pending additional survey	Pre-construction aquatic species relocations.	Complete aquatic species surveys and submit results to FWS and NCWRC If Neuse River waterdog are observed during surveys, conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.7) If other ESA species are observed during surveys, contact FWS NC Field Office to discuss appropriate conservation measures
Wilson County, NC	AP-2 / 66.9	UNT to Millstone Creek	Intermittent		5	Temp ROW	NA	C		NA		NA	
Wilson County, NC	AP-2 / 67.7	UNT to Millstone Creek	Intermittent	8 (CL)	2	Open Cut	NA	C		NA		NA	
Wilson County, NC	AP-2 / 67.8	UNT to Millstone Creek	Perennial	2 (CL)	2	Open Cut	NA	C		NA		NA	
Wilson County, NC	AP-2 / 68.3	UNT to Marsh Swamp	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 69.1	UNT to Marsh Swamp	Perennial	22 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 69.3	UNT to Marsh Swamp	Perennial	9 (CL)	5	Open Cut	NA	C		NA		NA	
Wilson County, NC	AP-2 / 69.5	UNT to Marsh Swamp	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 69.7	Marsh Swamp	Perennial	9 (CL)	8	Open Cut	NA	C, NSW		NA	Conduct aquatic species relocation	Pre-construction aquatic species relocations.	
Wilson County, NC	AP-2 / 70.4	UNT to Marsh Swamp	Perennial	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 70.5	UNT to Marsh Swamp	Perennial	9 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 70.9	UNT to Marsh Swamp	Perennial	20 (CL)	4	Open Cut	NA	C		NA	Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Wilson County, NC	AP-2 / 71.0	UNT to Marsh Swamp	Perennial	16 (CL)	20	Open Cut	NA	C		NA	Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Wilson County, NC	AP-2 / 71.0	UNT to Marsh Swamp	Intermittent	10 (CL)	10	Open Cut	NA	C		NA		NA	
Wilson County, NC	AP-2 / 72.2	UNT to Contentnea Creek	Ephemeral	6 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 72.3	UNT to Contentnea Creek	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 72.5	UNT to Contentnea Creek	Canal/Ditch	11 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Wilson County, NC	AP-2 / 73.1	UNT to Contentnea Creek	Perennial	4 (CL)	3	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Apply AFSA TOYR (Feb 15-Jun 30) Implement 100-ft ATWS setback
Wilson County, NC	AP-2 / 73.3	UNT to Contentnea Creek	Perennial	6 (CL)	3	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Apply AFSA TOYR (Feb 15-Jun 30) Implement 100-ft ATWS setback

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Wilson County, NC	AP-2 / 73.4	UNT to Contentnea Creek	Perennial	5 (CL)	3	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Implement 100-ft ATWS setback	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1) Apply AFSA TOYR (Feb 15-Jun 30) Implement 100-ft ATWS setback
Wilson County, NC	**AP-2 / 73.6**	**Contentnea Creek**	**Perennial**	**69 (CL)**	**40**	**HDD**	**NA**	**AFSA, WSV, NSW**		**February 15 to June 30**	**Assume presence of Carolina madtom (NC-T; F-UR)** **Assume presence of Neuse River waterdog (NC-SC; F-UR)** **Assume presence of North Carolina spiny crayfish (NC-SC)** **Assume presence of Atlantic pigtoe (NC-E; F-UR)** **Assume presence of state-listed mussel species** **Adopt HDD crossing technique**	**No in-stream work planned. HDD crossing method adopted.**	**Per NCWRC, due to the Wiigins Mill Reservoir, the Contentnea Creek does not support anadromous fish at the crossing location; therefore the AFSA TOYR would not apply and can be removed**
Wilson County, NC	AP-2 / 73.8	UNT to Contentnea Creek	Ephemeral		4	Temp ATWS	NA	C		NA		NA	
Wilson County, NC	AP-2 / 73.9	UNT to Contentnea Creek	Intermittent		3	Temp ROW	NA	C		NA		NA	
Wilson County, NC	AP-2 / 74.1	UNT to Contentnea Creek	Intermittent	7 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 74.4	UNT to Buckhorn Branch	Ephemeral		4	Abuts Perm AR	NA	C		NA		NA	
Wilson County, NC	AP-2 / 74.6	UNT to Buckhorn Branch	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Wilson County, NC	AP-2 / 74.9	UNT to Buckhorn Branch	Ephemeral	5 (CL)	4	Open Cut	NA	C		NA		NA	
Wilson County, NC	AP-2 / 75.8	UNT to Buckhorn Branch	Intermittent		3	Temp ROW	NA	C		NA		NA	
Wilson County, NC	AP-2 / 75.8	UNT to Buckhorn Branch	Perennial	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 78.9	UNT to Little Buffalo Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 78.9	UNT to Little Buffalo Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 79.2	UNT to Little Buffalo Creek	Perennial	26 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 79.5	Little Buffalo Creek	Perennial	31 (CL)	20	Open Cut	NA	C, NSW		NA	Consult with FWS NC Field Office regarding Carolina madtom suitable habitat Assume presence of banded sunfish (NC-SR) and ironcolor shiner (NC-SR) Conduct aquatic species relocation	NA	Confirm with FWS NC Field Office that waterbody does not provide suitable habitat for Carolina madtom (considered suitable habitat for Neuse River waterdog) If waterbody is determined to be suitable habitat for Carolina madtom conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody (see section 4.7.1.11)
Johnston County, NC	AP-2 / 81.0	UNT to Little River	Intermittent	2 (CL)	2	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 82.0	UNT to Little River	Intermittent	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Johnston County, NC	**AP-2 / 82.5**	**Little River**	**Perennial**	**57 (CL)**	**50**	**HDD**	**NA**	**AFSA, WSV, NSW**		**February 15 to June 30**	**Assume presence of Carolina madtom (NC-T; F-UR)** **Assume presence of Neuse River waterdog (NC-SC; F-UR)** **Assume presence of North Carolina spiny crayfish (NC-SC)** **Assume presence of Tar River spinymussel (F-E), dwarf wedgemussel (F-E), yellow lance (NC-E; F-PT), and Atlantic pigtoe (NC-E; F-UR)** **Assume presence of state-listed mussel species** **Apply AFSA TOYR (Feb 15-Jun 30)** **Adopt HDD crossing technique**	**No in-stream work planned. HDD crossing method adopted.**	
Johnston County, NC	AP-2 / 82.5	UNT to Little River	Intermittent	2 (CL)	2	HDD (Part of Little River HDD)	NA	C		NA		NA	
Johnston County, NC	AP-2 / 82.6	UNT to Little River	Intermittent	6 (CL)	6	HDD (Part of Little River HDD)	NA	C		NA		NA	
Johnston County, NC	AP-2 / 83.4	UNT to Buffalo Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 83.5	UNT to Buffalo Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 84.6	UT to Big Branch	Ephemeral		4	Ground Bed	NA	C		NA		NA	
Johnston County, NC	AP-2 / 84.6	Big Branch	Intermittent	15 (CL)	6	Open Cut	NA	C, NSW		NA		NA	
Johnston County, NC	AP-2 / 84.6	UNT to Big Branch	Intermittent		5	Ground Bed	NA	C, NSW		NA		NA	
Johnston County, NC	AP-2 / 85.9	UNT to Little Creek	Perennial	8 (CL)	8	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 86.5	Little Creek	Perennial	5 (CL)	4	Open Cut	NA	C, NSW		NA	Assume presence of banded sunfish (NC-SR) and conduct aquatic species relocation	NA	Complete aquatic species surveys and submit results to FWS and NCWRC Conduct aquatic species relocation
Johnston County, NC	AP-2 / 87.3	UNT to Moccasin Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 88.9	UNT to Moccasin Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 89.7	Moccasin Creek	Perennial	17 (CL)	12	Dam and Pump or Flume	NA	C, NSW	Ecological/biological Integrity Benthos	NA		NA	
Johnston County, NC	AP-2 / 91.2	UNT to Bawdy Swamp	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 92.1	Bawdy Swamp	Perennial	8 (CL)	8	Conventional Bore (with US70 Business crossing)	NA	C, NSW		NA		NA	
Johnston County, NC	AP-2 / 93.6	UNT to Mill Branch	Intermittent	14 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 95.1	UNT to Neuse River	Intermittent	8 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 95.3	UNT to Polecat Branch	Intermittent		4	Temp / Perm ROW	NA	C		NA		NA	
Johnston County, NC	AP-2 / 95.8	UNT to Polecat Branch	Intermittent		4	Temp ROW	NA	C		NA		NA	
Johnston County, NC	AP-2 / 96.3	UNT to Polecat Branch	Perennial	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Johnston County, NC	AP-2 / 96.4	UNT to Polecat Branch	Intermittent		4	Contractor Yard - Temporary Impact	NA	C		NA		NA	
Johnston County, NC	AP-2 / 97.2	Unnamed Pond	Pond	Pond	Pond	Pond	NA	C				NA	
Johnston County, NC	AP-2 / 97.5	Polecat Branch	Perennial	12 (AR) / 9 (CL)	8	Open Cut	NA	C		NA	Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Johnston County, NC	AP-2 / 97.7	UNT to Polecat Branch	Intermittent	10 (AR) / 10 (CL)	10	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 98.2	UNT to Neuse River	Intermittent	10 (CL)	4	Dam and Pump or Flume	NA	C				NA	
Johnston County, NC	AP-2 / 98.2	UNT to Neuse River	Perennial	19 (CL)	26	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Johnston County, NC	**AP-2 / 98.5**	**Neuse River**	**Perennial**	**138 (CL)**	**110**	**Cofferdam**	**NA**	**AFSA, PNA, WSV, NSW**		**February 1 to June 30/May 15 to July 31**	**Assume presence of green floater (NC-E)** **Assume presence of Carolina madtom (NC-T; F-UR)** **Assume presence of state-listed mussels** **Assume presence of Atlantic sturgeon (F-E) and shortnose sturgeon (F-E)** **Atlantic sturgeon Carolina DPS PCH** **Implement AFSA TOYR/Atlantic sturgeon moratorium (Feb 1-Jun 30)** **Implement PNA TOYR (Feb 15-Sept 30)** **Apply the FWS' enhanced conservation measures as ESA sensitive waterbodies** **Install turbidity curtains during construction across waterbody**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Complete aquatic species surveys and submit results to FWS and NCWRC** **Provide frac-out analysis for Neuse River crossing** **Pending additional consultation with NOAA Fisheries regarding Atlantic sturgeon spawning habitat** **Conduct aquatic species relocation** **Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies** **Install turbidity silt curtains during construction across waterbody** **Remove May 15-Jul 31 TOYR; TOYR only applies to Virginia waters** **Based on NCWRC comments, classify this waterbody as inland PNA, and apply TOYR of Feb 15-Sept 30**
Johnston County, NC	AP-2 / 99.7	UNT to Neuse River	Canal/Ditch	5 (CL)	Canal/Ditch	Flume or Dam and Pump	NA	Unclassified		NA		NA	Apply AFSA TOYR (Feb 15-Jun 30)
Johnston County, NC	AP-2 / 101.3	Hannah Creek	Wetland-Waterbody Complex			Open Cut	NA	C		NA	Assume presence of banded sunfish (NC-SR) and conduct aquatic species relocation	NA	Conduct aquatic species relocation
Johnston County, NC	AP-2 / 102.4	UNT to Hannah Creek	Intermittent	1 (CL)	1	Dam and Pump or Flume	NA	C		NA		NA	
Johnston County, NC	AP-2 / 102.8	UNT to Hannah Creek	Perennial	4 (CL)	4	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 102.8	UNT to Hannah Creek	Intermittent	4 (CL)	4	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 103.9	UNT to Hannah Creek	Perennial	4 (CL)	4	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 104.4	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Johnston County, NC	AP-2 / 105.1	Whiteoak Branch	Wetland-Waterbody Complex			Open Cut	NA	C, NSW		NA		NA	
Johnston County, NC	AP-2 / 106.8	Stone Creek	Wetland-Waterbody Complex			Open Cut	NA	C, NSW		NA	Assume presence of banded sunfish (NC-SR) and conduct aquatic species relocation	NA	Conduct aquatic species relocation

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Johnston County, NC	AP-2 / 107.6	UNT to Johnson Swamp	Wetland-Waterbody Complex			Open Cut	NA	C, NSW		NA	Assume presence of banded sunfish and conduct aquatic species relocation Pending additional survey data	NA	Confirm if there is a crossing at MP 107.6 or 107.7 of Johnson Swamp in addition to the UNT to Johnson Swamp; Applicant-Prepared BA (1/27/17) & the May 2017 NC Crayfish Report indicate there are is a crossing of Johnson Swamp and UNT to Johnson Swamp; presence of ironcolor shiner (NC-SR) should be assumed at Johnson Swamp and aquatic relocation performed Complete aquatic species surveys and submit results to FWS and NCWRC If surveys indicate suitable habitat for Carolina madtom, but no individuals are observed, assume presence of Carolina madtom and conduct aquatic species relocation, and apply the FWS' enhanced conservation measures at this waterbody crossing, and at any perennial tributaries within 1 mile of the ESA sensitive waterbody If Carolina madtom are observed during survey, contact FWS NC Field Office to discuss appropriate conservation measures
Johnston County, NC	AP-2 / 108.1	UNP to Johnson Swamp	Pond		Pond	Pond	NA	NA		NA		NA	
Johnston County, NC	AP-2 / 110.5	UNT to John K Swamp	Ephemeral	3 (CL)	3	Open Cut	NA	C		NA		NA	
Johnston County, NC	AP-2 / 110.6	John K Swamp	Wetland-Waterbody Complex			Open Cut	NA	C		NA	Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Johnston County, NC	AP-2 / 113.1	Mill Branch	Intermittent	8 (CL)	7	Dam and Pump or Flume	NA	C, NSW		NA		NA	
Johnston County, NC	AP-2 / 114.2	UNT to Jumping Run	Perennial	11 (CL)	5	Flume or Dam and Pump	NA	C		NA		NA	
Sampson County, NC	AP-2 / 115.4	UNT to Juniper Run	Ephemeral	5 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Sampson County, NC	AP-2 / 116.9	Little Juniper Run	Perennial	8 (CL)	8	Open Cut	NA	C, Sw		NA		NA	
Sampson County, NC	AP-2 / 117.2	Juniper Run	Perennial	17 (CL)	12	Open Cut	NA	C, Sw		NA		NA	
Sampson County, NC	AP-2 / 118.9	Beaverdam Swamp	Perennial	35 (CL)	9	Open Cut	NA	C, Sw		NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation	NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation
Sampson County, NC	AP-2 / 119.7	Beaverdam Swamp	Perennial	Wetland-Waterbody Complex (CL)	25	Open Cut	NA	C, Sw		NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation	NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation
Sampson County, NC	AP-2 / 121.9	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
Sampson County, NC	AP-2 / 121.9	UNT to Starlins Swamp	Intermittent	8 (CL)	2	Open Cut	NA	C		NA		NA	
Sampson County, NC	AP-2 / 122.2	Starlins Swamp	Perennial	25 (CL)	15	Open Cut	NA	C, Sw		NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation	NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation
Sampson County, NC	AP-2 / 122.3	Starlins Swamp	Perennial	Wetland-Waterbody Complex (CL)	20	Open Cut	NA	C, Sw		NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation	NA	Assume presence of blackbanded sunfish (NC-SR) Conduct aquatic species relocation
Sampson County, NC	AP-2 / 122.5	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Sampson County, NC	AP-2 / 122.5	UNT to Mingo Swamp	Intermittent		4	Perm AR - Existing Culvert	NA	C		NA		NA	

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Cumberland County, NC	AP-2 / 123.0	UNT to Mingo Swamp	Perennial	20 (AR)	12	Perm AR	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 123.1	UNT to Mingo Swamp	Perennial		10	Abuts Perm AR	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 123.1	UNT to Mingo Swamp	Perennial	8 (AR)	7	Perm AR	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 125.2	UNT to Black River	Intermittent	6 (CL)	5	Open Cut	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 125.8	UNT to South River	Ephemeral	8 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 125.8	UNT to South River	Intermittent		10	Temp ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 126.7	UNT to Cape Fear River	Ephemeral	4 (AR) / 4 (CL)	4	Flume or Dam and Pump	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 126.8	UNT to Cape Fear River	Perennial	8 (AR) / 19 (CL)	8	Open Cut	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 127.3	UNT to Cape Fear River	Perennial	25 (CL)	6	Open Cut	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 129.0	UNT to Cape Fear River	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 129.4	UNT to Cape Fear River	Perennial	8 (CL)	7	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 129.6	UNT to Cape Fear River	Perennial		30	Temp / Perm ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 129.7	UNT to Cape Fear River	Ephemeral		3	Temp ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 130.1	UNT to Cape Fear River	Intermittent	3 (CL)	3	Open Cut	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.1	UNT to Cape Fear River	Intermittent	4 (AR)	4	Perm AR	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.5	UNT to Cape Fear River	Perennial	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.6	UNT to Cape Fear River	Ephemeral		3	Temp ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.7	UNT to Cape Fear River	Intermittent	2 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.7	UNT to Cape Fear River	Intermittent	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 131.8	UNT to Cape Fear River	Intermittent		3	Temp ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 132.7	UNT to Cape Fear River	Intermittent	9 (CL)	9	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 132.8	UNT to Cape Fear River	Perennial	28 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 133.2	UNT to Cape Fear River	Perennial	39 (CL)	15	M&R Workspace	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 133.4	UNT to Cape Fear River	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 133.8	UNT to Cape Fear River	Intermittent	11 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 133.9	UNT to Cape Fear River	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 134.2	UNT to Cape Fear River	Perennial	13 (CL)	10	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 135.0	UNT to Gum Log Canal	Intermittent	7 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 135.8	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
Cumberland County, NC	AP-2 / 136.9	UNT to Bakers Swamp	Perennial	7 (CL)	6	Flume or Dam and Pump	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 137.0	UNT to Bakers Swamp	Perennial		8	Perm ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 137.1	UNT to Bakers Swamp	Perennial	62 (CL)	4	Dam and Pump or Flume	NA	C				NA	
Cumberland County, NC	AP-2 / 137.1	UNT to Bakers Swamp	Perennial	8 (CL)	8	Flume or Dam and Pump	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 137.1	UNT to Big Creek	Intermittent	8 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	

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Cumberland County, NC	AP-2 / 141.6	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
Cumberland County, NC	AP-2 / 141.8	UNT to Buck Creek	Intermittent	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 142.0	UNT to Buck Creek	Ephemeral	4 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 142.7	UNT to Sandy Creek	Ephemeral	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 142.8	UNT to Sandy Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 142.8	UNT to Sandy Creek	Ephemeral		3	Perm ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 142.9	UNT to Sandy Creek	Ephemeral	3 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 143.2	Sandy Creek	Perennial	11 (CL)	6	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 143.3	UNT to Sandy Creek	Intermittent	7 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 143.4	UNT to Sandy Creek	Intermittent	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 144.7	UNT to Cedar Creek	Intermittent		3	Temp / Perm ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 146.2	UNT to Cedar Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Cumberland County, NC	AP-2 / 146.2	UNT to Cedar Creek	Ephemeral	10 (CL)	4	Dam and Pump or Flume	NA	C				NA	
Cumberland County, NC	AP-2 / 146.5	UNT to Cedar Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 146.6	UNT to Cedar Creek	Perennial	6 (CL)	4	Dam and Pump or Flume	NA	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Cumberland County, NC	AP-2 / 146.7	UNT to Cedar Creek	Intermittent	4 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 147.0	UNT to Cedar Creek	Ephemeral	12 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 147.1	UNT to Cedar Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 150.3	UNT to Big Alligator Swamp	Ephemeral	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 150.4	UNT to Big Alligator Swamp	Perennial	22 (CL)	15	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 150.4	UNT to Big Alligator Swamp	Ephemeral	3 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 150.8	UNT to Big Alligator Swamp	Intermittent	8 (CL)	8	Dam and Pump or Flume	NA	C				NA	
Cumberland County, NC	AP-2 / 151.1	UNT to Big Alligator Swamp	Intermittent	10 (CL)	10	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 151.6	UNT to Hair Canal	Perennial	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 151.7	Hair Canal	Perennial	31 (CL)	15	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 152.8	UNT to Cape Fear River	Intermittent		28	Temp ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 153.1	UNT to Cape Fear River	Perennial	11 (CL)	9	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1
Cumberland County, NC	AP-2 / 153.2	UNT to Cape Fear River	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 153.5	UNT to Cape Fear River	Ephemeral	3 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Cumberland County, NC	AP-2 / 153.8	UNT to Cape Fear River	Perennial	11 (CL)	12	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Cumberland County, NC	AP-2 / 154.0	UNT to Cape Fear River	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Cumberland County, NC	AP-2 / 154.1	UNT to Cape Fear River	Perennial	48 (CL)	60	HDD (Part of Cape Fear HDD)	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Cumberland County, NC	**AP-2 / 154.2**	**Cape Fear River**	**Perennial**	**326 (CL)**	**333**	**HDD**	**NA**	**AFSA, PNA, WSIV**		**February 15 to June 30**	**Assume presence of Atlantic pigtoe (NC-E; F-UR)** **Apply AFSA TOYR (Feb 15-Jun 30)** **Implement PNA TOYR (Feb 15-Sept 30)**	**No in-stream work planned.**	**Based on NCWRC comments, classify this waterbody as inland PNA, and apply TOYR of Feb 15-Sept 30**
Cumberland County, NC	AP-2 / 154.3	UNT to Cape Fear River	Intermittent	19 (CL)	6	HDD (Part of Cape Fear HDD)	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 154.6	UNT to Cape Fear River	Perennial	10 (AR) / 12 (CL)	10	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Cumberland County, NC	AP-2 / 154.6	UNT to Cape Fear River	Intermittent		3	Temp / Perm ROW	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 154.7	UNT to Cape Fear River	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 155.1	UNT to Cape Fear River	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	C				NA	
Cumberland County, NC	AP-2 / 155.1	UNT to Cape Fear River	Intermittent	11 (CL)	6	Dam and Pump or Flume	NA	C				NA	
Cumberland County, NC	AP-2 / 155.2	UNT to Cape Fear River	Perennial	5 (CL)	2	Dam and Pump or Flume	NA	C		NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	NA	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Cumberland County, NC	AP-2 / 156.4	Longs Branch	Perennial	11 (CL)	9	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 157.3	UNT to Swans Creek	Perennial	4 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 158.3	UNT to Kirks Mill Creek	Intermittent	9 (CL)	9	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 158.3	UNT to Kirks Mill Creek	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Cumberland County, NC	AP-2 / 158.9	Kirks Mill Creek	Intermittent		2	Temp ROW	NA	WSIV		NA		NA	
Cumberland County, NC	AP-2 / 159.1	UNT to Kirks Mill Creek	Intermittent	6 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 160.5	Gallberry Swamp	Perennial	17 (CL)	15	Dam and Pump or Flume	NA	C, Sw		NA		NA	
Robeson County, NC	AP-2 / 161.8	UNT to Little Marsh	Pond		Pond	Pond	NA	C		NA		NA	
Robeson County, NC	AP-2 / 161.9	UNT to Little Marsh Swamp	Intermittent	10 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 164.2	UNT Little Marsh Swamp	Intermittent	8 (CL)	8	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 166.2	Mercer Branch	Intermittent	16 (CL)	15	Dam and Pump or Flume	NA	C, Sw		NA		NA	
Robeson County, NC	AP-2 / 166.8	UNT to Black Branch	Ephemeral		5	Temp ROW	NA	C		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Robeson County, NC	AP-2 / 167.0	Black Branch	Intermittent	8 (CL)	8	Dam and Pump or Flume	NA	C, Sw		NA		NA	
Robeson County, NC	AP-2 / 170.2	UNT to Tenmile Swamp	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 171.4	UNT to Little Tenmile Swamp	Intermittent	6 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 171.8	UNT to Saddletree Swamp	Intermittent	5 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.0	UNT to Little Tenmile Swamp	Intermittent	7 (CL)	4	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.0	UNT to Saddletree Swamp	Intermittent		4	Perm AR - Existing Culvert	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.1	UNT to Saddletree Swamp	Intermittent		5	Perm AR - Existing Culvert	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.4	UNT to Saddletree Swamp	Ephemeral		3	Ground Bed	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.4	UNT to Saddletree Swamp	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 172.4	UNT to Saddletree Swamp	Intermittent	7 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 174.0	Raft Swamp	Perennial	40 (CL)	40	Open Cut	NA	WSIV, Sw		NA	Assume presence of santee crayfish (NC-W3) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Robeson County, NC	AP-2 / 177.6	UNT to Richland Swamp	Intermittent		5	Perm AR - Existing Culvert	NA	C		NA		NA	
Robeson County, NC	AP-2 / 177.6	Unnamed Pond	Pond	Pond	Pond	Open Cut	NA	C				NA	
Robeson County, NC	AP-2 / 177.6	UNT to Richland Swamp	Ephemeral		3	Perm AR - Existing Culvert	NA	C, Sw		NA		NA	
Robeson County, NC	AP-2 / 178.5	Burnt Swamp	Perennial	43 (CL)	25	Flume or Dam and Pump	NA	C		NA	Assume presence of santee crayfish (NC-W3), and ironcolor shiner (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Robeson County, NC	AP-2 / 178.6	UNT to Burnt Swamp	Ephemeral	22 (CL)	8	Flume or Dam and Pump	NA	C		NA		NA	
Robeson County, NC	AP-2 / 179.2	UNT to Burnt Swamp	Perennial	10 (CL)	10	Flume or Dam and Pump	NA	C		NA		NA	
Robeson County, NC	AP-2 / 181.1	Moss Neck Swamp	Perennial	21 (CL)	20	Dam and Pump or Flume	NA	C, Sw		NA		NA	
Robeson County, NC	AP-2 / 181.3	UNT to Moss Neck Swamp	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 181.6	UNT to Bear Swamp	Perennial	8 (CL)	7	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 181.6	UNT to Little Bear Swamp	Intermittent		4	Temp ROW	NA	C		NA		NA	
Robeson County, NC	AP-2 / 181.7	UNT to Bear Swamp	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 181.7	UNT to Bear Swamp	Intermittent	5 (CL)	3	Dam and Pump or Flume	NA	C		NA		NA	
Robeson County, NC	AP-2 / 182.2	UNT to Bear Swamp	Intermittent		3	Temp / Perm ROW	NA	C		NA		NA	
Robeson County, NC	AP-2 / 182.3	UNT to Bear Swamp	Perennial	5 (CL)	5	Dam and Pump or Flume	NA	C		NA		NA	
Northampton County, NC	AP-3 / 0.6	Jacks Swamp	Wetland-Waterbody Complex			Open Cut	In-stream; Within 1000 feet	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Conduct aquatic species relocation
Northampton County, NC	AP-3 / 1.3	UNT to Jacks Swamp	Ephemeral	14 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet)[a]	Construction Method[b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments)[c]	FERC Recommended Conditions
Northampton County, NC	AP-3 / 1.5	UNT to Jack's Swamp	Ephemeral	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 3.6	UNT to Cypress Creek	Intermittent	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 4.2	UNT to Cypress Creek	Intermittent	10 (CL)	7	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 5.9	UNT to Cypress Creek	Perennial	31 (CL)	9	Open Cut	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 5.9	UNT to Cypress Creek	Perennial	8 (CL)	7	Open Cut	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 6.5	UNT to Cypress Creek	Intermittent		4	Abuts Perm AR	NA	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 7.0	UNT to Cypress Creek	Perennial	7 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 7.4	Cypress Creek	Wetland-Waterbody Complex			Open Cut	In-stream; Within 1000 feet	C, NSW		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Apply aquatic species relocation
Northampton County, NC	AP-3 / 7.8	UNT to Cypress Creek	Ephemeral	2 (CL)	2	Dam and Pump or Flume	In-stream; Within 1000 feet	C, NSW		NA		NA	
Northampton County, NC	AP-3 / 10.0	Cypress Creek	Perennial	33 (CL)	30	Open Cut	In-stream; Within 1000 feet	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Apply aquatic species relocation
Northampton County, NC	AP-3 / 10.0	UNT to Cypress Creek	Perennial		8	Temp ROW	Within 1000 feet	C		NA		NA	
Northampton County, NC	AP-3 / 10.2	UNT to Cypress Creek	Perennial	4 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Northampton County, NC	AP-3 / 10.3	Cypress Creek	Perennial	3 (CL)	3	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA	Assume presence of banded sunfish (NC-SR) Conduct aquatic species relocation	NA	Apply aquatic species relocation
Northampton County, NC	AP-3 / 10.8	UNT to Meherrin River	Ephemeral		3	Abuts Perm AR	NA	C		NA		NA	
Northampton County, NC	AP-3 / 11.2	UNT to Meherrin River	Intermittent	9 (AR)	8	Perm AR	NA	C		NA		NA	
Northampton County, NC	AP-3 / 11.6	UNT to Meherrin River	Intermittent	4 (CL)	4	Dam and Pump or Flume	In-stream; Within 1000 feet	C		NA		NA	
Greensville and Southampton Counties, VA	**AP-3 / 12.4**	**Meherrin River**	**Perennial**	**147 (CL)**	**113**	**Cofferdam**	**In-stream; Within 1000 feet**	**Aquatic Life, Migratory fish Spawning and Nursery**	**Mercury in Fish**	**February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30**	**Consult with VDGIF regarding proposal to not adhere to TOYR for green floater Assume presence of green floater (VA-T) and implement VDGIF TOYR (Apr 15-Jun 15 and Aug 15-Sept 30) Assume presence of Atlantic pigtoe (VA-T; F-UR) and implement VDGIF TOYR (May 15-Jul 31) VDGIF AFSA TOYR (Feb 15-Jun 30) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.**	**Consult with VDGIF regarding proposal to not adhere to TOYR for green floater Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Southampton County, VA	AP-3 / 13.3	UNT to Meherrin River	Canal/Ditch	15 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 13.5	UNT to Meherrin River	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30	Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 13.6	UNT to Meherrin River	Perennial		6	Temp ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30	Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 14.4	UNT to Meherrin River	Perennial	10 (CL)	7	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 15.9	UNT to Buckhorn Swamp	Perennial	12 (CL)	10	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 16.5	Buckhorn Swamp	Perennial	7 (CL)	7	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 17.8	Tarrara Creek	Wetland-Waterbody Complex			Open Cut	NA	Unclassified		NA		Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Confirm that pre-construction aquatic species relocation would apply to open cut crossing
Southampton County, VA	AP-3 / 18.6	UNT to Tarrara Creek	Intermittent		2	Temp / Perm ROW	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 18.9	UNT to Tarrara Creek	Ephemeral		5	Temp ROW	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 19.0	UNT to Tarrara Creek	Perennial	5 (CL)	5	Open Cut	NA	Unclassified		NA			
Southampton County, VA	AP-3 / 19.2	UNT to Tarrara Creek	Perennial	3 (CL)	2	Open Cut	NA	Unclassified		NA			
Southampton County, VA	AP-3 / 20.0	UNT to Tarrara Creek	Perennial	5 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 20.1	UNT to Tarrara Creek	Perennial	4 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 20.7	UNT to Tarrara Creek	Intermittent	2 (CL)	2	Open Cut	NA	Unclassified		NA			
Southampton County, VA	AP-3 / 21.0	UNT to Tarrara Creek	Perennial	6 (CL)	5	Open Cut	NA	Unclassified		NA			
Southampton County, VA	AP-3 / 21.3	UNT to Meherrin River	Intermittent	9 (CL)	6	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	Confirm if this is UNT to Meherrin River Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 21.7	UNT to Meherrin River	Intermittent	6 (CL)	5	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	Confirm if this is UNT to Meherrin River Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Meherrin River
Southampton County, VA	AP-3 / 22.1	UNT to Tarrara Creek	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 22.6	UNT to Tarrara Creek	Canal/Ditch	7 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 22.6	UNT to Tarrara Creek	Canal/Ditch		Canal/Ditch	Perm AR	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 22.8	UNT to Darden Run	Canal/Ditch		Canal/Ditch	Temp / Perm ROW	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 23.7	UNT to Darden Pond	Perennial	6 (CL)	6	Open Cut	NA	Unclassified		NA			
Southampton County, VA	AP-3 / 23.9	Ditch	Canal/Ditch	5 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 24.2	UNT to Darden Pond	Intermittent		5	Ground Bed	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 24.3	UNT to Darden Pond	Perennial	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Southampton County, VA	AP-3 / 24.5	UNT to Darden Pond	Perennial	5 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 24.8	Ditch	Canal/Ditch	4 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 26.0	UNT to Mill Swamp	Intermittent	1 (CL)	1	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 26.1	UNT to Mill Swamp	Intermittent	6 (CL)	5	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Southampton County, VA	AP-3 / 27.0	Ditch	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 27.4	UNT to Nottoway River	Ephemeral	4 (CL)	3	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waters
Southampton County, VA	AP-3 / 28.8	UNT to Nottoway River	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 28.8	UNT to Nottoway River	Intermittent	4 (AR)	4	Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 31.3	UNT to Nottoway River	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 31.6	UNT to Nottoway River	Perennial	10 (AR)	10	Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Complete mussel and Roanoke logperch surveys and submit results to FWS and VDGIF Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 31.8	UNT to Nottoway River	Wetland-Waterbody Complex			Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Apply the FWS' enhanced conservation measures for ESA sensitive streams	Will adhere to TOYR for work within the waterbody.	Complete mussel and Roanoke logperch surveys and submit results to FWS and VDGIF Apply the FWS' enhanced conservation measures for ESA sensitive streams Remove Apr 15-Jun 15 and Aug 15-Sept 30 TOYR
Southampton County, VA	AP-3 / 31.8	UNT to Nottoway River	Wetland-Waterbody Complex			Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Complete mussel and Roanoke logperch surveys and submit results to FWS and VDGIF Apply the FWS' enhanced conservation measures for ESA sensitive streams (see section 4.7.1) Remove Apr 15-Jun 15 and Aug 15-Sept 30 TOYR

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Southampton County, VA	**AP-3 / 32.2**	**Nottoway River**	**Perennial**		**160**	**Abuts Perm AR**	**NA**	**Aquatic Life, Migratory fish Spawning and Nursery, Recreation**		**February 15 to June 30/May 15 to July 31/March 15 to May 31 and August 15 to October 15/March 15 to June 30**	**Assume presence of Roanoke logperch and implement VDGIF TOYR (Mar 15-Jun 30) Assume presence of dwarf wedgemussel and implement VDGIF TOYR (Mar 15-May 31 and Aug 15-Oct 15) Assume presence of Atlantic pigtoe and yellow lance and implement VDGIF TOYR (May 15-Jul 31) VDGIF AFSA TOYR (Feb 15-Jun 30) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**	**Will adhere to TOYR for work within the waterbody.**	**No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply. Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Southampton County, VA	**AP-3 / 32.6**	**Nottoway River**	**Perennial**	**241 (CL)**	**160**	**HDD**	**NA**	**Aquatic Life, Migratory fish Spawning and Nursery**	**Benthic-Macroinvertebrate Bioassessments and Mercury in Fish**	**February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30**	**Assume presence of Roanoke logperch and implement VDGIF TOYR (Mar 15-Jun 30) Assume presence of dwarf wedgemussel and implement VDGIF TOYR (Mar 15-May 31 and Aug 15-Oct 15) Assume presence of Atlantic pigtoe and yellow lance and implement VDGIF TOYR (May 15-Jul 31) VDGIF AFSA TOYR (Feb 15-Jun 30) Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**	**No in-stream work planned. Presence is assumed for the Roanoke logperch due to suitable habitat and conservation measures as outlined in the EIS and BA will be implemented.**	**Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Remove Apr 15-Jun 15 and Aug 15-Sept 30 TOYR**
Southampton County, VA	AP-3 / 33.1	UNT to Nottoway River	Canal/Ditch		Canal/Ditch	Temp ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species	Will adhere to TOYR for work within the waterbody.	No work within waterbody identified; therefore commitment to adhere to TOYR within waterbody does not apply.
Southampton County, VA	AP-3 / 33.1	UNT to Nottoway River	Intermittent	5 (AR) / 5 (CL)	5	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Apply VDGIF TOYR for dwarf wedgemussel (Mar 15-May 31 and Aug 15-Oct 15) Apply VDGIF TOYR for Atlantic pigtoe and yellow lance (May 15-Jul 31)
Southampton County, VA	AP-3 / 33.1	UNT to Nottoway River	Intermittent	5 (AR) / 4 (CL)	4	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Apply pre-construction aquatic species relocation. Apply VDGIF TOYR for dwarf wedgemussel (Mar 15-May 31 and Aug 15-Oct 15) Apply VDGIF TOYR for Atlantic pigtoe and yellow lance (May 15-Jul 31)
Southampton County, VA	AP-3 / 33.3	UNT to Nottoway River	Intermittent	10 (CL)	10	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of Nottoway River for all applicable species Apply pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Apply pre-construction aquatic species relocation. Apply VDGIF TOYR for dwarf wedgemussel (Mar 15-May 31 and Aug 15-Oct 15) Apply VDGIF TOYR for Atlantic pigtoe and yellow lance (May 15-Jul 31)
Southampton County, VA	AP-3 / 33.9	UNT to Nottoway River	Canal/Ditch	6 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Southampton County, VA	AP-3 / 33.9	UNT to Nottoway River	Perennial	27 (CL)	22	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 33.9	UNT to Nottoway River	Intermittent	12 (CL)	6	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 34.3	UNT to Nottoway River	Canal/Ditch	10 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 34.4	UNT to Nottoway River	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Franklin City, VA	AP-3 / 34.5	Ditch	Canal/Ditch		Canal/Ditch	Contractor Yard - Temporary Impact	Within 1000 feet	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 34.6	UNT to Nottoway River	Perennial	22 (CL)	15	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30		Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River Confirm if pre-construction aquatic species relocation applies to open cut crossings.
Southampton County, VA	AP-3 / 34.6	UNT to Nottoway River	Perennial	14 (CL)	10	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/May 15 to July 31/April 15 to June 15 and August 15 to September 30/March 15 to May 31 and August 15 to October 15/March 15 to June 30		Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River Confirm if pre-construction aquatic species relocation applies to open cut crossings.
Southampton County, VA	AP-3 / 34.8	Ditch	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 34.9	Ditch	Canal/Ditch	3 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
Southampton County, VA	AP-3 / 35.7	UNT to Nottoway River	Intermittent	5 (CL)	4	Open Cut	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30/March 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Nottoway River
Southampton County, VA	AP-3 / 35.9	UNT to Blackwater River	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		NA	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
Southampton County, VA	AP-3 / 35.9	UNT to Blackwater River	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		NA	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
Southampton County, VA	AP-3 / 36.3	UNT to Blackwater River	Perennial	18 (CL)	16	Flume or Dam and Pump	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish	February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
Southampton County, VA	AP-3 / 36.6	UNT to Blackwater River	Canal/Ditch	14 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River Apply pre-construction aquatic species relocation.

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Southampton County, VA	AP-3 / 36.6	UNT to Blackwater River	Intermittent	4 (CL)	3	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 38.6	Blackwater River	Perennial	208 (CL)	185	HDD	NA	Aquatic Life, Migratory fish Spawning and Nursery	Dissolved Oxygen and Mercury in Fish	February 15 to June 30	Apply VDGIF AFSA TOYR (Feb 15-Jun 30)	No in-stream work planned.	TOYR also applies to water withdrawal activities
City of Suffolk, VA	AP-3 / 39.4	UNT to Blackwater River	Perennial	5 (CL)	4	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish	February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 39.5	UNT to Blackwater River	Canal/Ditch	4 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River Apply pre-construction aquatic species relocation.
City of Suffolk, VA	AP-3 / 39.7	UNT to Blackwater River	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 40.1	UNT to Blackwater River	Perennial	8 (CL)	5	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 40.2	UNT to Blackwater River	Perennial	7 (CL)	6	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish	February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 40.5	UNT to Blackwater River	Canal/Ditch	6 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River Apply pre-construction aquatic species relocation.
City of Suffolk, VA	AP-3 / 41.4	UNT to Blackwater River	Perennial	5 (CL)	3	Flume or Dam and Pump	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 41.6	UNT to Blackwater River	Ephemeral	3 (CL)	3	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR, does not apply to ephemeral waters
City of Suffolk, VA	AP-3 / 42.3	UNT to Blackwater River	Perennial	5 (CL)	5	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish	February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 42.3	UNT to Blackwater River	Perennial	8 (CL)	7	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery	Mercury in Fish	February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 42.7	UNT to Blackwater River	Intermittent	7 (CL)	5	Dam and Pump or Flume	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody. Pre-construction aquatic species relocations.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 42.7	UNT to Blackwater River	Intermittent		4	Temp ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	Remove TOYR; only applicable to intermittent and perennial tributaries within 1 river mile of Blackwater River
City of Suffolk, VA	AP-3 / 44.5	UNT to Kingsale Swamp	Perennial	5 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 44.6	Unnamed Ditch	Canal/Ditch		Canal/Ditch	Temp / Perm ROW	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 44.6	Unnamed Ditch	Canal/Ditch		Canal/Ditch	Temp ROW	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 44.6	UNT to Kindpole Swamp	Perennial	7 (CL)	5	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
City of Suffolk, VA	AP-3 / 45.1	UNT to Kingsale Swamp	Perennial	11 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
City of Suffolk, VA	AP-3 / 45.4	Ditch	Canal/Ditch	11 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 45.5	Ditch	Canal/Ditch	10 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 45.7	UNT to Kingsale Swamp	Canal/Ditch	8 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 45.8	UNT to Kingsale Swamp	Canal/Ditch	6 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 46.1	UNT to Kingsale Swamp	Perennial	4 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 46.2	UNT to Kingsale Swamp	Canal/Ditch	5 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 48.0	UNT to Jones Swamp	Canal/Ditch	9 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 48.5	UNT to Jones Swamp	Canal/Ditch	5 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 48.7	UNT to Jones Swamp	Canal/Ditch	26 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 49.2	Ditch	Canal/Ditch	4 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 49.5	Quaker Swamp	Wetland-Waterbody Complex			Open Cut	NA	Unclassified		NA		Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Confirm that pre-construction aquatic species relocation would apply to open cut crossing
City of Suffolk, VA	AP-3 / 49.9	UNT to Quaker Swamp	Perennial	3 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 50.2	Quaker Swamp	Wetland-Waterbody Complex			Open Cut	NA	Unclassified		NA		Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Confirm that pre-construction aquatic species relocation would apply to open cut crossing
City of Suffolk, VA	AP-3 / 50.5	UNT to Quaker Swamp	Perennial	2 (CL)	2	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 51.7	Ditch	Canal/Ditch	8 (CL)	Canal/Ditch	Flume or Dam and Pump	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 52.1	UNT to Quaker Swamp	Perennial	6 (CL)	6	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 52.1	UNT to Quaker Swamp	Intermittent	3 (CL)	4	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 52.2	UNT to Quaker Swamp	Intermittent		5	Temp / Perm ROW	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 52.6	UNT to Quaker Swamp	Intermittent	2 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 52.6	UNT to Quaker Swamp	Intermittent	3 (CL)	2	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 53.9	UNT to Speights Run	Intermittent		3	Temp ROW	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 53.9	UNT to Speights Run	Intermittent	4 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 53.9	UNT to Speights Run	Intermittent	3 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 54.6	UNT to Cohoon Creek	Perennial	4 (CL)	4	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 55.3	UNT to Lake Cohoon	Perennial	3 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
City of Suffolk, VA	AP-3 / 55.4	UNT to Lake Cohoon	Perennial	5 (CL)	4	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
City of Suffolk, VA	AP-3 / 55.5	Ditch	Canal/Ditch	2 (CL)	Canal/Ditch	Dam and Pump or Flume	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 56.1	Cohoon Creek	Wetland-Waterbody Complex			Open Cut	NA	Unclassified		NA		Pre-construction aquatic species relocations.	Complete mussel surveys and submit results to FWS and VDGIF Confirm that pre-construction aquatic species relocation would apply to open cut crossing
City of Suffolk, VA	AP-3 / 56.2	UNT to Cohoon Creek	Perennial	15 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 56.3	UNT to Cohoon Creek	Intermittent		2	Temp ROW	NA	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
City of Suffolk, VA	AP-3 / 56.3	UNT to Cohoon Creek	Intermittent	1 (CL)	1	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 56.3	UNT to Cohoon Creek	Perennial	3 (AR)	3	Perm AR - Bridge	NA	WQS not assessed		NA		NA	
City of Suffolk, VA	AP-3 / 56.4	UNT to Cohoon Creek	Perennial	10 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 56.7	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
City of Suffolk, VA	AP-3 / 56.7	UNT to Cohoon Creek	Intermittent	2 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 57.0	UNT to Eley Swamp	Intermittent	2 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 58.0	UNT to Eley Swamp	Perennial	9 (CL)	5	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 58.1	UNT to Eley Swamp	Perennial	4 (CL)	2	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 58.8	Ditch	Canal/Ditch		Canal/Ditch	Abuts Perm AR	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 59.3	UNT to Lake Prince	Perennial	3 (CL)	3	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 59.4	UNT to Lake Prince	Perennial	5 (CL)	5	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 59.4	UNT to Lake Prince	Intermittent	13 (CL)	2	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 60.5	UNT to Prince Lake	Perennial	2 (CL)	2	Flume or Dam and Pump	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 60.9	UNT to Prince Lake	Intermittent		2	Perm ROW	NA	UNT to Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 61.0	Lake Prince	Reservoir	389 (CL)	Reservoir	HDD	NA	Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 61.1	UNT to Lake Prince	Ephemeral	3 (CL)	1	HDD (Part of Lake Prince HDD)	NA	UNT to Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 61.6	UNT to Western Branch Reserv	Intermittent		1	Temp ROW	NA	UNT to Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 61.7	UNT to Western Branch Reserv	Perennial	9 (CL)	3	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 61.8	UNT to Western Branch Reserv	Perennial		3	Perm ROW	NA	UNT to Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 61.8	UNT to Western Branch Reserv	Perennial	3 (CL)	3	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 62.4	Western Branch Reservoir	Reservoir	302 (CL)	Reservoir	HDD	NA	Public fishing Lake		NA		NA	
City of Suffolk, VA	AP-3 / 62.7	UNT Western Branch Reserv	Perennial	3 (CL)	3	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 63.0	UNT Western Branch Reserv	Perennial	5 (CL)	3	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 63.0	UNT Western Branch Reserv	Perennial	2 (CL)	2	Dam and Pump or Flume	NA	UNT to Public fishing Lake		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	**AP-3 / 63.6**	**Western Tributary to Nansemond River**	**Perennial**	**60 (CL)**	**160**	**HDD**	**NA**	**Aquatic Life, Migratory fish Spawning and Nursery**		**February 15 to June 30**	**Assume presence of freshwater mussels Implement VDGIF TOYR for Potential AFSA (Feb 15-Jun 30)**	**No in-stream work planned.**	
City of Suffolk, VA	**AP-3 / 64.4**	**Nansemond River**	**Perennial**	**460 (CL)**	**440**	**HDD**	**NA**	**Aquatic Life, Migratory fish Spawning and Nursery**		**February 15 to June 30**	**Assume presence of freshwater mussels Potential for marine mammals Implement VDGIF TOYR for Potential AFSA (Feb 15-Jun 30)**	**No in-stream work planned.**	
City of Suffolk, VA	AP-3 / 65.5	UNT to Nansemond River	Canal/Ditch		Canal/Ditch	Temp ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery				NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
City of Suffolk, VA	AP-3 / 65.6	UNT to Nansemond River	Perennial		3	Perm ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery				NA	
City of Suffolk, VA	AP-3 / 65.8	UNT to Nansemond River	Intermittent	3 (CL)	2	Flume or Dam and Pump	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 15 to June 30		Will adhere to TOYR for work within the waterbody.	
City of Suffolk, VA	AP-3 / 65.9	UNT to Nansemond River	Intermittent		2	Perm ROW	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery				NA	Remove TOYR, does not apply to tributaries of Potential AFSA waters
City of Suffolk, VA	AP-3 / 66.0	UNT to Nansemond River	Canal/Ditch		Canal/Ditch	Abuts Perm AR	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery				NA	
City of Suffolk, VA	AP-3 / 66.3	UNT to Great Dismal Swamp	Intermittent	7 (AR)	5	Temp AR - Temp Impact	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 66.3	UNT to Great Dismal Swamp	Intermittent	70 (AR)	7	Abuts Perm AR	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 66.3	UNT to Great Dismal Swamp	Intermittent	5 (AR)	5	Temp AR - Temp Impact	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 66.9	UNT to Dismal Swamp	Perennial	9 (CL)	8	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 67.0	UNT to Dismal Swamp	Perennial	5 (CL)	5	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 67.6	UNT to Dismal Swamp	Perennial	24 (CL)	15	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 68.0	UNT to Dismal Swamp	Perennial	25 (CL)	15	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 68.5	UNT to Dismal Swamp	Pond		Pond	Pond	NA	Unclassified		NA		NA	
City of Suffolk, VA	AP-3 / 68.5	UNT to Dismal Swamp	Intermittent	6 (CL)	5	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Suffolk, VA	AP-3 / 68.6	UNT to Dismal Swamp	Perennial	10 (CL)	10	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 68.8	UNT to Dismal Swamp	Perennial	3 (CL)	3	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 69.0	UNT to Dismal Swamp	Perennial	10 (CL)	10	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 70.6	UNT to Dismal Swamp	Perennial	3 (CL)	10	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 71.1	UNT to Dismal Swamp	Perennial	6 (CL)	5	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 71.1	UNT to Dismal Swamp	Perennial	14 (CL)	5	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Suffolk, VA	AP-3 / 71.2	UNT to Dismal Swamp	Perennial	15 (CL)	14	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 71.3	UNT to Dismal Swamp	Perennial	13 (CL)	14	Flume or Dam and Pump	NA	WQS not assessed		NA	Pre-construction fish relocation	Pre-construction fish relocation	
City of Chesapeake, VA	AP-3 / 71.6	East Ditch	Perennial	31 (CL)	15	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	NA	Apply pre-construction aquatic species relocation.
City of Chesapeake, VA	AP-3 / 71.6	UNT to East Ditch	Perennial	5 (CL)	5	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 71.7	UNT to East Ditch	Perennial	3 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 71.8	UNT to East Ditch	Perennial	5 (CL)	4	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 73.6	UNT to Dismal Swamp	Perennial	13 (CL)	10	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 73.7	UNT to Dismal Swamp	Intermittent	9 (CL)	7	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
City of Chesapeake, VA	AP-3 / 73.9	UNT to Dismal Swamp	Perennial	17 (CL)	15	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 74.1	UNT to Dismal Swamp	Canal/Ditch	15 (AR)	Canal/Ditch	Temp AR - Temp Impact	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 74.3	UNT to Dismal Swamp	Perennial	15 (CL)	7	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 75.0	UNT to Dismal Swamp	Perennial	44 (CL)	15	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 76.0	UNT to Dismal Swamp	Intermittent	34 (CL)	15	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 76.9	UNT to Deep Creek	Intermittent		5	Temp ROW	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 77.3	UNT to Deep Creek	Perennial		4	Temp ROW	NA	WQS not assessed		NA		NA	
City of Chesapeake, VA	AP-3 / 77.4	Deep Creek	Perennial	32 (CL)	14	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 77.4	UNT to Deep Creek	Perennial	6 (CL)	6	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 77.4	UNT to Deep Creek	Intermittent	3 (CL)	2	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 77.5	UNT to Deep Creek	Canal/Ditch		Canal/Ditch	Temp ROW	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 78.3	UNT to Deep Creek	Intermittent	42 (CL)	3	Dam and Pump or Flume	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 78.8	UNT to Deep Creek	Perennial	20 (CL)	6	HDD (Part of Route 17 HDD)	NA	Unclassified		NA	Pre-construction aquatic species relocation	No in-stream work planned.	
City of Chesapeake, VA	AP-3 / 78.9	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
City of Chesapeake, VA	AP-3 / 79.0	Ditch	Canal/Ditch	7 (CL)	Canal/Ditch	HDD (Part of Route 17 HDD)	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 79.0	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
City of Chesapeake, VA	AP-3 / 81.0	UNT to Deep Creek	Ephemeral	3 (CL)	3	Flume or Dam and Pump	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 81.2	Unnamed Pond	Pond	Pond (CL)	Pond	Pond	NA	NA		NA		NA	
City of Chesapeake, VA	AP-3 / 81.6	Unnamed Pond	Pond		Pond	Pond	NA	NA		NA		NA	
City of Chesapeake, VA	**AP-3 / 81.8**	**South Branch Elizabeth River**	**Perennial**	**835 (CL)**	**840**	**HDD**	**NA**	**Aquatic Life, Migratory fish Spawning and Nursery**		**February 1 to June 30**	**Assume presence of Atlantic sturgeon (F-E) and shortnose sturgeon (F-E) Implement VDGIF AFSA TOYR (Feb 1-Jun 30) Potential for marine mammals**	**No in-stream work planned.**	**Pending consultation with NOAA Fisheries; shortnose sturgeon may also be present. NOAA Fisheries may request that the HDD be conducted outside of the TOYR due to potential for frac-out**
City of Chesapeake, VA	AP-3 / 82.1	Ditch	Canal/Ditch		Canal/Ditch	Temp ROW	NA	Unclassified		NA		NA	

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Waterbody Crossings Along the Atlantic Coast Pipeline

County, State/ Common-wealth	Project Segment / Milepost	Feature_Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet)[a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Common-wealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restrictions (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	Atlantic Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
City of Chesapeake, VA	AP-3 / 82.1	UNT to S B of Elizabeth River	Intermittent	17 (CL)	6	HDD (Part of Elizabeth River HDD)	NA	UNT to Aquatic Life, Migratory fish Spawning and Nursery		February 1 to June 30	Apply VDGIF TOYR to perennial and intermittent tributaries within 1 river mile of South Branch Elizabeth River for all applicable species	No in-stream work planned.	
City of Chesapeake, VA	AP-3 / 82.3	Ditch	Canal/Ditch	6 (CL)	Canal/Ditch	Flume or Dam and Pump	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 82.4	UNT to Dismal Swamp	Ephemeral		5	Perm ROW	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 82.4	UNT to Dismal Swamp	Perennial	5 (CL)	5	Flume or Dam and Pump	NA	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
City of Chesapeake, VA	AP-3 / 82.5	UNT to Newton Creek	Canal/Ditch		Canal/Ditch	Temp ROW	NA	Unclassified		NA		NA	
City of Chesapeake, VA	AP-3 / 82.5	UNT to Newton Creek	Canal/Ditch		Canal/Ditch	Temp / Perm ROW	NA	Unclassified		NA		NA	
Greensville County, VA	AP-5 / 0.2	UNT to Greensville Creek	Intermittent	2 (CL)	2	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-5 / 0.4	UNT to Greensville Creek	Intermittent	4 (AR) / 4 (CL)	4	Flume or Dam and Pump	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	
Greensville County, VA	AP-5 / 0.8	Greensville Creek	Perennial	21 (CL)	15	Dam and Pump or Flume	In-stream; Within 1000 feet	Unclassified		NA	Pre-construction aquatic species relocation	Pre-construction aquatic species relocations.	

Shaded rows indicate waterbody crossings on the Monongahela and George Washington National Forests.

[a] "Access Road (AR) and Centerline (CL) Crossings" and "Survey/Desktop Estimated OHWM Width" represent measures of the width or crossing width of waterbodies. The first two crossing lengths, for access roads and for the pipeline centerline are GIS derived measurements based on waterbody polygons and the distance the respective facilities (access road or pipeline centerline) cross within the waterbody polygon. The third column of measurement is included for features that are not crossed by either an access road or the pipeline centerline, based on the field survey or desktop estimated ordinary high water mark (OHWM) width of the waterbodies.

[b] Construction Method includes trenchline construction methods for waterbodies that have a pipeline centerline crossing length. For waterbodies that are not crossed by the pipeline centerline or other unique facility components this column reads "Not Crossed by Centerline". For waterbodies that intersect unique facility components (e.g., compressor stations, contractor yards) the column refers to the unique facility crossed and identifies the nature of the planned impacts.

[c] Includes Agency Recommended Mitigation measures received to date in consultation with State/Commonwealth and Federal agencies.

Appendix K-2

Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Harrison County, WV	TL-635 / 0.2	UNT to Tanner Fork	Perennial	2 (CL)	2	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Harrison County, WV	TL-635 / 0.7	UNT to Dry Fork	Intermittent	NA	2	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Harrison County, WV	TL-635 / 0.8	UNT to Dry Fork	Perennial	8 (CL)	8	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 0.9	Dry Fork	Perennial	6 (AR)	4	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 0.9	UNT to Dry Fork	Perennial	4 (AR)	5	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 1.3	Dry Fork	Perennial	11 (CL)	8	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 1.4	UNT to Dry Fork	Perennial	4 (CL)	4	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 2.1	Meathouse Fork	Perennial	30 (CL)	25	Dam and Pump	In-stream; Within 1000 feet	B1, HQS	Fecal Coliform, Iron, CNA Biological – Aquatic Life	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 2.9	Johnson Fork	Perennial	6 (CL)	6	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 2.9	UNT to Johnson Fork	Perennial	4 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 4	UNT to Indian Fork	Perennial	18 (AR)	10	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 4	UNT to Indian Fork	Perennial	13 (CL)	12	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 4.6	UNT to Indian Fork	Perennial	9 (CL)	8	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 5	Indian Fork	Perennial	20 (AR)	15	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 5.1	UNT to Indian Fork	Perennial	8 (CL)	8	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 5.1	Indian Fork	Perennial	6 (AR)	6	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 5.4	Buckeye Creek	Perennial	21 (AR)	10	Perm AR	NA	B1, HQS		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 5.4	Indian Fork	Perennial	12 (AR)	10	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 5.5	Buckeye Creek	Perennial	31 (CL)	10	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1, HQS	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 5.5	UNT to Buckeye Creek	Intermittent	17 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 5.9	UNT to Buckeye Creek	Intermittent	5 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 6.7	Greenbriar Creek	Perennial	10 (CL)	10	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 7.8	Buffalo Calf Fork	Perennial	21 (CL)	10	Dam and Pump	In-stream; Within 1000 feet	B1	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 7.8	Buffalo Calf Fork	Perennial	10 (AR)	10	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 7.9	UNT to Buffalo Calf Fork	Perennial	NA	6	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 7.9	UNT to Buffalo Calf Fork	Perennial	4 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	

Appendix K-2

Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Doddridge County, WV	TL-635 / 8.9	UNT to Buffalo Calf Fork	Perennial	8 (CL)	8	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 9.4	Long Run	Perennial	26 (CL)	25	Dam and Pump	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 9.4	UNT to Long Run	Perennial	25 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 10.6	Buckeye Run	Perennial	17 (CL)	16	Bore	Within 1000 feet	B1, HQS	Fecal Coliform, Iron, CNA Biological – Aquatic Life	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 10.6	UNT to Buckeye Run	Perennial	10 (CL)	10	Bore	Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 11.7	UNT to Buckeye Run	Intermittent	4 (AR)	4	Perm AR	NA	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 12.9	Flint Run	Perennial	12 (CL)	10	Dam and Pump	In-stream; Within 1000 feet	B1, HQS	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 13.5	UNT to Flint Run	Perennial	4 (AR)	4	Perm AR	NA	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 14.1	UNT to Righthand Fork East Run	Perennial	7 (CL)	7	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 14.1	UNT to Righthand Fork East Run	Perennial	19 (AR)	7	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 14.1	UNT to Righthand Fork	Perennial	4 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 14.2	UNT to Righthand Fork East Run	Intermittent	3 (AR)	3	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 14.2	UNT to Big Battle Run	Perennial	6 (AR)	6	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 15.1	UNT to Big Battle Run	Perennial	5 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 15.2	UNT to Big Battle Run	Perennial	3 (CL)	2	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 15.5	Big Battle Run	Perennial	18 (AR)	15	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 15.6	UNT to Big Battle Run	Perennial	11 (CL)	5	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 15.8	UNT to Big Battle Run	Intermittent	3 (AR)	3	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 15.8	UNT to Big Battle Run	Perennial	6 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 15.8	UNT to Big Battle Run	Perennial	5 (AR)	5	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 16.3	Big Battle Run	Perennial	31 (AR)	15	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 16.5	Big Battle Run	Perennial	27 (AR)	15	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 16.5	UNT to Big Battle Run	Perennial	5 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR.	
Doddridge County, WV	TL-635 / 17.8	Little Battle Run	Perennial	16 (CL)	6	Dam and Pump	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 17.8	Little Battle Run	Perennial	6 (AR)	6	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 17.8	UNT to Little Battle Run	Perennial	NA	1	Ground Bed	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 17.8	Little Battle Run	Perennial	19 (AR)	10	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	

Appendix K-2

Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Doddridge County, WV	**TL-635 / 18.5**	**McElroy Creek**	**Perennial**	**74 (CL)**	**55**	**Dam and Pump**	**In-stream; Within 1000 feet**	**B1, HQS**		**April 1 - June 30**	**Assume presence of snuffbox (F-E) WVDNR Endangered Mussels Water Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**	**Will adhere to TOYR for work within the waterbody and mussel relocation requirements.**	**Applicant-Prepared BA (1/27/17) appendix B-3 indicates this is a cofferdam crossing; confirm crossing technique and revise table accordingly Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1) Pre-construction aquatic species relocation**
Doddridge County, WV	**TL-635 / 18.5**	**McElroy Creek**	**Perennial**	**37 (AR)**	**55**	**Perm AR**	**NA**	**B1, HQS**		**April 1 - June 30**	**Assume presence of snuffbox (F-E) WVDNR Endangered Mussels Water Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1**	**Will adhere to TOYR for work within the waterbody and mussel relocation requirements.**	**Apply the FWS' enhanced conservation measures for ESA sensitive waterbodies (see section 4.7.1)**
Doddridge County, WV	TL-635 / 18.6	UNT to McElroy Creek	Perennial	41 (CL)	6	Dam and Pump	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)	Will adhere to TOYR for work within the waterbody.	Apply the FWS' enhanced conservation measures for perennial tributaries within 1 mile of ESA sensitive waterbodies (see section 4.7.1)
Doddridge County, WV	TL-635 / 19	Franks Run	Perennial	10 (AR)	10	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 20.6	Franks Run	Perennial	31 (CL)	20	Dam and Pump	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Doddridge County, WV	TL-635 / 21.9	UNT to Broad Run	Intermittent	5 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Tyler County, WV	TL-635 / 23.1	UNT to Indian Creek	Intermittent	NA	5	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Tyler County, WV	TL-635 / 23.1	Indian Creek	Perennial	16 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	15 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	3 (AR)	3	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	10 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	11 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	8 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 24.8	UNT to Buffalo Run	Perennial	17 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	UNT to Buffalo Run	Perennial	NA	4	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	UNT to Buffalo Run	Perennial	5 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	UNT to Buffalo Run	Perennial	13 (CL)	12	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	UNT to Buffalo Run	Perennial	24 (AR)	12	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	UNT to Arches Fork	Perennial	17 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.4	Arches Fork	Perennial	27 (AR)	25	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.5	UNT to Buffalo Run	Perennial	10 (AR)	9	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 25.5	UNT to Buffalo Run	Perennial	4 (AR)	9	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	

Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Wetzel County, WV	TL-635 / 25.9	UNT to Arches Fork	Perennial	8 (AR)	6	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	22 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	59 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	81 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	9 (AR)	8	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	54 (AR)	2	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	6 (AR)	2	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Perennial	4 (AR)	3	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Intermittent	3 (AR)	3	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Intermittent	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Intermittent	4 (AR)	4	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.2	UNT to Buffalo Run	Intermittent	2 (AR)	2	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.8	UNT to Carpenter Run	Perennial	NA	8	Temp / Perm ROW	Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 26.9	Carpenter Run	Perennial	16 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 28.1	Ashcamp Run	Perennial	10 (CL)	10	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.4	UNT to South Fork Fishing Creek	Perennial	NA	4	Temp / Perm ROW	Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.4	South Fork Fishing Creek	Perennial	74 (CL)	70	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1, HQS		April 1 - June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody and mussel relocation requirements.	Conduct pre-construction aquatic species relocation
Wetzel County, WV	TL-635 / 29.5	UNT to South Fork Fishing Creek	Perennial	3 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.5	UNT to South Fork Fishing Creek	Perennial	4 (AR)	4	Perm AR	NA	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	UNT to South Fork Fishing Creek	Intermittent	10 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	UNT to South Fork Fishing Creek	Intermittent	7 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	UNT to South Fork Fishing Creek	Intermittent	9 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	UNT to South Fork Fishing Creek	Intermittent	NA	4	Temp / Perm ROW	Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	UNT to South Fork Fishing Creek	Intermittent	NA	4	Temp / Perm ROW	Within 1000 feet	UNT to B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 29.7	South Fork Fishing Creek	Perennial	66 (CL)	50	Dam and Pump	In-stream; Within 1000 feet	B1, HQS	Fecal Coliform, Iron, CNA (Conditions not allowable) Biological - Aquatic life	April 1 - June 30	No mussels obseved during survey	Will adhere to TOYR for work within the waterbody.	

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Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Wetzel County, WV	TL-635 / 30.1	South Fork Fishing Creek	Perennial	54 (CL)	45	Dam and Pump	In-stream; Within 1000 feet	B1, HQS	Fecal Coliform, Iron, CNA (Conditions not allowable) Biological - Aquatic life	April 1 - June 30	Pre-construction aquatic species relocation	Will adhere to TOYR for work within the waterbody and mussel relocation requirements.	Conduct pre-construction aquatic species relocation
Wetzel County, WV	TL-635 / 30.9	Richwood Run	Perennial	33 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	B1	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 30.9	Richwood Run	Perennial	24 (AR)	15	Perm AR	NA	B1	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 31.8	Upper Run	Perennial	29 (CL)	20	Dam and Pump	In-stream; Within 1000 feet	B1	Fecal Coliform	April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 32.2	UNT to Upper Run	Perennial	18 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.2	Lower Run	Perennial	27 (CL)	7	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.2	Lower Run	Perennial	34 (AR)	7	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.4	Lower Run	Perennial	14 (AR)	14	Perm AR	NA	B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.4	UNT to Lower Run	Perennial	15 (CL)	15	Dam and Pump	In-stream; Within 1000 feet	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.5	South Fork Fishing Creek	Perennial	87 (AR)	98	Perm AR	NA	B1, HQS		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	Coordinate with the WVDNR to determine if mussel surveys are necessary at this crossing location considering the other South Fork Fishing Creek crossing locations were surveyed.
Wetzel County, WV	TL-635 / 33.5	UNT to Lower Run	Perennial	11 (AR)	10	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	TL-635 / 33.5	UNT to Lower Run	Perennial	7 (AR)	6	Perm AR	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	Mockingbird Hill / 33.6	UNT to Lower Run	Intermittent	NA	10	Compressor Station - Temporary Impact	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Wetzel County, WV	Mockingbird Hill / 33.6	UNT to Lower Run	Perennial	NA	6	Compressor Station - Temporary Impact	NA	UNT to B1		April 1 - June 30		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 0.2	UNT to Turtle Creek	Perennial	4 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	TSF	Aquatic Life	March 1 - June 15		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 0.2	UNT to Turtle Creek	Perennial	13 (AR)	3	Perm AR	NA	TSF	Aquatic Life	March 1 - June 15		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 0.6	UNT to Turtle Creek	Perennial	3 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	TSF	Aquatic Life	March 1 - June 15		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 1.2	UNT to Kemerer Hollow	Perennial	4 (CL)	4	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	Unclassified	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 1.2	UNT to Kemerer Hollow	Perennial	4 (AR)	4	Perm AR	NA	Unclassified	Aquatic Life				
Westmoreland County, PA	TL-636 / 1.3	Kemerer Hollow	Perennial	5 (CL)	4	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	Unclassified	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 1.7	UNT to Kemerer Hollow	Perennial	6 (CL)	1	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	Unclassified	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 1.9	UNT to Kemerer Hollow	Perennial	5 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	Unclassified	Aquatic Life	NA			

Appendix K-2

Waterbody Crossings Along the Supply Header Project

County, State/ Commonwealth	Project Segment / Milepost	Feature Name	Waterbody Regime	Access Road (AR) and Centerline (CL) Crossings (feet) [a]	Survey/ Desktop Estimated OHWM Width (feet) [a]	Construction Method [b]	Blasting Planned (in-stream or within 1000 feet)	State/Commonwealth Regulatory Classification	Impairment	State/Commonwealth or Federal Time of Year Restriction (TOYR) (work limited between dates listed)	Agency Recommended Mitigation	DETI Commitments to Conservation Measures (TOYR or other commitments) [c]	FERC Recommended Conditions
Westmoreland County, PA	TL-636 / 2.5	UNT to Steels Run	Perennial	4 (CL)	4	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to HQ-CWF	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 2.6	Steels Run	Perennial	7 (CL)	6	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	HQ-CWF	Aquatic Life	October 1 to December 31		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 2.7	UNT to Steels Run	Perennial	2 (AR)	2	Perm AR	NA	UNT to HQ-CWF					
Westmoreland County, PA	TL-636 / 2.9	UNT to Steels Run	Perennial	10 (CL)	10	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to HQ-CWF	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 3.2	UNT to Steels Run	Perennial	6 (CL)	4	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to HQ-CWF	Aquatic Life	NA			
Westmoreland County, PA	TL-636 / 3.6	UNT to Haymakers Run	Perennial	6 (CL)	5	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to HQ-CWF		NA			
Westmoreland County, PA	TL-636 / 3.8	UNT to Haymakers Run	Perennial	3 (CL)	3	1) Dam and Pump 2) Flume	In-stream; Within 1000 feet	UNT to HQ-CWF		NA			
Westmoreland County, PA	JB Tonkin / 3.9	UNT to Haymakers Run	Perennial	NA	8	Compressor Station - Temporary Impact	NA	UNT to HQ-CWF		NA			
Westmoreland County, PA	JB Tonkin / 3.9	Haymakers Run	Perennial	NA	9	Compressor Station - Temporary Impact	NA	HQ-CWF		October 1 - December 31		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	TL-636 / 3.9	Haymakers Run	Perennial	9 (AR)	9	Perm AR	NA	HQ-CWF		October 1 - December 31		Will adhere to TOYR for work within the waterbody.	
Westmoreland County, PA	JB Tonkin / 3.9	UNT to Haymakers Run	Perennial	NA	3	Compressor Station - Temporary Impact	NA	UNT to HQ-CWF		NA			

[a] "Access Road (AR) and Centerline (CL) Crossings" and "Survey/Desktop Estimated OHWM Width" represent measures of the width or crossing width of waterbodies. The first two crossing lengths, for access roads and for the pipeline centerline are GIS derived measurements based on waterbody polygons and the distance the respective facilities (access road or pipeline centerline) cross within the waterbody polygon. The third column of measurement is included for features that are not crossed by either an access road or the pipeline centerline, based on the field survey or desktop estimated ordinary high water mark (OHWM) width of the waterbodies.

[b] Construction Method includes trenchline construction methods for waterbodies that have a pipeline centerline crossing length. For waterbodies that are not crossed by the pipeline centerline or other unique facility components this column reads "Not Crossed by Centerline". For waterbodies that intersect unique facility components (e.g., compressor stations, contractor yards) the column refers to the unique facility crossed and identifies the nature of the planned impacts.

[c] Includes Agency Recommended Mitigation measures received to date in consultation with State/Commonwealth and Federal agencies.

APPENDIX L

WETLANDS CROSSED BY THE ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

TABLE L-1

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
AP-1								
West Virginia								
Harrison County								
	0.0	05020002	whab001e	PEM	42	<0.1	0.0	Open Cut
	0.0	05020002	whab001s	PSS	0	<0.1	0.0	Open Cut
	0.5	05020002	whab002e	PEM	7	<0.1	0.0	Open Cut
Lewis County								
	1.1	05020002	wleb001e	PEM	25	<0.1	0.0	Open Cut
	2.4	05020002	wleb109e	PEM	0	0.0	0.0	N/A
	2.4	05020002	wleb110e	PEM	0	0.0	0.0	N/A
	3.0	05020002	wleb111e	PEM	0	0.0	0.0	N/A
	5.7	05020002	wlea002e	PEM	53	<0.1	0.0	Open Cut
	5.8	05020002	wlea004e	PEM	44	0.1	0.0	Open Cut
	6.8	05020002	wleb105e	PEM	0	0.0	0.0	N/A
	7.2	05020002	wlea005e	PEM	9	<0.1	0.0	Open Cut
	8.2	05020002	wleb003e	PEM	0	<0.1	0.0	N/A
	9.2	05020002	wlea006e	PEM	6	<0.1	0.0	Open Cut
	9.2	05020002	wleb004e	PEM	0	<0.1	0.0	Open Cut
	9.6	05020002	wleb201e	PEM	0	<0.1	0.0	N/A
	10.3	05020002	wleb006s	PSS	24	<0.1	<0.1	Open Cut
	11.8	05020002	wlea007e	PEM	26	0.1	0.0	Open Cut
	12.7	05020002	wlea088e	PEM	0	0.0	0.0	N/A
	13.6	05020002	wlec001e	PEM	0	0.0	0.0	N/A
	13.8	05020002	wles001e	PEM	7	<0.1	0.0	Open Cut
	13.8	05020002	wleh003e	PEM	0	<0.1	0.0	N/A
	14.5	05020002	wlea079e	PEM	0	0.0	0.0	N/A
	14.5	05020002	wlea080e	PEM	0	0.0	0.0	N/A
	14.7	05020002	wlea081e	PEM	0	0.0	0.0	N/A
	14.7	05020002	wlea082e	PEM	0	0.0	0.0	N/A
	14.7	05020002	wlea083e	PEM	0	0.0	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	14.8	05020002	wlea084e	PEM	0	0.0	0.0	N/A
	14.8	05020002	wlea085e	PEM	0	0.0	0.0	N/A
	14.8	05020002	wlea087e	PEM	0	0.0	0.0	N/A
	15.0	05020002	wleb106e	PEM	0	<0.1	0.0	N/A
	15.3	05020002	wlea086e	PEM	0	0.0	0.0	N/A
	15.3	05020002	wleb107e	PEM	11	<0.1	0.0	Open Cut
	15.5	05020002	wlea076e	PEM	0	0.0	0.0	N/A
	16.4	05020002	wleb108e	PEM	16	<0.1	0.0	Open Cut
	16.5	05020002	wlea077e	PEM	0	0.0	0.0	N/A
	17.0	05020002	wlee001e	PEM	0	0.0	0.0	N/A
	17.3	05020002	wlea075e	PEM	0	0.0	0.0	N/A
	19.0	05020002	wlec005e	PEM	0	0.0	0.0	N/A
	19.9	05020002	nwi_wv_h_001	PUB	0	0.0	0.0	N/A
	19.9	05020002	wlea011e	PEM	0	<0.1	0.0	Open Cut
	20.2	05020002	wlec006e	PEM	0	0.0	0.0	N/A
	20.7	05020002	wlea012f	PFO	0	<0.1	0.0	N/A
Upshur County								
	24.0	05020001	wupb101e	PEM	0	0.0	0.0	N/A
	24.0	05020001	wupa001e	PEM	55	0.1	0.0	Open Cut
	24.3	05020001	wupa002e	PEM	12	<0.1	0.0	Open Cut
	24.7	05020001	wupa003e	PEM	40	0.1	0.0	Open Cut
	25.4	05020001	wupb001e	PEM	44	0.1	0.0	Open Cut
	25.7	05020001	wupb002e	PEM	0	<0.1	0.0	N/A
	25.9	05020001	wupb003e	PEM	429	0.7	0.0	Open Cut
	26.0	05020001	wupb004e	PEM	874	1.5	0.0	Open Cut
	26.3	05020002	wupa005e	PEM	72	0.1	0.0	Open Cut
	26.6	05020002	wupa004e	PEM	39	0.1	0.0	Open Cut
	26.8	05020002	wupc001e	PEM	0	0.0	0.0	N/A
	26.8	05020002	wupa006e	PEM	8	<0.1	0.0	Open Cut
	29.1	05020001	wupb006e	PEM	56	0.1	0.0	Open Cut
	29.3	05020001	wupb007e	PEM	100	0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	30.6	05020001	wupa007e	PEM	3	<0.1	0.0	Open Cut
	30.9	05020001	wupa008e	PEM	21	<0.1	0.0	Open Cut
	31.2	05020001	wupe002e	PEM	0	0.0	0.0	N/A
	31.3	05020001	wupe003e	PEM	0	0.0	0.0	N/A
	36.1	05020001	wupb009f	PFO	19	0.1	<0.1	Open Cut
	36.1	05020001	wupa010f	PFO	17	<0.1	<0.1	Open Cut
	36.8	05020001	wupb010e	PEM	0	<0.1	0.0	N/A
	37.0	05020001	wupa050e	PEM	0	0.0	0.0	N/A
	37.8	05020001	wupb050e	PEM	0	0.0	0.0	N/A
	37.9	05020001	wupb011e	PEM	0	<0.1	0.0	N/A
	39.4	05020001	wupa012e	PEM	141	0.1	0.0	Open Cut
	39.6	05020001	wupa015f	PFO	0	<0.1	0.0	N/A
	41.3	05020001	wupa011e	PEM	23	<0.1	0.0	Open Cut
	41.9	05020001	wupb103e	PEM	0	0.0	0.0	N/A
Randolph County								
	44.8	05020001	wrac102e	PEM	0	0.0	0.0	N/A
	44.8	05020001	wrac103e	PEM	0	0.0	0.0	N/A
	44.8	05020001	wrac105e	PEM	0	0.0	0.0	N/A
	47.1	05020001	wraa059f	PFO	0	0.0	0.0	N/A
	47.3	05020001	wraa104e	PEM	22	<0.1	0.0	Open Cut
	47.3	05020001	wrab102e	PEM	0	0.0	0.0	N/A
	47.4	05020001	wrab103e	PEM	22	0.1	0.0	Open Cut
	48.4	05020001	wraf002e	PEM	0	<0.1	0.0	Open Cut
	48.8	05020001	wrac099e	PEM	62	0.1	0.0	Open Cut
	50.2	05020001	wrac100e	PEM	58	0.1	0.0	Open Cut
	50.3	05020001	wrac101e	PEM	22	<0.1	0.0	Open Cut
	50.3	05020001	wraa450f	PFO	0	0.0	0.0	N/A
	50.5	05020001	wraa449e	PEM	0	0.0	0.0	N/A
	50.7	05020001	wraa402f	PFO	16	0.1	<0.1	Open Cut
	50.8	05020001	wraa403e	PEM	11	<0.1	0.0	Open Cut
	50.8	05020001	wrae001e	PEM	17	<0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	50.9	05020001	wrae250e	PEM	0	0.0	0.0	N/A
	50.9	05020001	wraa404f	PFO	32	<0.1	<0.1	Open Cut
	50.9	05020001	wraa404e	PEM	125	0.2	0.0	Open Cut
	51.0	05020001	wraa405f	PFO	0	<0.1	0.0	N/A
	51.1	05020001	wrae262e	PEM	0	0.0	0.0	N/A
	51.1	05020001	wrae263e	PEM	0	0.0	0.0	N/A
	51.1	05020001	wrae264e	PEM	0	0.0	0.0	N/A
	51.2	05020001	wraa406e	PEM	14	<0.1	0.0	Open Cut
	51.2	05020001	wraa407e	PEM	11	<0.1	0.0	Open Cut
	51.4	05020001	wraa408f	PFO	0	<0.1	<0.1	Open Cut
	51.4	05020001	wraa409e	PEM	0	<0.1	0.0	N/A
	51.4	05020001	wraa431s	PSS	0	0.0	0.0	N/A
	51.4	05020001	wraa410f	PFO	29	<0.1	<0.1	Open Cut
	51.5	05020001	wrae251e	PEM	0	0.0	0.0	N/A
	51.5	05020001	wraa411f	PFO	31	<0.1	<0.1	Open Cut
	51.6	05020001	wraa412f	PFO	30	<0.1	<0.1	Open Cut
	51.6	05020001	wraa413f	PFO	14	<0.1	<0.1	Open Cut
	51.7	05020001	wraa414e	PEM	8	<0.1	0.0	Open Cut
	51.8	05020001	wraa418e	PEM	0	<0.1	0.0	Open Cut
	51.8	05020001	wraa432s	PSS	0	0.0	0.0	N/A
	51.9	05020001	wraa417e	PEM	19	<0.1	0.0	Open Cut
	51.9	05020001	wrae284e	PEM	0	0.0	0.0	N/A
	52.0	05020001	wraa416e	PEM	0	<0.1	0.0	Open Cut
	52.0	05020001	wraa415f	PFO	30	<0.1	<0.1	Open Cut
	52.1	05020001	wraa420f	PFO	31	0.1	<0.1	Open Cut
	52.2	05020001	wraa434s	PSS	0	0.0	0.0	N/A
	52.2	05020001	wraa423s	PSS	0	0.0	0.0	N/A
	52.2	05020001	wraa423e	PEM	0	<0.1	0.0	N/A
	52.3	05020001	wraa435e	PEM	0	0.0	0.0	N/A
	52.3	05020001	wraa422e	PEM	0	<0.1	0.0	N/A
	53.0	05020001	wrae285e	PEM	0	0.0	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	53.1	05020001	wrae286e	PEM	0	0.0	0.0	N/A
	53.3	05020001	wraa421e	PEM	71	0.1	0.0	Open Cut
	53.3	05020001	wraa436e	PEM	0	0.0	0.0	N/A
	53.7	05020001	wrae288e	PEM	0	0.0	0.0	N/A
	53.7	05020001	nwi_wv_k_007	PFO	0	0.0	0.0	N/A
	53.7	05020001	wraa424e	PEM	29	<0.1	0.0	Open Cut
	54.2	05020001	wrac113e	PEM	0	0.0	0.0	N/A
	54.3	05020001	wrac110e	PEM	0	0.0	0.0	N/A
	54.3	05020001	wrac112e	PEM	0	0.0	0.0	N/A
	54.3	05020001	wraa429e	PEM	71	0.1	0.0	Open Cut
	54.4	05020001	wraa430s	PSS	21	<0.1	<0.1	Open Cut
	55.1	05020001	wrap001e	PFO	16	0.1	<0.1	Open Cut
	55.1	05020001	wrac114e	PEM	0	0.0	0.0	N/A
	55.3	05020001	wrap003e	PEM	0	<0.1	0.0	N/A
	55.4	05020001	wrap004e	PEM	31	<0.1	0.0	Open Cut
	55.8	05020001	wrap005e	PEM	0	<0.1	0.0	Open Cut
	55.9	05020001	wrap007e	PEM	0	<0.1	0.0	N/A
	55.9	05020001	wrap008e	PEM	16	<0.1	0.0	Open Cut
	56.0	05020001	wrap009e	PEM	32	0.1	0.0	Open Cut
	56.0	05020001	wrap011e	PEM	0	<0.1	0.0	N/A
	56.1	05020001	wrap012e	PEM	135	0.3	0.0	Open Cut
	56.2	05050007	wrae282e	PEM	0	0.0	0.0	N/A
	56.2	05050007	wrae282s	PSS	0	0.0	0.0	N/A
	56.3	05050007	wrap017e	PEM	0	<0.1	0.0	N/A
	56.4	05050007	wrap019e	PEM	0	<0.1	0.0	N/A
	56.4	05050007	wrap020e	PEM	0	<0.1	0.0	Open Cut
	56.4	05050007	wrap020s	PSS	0	0.2	<0.1	Open Cut
	56.4	05050007	wrap022e	PEM	0	<0.1	0.0	N/A
	56.5	05050007	wrap024s	PSS	0	<0.1	0.0	N/A
	56.5	05050007	wrap025e	PEM	0	<0.1	0.0	N/A
	56.7	05050007	wrap026e	PEM	14	<0.1	0.0	Open Cut

TABLE L-1 (cont'd)								
Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline								
Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	56.7	05050007	wrap027e	PEM	10	0.1	0.0	Open Cut
	56.7	05050007	wrap028e	PEM	8	<0.1	0.0	Open Cut
	56.7	05050007	wrap029e	PEM	11	<0.1	0.0	Open Cut
	56.7	05050007	wrae281e	PEM	0	0.0	0.0	N/A
	56.8	05050007	wrap030e	PEM	0	<0.1	0.0	N/A
	56.8	05050007	wrae200e	PEM	0	<0.1	0.0	N/A
	57.3	05050007	wrae280e	PEM	0	0.0	0.0	N/A
	57.3	05050007	wrac108e	PEM	0	0.0	0.0	N/A
	57.3	05050007	wrae201e	PEM	0	<0.1	0.0	N/A
	57.4	05050007	wrae202e	PEM	0	<0.1	0.0	N/A
	57.4	05050007	wrae203e	PEM	10	<0.1	0.0	Open Cut
	57.4	05050007	wrae205e	PEM	0	<0.1	0.0	Open Cut
	57.4	05050007	wrae204e	PEM	0	<0.1	0.0	N/A
	57.4	05050007	wrac104e	PEM	76	0.1	0.0	Open Cut
	57.7	05050007	wrae232e	PEM	0	0.0	0.0	N/A
	57.7	05050007	wrae233e	PEM	0	0.0	0.0	N/A
	57.7	05050007	wrae241e	PEM	0	0.0	0.0	N/A
	57.7	05050007	wrae230e	PEM	0	0.0	0.0	N/A
	57.7	05050007	wrae231e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae273e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae274e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae271e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae272e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae270e	PEM	0	0.0	0.0	N/A
	57.8	05050007	wrae269e	PEM	0	0.0	0.0	N/A
	57.9	05050007	wrae240e	PEM	25	<0.1	0.0	Open Cut
	57.9	05050007	wrae239e	PEM	33	<0.1	0.0	Open Cut
	58.0	05050007	wrae268e	PEM	0	0.0	0.0	N/A
	58.3	05050007	wrae235e	PEM	23	<0.1	0.0	Open Cut
	58.4	05050007	wrae256s	PSS	0	0.0	0.0	N/A
	58.5	05050007	wrae253s	PSS	0	0.0	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	58.7	05050007	wrae257s	PSS	0	0.0	0.0	N/A
	58.7	05050007	wrae257s	PSS	0	0.0	0.0	N/A
	58.8	05050007	wrae258e	PEM	0	0.0	0.0	N/A
	59.1	05050007	wrae259e	PEM	0	0.0	0.0	N/A
	59.2	05050007	wrae260e	PEM	0	0.0	0.0	N/A
	59.7	05050007	wrae254e	PEM	0	0.0	0.0	N/A
	59.7	05020001	nwi_wv_k_005	PEM	0	0.0	0.0	N/A
	59.9	05050007	wrac106e	PEM	0	0.0	0.0	N/A
	60.3	05050007	wrae207e	PEM	15	<0.1	0.0	Open Cut
	61.2	05050007	wrae209e	PEM	0	<0.1	0.0	N/A
	61.7	05050007	wrae225e	PEM	0	<0.1	0.0	Open Cut
	62.2	05050007	wrae223e	PEM	45	0.1	0.0	Open Cut
	62.2	05050007	wrae222e	PEM	110	0.2	0.0	Open Cut
	62.4	05050007	wrae220s	PSS	0	<0.1	0.0	N/A
	62.4	05050007	wrae220e	PEM	14	<0.1	0.0	Open Cut
	62.4	05050007	wrae219e	PEM	0	0.1	0.0	Open Cut
	62.6	05050007	wrae218e	PEM	0	<0.1	0.0	Open Cut
	62.6	05050007	wrae217e	PEM	31	<0.1	0.0	Open Cut
	62.8	05050007	wrae216e	PEM	86	0.2	0.0	Open Cut
	63.0	05020001	wrae261e	PEM	0	0.0	0.0	N/A
	63.0	05050007	wrae215f	PFO	49	0.1	<0.1	Open Cut
	63.0	05020001	wrae289e	PEM	0	0.0	0.0	N/A
	63.0	05020001	wrae214e	PEM	78	0.1	0.0	Open Cut
	63.1	05050007	wrac115e	PEM	0	0.0	0.0	N/A
	63.3	05020001	wrae212e	PEM	16	<0.1	0.0	Open Cut
	63.3	05020001	wrae213f	PFO	0	<0.1	0.0	N/A
	63.5	05020001	wrae211e	PEM	28	<0.1	0.0	Open Cut
	63.8	05020001	wrae210e	PEM	26	<0.1	0.0	Open Cut
	64.0	05050007	wrae242e	PEM	0	0.0	0.0	N/A
	64.2	05050007	wrae243e	PEM	0	0.0	0.0	N/A
Pocahontas County								

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	67.0	05050007	wpoe213e	PEM	0	0.0	0.0	N/A
	68.7	05050007	wpoy013e	PEM	72	0.1	0.0	Open Cut
	70.4	05050007	wpoy003e	PEM	20	<0.1	0.0	Open Cut
	70.4	05050007	wpoy002e	PEM	0	<0.1	0.0	Open Cut
	71.0	05050007	wpoe002e	PEM	6	<0.1	0.0	Open Cut
	71.7	05050003	wpoa406e	PEM	0	<0.1	0.0	N/A
	71.7	05050003	wpoa423e	PEM	0	0.0	0.0	N/A
	71.7 [g]	05050003	wpoa404e	PEM	0	<0.1	0.0	N/A
	71.7 [g]	05050003	wpoa403e	PEM	344	0.5	0.0	Open Cut
	71.9 [g]	05050007	wpoa413e	PEM	0	0.0	0.0	N/A
	71.9 [g]	05050007	wpoa414e	PEM	0	0.0	0.0	N/A
	71.9 [g]	05050007	wpoa410e	PEM	0	0.0	0.0	N/A
	71.9 [g]	05050007	wpoa411e	PEM	0	0.0	0.0	N/A
	71.9 [g]	05050007	wpoa415e	PEM	0	0.0	0.0	N/A
	71.9 [g]	05050007	wpoa416e	PEM	0	0.0	0.0	N/A
	72.0 [g]	05050007	wpoa418e	PEM	0	0.0	0.0	N/A
	72.0	05050007	wpox003e	PEM	0	0.0	0.0	N/A
	72.1	05050007	wpox004e	PEM	0	0.0	0.0	N/A
	72.1	05050007	wpox005s	PSS	0	0.0	0.0	N/A
	72.2	05050003	wpoc105f	PFO	181	0.3	0.1	Open Cut
	74.6	05050003	wpoe219e	PEM	29	0.1	0.0	Open Cut
	74.6	05050003	wpoc109e	PEM	37	0.1	0.0	Open Cut
	75.2	05050003	wpoe216e	PEM	0	0.0	0.0	N/A
	75.2	05050003	wpoe217e	PEM	0	0.0	0.0	N/A
	75.5	05050003	wpoc100e	PEM	70	0.1	0.0	Open Cut
	75.6	05050003	wpoc101e	PEM	25	<0.1	0.0	Open Cut
	75.7	05050003	wpoc102e	PEM	962	1.7	0.0	Open Cut
	76.2	05050003	wpoc103e	PEM	186	0.5	0.0	Open Cut
	76.4	05050003	wpoc104e	PEM	16	0.1	0.0	Open Cut
	76.4	05050003	wpoc106e	PEM	27	<0.1	0.0	Open Cut
	76.5	05050003	wpoc107s	PSS	40	0.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	81.0	05050003	wpoy004e	PEM	0	0.0	0.0	N/A
	81.0	05050003	wpoy005e	PEM	0	0.0	0.0	N/A
	81.0	05050003	wpoy007e	PEM	0	0.0	0.0	N/A
	81.0	05050003	wpoy008e	PEM	0	0.0	0.0	N/A
	81.0	05050003	wpoy009e	PEM	0	0.0	0.0	N/A
	81.0	05050003	wpoe011e	PEM	22	0.1	0.0	Open Cut
	81.0	05050003	wpoe214e	PEM	0	0.0	0.0	N/A
	81.1	05050003	wpoe010e	PEM	27	<0.1	0.0	Open Cut
	82.7 [g]	05050003	wpoa400e	PEM	0	<0.1	0.0	Open Cut
Virginia								
Highland County								
	85.4 [g]	02080201	whia407f	PFO	0	<0.1	0.0	N/A
	85.4	02080201	whia410e	PEM	0	0.0	0.0	N/A
	85.4 [g]	02080201	whia406f	PFO	49	0.1	<0.1	Open Cut
	86.9	02080201	whiy001e	PEM	0	0.0	0.0	N/A
	87.6	02080201	whic100e	PEM	0	0.0	0.0	N/A
	87.6	02080201	whic101e1	PEM	0	0.0	0.0	N/A
	87.6	02080201	whic101e2	PEM	0	0.0	0.0	N/A
	87.6	02080201	whic101s	PSS	0	0.0	0.0	N/A
	87.7	02080201	whia411e	PEM	0	0.0	0.0	N/A
	88.3	02080201	whia403e	PEM	29	<0.1	0.0	Open Cut
	90.6	02080201	whia400e	PEM	2	<0.1	0.0	Open Cut
	91.3	02080201	whic121e	PEM	0	<0.1	0.0	N/A
	91.3	02080201	whix001e	PEM	236	1.4	0.0	Open Cut
	91.4	02080201	whix002e	PEM	107	0.2	0.0	Open Cut
	91.6	02080201	whix005f	PFO	0	0.0	0.0	N/A
Bath County								
	91.8	02080201	wbax001s	PSS	0	0.0	0.0	N/A
	94.8	02080201	wbaa009e	PEM	51	0.1	0.0	Open Cut
	95.5	02080201	wbaa010s	PSS	701	1.7	0.2	Open Cut
	95.6	02080201	wbax003s	PSS	0	0.0	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	97.6	02080201	wbaa003f	PFO	1,235	2.4	0.8	Open Cut
	97.7	02080201	wbaa004e	PEM	155	0.3	0.0	Open Cut
	99.0	02080201	wbaa006e	PEM	0	<0.1	0.0	N/A
	99.3	02080201	wbaa005f	PFO	75	0.2	0.1	Open Cut
	99.4	02080201	wbaz009e	PEM	0	0.0	0.0	N/A
	99.4	02080201	wbaz005e	PEM	0	0.0	0.0	N/A
	99.4	02080201	wbaz008e	PEM	0	0.0	0.0	N/A
	100.6	02080201	wbaa002e	PEM	7	<0.1	0.0	Open Cut
	101.0	02080201	wbar009f	PFO	0	<0.1	<0.1	Open Cut
	101.2	02080201	wbaf001f	PFO	0	<0.1	<0.1	Open Cut
	101.2	02080201	wbaf001e	PEM	0	<0.1	0.0	Open Cut
	102.4	02080201	wbae201e	PEM	0	<0.1	0.0	Open Cut
	102.9	02080202	wbaa008e	PEM	42	0.2	0.0	Open Cut
	102.9	02080202	wbaa007e	PEM	39	0.1	0.0	Open Cut
	103.1	02080202	wbar004e	PEM	99	0.1	0.0	Open Cut
	103.1	02080202	wbar003e	PEM	64	0.1	0.0	Open Cut
	104.0	02080202	wbar002f	PFO	0	0.0	0.0	N/A
	104.0	02080202	wbaz001e	PEM	0	0.0	0.0	N/A
	104.0	02080202	wbaz004e	PEM	0	0.0	0.0	N/A
	104.0	02080202	wbaz003e	PEM	0	0.0	0.0	N/A
	104.0	02080202	wbaz002e	PEM	0	0.0	0.0	N/A
	104.2	02080202	wbar001f	PFO	0	<0.1	<0.1	Open Cut
	104.2	02080202	wbaa017f	PFO	740	1.4	0.5	Open Cut
	104.5	02080202	wbaa015f	PFO	91	0.2	0.1	Open Cut
	104.6	02080202	wbaa012f	PFO	100	0.3	0.1	Open Cut
	104.7	02080202	wbaa014f	PFO	43	0.1	<0.1	Open Cut
	104.8	02080202	wbaa011f	PFO	491	1.7	0.4	Open Cut
	105.7	02080202	wbar007f	PFO	15	<0.1	<0.1	Open Cut
Augusta County								
	107.2	02080202	wauz013s	PSS	0	0.0	0.0	N/A
	108.3	02080202	waur001f	PFO	14	<0.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	108.3	02080202	waur001e	PEM	95	0.2	0.0	Open Cut
	108.8	02080202	waua406e	PEM	0	0.1	0.0	N/A
	108.9	02080202	waua407e	PEM	0	0.5	0.0	Open Cut
Highland County								
	109.0	02080201	whie003e	PEM	0	0.0	0.0	N/A
	109.0	02080201	whie005e	PEM	0	0.0	0.0	N/A
	109.0	02080201	whie006e	PEM	0	0.0	0.0	N/A
Augusta County								
	109.1	02080202	wauf002e	PEM	0	0.0	0.0	N/A
	109.2	02080202	wauf001e	PEM	0	0.0	0.0	N/A
	109.6	02080202	wauz007e	PEM	0	0.1	0.0	N/A
	109.6	02080202	wauz006e	PEM	0	0.1	0.0	Open Cut
	109.7	02080202	wauz005e	PEM	9	<0.1	0.0	Open Cut
	109.8	02080202	wauz004e	PEM	10	<0.1	0.0	Open Cut
	110.2	02080202	wauc112e	PEM	35	0.1	0.0	Open Cut
	110.3	02080202	wauc113e	PEM	216	0.4	0.0	Open Cut
	111.2	02080202	wauy005e	PEM	172	0.3	0.0	Open Cut
	111.3	02080202	wauy004e	PEM	0	0.0	0.0	N/A
	112.0	02080202	wauc110e	PEM	19	<0.1	0.0	Open Cut
	112.3	02080202	wauz009e	PEM	0	0.0	0.0	N/A
	113.0	02080202	wauz012e	PEM	0	0.0	0.0	N/A
	113.1	02080202	waua402s	PSS	0	<0.1	0.0	N/A
	113.1	02080202	wauz003e	PEM	0	<0.1	0.0	N/A
	113.5	02080202	waua403e	PEM	6	<0.1	0.0	Open Cut
	114.0	02080202	wauz011e	PEM	0	0.0	0.0	N/A
	114.0	02080202	wauz010e	PEM	0	0.0	0.0	N/A
	115.2	02080202	waua415f	PFO	280	0.9	0.2	Open Cut
	115.4	02080202	waub100e	PEM	9	<0.1	0.0	Open Cut
	115.8	02080202	waub101e	PEM	15	<0.1	0.0	Open Cut
	115.8	02080202	waua411e	PEM	21	<0.1	0.0	Open Cut
	116.5	02080202	wauz001e	PEM	0	<0.1	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	116.5	02080202	wauz002e	PEM	0	<0.1	0.0	N/A
	117.1 [g]	02080202	waua408f	PFO	12	<0.1	<0.1	Open Cut
	120.4 [g]	02070005	waua409s	PSS	0	<0.1	<0.1	Open Cut
	124.0	02070005	waub107e	PEM	0	0.0	0.0	N/A
	139.2	02070005	waua416f	PFO	15	<0.1	<0.1	Open Cut
	141.0	02070005	waub106e	PEM	0	0.0	0.0	N/A
	143.2	02070005	wauc101e	PEM	0	<0.1	0.0	N/A
	143.2	02070005	waub001e	PEM	10	<0.1	0.0	Open Cut
	148.3	02070005	wauc102e	PEM	0	<0.1	0.0	N/A
	148.5	02070005	wauc102f	PFO	589	1.0	0.4	Open Cut
	150.8	02070005	wauc103f	PFO	0	<0.1	0.0	N/A
	152.4	02070005	waub103f	PFO	283	0.5	0.2	Open Cut
	153.4	02070005	waua059f	PFO	3	<0.1	<0.1	Open Cut
	153.4	02070005	waua060f	PFO	0	<0.1	0.0	N/A
	153.6	02070005	waua061f	PFO	113	0.2	0.1	Open Cut
	153.8	02070005	waux003s	PSS	232	0.8	0.1	Open Cut
	154.6 [g]	02070005	waua410e	PEM	0	<0.1	0.0	N/A
	156.0	02070005	waua053s	PSS	40	0.1	<0.1	Open Cut
	156.2	02070005	waua052e	PEM	20	0.1	0.0	Open Cut
	156.4	02070005	waua051e	PEM	43	0.1	0.0	Open Cut
	156.9	02070005	waue001s	PSS	104	0.1	<0.1	Open Cut
	157.0	02070005	waue002e	PEM	0	0.0	0.0	N/A
	157.3	02070005	waux004f	PFO	38	0.5	<0.1	Open Cut
	157.4	02070005	waua400f	PFO	128	0.3	0.1	Open Cut
Nelson County								
	158.9	02080203	wnea020f	PFO	0	<0.1	0.0	N/A
	162.4	02080203	wnea404f	PFO	0	<0.1	0.0	N/A
	162.5	02080203	wnea403f	PFO	0	<0.1	0.0	N/A
	163.1	02080203	wnea405f	PFO	272	0.5	0.2	Open Cut
	163.4	02080203	wnex003f	PFO	213	0.7	0.1	Open Cut
	163.7	02080203	wnea406e	PEM	0	0.1	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	164.4	02080203	wnea407f	PFO	49	0.1	<0.1	Open Cut
	165.5	02080203	wnec050e	PEM	28	<0.1	0.0	Open Cut
	165.9	02080203	wnea412f	PFO	25	0.1	<0.1	Open Cut
	166.0	02080203	wnea411f	PFO	51	0.1	<0.1	Open Cut
	166.2	02080203	wnea051f	PFO	57	0.1	<0.1	Open Cut
	168.8	02080203	wnea409f	PFO	108	0.3	0.1	Open Cut
	170.3	02080203	wnex001e	PEM	0	<0.1	0.0	Open Cut
	171.0	02080203	wnez004s	PSS	0	<0.1	0.0	N/A
	171.3	02080203	wnez003s	PSS	0	0.0	0.0	N/A
	171.8	02080203	wnea402e	PEM	0	<0.1	0.0	Open Cut
	172.6	02080203	wnea408f	PFO	21	<0.1	<0.1	Open Cut
	182.9	02080203	wnep001f	PFO	0	<0.1	0.0	N/A
	184.5	02080203	wnea023f	PFO	10	<0.1	<0.1	HDD
	184.6	02080203	wnea021e	PEM	0	0.0	0.0	N/A
	184.6	02080203	wnea022f	PFO	110	0.2	0.1	HDD
	184.6	02080203	wnec052e	PEM	0	0.0	0.0	N/A
Buckingham County								
	184.8	02080203	wbuc109f	PFO	281	0.9	0.2	Open Cut
	184.8	02080203	wbua009f	PFO	0	0.0	0.0	N/A
	184.8	02080203	wbup006e	PEM	0	0.0	0.0	N/A
	184.9	02080203	wbua008e	PEM	0	0.0	0.0	N/A
	185.3	02080203	wbua007e	PEM	0	0.0	0.0	N/A
	185.4	02080203	wbua006e	PEM	0	0.0	0.0	N/A
	185.4	02080203	wbup007e	PEM	0	<0.1	0.0	N/A
	186.8	02080203	wbuz002e	PEM	0	<0.1	0.0	N/A
	186.8	02080203	nwi_va_a_025	PFO	0	0.2	<0.1	Open Cut
	187.6	02080203	wbup005f	PFO	104	0.2	0.1	Open Cut
	188.2	02080203	wbup004f	PFO	26	<0.1	<0.1	Open Cut
	188.2	02080203	wbup003f	PFO	0	<0.1	0.0	N/A
	189.1	02080203	wbuc007s	PSS	0	0.0	0.0	N/A
	190.0	02080203	wbuc106s	PSS	0	0.0	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	190.1	02080203	wbuc108f	PFO	25	0.1	<0.1	Open Cut
	190.6	02080203	wbua001f	PFO	56	0.1	<0.1	Open Cut
	190.8	02080203	wbua010f	PFO	0	<0.1	0.0	N/A
	191.0	02080203	wbua002f	PFO	51	0.1	<0.1	Open Cut
	191.5	02080203	wbub050f	PFO	93	0.1	0.1	Open Cut
	191.5	02080203	wbub050e	PEM	0	0.0	0.0	N/A
	191.9	02080203	wbub051s	PSS	34	0.1	<0.1	Open Cut
	192.2	02080203	wbux001f	PFO	41	0.1	<0.1	Open Cut
	193.5	02080203	wbuc003f	PFO	115	0.2	0.1	Open Cut
	194.1	02080203	wbuc004e	PEM	11	<0.1	0.0	Open Cut
	194.1	02080203	wbuc005f	PFO	0	<0.1	<0.1	Open Cut
	195.0	02080203	wbuk001e	PEM	24	<0.1	0.0	Open Cut
	196.1	02080203	wbuk005e	PEM	177	0.3	0.0	Open Cut
	197.5	02080203	wbuk007e	PEM	0	<0.1	0.0	Open Cut
	198.5	02080203	wbua200e	PEM	29	<0.1	0.0	Open Cut
	198.5	02080203	wbua201e	PEM	47	0.1	0.0	Open Cut
	198.5	02080203	wbua201f	PFO	68	0.1	<0.1	Open Cut
	200.1	02080203	wbul004s	PSS	29	0.1	<0.1	Open Cut
	200.5	02080203	wbup002e	PEM	132	0.2	0.0	Open Cut
	201.2	02080203	wbup001f	PFO	150	0.2	0.1	Open Cut
	201.2	02080203	wbup001s	PSS	0	<0.1	<0.1	Open Cut
	201.8	02080203	wbul005f	PFO	129	0.2	0.1	Open Cut
	203.6	02080205	wbul002f	PFO	224	0.4	0.2	Open Cut
	205.2	02080205	wbul003f	PFO	0	<0.1	0.0	N/A
	206.5	02080205	wbul007f	PFO	0	<0.1	0.0	N/A
	206.9	02080205	wbul006f	PFO	80	0.2	0.1	Open Cut
	207.8	02080205	wbua004f	PFO	36	0.1	<0.1	Open Cut
	208.8	02080205	wbua400f	PFO	0	<0.1	0.0	N/A
	209.2	02080205	wbuk013f	PFO	28	0.1	<0.1	Open Cut
	209.3	02080205	wbuk016f	PFO	0	<0.1	0.0	N/A
	209.5	02080205	wbuk017e	PEM	31	0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	209.5	02080205	wbuk018e	PEM	157	0.2	0.0	Open Cut
	210.1	02080205	wbuc104f2	PFO	272	0.5	0.2	Open Cut
	210.9	02080205	wbuk010f	PFO	68	0.1	<0.1	Open Cut
	211.4	02080205	wbua003e	PEM	0	0.0	0.0	N/A
	211.7	02080205	wbua203e	PEM	0	<0.1	0.0	N/A
	211.7	02080205	wbua401f	PFO	0	<0.1	0.0	N/A
	211.8	02080205	wbua402e	PEM	17	<0.1	0.0	Open Cut
Cumberland County								
	213.8	02080207	wcuk001f	PFO	19	<0.1	<0.1	Open Cut
	213.9	02080207	wcuk002f	PFO	0	0.1	0.0	N/A
	214.5	02080207	wcuc001f	PFO	32	0.1	<0.1	Open Cut
	214.8	02080207	wcua400f	PFO	69	0.1	<0.1	Open Cut
	215.0	02080207	wcuk014f	PFO	0	<0.1	0.0	N/A
	215.4	02080207	wcuk016f	PFO	0	<0.1	0.0	N/A
	216.0	02080207	wcuk017e	PEM	0	<0.1	0.0	N/A
	218.2	02080207	wcuk012s	PSS	41	<0.1	<0.1	Open Cut
	218.7	02080207	wcuk011f	PFO	12	0.1	<0.1	Open Cut
	218.9	02080207	wcua002f	PFO	0	0.0	0.0	N/A
	219.5	02080207	wcuk008f	PFO	55	0.2	<0.1	Open Cut
	220.0	02080207	wcuc100e	PEM	0	<0.1	0.0	N/A
	220.4	02080207	wcuk006e	PEM	218	0.4	0.0	Open Cut
	220.7	02080207	wcuk005e	PEM	70	0.1	0.0	Open Cut
Prince Edward County								
	221.7	02080207	wpek001e	PEM	90	0.1	0.0	Open Cut
	222.6	02080207	wpek002e	PEM	72	0.1	0.0	Open Cut
	223.1	02080207	wpea005f	PFO	892	1.5	0.6	Open Cut
	223.9	02080207	wpea002f	PFO	0	<0.1	0.0	N/A
	224.1	02080207	wpea003f	PFO	60	0.1	<0.1	Open Cut
	224.3	02080207	wpea004f	PFO	42	0.1	<0.1	Open Cut
	225.2	02080207	wpec001f	PFO	53	0.1	<0.1	Open Cut
	225.5	02080207	wpea006f	PFO	57	0.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
Nottoway County								
	226.0	02080207	wnok021s	PSS	25	<0.1	<0.1	Open Cut
	226.1	02080207	wnok022f	PFO	62	0.1	<0.1	Open Cut
	226.8	02080207	wnok001f	PFO	0	<0.1	0.0	N/A
	227.2	02080207	wnok002f	PFO	30	0.1	<0.1	Open Cut
	228.3	02080207	wnok003f	PFO	0	<0.1	<0.1	Open Cut
	228.3	02080207	wnok003e	PEM	155	0.2	0.0	Open Cut
	228.8	02080207	wnok005f	PFO	44	0.1	<0.1	Open Cut
	229.2	02080207	wnok006e	PEM	153	0.3	0.0	Open Cut
	229.3	02080207	wnok007f	PFO	3	<0.1	<0.1	Open Cut
	229.9	02080207	wnok008f	PFO	7	<0.1	<0.1	Open Cut
	230.0	02080207	wnok009f	PFO	47	0.1	<0.1	Open Cut
	231.8	02080207	wnol001f	PFO	61	0.1	<0.1	Open Cut
	232.4	02080207	wnol003f	PFO	0	<0.1	0.0	N/A
	232.7	02080207	wnok017f	PFO	30	0.1	<0.1	Open Cut
	232.7	02080207	wnok017e	PEM	56	0.1	0.0	Open Cut
	232.7	02080207	wnok017f	PFO	83	0.1	0.1	Open Cut
	232.8	02080207	wnok018s	PSS	0	<0.1	0.0	N/A
	233.4	02080207	wnok019f	PFO	90	0.1	0.1	Open Cut
	233.5	02080207	wnok020s	PSS	0	<0.1	<0.1	Open Cut
	233.5	02080207	wnok020f	PFO	33	0.1	<0.1	Open Cut
	235.2	02080207	wnom005e	PEM	0	<0.1	0.0	Open Cut
	235.5	02080207	wnom006f	PFO	274	0.4	0.2	Open Cut
	236.0	02080207	wnok101f	PFO	275	0.4	0.2	Open Cut
	236.1	02080207	wnok100f	PFO	88	0.1	0.1	Open Cut
	237.4	02080207	wnop001f	PFO	32	0.1	<0.1	Open Cut
	238.6	02080207	wnok010f	PFO	300	0.8	0.2	Open Cut
	238.6	02080207	wnok010e	PEM	0	0.1	0.0	N/A
	238.8	02080207	wnok011e	PEM	30	<0.1	0.0	Open Cut
	239.1	02080207	wnok012f	PFO	0	<0.1	<0.1	Open Cut
	240.0	02080207	wnok013e	PEM	11	<0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	240.5	02080207	wnok014s	PSS	243	0.3	0.1	Open Cut
	240.6	02080207	wnok016f	PFO	226	0.4	0.2	Open Cut
	241.4	02080207	wnoc100f	PFO	466	0.8	0.3	Open Cut
	242.8	02080207	wnoc001f	PFO	361	0.6	0.2	Open Cut
	242.8	02080207	wnoc001e	PFO	0	<0.1	<0.1	Open Cut
	242.9	02080207	wnoc001e	PEM	491	0.9	0.0	Open Cut
	243.0	02080207	wnoc001f	PEM	105	0.2	0.0	Open Cut
	244.1	02080207	wnos002f	PFO	615	1.7	0.4	Open Cut
	244.9	02080207	wnos001f	PFO	20	<0.1	<0.1	Open Cut
	245.1	02080207	wnol006f	PFO	168	0.4	0.1	Open Cut
	245.4	02080207	wnoa010f	PFO	17	<0.1	<0.1	Open Cut
	245.6	02080207	wnol007f	PFO	111	0.2	0.1	Open Cut
	246.0	02080207	wnol008f	PFO	114	0.2	0.1	Open Cut
	247.2	02080207	wnok024f	PFO	0	0.1	<0.1	Open Cut
	247.2	02080207	wnok025f	PFO	0	<0.1	<0.1	Open Cut
	247.8	03010201	wnom001e	PEM	52	0.1	0.0	Open Cut
	248.1	03010201	wnom002e	PEM	52	0.1	0.0	Open Cut
	248.1	03010201	wnom003f	PFO	41	0.2	<0.1	Open Cut
	248.6	03010201	wnom004f	PFO	118	0.2	0.1	Open Cut
Dinwiddie County								
	249.1	03010201	wdim001f	PFO	53	0.1	<0.1	Open Cut
	249.1	03010201	wdim001e	PEM	59	0.1	0.0	Open Cut
	249.2	03010201	wdim002s	PSS	60	0.1	<0.1	Open Cut
	249.5	03010201	wdim003e	PEM	143	0.3	0.0	Open Cut
	249.8	03010201	wdim004e	PEM	37	0.1	0.0	Open Cut
	249.9	03010201	wdim005s	PSS	0	<0.1	0.0	N/A
	250.2	03010201	wdim006f	PFO	51	0.1	<0.1	Open Cut
	250.5	03010201	wdim007f	PFO	16	<0.1	<0.1	Open Cut
	250.6	03010201	wdim011f	PFO	166	0.3	0.1	Open Cut
	251.2	03010201	wdim010f	PFO	41	0.1	<0.1	Open Cut
	251.4	03010201	wdim008e	PEM	7	<0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	251.5	03010201	wdim009e	PEM	58	0.1	0.0	Open Cut
	251.5	03010201	wdim009f	PFO	7	<0.1	<0.1	Open Cut
	251.5	03010201	wdim012f	PFO	82	0.1	<0.1	Open Cut
	252.0	03010201	wdim015f	PFO	74	0.1	0.1	Open Cut
	252.1	03010201	wdim016f	PFO	11	<0.1	<0.1	Open Cut
	252.6	03010201	wdim018f	PFO	61	0.1	<0.1	Open Cut
	252.7	03010201	wdim019f	PFO	32	0.1	<0.1	Open Cut
	252.9	03010201	wdim020f	PFO	30	0.1	<0.1	Open Cut
	253.1	03010201	wdim021f	PFO	24	<0.1	<0.1	Open Cut
	253.6	03010201	wdic013f	PFO	1,423	2.4	1.0	Open Cut
	254.0	03010201	wdic011f	PFO	494	0.7	0.3	Open Cut
	254.3	03010201	wdic010f	PFO	29	0.1	<0.1	Open Cut
	254.5	03010201	wdic008e	PEM	0	<0.1	0.0	N/A
	254.6	03010201	wdic007e	PEM	0	<0.1	0.0	N/A
	254.6	03010201	wdib006f	PFO	75	0.1	0.1	Open Cut
	254.8	03010201	wdia006f	PFO	159	0.4	0.1	Open Cut
	255.4	03010201	wdib004f	PFO	30	<0.1	<0.1	Open Cut
	255.4	03010201	wdib005e	PEM	54	0.1	0.0	Open Cut
	255.5	03010201	wdib003s	PSS	48	0.1	<0.1	Open Cut
	255.7	03010201	wdib002s	PSS	156	0.3	<0.1	Open Cut
	255.9	03010201	wdib001f	PFO	105	0.1	0.1	Open Cut
	256.2	03010201	wdic006f	PFO	29	0.1	<0.1	Open Cut
	256.5	03010201	wdic004f	PFO	100	0.2	0.1	Open Cut
	256.7	03010201	wdio030f	PFO	0	<0.1	<0.1	Open Cut
	257.3	03010201	wdio028f	PFO	95	0.2	0.1	Open Cut
	257.8	03010201	wdia401f	PFO	16	0.1	<0.1	Open Cut
	259.3	03010201	wdic001f	PFO	236	0.4	0.2	Open Cut
	259.4	03010201	wdia400f	PFO	221	0.3	0.1	Open Cut
	259.7	03010201	wdio026f	PFO	0	<0.1	<0.1	Open Cut
	260.6	03010201	wdic003f	PFO	410	0.7	0.3	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
Brunswick County								
	260.7	03010201	nwi_va_a_044	PFO	0	0.0	0.0	N/A
	260.7	03010201	wbrc003f	PFO	113	0.2	0.1	Open Cut
	260.8	03010201	wbra201f	PFO	100	0.2	0.1	Open Cut
	261.3	03010201	wbrc001f	PFO	46	0.1	<0.1	Open Cut
	261.5	03010201	wbra202f	PFO	31	<0.1	<0.1	Open Cut
	261.6	03010201	wbra400f	PFO	34	0.1	<0.1	Open Cut
	262.5	03010201	wbra203f	PFO	178	0.3	0.1	Open Cut
	262.8	03010201	wbra204f	PFO	445	0.6	0.3	Open Cut
	264.2	03010201	wbrc050e	PEM	0	<0.1	0.0	Open Cut
	265.1	03010201	wbro003f	PFO	0	<0.1	0.0	N/A
	265.4	03010201	wbro005f	PFO	64	0.1	<0.1	Open Cut
	266.1	03010201	wbrr013f	PFO	0	<0.1	0.0	N/A
	266.3	03010201	wbrr012f	PFO	36	<0.1	<0.1	Open Cut
	266.6	03010201	wbrr011s	PSS	160	0.3	<0.1	Open Cut
	266.7	03010201	wbrr010f	PFO	181	0.3	0.1	Open Cut
	266.9	03010201	wbrr009e	PEM	4	<0.1	0.0	Open Cut
	266.9	03010201	wbrr014f	PFO	63	0.1	<0.1	Open Cut
	267.4	03010201	wbrr015s	PSS	56	0.1	<0.1	Open Cut
	267.4	03010201	wbrr015f	PFO	0	0.1	<0.1	Open Cut
	267.5	03010201	wbro010f	PFO	0	<0.1	0.0	N/A
	267.8	03010201	wbro008f	PFO	0	<0.1	0.0	N/A
	267.9	03010201	wbro009f	PFO	115	0.1	<0.1	Open Cut
	267.9	03010201	wbro009e	PEM	0	0.1	0.0	Open Cut
	268.5	03010201	wbrr019e	PEM	156	0.4	0.0	Open Cut
	268.7	03010201	wbrr020e	PEM	36	0.1	0.0	Open Cut
	268.9	03010201	wbrr021e	PEM	69	0.1	0.0	Open Cut
	269.0	03010201	wbrr022e	PEM	53	0.2	0.0	Open Cut
	269.1	03010201	wbrr023e	PEM	38	0.1	0.0	Open Cut
	269.4	03010201	wbrr025e	PEM	159	0.3	0.0	Open Cut
	269.7	03010201	wbrr006f	PFO	0	<0.1	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	270.0	03010201	wbrr001e	PEM	0	<0.1	0.0	Open Cut
	270.0	03010201	wbrr001f	PFO	21	<0.1	<0.1	Open Cut
	270.2	03010201	wbrr002e	PEM	16	0.1	0.0	Open Cut
	270.2	03010201	wbrr002f	PFO	97	0.1	<0.1	Open Cut
	270.5	03010201	wbrr003e	PEM	123	0.2	0.0	Open Cut
	270.5	03010201	wbrr003f	PFO	0	0.1	0.0	N/A
	271.8	03010201	wbrr005e	PEM	41	0.1	0.0	Open Cut
	271.9	03010201	wbrr005f	PFO	352	0.5	0.2	Open Cut
	272.0	03010201	wbrr007f	PFO	19	<0.1	<0.1	Open Cut
	272.6	03010201	wbrr008e	PEM	35	<0.1	0.0	Open Cut
	272.9	03010201	wbro001e	PEM	0	<0.1	0.0	Open Cut
	273.0	03010201	wbro011f	PFO	0	<0.1	0.0	N/A
	273.8	03010201	wbro024f	PFO	40	0.1	<0.1	Open Cut
	273.8	03010201	wbro024e	PEM	0	<0.1	0.0	Open Cut
	274.2	03010201	wbro025e	PEM	16	<0.1	0.0	Open Cut
	274.2	03010201	wbro025s	PSS	34	<0.1	<0.1	Open Cut
	274.3	03010201	wbrc101e	PEM	78	0.1	0.0	Open Cut
	274.4	03010201	wbrc100e	PEM	94	0.1	0.0	Open Cut
	274.4	03010201	wbrc102e	PEM	21	<0.1	0.0	Open Cut
	274.6	03010204	wbrr016e	PEM	1,003	1.9	0.0	Open Cut
	274.8	03010204	wgrc106e	PEM	0	0.0	0.0	N/A
	274.9	03010204	wbrr017e	PEM	564	0.9	0.0	Open Cut
	274.9	03010204	wgrc107e	PEM	0	0.0	0.0	N/A
	275.0	03010204	wbrr017f	PFO	13	0.1	<0.1	Open Cut
	275.1	03010204	wbrr026e	PEM	153	0.1	0.0	Open Cut
	275.1	03010204	wbrr026s	PSS	0	0.3	<0.1	Open Cut
	275.2	03010204	wbrr018e	PEM	164	0.3	0.0	Open Cut
	275.3	03010204	wbrr018f	PFO	214	0.7	0.1	Open Cut
	275.5	03010204	wbro015e	PEM	71	0.1	0.0	Open Cut
	275.5	03010204	wbro015f	PFO	0	<0.1	0.0	N/A
	275.5	03010204	wbro016e	PEM	122	0.2	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	275.6	03010204	wbro017e	PEM	52	0.1	0.0	Open Cut
	275.8	03010204	wbrz005f	PFO	316	0.6	0.2	Open Cut
	275.9	03010204	wbrz004e	PEM	244	0.2	0.0	Open Cut
	275.9	03010204	wbrp002f	PFO	0	0.2	<0.1	Open Cut
	276.1	03010204	wbrp003f	PFO	27	0.3	<0.1	Open Cut
	276.1	03010204	wbrp003e	PEM	131	0.1	0.0	Open Cut
	276.8	03010204	wbro018f	PFO	0	<0.1	0.0	N/A
	277.0	03010204	wbro019e	PEM	10	<0.1	0.0	Open Cut
	277.0	03010204	wbro020f	PFO	0	0.1	<0.1	Open Cut
	277.0	03010204	wbro020e	PEM	45	<0.1	0.0	Open Cut
	277.6	03010204	wbrc103e	PEM	104	0.1	0.0	Open Cut
	277.7	03010204	wbrc104e	PEM	60	0.1	0.0	Open Cut
	277.9	03010204	wbrz001e	PEM	47	0.1	0.0	Open Cut
	278.3	03010204	wbrz002e	PEM	0	<0.1	0.0	N/A
	278.3	03010204	wbrz003f	PFO	0	<0.1	0.0	N/A
	278.9	03010204	wbro014e	PEM	28	<0.1	0.0	Open Cut
	279.2	03010204	wbrp001e	PEM	26	<0.1	0.0	Open Cut
	279.2	03010204	wbrp001f	PFO	0	<0.1	0.0	N/A
	280.0	03010204	wbra217s	PSS	0	<0.1	<0.1	Open Cut
	280.4	03010204	wbra216f	PFO	604	0.9	0.4	Open Cut
	280.6	03010204	wbra215f	PFO	130	0.3	0.1	Open Cut
	281.0	03010204	wbra214f	PFO	0	<0.1	0.0	N/A
	281.3	03010201	wbra213s	PSS	42	0.1	<0.1	Open Cut
	281.5	03010204	nwi_va_063	PFO	0	0.0	0.0	N/A
	281.5	03010204	nwi_va_062	PFO	0	0.0	0.0	N/A
	281.9	03010204	wbrb003f	PFO	10	<0.1	<0.1	Open Cut
	282.0	03010204	wbrb002f	PFO	64	0.2	<0.1	Open Cut
	282.1	03010204	wbrb001f	PFO	243	0.4	0.2	Open Cut
	282.3	03010204	wbrb004f	PFO	124	0.2	0.1	Open Cut
	282.4	03010204	wbra026f	PFO	0	0.0	0.0	N/A
	282.8	03010204	wbra002f	PFO	0	0.2	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	282.9	03010204	wbra001f	PFO	44	0.1	<0.1	Open Cut
Greensville County								
	283.0	03010204	WVA-DDF-002	PFO	411	0.8	0.3	Open Cut
	283.3	03010204	WVA-DDF-010	PFO	61	0.1	<0.1	Open Cut
	283.5	03010204	WVA-DDF-011	PEM	104	0.2	0.0	Open Cut
	283.9	03010201	WVA-RDK-006	PEM	0	0.0	0.0	N/A
	283.9	03010201	WVA-RDK-006	PFO	0	0.0	0.0	N/A
	283.9	03010204	wgra016f	PFO	199	0.4	0.1	Open Cut
	284.0	03010204	WVA-RDK-007	PFO	0	<0.1	0.0	N/A
	284.1	03010204	wgra016e	PEM	0	<0.1	0.0	Open Cut
	284.5	03010204	WVA-RDK-001	PSS	1,111	1.9	0.3	Open Cut
	285.0	03010204	wgrc108f	PFO	0	<0.1	0.0	N/A
	285.4	03010204	wgra040f	PFO	0	0.1	0.0	N/A
	285.9	03010204	wgra013f	PFO	62	0.1	<0.1	Open Cut
	286.2	03010204	wgra014f	PFO	0	<0.1	0.0	N/A
	286.3	03010204	wgra015f	PFO	46	0.1	<0.1	Open Cut
	286.4	03010204	wgra008f	PFO	334	0.6	0.2	Open Cut
	286.5	03010204	wgra008e	PEM	104	0.2	0.0	Open Cut
	286.6	03010204	wgrc001f	PFO	0	0.0	0.0	N/A
	286.8	03010204	wgra009f	PFO	272	0.5	0.2	Open Cut
	287.6	03010204	wgra039f	PFO	174	0.5	0.1	Open Cut
	287.8	03010204	wgra011f1	PFO	262	0.4	0.2	Open Cut
	287.8	03010204	wgra011f2	PFO	377	0.7	0.3	Open Cut
	288.2	03010204	wgra001f	PFO	119	0.2	0.1	Open Cut
	288.5	03010204	wgra002f	PFO	551	0.9	0.4	Open Cut
	289.1	03010204	wgrc109s	PSS	19	<0.1	<0.1	Open Cut
	290.1	03010204	wgrc010e	PEM	472	0.8	0.0	Open Cut
	290.2	03010204	wgrc011f	PFO	50	0.1	<0.1	Open Cut
	290.4	03010204	wgrc009f	PFO	511	0.8	0.3	Open Cut
	291.4	03010204	wgra003f	PFO	28	0.1	<0.1	Open Cut
	292.4	03010204	wgra012s	PSS	2,098	3.6	0.5	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	292.8	03010204	wgra012s	PSS	336	0.9	0.1	Open Cut
	295.6	03010204	wgrb003f	PFO	609	1.0	0.4	Open Cut
	295.9	03010204	wgrp004f	PFO	138	0.3	0.1	Open Cut
	296.1	03010204	wgrp003f	PFO	78	0.1	0.1	Open Cut
	296.8	03010204	wgrb001f	PFO	242	0.4	0.2	Open Cut
	296.9	03010204	wgrb002f	PFO	932	1.5	0.6	Open Cut
	297.5	03010204	wgrc012f	PEM	149	0.3	0.0	Open Cut
	297.7	03010204	wgra034s	PSS	580	0.8	0.1	Open Cut
	297.8	03010204	wgra034e	PEM	374	0.9	0.0	Open Cut
	297.9	03010204	wgra033f	PFO	1,921	3.3	1.3	Open Cut
	298.3	03010204	wgra032f	PFO	124	0.3	0.1	Open Cut
	298.4	03010204	wgra031f	PFO	173	0.4	0.1	Open Cut
	298.4	03010204	wgro006e	PEM	0	0.0	0.0	N/A
	298.4	03010204	wgra030f	PFO	153	0.3	0.1	Open Cut
	298.6	03010204	wgra029f	PFO	101	0.2	0.1	Open Cut
	298.6	03010204	wgro005f	PFO	0	0.0	0.0	N/A
	298.6	03010204	wgro004f	PFO	0	<0.1	0.0	N/A
	298.7	03010204	wgrp005s	PSS	804	1.4	0.2	Open Cut
	299.3	03010204	wgrp006s	PSS	1,220	2.1	0.3	Open Cut
	299.6	03010204	wgrp006f	PFO	1,313	2.3	0.9	Open Cut
AP-1 Total					**52,357**	**101.6**	**22.0**	
AP-2								
North Carolina								
Northampton County								
	0.3	03010204	wnra002f	PFO	278	2.3	0.9	Open Cut
	0.7	03010204	wnra001f	PFO	96	0.2	0.1	Open Cut
	1.0	03010204	wnrh011f	PFO	489	0.8	0.3	Open Cut
	1.2	03010204	wnrh010f	PFO	352	0.6	0.2	Open Cut
	1.4	03010204	wnrh009f	PFO	1,002	1.7	0.7	Open Cut
	1.6	03010204	wnrh008f	PFO	160	0.3	0.1	Open Cut
	1.8	03010204	wnrh007f	PFO	784	1.4	0.5	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	3.1	03010204	wnro001f	PFO	203	0.4	0.2	Open Cut
	3.4	03010204	wnrh012f	PFO	155	0.3	0.1	Open Cut
	3.5	03010204	wnrg001e	PEM	43	0.1	0.0	Open Cut
	3.6	03010204	wnrg002f	PFO	428	0.7	0.3	Open Cut
	5.1	03010107	wnrp023f	PFO	199	0.3	0.1	Open Cut
	6.6	03010107	wnrp019f	PFO	0	<0.1	0.0	N/A
	8.0	03010107	wnrg005f	PFO	77	0.1	0.1	Open Cut
	8.5	03010107	wnrg006f	PFO	150	0.3	0.1	Open Cut
	9.6	03010107	wnrh005f	PFO	3	<0.1	<0.1	Open Cut
Halifax County								
	10.1	03010107	whlh002f	PFO	134	0.3	0.1	Open Cut
	10.7	03010107	whlh003f	PFO	89	0.1	0.1	Open Cut
	11.4	03010107	whlc002f	PFO	45	0.2	<0.1	Open Cut
	11.6	03010107	whlc003e	PEM	53	0.1	0.0	Open Cut
	11.7	03010107	whlc004e	PEM	47	0.1	0.0	Open Cut
	11.8	03010107	whlc005f	PFO	11	<0.1	<0.1	Open Cut
	11.9	03010107	whlc006f	PFO	79	0.1	0.1	Open Cut
	12.8	03010107	whlc001f	PFO	127	0.2	0.1	Open Cut
	13.2	03010107	whlg001f	PFO	114	0.2	0.1	Open Cut
	13.6	03010107	whlf002s	PSS	12	<0.1	<0.1	Open Cut
	13.6	03010107	whlf003f	PFO	157	0.3	0.1	Open Cut
	13.9	03010107	whlf004s	PSS	24	<0.1	<0.1	Open Cut
	14.4	03010107	whlp001f	PFO	86	0.1	0.1	Open Cut
	14.6	03010107	whlp002f	PFO	387	1.1	0.3	Open Cut
	15.0	03010107	whlp004f	PFO	160	0.5	0.1	Open Cut
	15.3	03010107	whlf007f	PFO	63	0.4	0.1	Open Cut
	15.3	03010107	whlf007f	PFO	89	0.2	0.1	Open Cut
	15.3	03010107	nwi_nc_n_002	PFO	64	0.1	<0.1	Open Cut
	15.5	03010107	whlf008f	PEM	228	0.4	0.0	Open Cut
	15.7	03010107	whlf009f	PFO	153	0.3	0.1	Open Cut
	15.8	03010107	whlg005f	PFO	746	1.4	0.5	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	16.2	03010107	nwi_nc_a_005	PSS	0	<0.1	0.0	N/A
	16.6	03010107	whlp009s	PSS	98	0.2	<0.1	Open Cut
	16.9	03010107	whlp008f	PFO	140	0.4	0.1	Open Cut
	16.9	03010107	whlp008s	PEM	46	0.1	0.0	Open Cut
	17.0	03010107	whlp007e	PEM	0	0.1	0.0	Open Cut
	17.1	03010107	whlp006s	PSS	0	0.1	0.0	N/A
	17.3	03010107	whlp005f	PFO	0	<0.1	0.0	N/A
	17.5	03010107	whlg008f	PFO	542	1.0	0.4	Open Cut
	17.8	03010107	whlg009f	PFO	567	1.0	0.4	Open Cut
	18.2	03020102	whlb050e	PEM	0	0.0	0.0	N/A
	19.2	03020102	whlh010f	PFO	283	0.4	0.2	Open Cut
	19.6	03020102	whlg020f	PFO	0	0.0	0.0	N/A
	19.7	03020102	whlh009f	PFO	3,167	5.6	2.2	Open Cut
	20.4	03020102	whlh008f	PFO	111	0.1	0.1	Open Cut
	20.6	03020102	whlg012e	PEM	525	0.9	0.0	Open Cut
	20.7	03020102	whlg012f	PFO	10	<0.1	<0.1	Open Cut
	21.0	03020102	whlh032s	PSS	1,979	3.6	0.5	Open Cut
	21.5	03020102	whlh032f	PFO	268	0.5	0.2	Open Cut
	21.6	03020102	whlh031f	PFO	523	0.9	0.4	Open Cut
	21.9	03020102	whlh030f	PFO	152	0.3	0.1	Open Cut
	22.0	03020102	whlb103f	PFO	166	0.3	0.1	Open Cut
	22.2	03020102	whlh027e	PEM	337	0.6	0.0	Open Cut
	22.3	03020102	whlh027f	PFO	172	0.3	0.1	Open Cut
	22.7	03020102	whlh028f	PFO	242	0.4	0.2	Open Cut
	23.0	03020102	whlh029f	PFO	777	1.4	0.6	Open Cut
	23.5	03020102	whlg019f	PFO	205	0.3	0.1	Open Cut
	23.8	03020102	whlg018f	PFO	305	0.5	0.2	Open Cut
	24.2	03020102	whlg017s	PSS	1,241	2.1	0.3	Open Cut
	24.6	03020102	whlg016f	PFO	209	0.4	0.1	Open Cut
	24.6	03020102	whlh035e	PEM	0	0.0	0.0	N/A
	24.7	03020102	whlg015f	PFO	455	0.8	0.3	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	24.9	03020102	whlb100f2	PFO	443	0.8	0.3	Open Cut
	25.0	03020102	whlb100f1	PFO	108	0.2	0.1	Open Cut
	25.2	03020102	whlg014f	PFO	107	0.2	0.1	Open Cut
	25.3	03020102	whlg013f	PFO	1,165	2.0	0.8	Open Cut
	25.8	03020102	whlh012f	PFO	400	0.7	0.3	Open Cut
	26.3	03020102	whlh014f	PFO	1,879	3.2	1.3	Open Cut
	27.2	03020102	whlh015f	PFO	1,350	2.4	0.9	Open Cut
	27.7	03020102	whlh016f	PFO	238	0.4	0.2	Open Cut
	29.0	03020102	whlh017f	PFO	256	0.5	0.2	Open Cut
	29.0	03020102	whlg021e	PEM	0	0.0	0.0	N/A
	29.1	03020102	whlh018f	PFO	150	0.3	0.1	Open Cut
	29.3	03020102	whlh019f	PFO	320	0.5	0.2	Open Cut
	29.7	03020102	whlh020f	PFO	418	0.7	0.3	Open Cut
	30.2	03020102	whlh024f	PFO	216	0.3	0.1	Open Cut
	30.5	03020102	whlh025f	PFO	168	0.3	0.1	Open Cut
	30.9	03020102	whlh026f	PFO	331	0.6	0.2	Open Cut
	31.2	03020102	whlo001f	PFO	105	0.2	0.1	Open Cut
	31.6	03020102	whlh021s	PSS	88	0.1	<0.1	Open Cut
	32.0	03020102	whlh023e	PEM	455	0.8	0.0	Open Cut
	33.3	03020102	whlg010f	PFO	437	1.0	0.3	Open Cut
	33.5	03020102	whlh034f	PFO	0	0.0	0.0	N/A
	33.7	03020102	whlg011f	PFO	166	0.2	0.1	Open Cut
Nash County								
	34.8	03020102	wnag001f	PFO	89	0.2	0.1	Open Cut
	34.9	03020102	wnag002f	PFO	123	0.2	0.1	Open Cut
	35.1	03020102	wnag003f	PFO	124	0.2	0.1	Open Cut
	35.1	03020102	wnah017f	PFO	193	0.3	0.1	Open Cut
	36.5	03020102	wnah015f	PFO	1,042	1.8	0.7	Open Cut
	36.7	03020102	wnah014f	PFO	123	0.2	0.1	Open Cut
	36.8	03020102	wnao015f	PFO	0	0.1	<0.1	N/A
	37.0	03020102	wnah019f	PFO	199	0.3	0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	37.0	03020102	wnah019e	PEM	538	0.9	0.0	Open Cut
	37.8	03020102	wnah036f	PFO	83	0.2	0.1	Open Cut
	37.9	03020102	wnah018s	PSS	202	0.4	<0.1	Open Cut
	38.1	03020102	wnah006f	PFO	194	0.3	0.1	Open Cut
	38.3	03020102	wnah005f	PFO	282	0.5	0.2	Open Cut
	38.4	03020102	wnab102s	PSS	31	0.1	<0.1	Open Cut
	38.5	03020102	wnah004f	PFO	251	0.3	0.2	Open Cut
	38.7	03020102	wnab101f	PFO	82	0.2	0.1	Open Cut
	38.9	03020102	wnah003f	PFO	234	0.4	0.2	Open Cut
	39.1	03020102	wnah002f	PFO	458	0.8	0.3	Open Cut
	39.2	03020102	wnah001f	PFO	846	1.5	0.6	Open Cut
	39.7	03020101	wnab100f	PFO	6	<0.1	<0.1	Open Cut
	39.9	03020101	wnah008f	PFO	100	0.2	0.1	Open Cut
	40.1	03020101	wnah007f	PFO	250	0.4	0.2	Open Cut
	40.9	03020101	wnah013f	PFO	391	0.7	0.3	Open Cut
	41.0	03020101	wnah012f	PFO	292	0.5	0.2	Open Cut
	41.6	03020101	wnah011f	PFO	70	0.1	<0.1	Open Cut
	41.7	03020101	wnah010f	PFO	123	0.2	0.1	Open Cut
	41.8	03020101	wnah009f	PFO	93	0.2	0.1	Open Cut
	42.0	03020101	wnah034f	PFO	645	1.3	0.5	Open Cut
	42.8	03020101	wnac002f	PFO	52	0.2	<0.1	Open Cut
	43.0	03020101	wnac001f	PFO	0	0.1	0.0	N/A
	43.6	03020101	wnac003f	PFO	322	0.6	0.2	Open Cut
	44.0	03020101	wnac004f	PFO	354	0.6	0.2	Open Cut
	44.4	03020101	wnac005s	PSS	119	0.2	<0.1	Open Cut
	44.4	03020101	wnac005f	PFO	192	0.4	0.1	Open Cut
	44.7	03020101	wnag012f	PFO	221	0.5	0.2	Open Cut
	45.4	03020101	wnac006f	PFO	264	0.5	0.2	Open Cut
	45.6	03020101	wnab103f	PFO	532	1.0	0.4	Open Cut
	47.2	03020101	wnah021f	PFO	29	<0.1	<0.1	Open Cut
	47.6	03020101	wnah022f	PFO	0	<0.1	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	47.7	03020101	wnah022f	PFO	2,449	4.2	1.7	Open Cut
	48.1	03020101	wnah022e	PEM	165	0.3	0.0	Open Cut
	48.2	03020101	wnah022f	PFO	1,111	1.9	0.8	Open Cut
	48.4	03020101	wnah023f	PFO	1,040	1.9	0.7	Open Cut
	48.6	03020101	nwi_nc_k_004	PFO	965	2.2	0.7	Open Cut
	48.7	03020101	wnah023e	PEM	0	<0.1	0.0	N/A
	48.9	03020101	wnah023f	PFO	0	<0.1	0.0	N/A
	48.9	03020101	wnah024f	PFO	713	1.3	0.5	Open Cut
	50.3	03020101	wnag006f	PFO	99	0.2	0.1	Open Cut
	50.7	03020101	wnag005f	PFO	0	0.1	<0.1	Open Cut
	50.8	03020101	wnag004f	PFO	113	0.2	0.1	Open Cut
	51.5	03020101	wnag008f	PFO	574	1.0	0.4	Open Cut
	52.0	03020101	wnag007f	PFO	134	0.2	0.1	Open Cut
	53.1	03020101	wnag011f	PFO	0	0.0	0.0	N/A
	53.3	03020101	wnah030e	PEM	246	0.4	0.0	Open Cut
	53.5	03020101	wnah029f	PFO	370	0.6	0.3	Open Cut
	53.7	03020101	wnah028f	PFO	2,191	3.9	1.5	Open Cut
	54.3	03020101	wnah027f	PFO	1,374	2.2	0.9	Open Cut
	54.9	03020101	wnah026f	PFO	424	0.7	0.3	Open Cut
	55.7	03020101	wnah032f	PFO	52	0.1	<0.1	Open Cut
	55.9	03020101	wnah033f	PFO	572	1.0	0.4	Open Cut
	56.2	03020101	wnah031f	PFO	2,950	5.0	2.0	Open Cut
	56.8	03020101	wnah025f	PFO	1,633	2.8	1.1	Open Cut
	57.9	03020101	wnao012f	PFO	2,934	4.7	2.0	Open Cut
	58.8	03020101	wnap004f	PFO	36	<0.1	<0.1	Open Cut
	59.1	03020101	wnap003f	PFO	179	0.2	0.1	Open Cut
	59.3	03020101	wnap002f	PFO	66	0.1	<0.1	HDD
	59.4	03020101	wnap001f	PFO	17	<0.1	<0.1	HDD
	59.8	03020101	wnao011f	PFO	0	<0.1	0.0	N/A
	60.6	03020203	wnao010f	PFO	1,353	2.4	0.9	Open Cut
	61.2	03020203	wnao009f	PFO	188	0.3	0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	61.3	03020203	wnap006f	PFO	246	0.4	0.2	Open Cut
	61.8	03020203	wnao008f	PFO	262	0.5	0.2	Open Cut
	62.1	03020203	wnao007f	PFO	0	<0.1	0.0	N/A
	62.3	03020203	wnao006f	PFO	846	1.4	0.6	Open Cut
	62.6	03020203	wnao005f	PFO	493	0.8	0.3	Open Cut
	62.8	03020203	wnao004f	PFO	499	0.9	0.4	Open Cut
	63.3	03020203	wnao003f	PFO	179	0.3	0.1	Open Cut
	64.6	03020203	wnao002f	PFO	2,149	3.7	1.5	Open Cut
	65.3	03020203	wnao001f	PFO	408	0.8	0.3	Open Cut
Wilson County								
	66.0	03020203	wwio021f	PFO	284	0.5	0.2	Open Cut
	66.5	03020203	wwio018f	PFO	173	0.3	0.1	Open Cut
	66.6	03020203	wwio017f	PFO	552	0.9	0.4	Open Cut
	66.9	03020203	nwi_nc_k_005	PFO	247	0.6	0.2	Open Cut
	67.7	03020203	wwio001s	PSS	360	0.6	0.1	Open Cut
	67.8	03020203	wwio001f	PFO	112	0.2	0.1	Open Cut
	68.0	03020203	wwio002f	PFO	136	0.2	0.1	Open Cut
	69.1	03020203	wwio004e	PEM	100	0.1	0.0	Open Cut
	69.1	03020203	wwio004f	PFO	96	0.2	0.1	Open Cut
	69.3	03020203	wwio005f	PFO	334	0.6	0.2	Open Cut
	69.6	03020203	wwio006f	PFO	338	0.6	0.2	Open Cut
	69.9	03020203	wwio007f	PFO	443	0.7	0.3	Open Cut
	70.3	03020203	wwio009f	PFO	588	1.0	0.4	Open Cut
	70.5	03020203	wwip020f	PFO	0	<0.1	0.0	N/A
	70.5	03020203	wwio008f	PFO	51	0.1	<0.1	Open Cut
	70.9	03020203	wwio012f	PFO	890	1.5	0.6	Open Cut
	71.3	03020203	wwio013f	PFO	668	1.2	0.5	Open Cut
	71.6	03020203	wwip001f	PFO	182	0.3	0.1	Open Cut
	71.7	03020203	nwi_nc_n_001	PFO	353	0.9	0.2	Open Cut
	72.3	03020203	wwic002f	PFO	109	0.2	0.1	Open Cut
	72.5	03020203	wwic001f	PFO	62	0.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	72.9	03020203	wwic003f	PFO	509	0.9	0.3	Open Cut
	73.1	03020203	wwib101f	PFO	1,133	2.3	0.8	Open Cut
	73.3	03020203	nwi_nc_n_007	PFO	0	0.1	0.0	N/A
	73.4	03020203	nwi_nc_n_005	PSS	0	<0.1	0.0	N/A
	73.5	03020203	wwib100f	PFO	126	0.4	0.1	Open Cut
	73.6	03020203	nwi_nc_n_006	PFO	0	<0.1	0.0	N/A
	73.6	03020203	nwi_nc_n_004	PFO	11	<0.1	<0.1	Open Cut
	73.8	03020203	nwi_nc_n_009	PFO	364	0.9	0.3	Open Cut
	74.0	03020203	wwip016f	PFO	258	0.4	0.2	Open Cut
	74.3	03020203	wwip015f	PFO	442	0.7	0.3	Open Cut
	74.5	03020203	wwip004f	PFO	246	0.4	0.2	Open Cut
	74.8	03020203	wwip006f	PFO	629	1.1	0.4	Open Cut
	75.1	03020203	wwip007f	PFO	267	0.5	0.2	Open Cut
	75.2	03020203	wwip008f	PFO	121	0.2	0.1	Open Cut
	75.2	03020203	wwia001f	PFO	276	0.5	0.2	Open Cut
	75.6	03020203	wwip019f	PFO	508	0.8	0.4	Open Cut
	76.0	03020203	wwip013f	PFO	4,163	7.1	2.9	Open Cut
	76.8	03020203	wwip013e	PEM	39	0.1	0.0	Open Cut
	76.8	03020203	wwip013f	PFO	182	0.3	0.1	Open Cut
	76.9	03020203	wwip014f	PFO	285	0.5	0.2	Open Cut
	77.0	03020203	wwio016f	PFO	139	0.2	0.1	Open Cut
	77.3	03020203	wwio015f	PFO	257	0.4	0.2	Open Cut
	77.4	03020203	wwio014s	PSS	0	<0.1	0.0	N/A
	77.5	03020203	wwio014f	PFO	1,113	1.9	0.8	Open Cut
Johnston County								
	77.9	03020203	wjoo003f	PFO	1,797	3.1	1.2	Open Cut
	78.5	03020201	wjoo002f	PFO	965	1.7	0.7	Open Cut
	79.1	03020201	wjob109f	PFO	251	0.4	0.2	Open Cut
	79.3	03020201	wjoo039f	PFO	0	0.1	<0.1	N/A
	79.3	03020201	wjob110f	PFO	125	0.2	0.1	Open Cut
	79.4	03020201	wjob111s	PSS	463	0.8	0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	79.7	03020201	wjob106f	PFO	99	0.2	0.1	Open Cut
	79.8	03020201	wjob105f	PFO	517	0.9	0.4	Open Cut
	79.9	03020201	wjob105e	PEM	41	0.1	0.0	Open Cut
	80.1	03020201	wjoo004f	PFO	1,102	1.9	0.8	Open Cut
	80.4	03020201	wjop022f	PFO	586	1.0	0.4	Open Cut
	80.6	03020201	wjop020f	PFO	1,367	2.3	0.9	Open Cut
	81.0	03020201	wjop021f	PFO	770	1.3	0.5	Open Cut
	81.4	03020201	wjoo009f	PFO	92	0.2	0.1	Open Cut
	81.5	03020201	wjoo010e	PEM	13	<0.1	0.0	Open Cut
	81.9	03020201	wjop004f	PFO	795	1.3	0.5	Open Cut
	82.5	03020201	wjoe001f	PFO	87	0.1	0.1	Open Cut
	82.6	03020201	wjoe002f	PFO	408	0.5	0.3	Open Cut
	83.2	03020201	wjoe004f	PFO	345	0.6	0.2	Open Cut
	83.7	03020201	wjop017f	PFO	36	0.1	<0.1	Open Cut
	84.5	03020201	wjop002f	PFO	378	0.6	0.3	Open Cut
	85.0	03020201	wjoo011f	PFO	904	1.6	0.6	Open Cut
	85.3	03020201	wjop003f	PFO	256	0.4	0.2	Open Cut
	85.6	03020201	wjoo012f	PFO	961	1.7	0.7	Open Cut
	85.9	03020201	wjoo013f	PFO	258	0.5	0.2	Open Cut
	86.1	03020201	wjoo014s	PSS	373	0.6	0.1	Open Cut
	86.3	03020201	wjoo015f	PFO	0	<0.1	0.0	N/A
	86.4	03020201	wjoo016f	PFO	532	0.9	0.4	Open Cut
	87.0	03020201	wjoo017f	PFO	243	0.4	0.2	Open Cut
	87.3	03020201	wjoo019f	PFO	114	0.1	0.1	Open Cut
	87.4	03020201	wjoo020f	PFO	0	<0.1	0.0	N/A
	87.6	03020201	wjoo021f	PFO	2,700	4.7	1.9	Open Cut
	89.6	03020201	wjop005f	PFO	432	0.7	0.3	Open Cut
	89.7	03020201	wjop006f	PFO	115	0.2	0.1	Open Cut
	89.8	03020201	wjop007f	PFO	431	0.7	0.3	Open Cut
	90.0	03020201	wjop027f	PFO	744	1.3	0.5	Open Cut
	90.3	03020201	wjop026e	PEM	242	0.4	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	90.4	03020201	wjop008e	PEM	25	<0.1	0.0	Open Cut
	90.6	03020201	wjop009f	PFO	421	0.7	0.3	Open Cut
	90.9	03020201	wjop028s	PSS	400	0.7	0.1	Open Cut
	91.0	03020201	wjop011s	PSS	300	0.5	0.1	Open Cut
	91.0	03020201	wjop011e	PEM	100	0.2	0.0	Open Cut
	91.1	03020201	wjop011f	PFO	228	0.4	0.2	Open Cut
	91.8	03020201	wjop012f	PFO	154	0.2	0.1	Open Cut
	92.1	03020201	wjop013f	PFO	79	0.1	<0.1	Open Cut
	92.6	03020201	wjop031f	PFO	1,670	2.8	1.1	Open Cut
	93.0	03020201	wjop039f	PFO	443	0.8	0.3	Open Cut
	93.1	03020201	wjop038f	PFO	16	<0.1	<0.1	Open Cut
	93.3	03020201	wjop019f	PFO	906	1.6	0.6	Open Cut
	94.0	03020201	wjoa020f	PFO	1,404	2.4	1.0	Open Cut
	94.7	03020201	wjoo029f	PFO	133	0.2	0.1	Open Cut
	95.1	03020201	wjoa019f	PFO	143	0.3	0.1	Open Cut
	95.9	03020201	wjob108f	PFO	749	1.3	0.5	Open Cut
	96.1	03020201	wjob107f	PFO	49	0.1	<0.1	Open Cut
	96.4	03020201	wjob115f	PFO	0	0.0	0.0	N/A
	97.1	03020201	wjoo032f	PFO	233	0.6	0.2	Open Cut
	97.1	03020201	wjoo031f	PFO	868	1.7	0.6	Open Cut
	97.4	03020201	wjoo030f	PFO	857	2.3	0.6	Open Cut
	97.6	03020201	wjoo034f	PFO	2,172	5.1	1.5	Open Cut
	97.8	03020201	wjoo035f	PFO	0	0.0	0.0	N/A
	97.8	03020201	wjop036f	PFO	0	0.0	0.0	N/A
	97.8	03020201	wjop036f	PFO	0	0.0	0.0	N/A
	98.0	03020201	wjoo036f	PFO	1,997	3.3	1.4	Open Cut
	98.2	03020201	wjop035f	PFO	0	0.0	0.0	N/A
	98.3	03020201	wjop034f	PFO	788	1.6	0.6	Open Cut
	98.4	03020201	wjop032f	PFO	0	0.0	0.0	N/A
	98.4	03020201	wjop032e	PEM	0	0.0	0.0	N/A
	98.4	03020201	wjob112f	PFO	438	0.4	0.3	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	98.4	03020201	wjob112s	PSS	0	<0.1	0.0	N/A
	98.5	03020201	wjob112f	PFO	0	<0.1	<0.1	Open Cut
	98.6	03020201	wjoa013s	PSS	43	0.1	<0.1	Open Cut
	98.6	03020201	wjoa013f	PFO	302	0.8	0.2	Open Cut
	98.8	03020201	wjop042f	PFO	1,418	3.3	1.0	Open Cut
	99.0	03020201	wjop041f	PFO	66	0.2	<0.1	Open Cut
	99.3	03020201	wjoo045f	PFO	1,338	3.2	0.9	Open Cut
	99.8	03020201	wjoa021f	PFO	767	1.3	0.5	Open Cut
	99.9	03020201	wjoa021s	PSS	761	1.5	0.2	Open Cut
	100.5	03020201	wjob113e	PEM	258	0.5	0.0	Open Cut
	100.5	03020201	wjob113f	PFO	292	0.6	0.2	Open Cut
	101.2	03020201	wjoa012f	PFO	944	1.6	0.7	Open Cut
	101.5	03020201	wjoa011f	PFO	146	0.3	0.1	Open Cut
	101.7	03020201	wjoa010f	PFO	517	0.8	0.3	Open Cut
	102.2	03020201	wjoa009f	PFO	21	<0.1	<0.1	Open Cut
	102.8	03020201	wjoa008f	PFO	753	1.0	0.5	Open Cut
	103.9	03020201	wjoa007f	PFO	495	0.8	0.3	Open Cut
	104.4	03020201	wjoa006f	PFO	110	0.2	0.1	Open Cut
	105.0	03020201	wjoa005f	PFO	397	0.7	0.3	Open Cut
	106.3	03020201	wjob104f	PFO	0	0.0	0.0	N/A
	106.3	03020201	wjob103s	PSS	0	0.0	0.0	N/A
	106.3	03020201	wjoa004e	PEM	0	<0.1	0.0	N/A
	106.5	03020201	wjoa003f	PFO	1,411	2.5	1.0	Open Cut
	107.5	03020201	wjoa002f	PFO	1,137	1.9	0.8	Open Cut
	108.1	03020201	wjob100f	PFO	59	0.1	<0.1	Open Cut
	108.9	03020201	wjoa001f	PFO	51	0.1	<0.1	Open Cut
	110.1	03020201	wjop024f	PFO	915	1.7	0.6	Open Cut
	110.5	03020201	wjop029f	PFO	748	1.3	0.5	Open Cut
	111.4	03020201	wjoo026f	PFO	61	0.1	<0.1	Open Cut
	113.1	03020201	wjoo027f	PFO	938	1.7	0.6	Open Cut
	113.7	03020201	wjoo024f	PFO	1,006	1.7	0.7	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	114.0	03020201	wjoq001f	PFO	143	0.4	0.1	Open Cut
	114.1	03020201	wjoq002f	PFO	348	0.9	0.2	Open Cut
	114.5	03020201	wjoo023e	PEM	14	<0.1	0.0	Open Cut
	114.5	03020201	wjoo023f	PFO	213	0.4	0.1	Open Cut
	114.6	03020201	wjoo022f	PFO	375	0.6	0.3	Open Cut
Sampson County								
	116.7	03030006	wsao002f	PFO	634	1.1	0.4	Open Cut
	116.9	03030006	wsao001f	PFO	300	0.5	0.2	Open Cut
	117.2	03030006	wsap002f	PFO	476	0.9	0.3	Open Cut
	117.9	03030006	wsap003f	PFO	287	0.5	0.2	Open Cut
	118.3	03030006	wsao010f	PFO	1,817	3.1	1.3	Open Cut
	118.7	03030006	wsao011f	PFO	609	1.0	0.4	Open Cut
	118.8	03030006	wsao007e	PEM	438	0.7	0.0	Open Cut
	118.9	03030006	wsao007f	PFO	1,445	2.4	1.0	Open Cut
	119.6	03030006	wsao009f	PFO	955	1.5	0.6	Open Cut
	120.4	03030006	wsao003s	PSS	34	0.1	<0.1	Open Cut
	120.9	03030006	wsao004e	PEM	23	<0.1	0.0	Open Cut
	121.1	03030006	wsao005e	PEM	5	<0.1	0.0	Open Cut
	121.8	03030006	wsao006f	PFO	3,770	6.3	2.6	Open Cut
Cumberland County								
	122.7	03030006	wcmo011s	PSS	10,010	16.7	2.3	Open Cut
	123.0	03030006	wcmo015s	PSS	0	0.0	0.0	N/A
	123.1	03030006	wcmo015e	PEM	0	0.0	0.0	N/A
	124.7	03030006	wcmo011f	PFO	436	0.7	0.3	Open Cut
	125.4	03030006	wcmc006s	PSS	288	0.5	0.1	Open Cut
	125.6	03030006	wcmc005f	PFO	215	0.4	0.1	Open Cut
	126.0	03030004	wcmp006f	PFO	441	0.7	0.3	Open Cut
	126.3	03030004	wcmp007f	PFO	105	0.2	0.1	Open Cut
	126.8	03030004	wcmp008f	PFO	222	0.4	0.2	Open Cut
	126.8	03030004	wcmp009f	PFO	0	0.0	0.0	N/A
	127.2	03030004	wcmp010f	PFO	214	0.4	0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	127.8	03030004	wcmp011f	PFO	110	0.3	0.1	Open Cut
	128.4	03030004	wcmp017f	PFO	24	0.1	<0.1	Open Cut
	128.8	03030004	wcmp016f	PFO	228	0.4	0.2	Open Cut
	129.0	03030004	wcmp015f	PFO	199	0.3	0.1	Open Cut
	129.4	03030004	wcmc002f	PFO	34	0.1	<0.1	Open Cut
	129.5	03030004	wcmp050f	PFO	62	0.1	<0.1	Open Cut
	129.6	03030004	wcmc003f	PFO	281	0.4	0.2	Open Cut
	129.6	03030004	wcmc003s	PSS	0	0.1	<0.1	Open Cut
	130.1	03030004	wcmc007f	PFO	0	<0.1	0.0	N/A
	130.5	03030004	wcmp005f	PFO	0	0.1	0.0	N/A
	130.6	03030004	wcmp004f	PFO	259	0.4	0.2	Open Cut
	131.8	03030004	wcmb103f	PFO	1,975	3.4	1.4	Open Cut
	132.3	03030004	wcmb102f	PFO	126	0.2	0.1	Open Cut
	133.1	03030004	wcmo009f	PFO	590	1.0	0.4	Open Cut
	133.9	03030004	wcmp039e	PEM	91	0.2	0.0	Open Cut
	134.3	03030004	nwi_nc_f_006	PFO	155	0.3	0.1	Open Cut
	135.7	03030004	nwi_nc_f_007	PFO	119	0.2	0.1	Open Cut
	136.1	03030006	nwi_nc_l_003	PFO	0	0.0	0.0	N/A
	136.7	03030006	nwi_nc_l_002	PFO	0	0.0	0.0	N/A
	136.7	03030006	wcmq001e	PEM	2,323	3.6	0.0	Open Cut
	136.9	03030006	wcmq001f	PFO	0	0.0	0.0	N/A
	137.2	03030006	nwi_nc_f_008	PFO	4,163	7.0	2.7	Open Cut
	137.2	03030006	nwi_nc_l_001	PFO	0	0.0	0.0	N/A
	137.7	03030006	wcmp048e	PEM	0	0.5	0.0	Open Cut
	138.0	03030006	wcmp051e	PEM	2,155	1.8	0.0	Open Cut
	138.4	03030006	wcmp051f	PFO	77	2.2	0.3	Open Cut
	138.8	03030006	wcmo036f	PFO	0	0.1	0.0	N/A
	138.8	03030006	wcmo036e	PEM	0	0.2	0.0	Open Cut
	139.0	03030006	wcmf002e	PEM	1,157	2.0	0.0	Open Cut
	139.2	03030006	wcmf002f	PFO	3,056	5.5	2.0	Open Cut
	139.8	03030006	wcmf003e	PEM	64	0.2	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	139.9	03030006	wcmf003f	PFO	786	1.3	0.5	Open Cut
	140.2	03030006	wcmf004e	PEM	23	0.1	0.0	Open Cut
	140.4	03030006	wcmf001e	PEM	161	0.4	0.0	Open Cut
	140.4	03030006	wcmf001f	PFO	1,324	2.2	0.9	Open Cut
	140.7	03030006	wcmf005e	PEM	106	0.5	0.0	Open Cut
	140.7	03030006	wcmf005f1	PFO	1,817	2.9	1.3	Open Cut
	141.0	03030006	wcmf005f2	PFO	1,609	2.7	1.1	Open Cut
	141.3	03030006	wcmf005f	PFO	1,901	4.9	1.3	Open Cut
	141.7	03030004	wcuc051e	PEM	0	0.0	0.0	N/A
	141.8	03030006	wcmr003f	PFO	1,582	2.9	1.1	Open Cut
	141.9	03030006	wcmr003e	PEM	0	0.2	0.0	N/A
	142.3	03030006	wcmo027f	PFO	182	0.3	0.1	Open Cut
	142.3	03030006	wcmo027e	PEM	0	<0.1	0.0	N/A
	142.4	03030006	wcmo028f	PFO	41	0.2	<0.1	Open Cut
	142.4	03030006	wcmo028e	PEM	148	0.1	0.0	Open Cut
	142.9	03030006	wcmo029f	PFO	763	1.5	0.6	Open Cut
	143.0	03030006	wcmo029e	PEM	0	0.1	0.0	Open Cut
	143.3	03030006	wcmf010e	PEM	0	<0.1	0.0	N/A
	143.5	03030006	wcmf011e	PEM	0	<0.1	0.0	N/A
	143.6	03030006	wcmf009f	PFO	473	0.8	0.3	Open Cut
	143.7	03030006	wcmf009e	PEM	0	<0.1	0.0	N/A
	143.8	03030006	wcmr006f	PFO	634	1.2	0.4	Open Cut
	143.9	03030006	wcmr006e	PEM	0	0.2	0.0	N/A
	144.0	03030006	wcmf008f	PFO	2,275	4.3	1.6	Open Cut
	144.2	03030006	wcmf008e	PEM	0	0.1	0.0	N/A
	145.0	03030005	wcmf006f	PFO	5,159	8.6	3.5	Open Cut
	145.5	03030005	wcmf006e	PEM	0	0.3	0.0	N/A
	146.2	03030005	wcmp040f	PFO	0	0.1	0.0	N/A
	147.5	03030005	wcmr005f	PFO	375	0.9	0.3	Open Cut
	147.8	03030005	wcmo026f	PFO	1,052	1.8	0.7	Open Cut
	147.9	03030005	wcmo026e	PEM	0	<0.1	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	148.3	03030005	wcmo031f	PFO	65	0.1	<0.1	Open Cut
	148.7	03030005	wcmo024f	PFO	4,250	7.3	2.9	Open Cut
	149.5	03030005	wcmo032f	PFO	702	1.2	0.5	Open Cut
	152.8	03030005	wcmr002f	PFO	666	1.1	0.5	Open Cut
	153.0	03030005	wcmr001f	PFO	118	0.3	0.1	Open Cut
	153.0	03030005	wcmr001e	PEM	0	<0.1	0.0	N/A
	153.3	03030005	wcmp045s	PSS	70	0.1	<0.1	Open Cut
	153.4	03030005	wcmp043s	PSS	0	<0.1	0.0	N/A
	153.5	03030005	wcmp046f	PFO	112	0.2	0.1	Open Cut
	154.0	03030005	wcmp042f	PFO	126	0.1	0.1	Open Cut
	154.0	03030005	wcmp042e	PEM	0	0.1	0.0	Open Cut
	154.1	03030005	wcmo035f	PFO	0	<0.1	0.0	HDD
	154.3	03030005	wcmo022e	PEM	0	<0.1	0.0	N/A
	154.4	03030005	wcmo022f	PFO	85	0.4	0.1	Open Cut
	154.4	03030005	wcmo023f	PFO	0	<0.1	<0.1	Open Cut
	154.8	03030005	wcmo021f	PFO	18	<0.1	<0.1	Open Cut
	154.9	03030005	wcmo020e	PEM	0	<0.1	0.0	N/A
	154.9	03030005	wcmo020f	PFO	23	<0.1	<0.1	Open Cut
	155.1	03030005	wcmp052f	PFO	241	0.5	0.2	Open Cut
	155.1	03030005	wcmp052s	PSS	0	<0.1	0.0	Open Cut
	155.2	03030005	wcmo033f	PFO	628	1.1	0.4	Open Cut
	155.3	03030005	wcmo033e	PEM	0	<0.1	0.0	N/A
	156.4	03030005	wcmo025s	PSS	28	0.1	<0.1	Open Cut
	156.4	03030005	wcmo025f	PFO	709	1.2	0.5	Open Cut
	156.7	03030005	wcmp049f	PFO	395	0.9	0.2	Open Cut
	156.8	03030005	wcmp049s	PSS	0	0.1	<0.1	Open Cut
	157.3	03030005	wcmp047f	PFO	90	0.1	0.1	Open Cut
	157.3	03030005	wcmp047s	PSS	671	1.2	0.2	Open Cut
	158.3	03030005	wcmh004f	PFO	2,010	3.5	1.4	Open Cut
	158.9	03030005	wcmh003f	PFO	205	0.5	0.1	Open Cut
	159.1	03030005	wcmh002s	PSS	137	0.3	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	159.1	03030005	wcmh002f	PFO	483	0.9	0.3	Open Cut
	159.2	03030005	wcmh002s	PSS	71	0.1	<0.1	Open Cut
	159.6	03040203	wcmh008s	PSS	447	0.8	0.1	Open Cut
	159.7	03040203	wcmh008f	PFO	544	1.0	0.4	Open Cut
Robeson County								
	160.3	03040203	wroo002f	PFO	1,904	4.9	1.3	Open Cut
	160.5	03040203	wroo002e	PEM	182	0.5	0.0	Open Cut
	161.1	03040203	wroo001f	PFO	377	0.9	0.3	Open Cut
	162.1	03040203	wroh019f	PFO	4,280	7.4	2.9	Open Cut
	163.7	03040203	wroc100e	PEM	141	0.2	0.0	Open Cut
	164.2	03040203	wrog008f	PFO	58	0.1	<0.1	Open Cut
	164.9	03040203	wrog007f	PFO	1,526	2.6	1.1	Open Cut
	165.3	03040203	wrob001f	PFO	2,125	3.7	1.5	Open Cut
	165.7	03040203	wrob002f	PFO	125	0.2	0.1	Open Cut
	166.0	03040203	wrof004f	PFO	203	0.4	0.1	Open Cut
	166.1	03040203	wrof004e	PEM	39	0.1	0.0	Open Cut
	166.1	03040203	wrof004f	PFO	258	0.5	0.2	Open Cut
	166.2	03040203	wrof003f	PFO	323	0.6	0.2	Open Cut
	166.3	03040203	wrof002e	PEM	136	0.2	0.0	Open Cut
	166.4	03040203	wrof001e	PEM	922	1.6	0.0	Open Cut
	166.9	03040203	wrof006f	PFO	203	0.4	0.1	Open Cut
	167.0	03040203	wroc003f	PFO	146	0.2	0.1	Open Cut
	167.6	03040203	wroh018f	PFO	227	0.4	0.2	Open Cut
	167.7	03040203	wroh018s	PSS	2,789	4.8	0.6	Open Cut
	168.2	03040203	wroh018f	PFO	173	0.3	0.1	Open Cut
	169.0	03040203	wroh017f	PFO	2,960	5.1	2.0	Open Cut
	169.6	03040203	wrog006f	PFO	1,517	2.7	1.0	Open Cut
	170.6	03040203	wrog004f	PFO	2,381	4.1	1.6	Open Cut
	171.3	03040203	wrog003f	PFO	212	0.4	0.1	Open Cut
	171.5	03040203	wrog002s	PSS	1,388	2.4	0.3	Open Cut
	171.8	03040203	wrog002f	PFO	220	0.5	0.2	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	171.9	03040203	wrog001s	PSS	495	1.0	0.1	Open Cut
	172.1	03040203	wrog001f	PFO	278	0.5	0.2	Open Cut
	172.4	03040203	wroh016s	PSS	2,416	4.2	0.6	Open Cut
	172.9	03040203	wroh015f	PFO	2,047	3.5	1.4	Open Cut
	173.4	03040203	wroh014f	PFO	375	0.7	0.3	Open Cut
	173.9	03040203	wroh013f	PFO	800	1.4	0.6	Open Cut
	174.0	03040203	wroh013s	PSS	551	0.9	0.1	Open Cut
	174.1	03040203	wroh013f	PFO	1,357	2.4	0.9	Open Cut
	174.4	03040203	wroh013s	PSS	178	0.3	<0.1	Open Cut
	174.4	03040203	wroh013f	PFO	520	0.9	0.4	Open Cut
	175.5	03040203	wroh011f	PFO	1,872	3.2	1.3	Open Cut
	176.4	03040203	wroh010s	PSS	291	0.5	0.1	Open Cut
	176.7	03040203	wroh008f	PFO	2,485	5.5	1.7	Open Cut
	177.4	03040203	wrop002f	PFO	218	0.7	0.2	Open Cut
	177.5	03040203	wrop002s	PSS	347	0.8	0.1	Open Cut
	177.5	03040203	wroh007s	PSS	457	1.1	0.1	Open Cut
	177.6	03040203	nwi_nc_n_015	PSS	0	0.2	0.0	N/A
	177.7	03040203	wroh007s	PSS	646	1.1	0.1	Open Cut
	178.5	03040203	wrop001f	PFO	568	1.1	0.4	Open Cut
	178.5	03040203	wrop001e	PEM	0	0.2	0.0	N/A
	180.7	03040203	wroh005s	PSS	62	0.1	<0.1	Open Cut
	181.5	03040203	wroe001e	PEM	144	0.2	0.0	Open Cut
	181.6	03040203	wroh004s	PSS	272	0.5	0.1	Open Cut
	181.7	03040203	wroh003s	PSS	270	0.4	0.1	Open Cut
	182.3	03040203	wroh022f	PFO	0	0.0	0.0	N/A
	182.5	03040203	wroh002f	PFO	566	1.0	0.4	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
AP-2 Total					**246,400**	**444.9**	**149.5**	
AP-3								
North Carolina								
Northampton County								
	0.3	03010204	wnrh014e	PEM	0	0.0	0.0	N/A
	0.7	03010204	wnrc001s	PSS	51	0.3	<0.1	Open Cut
	0.7	03010204	wnrc001e	PEM	103	0.1	0.0	Open Cut
	1.5	03010204	wnrc003f	PFO	0	<0.1	<0.1	Open Cut
	1.6	03010204	wnrc002f	PFO	40	0.1	<0.1	Open Cut
	2.2	03010204	wnrc004f	PFO	67	0.1	<0.1	Open Cut
	2.6	03010204	wnrc006f	PFO	314	0.6	0.2	Open Cut
	3.0	03010204	wnrc007f	PFO	41	0.1	<0.1	Open Cut
	3.6	03010204	wnrp003f	PFO	35	0.1	<0.1	Open Cut
	4.1	03010204	wnrp004f	PFO	40	0.1	<0.1	Open Cut
	4.9	03010204	wnrc008e	PEM	115	0.2	0.0	Open Cut
	4.9	03010204	wnrc008f	PFO	0	<0.1	0.0	N/A
	5.1	03010204	wnrc009e	PEM	135	0.2	0.0	Open Cut
	5.3	03010204	wnrp020f	PFO	1,188	2.0	0.8	Open Cut
	5.9	03010204	wnrp022f	PFO	251	0.5	0.2	Open Cut
	6.3	03010204	wnrp011f	PFO	193	0.2	0.1	Open Cut
	6.3	03010204	wnrp011e	PEM	0	0.1	0.0	Open Cut
	7.0	03010204	wnrp009e	PEM	57	0.1	0.0	Open Cut
	7.0	03010204	wnrp009f	PFO	136	0.2	0.1	Open Cut
	7.1	03010204	wnrp008f	PFO	32	<0.1	<0.1	Open Cut
	7.1	03010204	wnrp008e	PEM	0	<0.1	0.0	Open Cut
	7.2	03010204	wnrr007f	PFO	0	0.0	0.0	N/A
	7.3	03010204	wnrp006e	PEM	746	0.5	0.0	Open Cut
	7.5	03010204	wnrp006f	PFO	105	1.0	0.3	Open Cut
	7.5	03010204	wnrp007e	PEM	9	<0.1	0.0	Open Cut
	7.6	03010204	wnrb107f	PFO	259	0.5	0.2	Open Cut
	7.6	03010204	wnrb107e	PEM	125	0.2	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	8.1	03010204	wnrb108e	PEM	358	0.2	0.0	Open Cut
	8.2	03010204	wnrb108f	PFO	0	0.5	0.1	Open Cut
	8.6	03010204	wnrc011e	PEM	253	0.2	0.0	Open Cut
	8.6	03010204	wnrc011f	PFO	0	0.2	<0.1	Open Cut
	8.7	03010204	wnrc012e	PEM	1,426	1.7	0.0	Open Cut
	9.0	03010204	wnrc012f	PFO	4	0.8	0.1	Open Cut
	9.2	03010204	wnrp018f	PFO	0	<0.1	0.0	N/A
	9.4	03010204	wnrp017f	PFO	0	0.1	<0.1	Open Cut
	9.4	03010204	wnrp017e	PEM	5	<0.1	0.0	Open Cut
	9.4	03010204	wnrp016e	PEM	634	0.7	0.0	Open Cut
	9.4	03010204	wnrp016f	PFO	0	0.4	<0.1	Open Cut
	9.7	03010204	wnrb106s	PSS	167	0.3	<0.1	Open Cut
	9.9	03010204	wnro003f	PFO	304	0.6	0.2	Open Cut
	9.9	03010204	wnro002f	PFO	150	0.4	0.1	Open Cut
	10.0	03010204	wnrb102f	PFO	1,407	2.4	1.0	Open Cut
	10.5	03010204	wnrb101f	PFO	0	<0.1	0.0	N/A
	10.7	03010204	wnrb100f	PFO	329	0.5	0.2	Open Cut
	11.9	03010204	wnrp015f	PFO	1,166	1.9	0.8	Open Cut
	12.1	03010204	wgrp002f	PFO	78	0.1	<0.1	Open Cut
Virginia								
Greensville County								
	12.3	03010204	wgrp001f	PFO	481	0.8	0.3	Open Cut
Southampton County								
	12.4	03010204	wsop004f	PFO	2,015	3.5	1.4	Open Cut
	13.4	03010204	wsop001f	PFO	3,562	6.3	2.4	Open Cut
	14.3	03010204	wsop006s	PSS	263	0.7	0.1	Open Cut
	14.3	03010204	wsop006e	PEM	510	2.3	0.0	Open Cut
	14.4	03010204	wsop006f	PFO	3,640	4.6	1.7	Open Cut
	14.8	03010204	nwi_va_a_035	PFO	0	0.0	0.0	N/A
	14.9	03010204	wsop005f	PFO	0	0.0	0.0	N/A
	15.2	03010204	wsop022e	PEM	120	0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	15.2	03010204	wsop022f	PFO	0	0.1	<0.1	Open Cut
	15.3	03010204	wsop023f	PFO	1,025	1.4	0.5	Open Cut
	15.4	03010204	wsop023e	PEM	0	0.4	0.0	Open Cut
	15.6	03010204	wsor001e	PEM	760	1.1	0.0	Open Cut
	16.3	03010204	wsoo007f	PFO	0	0.1	<0.1	Open Cut
	16.5	03010204	wsoo001f	PFO	169	0.3	0.1	Open Cut
	16.8	03010204	wsop015e	PEM	262	0.3	0.0	Open Cut
	16.8	03010204	wsop015f	PFO	0	0.1	0.0	N/A
	17.0	03010204	wsop016e	PEM	187	0.2	0.0	Open Cut
	17.0	03010204	wsop016f	PFO	0	0.2	<0.1	Open Cut
	17.1	03010204	wsop017e	PEM	1,185	1.6	0.0	Open Cut
	17.2	03010204	wsop017f	PFO	0	0.5	0.0	N/A
	17.7	03010204	wsop018f	PFO	1,552	2.7	1.1	Open Cut
	17.7	03010204	nwi_va_n_003	PFO	0	<0.1	0.0	N/A
	17.8	03010204	wsop018e	PEM	0	0.1	0.0	Open Cut
	18.1	03010204	wsoa073e	PEM	157	0.2	0.0	Open Cut
	18.2	03010204	wsoa073f	PFO	0	0.1	<0.1	Open Cut
	18.3	03010204	wsoa072e	PEM	152	0.2	0.0	Open Cut
	18.3	03010204	wsoa072f	PFO	0	0.1	<0.1	Open Cut
	18.4	03010204	wsoa071e	PEM	760	0.6	0.0	Open Cut
	18.4	03010204	wsoa071f	PFO	138	0.8	0.2	Open Cut
	19.0	03010204	wsoa070f	PFO	83	0.2	0.1	Open Cut
	19.2	03010204	wsoo002e	PFO	196	0.3	0.1	Open Cut
	20.0	03010204	wsop014e	PEM	48	<0.1	0.0	Open Cut
	20.4	03010204	wsop013e	PEM	0	<0.1	0.0	Open Cut
	20.4	03010204	wsop013f	PFO	52	0.1	<0.1	Open Cut
	20.7	03010204	wsop012f	PFO	122	0.2	0.1	Open Cut
	20.7	03010204	wsop012e	PEM	0	<0.1	0.0	Open Cut
	20.8	03010204	wsop011e	PEM	67	0.2	0.0	Open Cut
	20.8	03010204	wsop011f	PFO	206	0.4	0.1	Open Cut
	21.3	03010204	wsoa076e	PEM	296	0.2	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	21.3	03010204	wsoa076f	PFO	0	0.2	<0.1	Open Cut
	21.5	03010204	wsoa075e	PEM	1,291	0.9	0.0	Open Cut
	21.8	03010204	wsoa075f	PFO	132	1.3	0.4	Open Cut
	22.3	03010204	wsoa074e	PEM	20	<0.1	0.0	Open Cut
	22.8	03010201	wsoa032f	PFO	300	0.3	0.2	Open Cut
	23.0	03010201	wsoa031f	PFO	74	0.1	0.1	Open Cut
	23.5	03010201	wsoa005f	PFO	31	0.1	<0.1	Open Cut
	23.7	03010201	wsoo003f	PFO	332	0.5	0.2	Open Cut
	24.5	03010201	wsoo008f	PFO	0	<0.1	0.0	N/A
	24.8	03010201	nwi_va_m_001	PFO	0	0.0	0.0	N/A
	24.9	03010201	wsoo009f	PFO	0	<0.1	<0.1	Open Cut
	25.1	03010201	wsop021f	PFO	77	0.1	0.1	Open Cut
	25.3	03010201	wsop020f	PFO	276	0.5	0.2	Open Cut
	25.4	03010201	wsop019f	PFO	68	0.2	<0.1	Open Cut
	26.6	03010201	wsoo006e	PEM	0	<0.1	0.0	Open Cut
	26.6	03010201	wsoo006f	PFO	45	<0.1	<0.1	Open Cut
	27.3	03010201	wsol009f	PFO	469	0.8	0.3	Open Cut
	27.7	03010201	wsol010f	PFO	301	0.6	0.2	Open Cut
	27.7	03010201	wsol010e	PEM	206	0.3	0.0	Open Cut
	27.9	03010201	wsol011e	PEM	35	0.1	0.0	Open Cut
	28.1	03010201	wsol012f	PFO	522	0.9	0.4	Open Cut
	28.3	03010201	wsol014f	PFO	131	0.2	0.1	Open Cut
	28.6	03010201	wsop100f	PFO	140	0.2	0.1	Open Cut
	28.7	03010201	wsol015f	PFO	66	0.1	<0.1	Open Cut
	29.2	03010201	wsol016f	PFO	77	0.1	0.1	Open Cut
	29.4	03010201	wsol017s	PSS	208	0.5	<0.1	Open Cut
	29.5	03010201	wsol018f	PFO	209	0.3	0.1	Open Cut
	29.7	03010201	wsoc009f	PFO	48	0.1	<0.1	Open Cut
	30.0	03010201	wsol019e	PEM	209	0.3	0.0	Open Cut
	30.0	03010201	wsol019f	PFO	254	0.5	0.2	Open Cut
	30.1	03010201	wsol020f	PFO	454	0.7	0.3	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	30.7	03010201	wsoa017f	PFO	227	0.4	0.2	Open Cut
	31.6	03010201	nwi_va_108	PFO	0	0.0	0.0	N/A
	31.8	03010201	wsoa020f	PFO	504	0.8	0.3	Open Cut
	31.9	03010201	nwi_va_111	PFO	0	0.0	0.0	N/A
	32.1	03010201	wsol031f	PFO	449	0.8	0.3	Open Cut
	32.3	03010201	wsol030f	PFO	302	0.5	0.2	Open Cut
	32.3	03010201	wsol029f	PFO	153	0.3	0.1	Open Cut
	32.4	03010201	wsol029s	PSS	196	0.3	<0.1	Open Cut
	32.4	03010201	wsoa019s	PSS	0	0.0	0.0	N/A
	32.5	03010201	wsol028s	PSS	47	0.1	<0.1	Open Cut
	32.5	03010201	wsol027f	PFO	149	0.5	0.1	Open Cut
	32.6	03010201	wsol026f	PFO	113	0.1	0.1	HDD
	32.6	03010201	wsol021f	PFO	729	0.8	0.5	HDD
	33.0	03010201	wsol022f	PFO	52	0.1	<0.1	Open Cut
	33.5	03010201	wsoa026e	PEM	32	0.1	0.0	Open Cut
	33.6	03010201	wsoa027s	PSS	141	0.2	<0.1	Open Cut
	33.7	03010201	wsoa028f	PFO	254	0.4	0.2	Open Cut
	34.6	03010201	wsoo010f	PFO	6	<0.1	<0.1	Open Cut
	34.9	03010201	wsol025f2	PFO	1,083	1.8	0.7	Open Cut
	35.1	03010201	wsol025f1	PFO	54	0.1	<0.1	Open Cut
	35.1	03010201	wsol025s	PSS	469	0.8	0.1	Open Cut
	35.2	03010201	wsol024s	PSS	508	0.9	0.1	Open Cut
	35.4	03010201	wsol023s	PSS	1,234	2.1	0.3	Open Cut
	35.6	03010201	wsol023f	PFO	1,047	1.8	0.7	Open Cut
	35.8	03010202	wsoa025e	PEM	27	0.1	0.0	Open Cut
	37.0	03010202	wsol033e	PEM	434	0.7	0.0	Open Cut
	37.3	03010202	wsol034f	PFO	172	0.3	0.1	Open Cut
	37.4	03010202	wsoa023f	PFO	805	1.4	0.6	Open Cut
	37.6	03010202	wsoc008f	PFO	105	0.1	0.1	Open Cut
	37.7	03010202	wsoc017f	PFO	111	0.2	0.1	Open Cut
	37.8	03010202	wsoa022f	PFO	95	0.2	0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	38.1	03010202	wsoa021f	PFO	638	1.1	0.4	Open Cut
	38.3	03010202	wsoo018f	PFO	0	0.1	0.0	N/A
	38.4	03010202	wsoa024f	PFO	1,110	1.3	0.8	HDD
City of Suffolk								
	38.6	03010202	wsua006f	PFO	210	0.2	0.1	HDD
	39.1	03010202	wsuc010s	PSS	0	0.0	0.0	N/A
	39.1	03010202	wsua007s	PSS	50	0.1	<0.1	Open Cut
	39.4	03010202	wsua008f	PFO	140	0.3	0.1	Open Cut
	39.5	03010202	wsua021f	PFO	273	0.5	0.2	Open Cut
	39.6	03010202	wsua021f	PFO	213	0.3	0.1	Open Cut
	39.7	03010202	wsua020f	PFO	38	0.1	<0.1	Open Cut
	39.7	03010202	wsua019s	PSS	111	0.2	<0.1	Open Cut
	39.9	03010202	wsua018s	PSS	33	<0.1	<0.1	Open Cut
	40.0	03010202	wsua009f	PFO	32	0.1	<0.1	Open Cut
	40.1	03010202	wsua010f	PFO	193	0.3	0.1	Open Cut
	41.0	03010202	wsua072f	PFO	68	0.1	<0.1	Open Cut
	41.1	03010202	wsua070f	PFO	83	0.2	0.1	Open Cut
	41.2	03010202	wsua071f	PFO	490	0.8	0.3	Open Cut
	41.4	03010202	wsuo037f	PFO	104	0.2	0.1	Open Cut
	42.2	03010202	wsuo013f	PFO	416	0.7	0.3	Open Cut
	42.7	03010202	wsuo012f	PFO	107	0.2	0.1	Open Cut
	43.1	03010202	wsup030e	PEM	11	<0.1	0.0	Open Cut
	43.7	03010202	wsup014e	PEM	27	<0.1	0.0	Open Cut
	43.7	03010202	wsup014f	PFO	0	<0.1	<0.1	Open Cut
	43.8	03010202	wsup013e	PEM	491	0.8	0.0	Open Cut
	43.9	03010202	wsup013f	PFO	481	0.8	0.3	Open Cut
	44.2	03010202	wsup026e	PEM	483	0.7	0.0	Open Cut
	44.2	03010202	wsup026f	PFO	0	0.1	<0.1	Open Cut
	44.3	03010202	wsup026f	PFO	0	<0.1	<0.1	Open Cut
	44.5	03010202	wsup025f	PFO	336	0.7	0.3	Open Cut
	44.6	03010202	wsup025e	PEM	31	<0.1	0.0	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	44.6	03010202	wsuo017f	PFO	287	0.5	0.2	Open Cut
	45.1	03010202	wsuo020f	PFO	91	0.2	0.1	Open Cut
	45.5	03010202	wsua076f	PFO	562	1.0	0.4	Open Cut
	45.6	03010202	wsua076e	PEM	82	0.1	0.0	Open Cut
	46.1	03010202	wsua074e	PEM	13	<0.1	0.0	Open Cut
	46.2	03010202	wsua073f	PFO	1,526	2.6	1.0	Open Cut
	46.5	03010203	wsuc101f	PFO	3,253	5.6	2.2	Open Cut
	47.0	03010203	wsuc101e	PEM	72	0.1	0.0	Open Cut
	47.2	03010203	wsuc101s	PSS	333	0.6	0.1	Open Cut
	47.3	03010203	wsuc100f	PFO	840	1.4	0.6	Open Cut
	47.3	03010203	wsuc100s	PSS	281	0.5	0.1	Open Cut
	47.5	03010203	wsuc005f	PFO	802	2.2	0.6	Open Cut
	47.6	03010203	wsuc005s	PSS	1,557	1.8	0.4	Open Cut
	48.1	03010203	wsuc006e	PEM	293	0.2	0.0	Open Cut
	48.1	03010203	wsuc006f	PFO	0	0.3	0.1	Open Cut
	48.6	03010203	wsuc007e	PEM	471	0.8	0.0	Open Cut
	49.3	03010203	wsuo048f	PFO	1,145	2.2	0.8	Open Cut
	49.3	03010203	wsuo048e	PEM	0	<0.1	0.0	N/A
	49.4	03010203	nwi_va_b_048	PFO	252	0.3	0.2	Open Cut
	49.6	03010203	wsuo027f	PFO	221	0.4	0.2	Open Cut
	49.7	03010203	wsuo027e	PEM	143	0.2	0.0	Open Cut
	49.8	03010203	wsuo026f	PFO	189	0.4	0.1	Open Cut
	50.0	03010203	wsuo025f	PFO	1,169	2.0	0.8	Open Cut
	50.5	03010203	wsuo024f	PFO	81	0.2	0.1	Open Cut
	50.8	03010203	wsuo022f	PFO	2,405	4.1	1.7	Open Cut
	51.4	03010203	wsuo023f	PFO	867	1.6	0.6	Open Cut
	52.1	03010203	wsup037f	PFO	142	0.2	0.1	Open Cut
	52.3	03010203	wsup021f	PFO	420	0.8	0.3	Open Cut
	52.6	03010203	wsup024s	PSS	171	0.3	<0.1	Open Cut
	52.6	03010203	wsup024f	PFO	90	0.1	0.1	Open Cut
	52.7	03010203	wsup023f	PFO	259	0.4	0.2	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	52.8	03010203	wsup022f	PFO	1,352	2.3	0.9	Open Cut
	53.0	02080208	wsup022s	PSS	2,748	4.7	0.6	Open Cut
	53.3	02080208	nwi_va_h_005	PSS	0	0.0	0.0	N/A
	53.6	02080208	wsuo039f	PFO	21	<0.1	<0.1	Open Cut
	53.9	02080208	wsup027s	PSS	2,054	3.5	0.5	Open Cut
	54.4	02080208	wsup028s	PSS	353	0.6	0.1	Open Cut
	54.5	02080208	wsup028f	PFO	89	0.1	0.1	Open Cut
	54.6	02080208	wsup029f	PFO	203	0.3	0.1	Open Cut
	54.6	02080208	nwi_va_n_006	PFO	32	0.1	<0.1	Open Cut
	54.6	02080208	wsur007f	PFO	60	0.1	<0.1	Open Cut
	54.7	02080208	wsur008f	PFO	0	<0.1	0.0	N/A
	54.9	02080208	wsuo047f	PFO	772	1.4	0.5	Open Cut
	55.1	02080208	wsuo046f	PFO	114	0.3	0.1	Open Cut
	55.2	02080208	wsuo046e	PEM	31	<0.1	0.0	Open Cut
	55.3	02080208	wsuo045f	PFO	272	0.5	0.2	Open Cut
	55.4	02080208	wsuo044f	PFO	54	0.1	<0.1	Open Cut
	56.1	02080208	wsup032f	PFO	1,000	1.6	0.7	Open Cut
	56.3	02080208	wsuo051s	PSS	0	0.0	0.0	N/A
	56.3	02080208	wsup033f	PFO	76	0.1	<0.1	Open Cut
	56.4	02080208	wsup034e	PEM	152	0.3	0.0	Open Cut
	56.7	02080208	wsup035f	PFO	80	0.1	0.1	Open Cut
	57.4	02080208	wsup038f	PFO	135	0.2	0.1	Open Cut
	57.5	02080208	wsuo032f	PFO	442	0.8	0.3	Open Cut
	57.9	02080208	wsuo033f	PFO	466	0.8	0.3	Open Cut
	59.3	02080208	wsuo034f	PFO	37	0.1	<0.1	Open Cut
	59.4	02080208	wsuo035f	PFO	145	0.2	0.1	Open Cut
	62.7	02080208	wsuo041f	PFO	25	0.1	<0.1	Open Cut
	63.0	02080208	wsuo042f	PFO	85	0.2	0.1	Open Cut
	63.6	02080208	wsup015f	PFO	50	0.1	0.1	HDD
	63.6	02080208	wsup015e	PEM	20	<0.1	0.0	HDD
	63.6	02080208	nwi_va_c_001	E2E	1,940	2.2	0.0	HDD

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	64.0	02080208	wsup018e	PEM	50	0.1	0.0	HDD
	64.2	02080208	nwi_va_h_006	E2E	0	0.0	0.0	N/A
	64.2	02080208	nwi_va_h_007	E2E	0	0.0	0.0	N/A
	64.3	02080208	wsup016e	PEM	37	<0.1	0.0	HDD
	64.3	02080208	nwi_va_c_002	E2E	297	0.3	0.0	HDD
	64.4	02080208	nwi_va_c_005	E2U	1,866	2.1	0.0	HDD
	64.8	02080208	wsuc112e	PEM	350	0.4	0.0	HDD
	65.6	02080208	wsuo050e	PEM	57	0.2	0.0	Open Cut
	65.8	02080208	wsuo049e	PEM	272	0.8	0.0	Open Cut
	65.8	02080208	wsuo049f	PFO	157	0.1	0.1	Open Cut
	66.1	02080208	wsuo043e	PEM	711	0.7	0.0	Open Cut
	66.2	02080208	wsuo043f	PFO	0	0.8	0.1	Open Cut
	66.3	02080208	wsuo018e	PEM	3,492	2.5	0.0	Open Cut
	66.3	02080208	wsuo018f	PFO	0	0.3	<0.1	Open Cut
	66.7	02080208	wsuo018s	PSS	0	3.0	0.0	Open Cut
	67.0	02080208	wsuo019e	PEM	2,177	1.8	0.0	Open Cut
	67.2	02080208	wsuo019s	PSS	1,074	3.8	0.3	Open Cut
	67.6	02080208	wsup020f	PFO	1,265	5.6	1.5	Open Cut
	67.6	02080208	wsup020e	PEM	3,895	3.3	0.0	Open Cut
	68.5	02080208	wsuo052f	PFO	2,114	1.7	1.0	Open Cut
	68.8	02080208	wsuo055f	PFO	0	0.8	0.0	N/A
	69.7	02080208	wsuo054f	PFO	712	6.8	1.1	Open Cut
	69.8	02080208	wsuo053f	PFO	0	0.3	0.1	Open Cut
	70.6	02080208	wsuo056s	PSS	1,498	2.6	0.3	Open Cut
	70.9	02080208	wsuo056f	PFO	1,224	2.1	0.8	Open Cut
	71.1	02080208	wsuo056e	PEM	52	0.1	0.0	Open Cut
	71.1	02080208	wsuo011f	PFO	406	0.7	0.3	Open Cut
	71.2	02080208	wsuc111f	PFO	0	0.0	0.0	N/A
	71.2	02080208	wsuo011e	PEM	22	<0.1	0.0	Open Cut
	71.3	03010205	wsus003f	PFO	45	0.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
City of Chesapeake								
	71.3	02080208	wchr004f	PFO	117	0.2	0.1	Open Cut
	71.8	02080208	wchr002f	PFO	16,879	27.3	11.5	Open Cut
	73.1	02080208	wchr002e	PEM	340	2.3	0.0	Open Cut
	75.1	02080208	wchc003s	PSS	0	0.0	0.0	N/A
	75.1	02080208	wchr001f	PFO	4,851	7.9	3.3	Open Cut
	76.0	02080208	nwi_va_i_008	PFO	233	0.4	0.2	Open Cut
	76.4	02080208	wcho001f	PFO	2,025	2.3	1.4	Open Cut
	76.9	02080208	wchc002f	PFO	180	0.2	0.1	Open Cut
	77.1	02080208	wchc001f	PFO	55	0.1	<0.1	Open Cut
	77.2	02080208	wcho024f	PFO	0	0.1	0.0	N/A
	77.3	02080208	wcho023f	PSS	0	0.1	0.0	N/A
	77.3	02080208	wcho002f	PFO	8	0.1	<0.1	Open Cut
	77.4	02080208	wcho004f	PFO	133	0.3	0.1	Open Cut
	77.9	02080208	wcho011e3	PEM	56	0.2	0.0	Open Cut
	78.0	02080208	wcho011f3	PFO	603	1.1	0.4	Open Cut
	78.2	02080208	wcho011f	PFO	838	1.2	0.6	Open Cut
	78.5	02080208	wcho011e	PEM	394	1.5	0.0	Open Cut
	79.1	02080208	wcho008e	PEM	5	<0.1	0.0	Open Cut
	79.5	02080208	wcho005e	PEM	0	<0.1	0.0	N/A
	79.9	02080208	wcho009e	PEM	72	0.1	0.0	Open Cut
	79.9	02080208	wcho009f	PFO	0	0.1	0.0	N/A
	80.4	02080208	wcho010e	PEM	1,596	1.7	0.0	Open Cut
	80.4	02080208	wchro001e	PEM	0	<0.1	0.0	Open Cut
	80.7	02080208	wcho010f	PFO	443	2.2	0.4	Open Cut
	80.8	02080208	wchro002e	PEM	488	1.1	0.0	Open Cut
	80.8	02080208	wchro002e	PEM	0	0.2	0.0	Open Cut
	80.9	02080208	wchro002f	PFO	314	0.4	0.1	Open Cut
	80.9	02080208	wchro002f	PFO	351	0.5	0.2	Open Cut
	81.0	02080208	wcho012e	PEM	6	<0.1	0.0	Open Cut
	81.4	02080208	wcho014f	PFO	0	1.1	<0.1	Open Cut

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	81.7	02080208	wcho016f	PFO	0	0.1	<0.1	Open Cut
	81.7	02080208	wcho017e	PEM	0	<0.1	0.0	N/A
	81.7	02080208	wcho016e	PEM	320	0.4	0.0	HDD
	82.4	02080208	wcho018e	PEM	215	0.2	0.0	Open Cut
	82.5	02080208	wcho018f	PFO	292	0.2	0.1	Open Cut
	82.7	02080208	wcha001f	PFO	0	0.0	0.0	N/A
AP-3 Total					**133,387**	**231.5**	**64.6**	
AP-4								
Virginia								
Brunswick County			None		**0**	**0.0**	**0.0**	
AP-4 Total								
AP-5								
Virginia								
Greensville County								
	0.1	03010204	WVA-RDK-002	PSS	0	<0.1	0.0	N/A
AP-5 Total					**0**	**<0.1**	**0.0**	
ACP PIPELINE FACILITIES TOTALS					**432,143**	**778.1**	**236.1**	
ABOVEGROUND FACILITIES								
Site 1 (launcher)								
West Virginia								
Harrison County								
	0.0	05020002	whab001e	PEM	N/A	0.1	0.1	N/A
	0.0	05020002	whab001s	PSS	N/A	<0.1	<0.1	N/A
Long Run M&R Station								
Randolph County								
	47.3	05020001	wrab102e	PEM	N/A	<0.1	<0.1	N/A
Compressor Station 2								
Virginia								
Buckingham County								
	191.5	02080203	wbub050f	PFO	N/A	0.5	0.0	N/A

TABLE L-1 (cont'd)

Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Construction Impacts (acres) [c]	Operation Impacts (acres) [d]	Construction Method [e, f]
	191.5	02080203	wbub050e	PEM	N/A	0.8	0.0	N/A
	191.9	02080203	wbub051s	PSS	N/A	1.3	0.0	N/A
Elizabeth River M&R Station								
Virginia								
City of Chesapeake								
	82.7	02080208	wcha001f	PFO	N/A	0.1	0.1	N/A
ABOVEGROUND FACILITIES TOTALS					**N/A**	**2.9**	**0.3**	
CONTRACTOR YARDS/PIPE YARDS								
			None		N/A	0.0	0.0	
CONTRACTOR YARDS/PIPE YARDS TOTAL					**N/A**	**0.0**	**0.0**	

[a] Wetland types according to Cowardin et al. (1979)

[b] The crossing length is the measure of the distance of the centerline through the wetland. It does not include feet crossed outside the centerline. A value of 0 indicates that the centerline does not cross the wetland.

[c] Temporary wetland impacts associated with the construction right-of-way (includes permanent impacts, temporary impacts, ATWS impacts, ground bed impacts and water impoundment impacts).

[d] Operational impacts are associated with scrub-shrub and forested wetlands. Operational requirements allow a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state, and for the removal of trees within 15 feet on either side of the pipeline. To determine conversion impacts on scrub-shrub wetlands, a 10-foot-wide corridor centered over the pipeline was assessed. A 30-foot-wide corridor centered over the pipeline was assessed for forested wetlands. Because the easement will be maintained in an herbaceous state, there will be no operational impacts on emergent wetlands.

[e] Pending the results of geotechnical investigations and final engineering, Atlantic is evaluating use of the HDD method to cross six waterbodies, a water impoundment area, three highways, and the Appalachian Trail/Blue Ridge Parkway. Use of the HDD method would avoid these features as well as adjacent wetlands and riparian areas. If successfully implemented, the HDD method would avoid impacts on the adjacent wetlands, including wetlands identified in this table.

[f] N/A = wetland occurs within workspace but is not crossed by the centerline, trenching thru the wetland is not expected.

[g] Located entirely or partially on NFS land.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

TABLE L-2								
Wetlands Crossed by the Supply Header Project								
Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impact (acres)	Crossing Method
PIPELINE FACILITIES								
TL-635								
West Virginia								
Harrison County	0.1	5020002	whag001e	PEM	N/A	0.3	0.0	N/A
	0.4	5020002	whag002e	PEM	N/A	0.2	0.0	N/A
Doddridge County	0.8	5030201	wdog001e	PEM	N/A	0.1	0.0	N/A
	1.3	5030201	wdog005e	PEM	94	0.2	0.0	Open Cut
	1.4	5030201	wdoh003e	PEM	N/A	<0.1	0.0	N/A
	2.9	5030201	wdog006f	PFO	23	<0.1	<0.1	Open Cut
	5.1	5030201	wdog008f	PFO	37	0.1	<0.1	Open Cut
	12.2	5030201	wdog010f	PFO	50	0.1	0.1	Open Cut
	15.1	5030201	wdog003e	PEM	N/A	<0.1	0.0	N/A
	20.7	5030201	wdog012s	PSS	65	0.1	0.1	Open Cut
Wetzel County								
	24.8	5030201	wwzg003f	PFO	61	0.1	0.1	Open Cut
	26.8	5030201	wwzg004f	PFO	129	0.2	0.1	Open Cut
	31.3	5030201	wwza001e	PEM	N/A	<0.1	0.0	N/A
TL-635 Totals					**459**	**1.4**	**0.4**	
TL-636								
Pennsylvania								
Westmoreland County	0.2	5020005	wwmh012f	PFO	33	0.1	<0.1	Open Cut
	0.6	5020005	wwmh001f	PFO	69	0.1	<0.1	Open Cut
	1.2	5020005	wwmh002e	PEM	85	0.2	0.0	Open Cut
	1.3	5020005	wwmh002e	PEM	51	0.1	0.0	Open Cut
	1.9	5020005	wwmh007e	PEM	199	0.3	0.0	Open Cut
	2.6	5020005	wwmh003f	PFO	N/A	0.1	<0.1	N/A
	2.9	5020005	wwmh008e	PEM	N/A	<0.1	0.0	N/A
	2.9	5020005	wwmh009e	PEM	N/A	<0.1	0.0	N/A
	2.9	5020005	wwmh010f	PFO	N/A	<0.1	<0.1	Open Cut
	3.1	5020005	wwmh010f	PFO	N/A	<0.1	<0.1	Open Cut
	3.2	5020005	wwmh010f	PFO	55	0.1	<0.1	Open Cut
	3.6	5020005	wwmh011f	PFO	42	0.1	<0.1	Open Cut

TABLE L-2 (cont'd)

Wetlands Crossed by the Supply Header Project

Facility/State or Commonwealth/ County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impact (acres)	Crossing Method
	3.8	5020005	wwmh006e	PEM	11	<0.1	0.0	Open Cut
TL-636 Totals					**544**	**1.0**	**0.1**	
SUPPLY HEADER PIPELINE TOTALS					**1,003**	**2.4**	**0.5**	
ABOVEGROUND FACILITIES								
JB Tonkin								
Pennsylvania								
Westmoreland	3.8	5020005	wwmh005e	PEM	N/A	<0.1	<0.1	N/A
ABOVEGROUND FACILITIES TOTAL						**<0.1**	**<0.1**	
ACCESS ROADS								
TL-635								
West Virginia								
Doddridge	4.0	5030201	wdoa002e	PEM	13	<0.1	<0.1	
	14.1	5030201	wdoh006f	PFO	71	<0.1	<0.1	
	18.5	5030201	wdoa100e	PEM	39	<0.1	<0.1	
	24.8	5030201	wwzg003f	PFO	95	<0.1	<0.1	
	25.4	5030201	wwzh021e	PEM	172	<0.1	<0.1	
	25.4	5030201	wwzh022e	PEM	74	<0.1	<0.1	
	26.2	5030201	wwzh020e	PEM	102	<0.1	<0.1	
ACCESS ROADS TOTALS						**0.4**	**0.4**	
GROUND BEDS AND WATER IMPOUNDMENTS								
TL-635								
West Virginia								
Doddridge	17.8	5030201	wdoh004e	PEM	NA	<0.1	0.0	
	18.5	5030201	wdoa100e	PEM	NA	<0.1	0.0	

[a] Wetland types according to Cowardin et al. (1979):
PFO = palustrine forested
PSS = palustrine scrub-shrub
PEM = palustrine emergent
PUB = palustrine unconsolidated bottom
E = estuarine

[b] The crossing length is the measure of the distance of the centerline through the wetland. N/A For crossing width indicates that the centerline does not cross the wetland.

TABLE L-3

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
AP-1							
West Virginia							
Lewis County							
	2.4	05020002	wleb109e	PEM	164	0.1	0.0
	2.4	05020002	wleb110e	PEM	0	<0.1	0.0
	3.0	05020002	wleb111e	PEM	282	0.1	0.1
	6.8	05020002	wleb105e	PEM	13	<0.1	0.0
	11.8	05020002	wlea007e	PEM	0	<0.1	<0.1
	12.7	05020002	wlea088e	PEM	0	<0.1	<0.1
	13.6	05020002	wlec001e	PEM	0	<0.1	<0.1
	14.5	05020002	wlea079e	PEM	3	<0.1	<0.1
	14.5	05020002	wlea080e	PEM	0	<0.1	<0.1
	14.7	05020002	wlea081e	PEM	28	<0.1	<0.1
	14.7	05020002	wlea082e	PEM	0	<0.1	<0.1
	14.7	05020002	wlea083e	PEM	0	<0.1	<0.1
	14.8	05020002	wlea084e	PEM	0	<0.1	0.0
	14.8	05020002	wlea085e	PEM	198	0.1	<0.1
	14.8	05020002	wlea087e	PEM	0	<0.1	<0.1
	15.3	05020002	wlea086e	PEM	72	<0.1	<0.1
	15.3	05020002	wleb107e	PEM	0	<0.1	<0.1
	15.5	05020002	wlea076e	PEM	0	<0.1	<0.1
	16.5	05020002	wlea077e	PEM	287	0.2	0.2
	17.0	05020002	wlee001e	PEM	29	<0.1	<0.1
	17.3	05020002	wlea075e	PEM	0	<0.1	<0.1
	19.0	05020002	wlec005e	PEM	38	<0.1	<0.1
	19.9	05020002	nwi_wv_h_001	PUB	96	0.1	0.1
	20.2	05020002	wlec006e	PEM	127	0.1	0.1
Upshur County							
	24.0	05020001	wupb101e	PEM	0	<0.1	0.0
	24.0	05020001	wupa001e	PEM	46	<0.1	0.0

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	26.8	05020002	wupc001e	PEM	0	<0.1	<0.1
	29.3	05020001	wupb007e	PEM	42	<0.1	<0.1
	31.2	05020001	wupe002e	PEM	0	<0.1	<0.1
	31.3	05020001	wupe003e	PEM	19	<0.1	<0.1
	36.1	05020001	wupb009f	PFO	68	<0.1	<0.1
	37.0	05020001	wupa050e	PEM	89	0.1	0.0
	37.8	05020001	wupb050e	PEM	17	<0.1	<0.1
	41.9	05020001	wupb103e	PEM	87	<0.1	<0.1
Randolph County							
	47.1	05020001	wraa059f	PFO	67	<0.1	<0.1
	47.3	05020001	wrab102e	PEM	0	<0.1	<0.1
	50.3	05020001	wraa450f	PFO	63	<0.1	<0.1
	50.5	05020001	wraa449e	PEM	0	<0.1	<0.1
	50.9	05020001	wrae250e	PEM	0	<0.1	<0.1
	50.9	05020001	wraa404e	PEM	410	0.2	0.2
	51.4	05020001	wraa431s	PSS	0	<0.1	<0.1
	51.5	05020001	wrae251e	PEM	33	<0.1	<0.1
	51.8	05020001	wraa432s	PSS	0	<0.1	<0.1
	51.9	05020001	wrae284e	PEM	0	<0.1	<0.1
	52.2	05020001	wraa434s	PSS	19	<0.1	<0.1
	52.2	05020001	wraa423s	PSS	132	0.1	0.1
	52.2	05020001	wraa423e	PEM	56	<0.1	<0.1
	52.3	05020001	wraa435e	PEM	114	0.1	0.1
	53.0	05020001	wrae285e	PEM	27	<0.1	<0.1
	53.1	05020001	wrae286e	PEM	21	<0.1	<0.1
	53.3	05020001	wraa436e	PEM	0	<0.1	<0.1
	53.7	05020001	wrae288e	PEM	27	<0.1	<0.1
	54.2	05020001	wrac113e	PEM	0	<0.1	<0.1
	54.3	05020001	wrac110e	PEM	0	<0.1	<0.1
	54.3	05020001	wrac112e	PEM	0	<0.1	<0.1
	55.1	05020001	wrac114e	PEM	0	<0.1	<0.1

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	56.2	05050007	wrae282e	PEM	0	<0.1	<0.1
	56.2	05050007	wrae282s	PSS	0	<0.1	<0.1
	56.7	05050007	wrae281e	PEM	0	<0.1	<0.1
	57.3	05050007	wrae280e	PEM	0	<0.1	<0.1
	57.3	05050007	wrac108e	PEM	0	<0.1	<0.1
	57.3	05050007	wrae201e	PEM	8	<0.1	<0.1
	57.4	05050007	wrae202e	PEM	111	<0.1	<0.1
	57.4	05050007	wrae203e	PEM	29	<0.1	<0.1
	57.7	05050007	wrae232e	PEM	0	<0.1	<0.1
	57.7	05050007	wrae233e	PEM	123	0.1	0.1
	57.7	05050007	wrae241e	PEM	0	<0.1	<0.1
	57.7	05050007	wrae230e	PEM	3	<0.1	<0.1
	57.7	05050007	wrae231e	PEM	33	<0.1	<0.1
	57.8	05050007	wrae273e	PEM	363	0.1	0.1
	57.8	05050007	wrae274e	PEM	142	0.1	0.1
	57.8	05050007	wrae271e	PEM	56	<0.1	<0.1
	57.8	05050007	wrae272e	PEM	132	0.1	0.1
	57.8	05050007	wrae270e	PEM	164	0.1	0.1
	57.8	05050007	wrae269e	PEM	40	<0.1	<0.1
	58.0	05050007	wrae268e	PEM	25	<0.1	<0.1
	58.3	05050007	wrae235e	PEM	1792	1.3	0.0
	58.4	05050007	wrae256s	PSS	73	0.1	0.1
	58.5	05050007	wrae253s	PSS	0	<0.1	<0.1
	58.7	05050007	wrae257s	PSS	124	0.1	0.1
	58.7	05050007	wrae257s	PSS	0	<0.1	<0.1
	58.8	05050007	wrae258e	PEM	0	<0.1	<0.1
	59.1	05050007	wrae259e	PEM	0	<0.1	<0.1
	59.2	05050007	wrae260e	PEM	168	0.1	0.1
	59.7	05050007	wrae254e	PEM	0	<0.1	<0.1
	59.9	05050007	wrac106e	PEM	0	<0.1	<0.1
	63.0	05020001	wrae289e	PEM	103	0.1	0.1

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	63.0	05020001	wrae214e	PEM	36	<0.1	<0.1
	63.1	05050007	wrac115e	PEM	0	<0.1	<0.1
	63.3	05020001	wrae212e	PEM	0	<0.1	<0.1
	64.0	05050007	wrae242e	PEM	0	<0.1	<0.1
	64.2	05050007	wrae243e	PEM	427	0.2	0.2
Pocahontas County							
	67.0	05050007	wpoe213e	PEM	62	<0.1	<0.1
	71.7 [c]	05050003	wpoa404e	PEM	37	<0.1	<0.1
	71.9 [c]	05050007	wpoa413e	PEM	0	<0.1	<0.1
	71.9 [c]	05050007	wpoa414e	PEM	0	<0.1	<0.1
	71.9 [c]	05050007	wpoa410e	PEM	0	<0.1	<0.1
	71.9 [c]	05050007	wpoa411e	PEM	0	<0.1	<0.1
	71.9 [c]	05050007	wpoa415e	PEM	0	<0.1	<0.1
	71.9 [c]	05050007	wpoa416e	PEM	0	<0.1	<0.1
	72.0 [c]	05050007	wpoa418e	PEM	0	<0.1	<0.1
	75.2	05050003	wpoe216e	PEM	0	<0.1	<0.1
	75.2	05050003	wpoe217e	PEM	0	<0.1	<0.1
Virginia							
Highland County							
	85.4	02080201	whia410e	PEM	0	<0.1	<0.1
	85.4 [c]	02080201	whia406f	PFO	33	<0.1	<0.1
	86.9	02080201	whiy001e	PEM	15	<0.1	<0.1
	87.7	02080201	whia411e	PEM	105	0.1	0.1
	91.6	02080201	whix005f	PFO	0	<0.1	<0.1
Bath County							
	91.8	02080201	wbax001s	PSS	0	<0.1	<0.1
	95.5	02080201	wbaa010s	PSS	295	0.2	0.2
	95.6	02080201	wbax003s	PSS	32	<0.1	<0.1
	99.3	02080201	wbaa005f	PFO	34	<0.1	<0.1
	99.4	02080201	wbaz009e	PEM	0	<0.1	<0.1
	99.4	02080201	wbaz005e	PEM	0	<0.1	<0.1

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	99.4	02080201	wbaz008e	PEM	55	<0.1	<0.1
	104.0	02080202	wbar002f	PFO	0	<0.1	<0.1
	104.0	02080202	wbaz001e	PEM	152	0.2	0.2
	104.0	02080202	wbaz004e	PEM	0	<0.1	<0.1
	104.0	02080202	wbaz003e	PEM	0	<0.1	<0.1
	104.0	02080202	wbaz002e	PEM	0	<0.1	<0.1
Augusta County							
	107.2	02080202	wauz013s	PSS	0	<0.1	<0.1
	111.3	02080202	wauy004e	PEM	0	<0.1	<0.1
	112.3	02080202	wauz009e	PEM	0	<0.1	<0.1
	113.0	02080202	wauz012e	PEM	0	<0.1	<0.1
	114.0	02080202	wauz011e	PEM	10	<0.1	<0.1
	114.0	02080202	wauz010e	PEM	0	<0.1	<0.1
	124.0	02070005	waub107e	PEM	0	<0.1	<0.1
	141.0	02070005	waub106e	PEM	0	<0.1	<0.1
	157.0	02070005	waue002e	PEM	0	<0.1	<0.1
Nelson County							
	171.3	02080203	wnez003s	PSS	40	<0.1	<0.1
	184.6	02080203	wnea021e	PEM	0	<0.1	0.0
	184.6	02080203	wnec052e	PEM	0	<0.1	0.0
Buckingham County							
	184.8	02080203	wbuc109f	PFO	175	0.1	0.1
	184.8	02080203	wbua009f	PFO	39	<0.1	<0.1
	184.8	02080203	wbup006e	PEM	0	<0.1	<0.1
	184.9	02080203	wbua008e	PEM	20	<0.1	<0.1
	185.3	02080203	wbua007e	PEM	101	0.1	0.1
	185.4	02080203	wbua006e	PEM	0	<0.1	<0.1
	189.1	02080203	wbuc007s	PSS	22	<0.1	<0.1
	190.0	02080203	wbuc106s	PSS	0	<0.1	<0.1
	211.4	02080205	wbua003e	PEM	17	<0.1	<0.1
Cumberland County							

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	218.9	02080207	wcua002f	PFO	32	<0.1	0.0
Brunswick County							
	260.7	03010201	nwi_va_a_044	PFO	121	0.1	0.1
	260.7	03010201	wbrc003f	PFO	44	<0.1	<0.1
	281.5	03010204	nwi_va_063	PFO	166	0.1	0.1
	281.5	03010204	nwi_va_062	PFO	198	0.1	0.1
	282.4	03010204	wbra026f	PFO	0	<0.1	<0.1
Greensville County							
	283.9	03010201	WVA-RDK-006	PEM	0	<0.1	<0.1
	283.9	03010201	WVA-RDK-006	PFO	0	<0.1	<0.1
	284.5	03010204	WVA-RDK-001	PSS	278	0.2	0.0
	286.6	03010204	wgrc001f	PFO	100	0.1	0.1
	298.4	03010204	wgro006e	PEM	0	<0.1	<0.1
	298.6	03010204	wgro005f	PFO	270	0.2	0.2
AP-1 Total					**9,076**	**6.4**	**4.6**
AP-2							
North Carolina							
Halifax County							
	19.6	03020102	whlg020f	PFO	0	0.1	0.1
	24.6	03020102	whlg016f	PFO	0	<0.1	<0.1
	24.6	03020102	whlh035e	PEM	208	0.1	0.1
	29.0	03020102	whlg021e	PEM	0	<0.1	0.0
	33.5	03020102	whlh034f	PFO	170	0.1	0.1
Nash County							
	53.1	03020101	wnag011f	PFO	0	<0.1	<0.1
	54.3	03020101	wnah027f	PFO	0	0.1	0.1
	61.2	03020203	wnao009f	PFO	0	<0.1	<0.1
	61.3	03020203	wnap006f	PFO	0	<0.1	<0.1
Johnston County							
	97.1	03020201	wjoo031f	PFO	415	0.2	<0.1
	97.4	03020201	wjoo030f	PFO	27	<0.1	<0.1

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
	97.6	03020201	wjoo034f	PFO	161	0.1	0.1
	97.8	03020201	wjoo035f	PFO	0	<0.1	<0.1
	97.8	03020201	wjop036f	PFO	219	0.5	0.0
	97.8	03020201	wjop036f	PFO	30	0.3	0.0
	98.2	03020201	wjop035f	PFO	0	<0.1	0.0
	98.3	03020201	wjop034f	PFO	162	0.5	0.0
	98.4	03020201	wjop032f	PFO	0	0.1	0.0
	98.4	03020201	wjop032e	PEM	361	0.1	0.0
	98.4	03020201	wjob112f	PFO	280	0.2	0.0
	98.5	03020201	wjob112f	PFO	80	0.1	0.0
	106.3	03020201	wjob104f	PFO	0	<0.1	<0.1
	106.3	03020201	wjob103s	PSS	0	<0.1	<0.1
Cumberland County							
	122.7	03030006	wcmo011s	PSS	14	<0.1	<0.1
	123.0	03030006	wcmo015s	PSS	964	0.3	0.3
	123.1	03030006	wcmo015e	PEM	88	<0.1	<0.1
	126.8	03030004	wcmp008f	PFO	0	<0.1	<0.1
	126.8	03030004	wcmp009f	PFO	0	<0.1	<0.1
	136.1	03030006	nwi_nc_l_003	PFO	265	0.2	0.2
	136.7	03030006	nwi_nc_l_002	PFO	0	<0.1	0.0
	136.9	03030006	wcmq001f	PFO	0	<0.1	0.0
	137.2	03030006	nwi_nc_l_001	PFO	1853	1.3	0.0
	143.9	03030006	wcmr006e	PEM	0	<0.1	<0.1
Robeson County							
	182.3	03040203	wroh022f	PFO	0	<0.1	<0.1
AP-2 Total					**5,294**	**4.6**	**1.3**
AP-3							
North Carolina							
Northampton County							
	0.3	03010204	wnrh014e	PEM	0	<0.1	0.0
	7.2	03010204	wnrr007f	PFO	9	<0.1	<0.1

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
Virginia							
Southampton County							
	14.4	03010204	wsop006f	PFO	150	0.1	0.0
	14.8	03010204	nwi_va_a_035	PFO	1072	0.7	0.0
	14.9	03010204	wsop005f	PFO	0	<0.1	0.0
	24.8	03010201	nwi_va_m_001	PFO	0	<0.1	<0.1
	29.5	03010201	wsol018f	PFO	68	0.1	0.0
	31.6	03010201	nwi_va_108	PFO	111	0.1	0.1
	31.8	03010201	wsoa020f	PFO	0	<0.1	<0.1
	31.9	03010201	nwi_va_111	PFO	49	<0.1	<0.1
	32.4	03010201	wsoa019s	PSS	172	0.1	0.0
	32.5	03010201	wsol028s	PSS	0	<0.1	<0.1
	32.5	03010201	wsol027f	PFO	0	<0.1	<0.1
	33.0	03010201	wsol022f	PFO	0	<0.1	<0.1
City of Suffolk							
	39.1	03010202	wsuc010s	PSS	0	<0.1	<0.1
	39.1	03010202	wsua007s	PSS	0	0.1	0.1
	53.0	02080208	wsup022s	PSS	1172	0.8	0.0
	53.3	02080208	nwi_va_h_005	PSS	261	0.2	0.0
	56.3	02080208	wsuo051s	PSS	0	<0.1	<0.1
	64.2	02080208	nwi_va_h_006	E2E	181	0.1	0.1
	64.2	02080208	nwi_va_h_007	E2E	410	0.3	0.3
	66.3	02080208	wsuo018f	PFO	651	0.5	0.0
	71.2	02080208	wsuc111f	PFO	0	<0.1	<0.1
City of Chesapeake							
	71.8	02080208	wchr002f	PFO	131	0.2	0.1
	75.1	02080208	wchc003s	PSS	0	<0.1	<0.1
	75.1	02080208	wchr001f	PFO	0	<0.1	<0.1
AP-3 Total					**4,437**	**3.4**	**0.8**
AP-4							
Virginia							

TABLE L-3 (cont'd)

Wetlands Crossed by Access Roads for the Atlantic Coast Pipeline

Facility/State or Commonwealth/County or City	Approximate Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet) [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
Brunswick County			None		0	0	0
AP-4 Total					**0**	**0**	**0**
AP-5							
Virginia							
Greensville County			None		0	0	0
AP-5 Total					**0**	**0**	**0**
ACCESS ROAD TOTALS					**18,807**	**14.4**	**6.6**

[a] Wetland types according to Cowardin et al. (1979)
[b] The crossing length is the measure of the distance of the centerline through the wetland. A value of 0 indicates that the centerline does not cross the wetland.
[c] Located entirely or partially on NFS land.

APPENDIX M

ROADS, RAILROADS, AND TRAILS CROSSED BY THE ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

TABLE M-1

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
ATLANTIC COAST PIPELINE					
AP-1					
West Virginia	Harrison County	County or local road	County Hwy 35/3	1.1	Bore
West Virginia	Lewis County	County or local road	County Hwy 2	1.4	Bore
West Virginia	Lewis County	County or local road	County Hwy 4/3	3.9	Bore
West Virginia	Lewis County	County or local road		4.1	Bore
West Virginia	Lewis County	County or local road	County Hwy 10/10	4.1	Bore
West Virginia	Lewis County	County or local road	County Hwy 10/11	5.0	Bore
West Virginia	Lewis County	County or local road	County Hwy 10/12	5.7	Bore
West Virginia	Lewis County	County or local road	Hollick Run Rd	7.8	Bore
West Virginia	Lewis County	County or local road	County Hwy 1	8.1	Bore
West Virginia	Lewis County	County or local road	Elk City Rd	8.4	Bore
West Virginia	Lewis County	County or local road	Broad Run Rd	9.4	Bore
West Virginia	Lewis County	County or local road	County Hwy 8/3	9.6	Bore
West Virginia	Lewis County	Railroad	Baltimore and Ohio Railroad	11.7	Bore
West Virginia	Lewis County	County or local road	Sycamore Rd	11.8	Bore
West Virginia	Lewis County	County or local road		12.2	Bore
West Virginia	Lewis County	U.S. or State Hwy	US Hwy 19	12.7	Bore
West Virginia	Lewis County	County or local road	4WD Road	13.7	Bore
West Virginia	Lewis County	U.S. or State Hwy	I 79	14.1	HDD
West Virginia	Lewis County	County or local road	Lifes Run Rd	14.3	Bore
West Virginia	Lewis County	County or local road	County Hwy 7/4	15.5	Bore
West Virginia	Lewis County	County or local road	County Hwy 13	17.2	Bore
West Virginia	Lewis County	County or local road	Laurel Lick Rd	18.1	Bore
West Virginia	Lewis County	County or local road		19.9	Bore
West Virginia	Lewis County	County or local road	County Hwy 32/2	20.4	Bore
West Virginia	Lewis County	County or local road	County Hwy 32	20.6	Bore
West Virginia	Lewis County	County or local road		20.7	Bore
West Virginia	Upshur County	County or local road	County Hwy 12	23.2	Bore
West Virginia	Upshur County	U.S. or State Hwy	US Hwy 119/33	23.2	Bore
West Virginia	Upshur County	County or local road	Fink Run Rd	24.0	Bore
West Virginia	Upshur County	County or local road	County Hwy 7/4	24.7	Bore
West Virginia	Upshur County	County or local road	County Route 7	25.8	Bore
West Virginia	Upshur County	County or local road	County Hwy 14	27.1	Bore
West Virginia	Upshur County	U.S. or State Hwy	State Hwy 4	29.1	Bore
West Virginia	Upshur County	County or local road	Sago Rd	29.3	Bore
West Virginia	Upshur County	County or local road	County Hwy 20/9	30.5	Bore
West Virginia	Upshur County	Railroad	Baltimore and Ohio Railroad	31.1	Bore
West Virginia	Upshur County	County or local road	Sago Rd	31.6	Bore
West Virginia	Upshur County	Railroad	Baltimore and Ohio Railroad	31.6	Bore
West Virginia	Upshur County	County or local road	County Hwy 22	31.7	Bore
West Virginia	Upshur County	County or local road	County Hwy 22	33.8	Bore
West Virginia	Upshur County	County or local road	County Hwy 22/3	34.4	Bore
West Virginia	Upshur County	County or local road		34.4	Bore
West Virginia	Upshur County	County or local road	Driveway	36.7	Bore
West Virginia	Upshur County	County or local road	County Hwy 24	36.8	Bore
West Virginia	Upshur County	County or local road	County Hwy 9/8	37.7	Bore
West Virginia	Upshur County	County or local road		38.7	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
West Virginia	Upshur County	County or local road	County Hwy 30/18	40.6	Bore
West Virginia	Upshur County	County or local road	County Hwy 30	41.3	Bore
West Virginia	Upshur County	County or local road	County Hwy 9	41.3	Bore
West Virginia	Upshur County	County or local road	County Hwy 9/23	43.8	Bore
West Virginia	Randolph County	County or local road	County Hwy 34	45.3	Bore
West Virginia	Randolph County	County or local road	County Hwy 42/1	48.4	Bore
West Virginia	Randolph County	County or local road	County Hwy 42	48.4	Bore
West Virginia	Randolph County	County or local road	County Hwy 46/2	49.0	Bore
West Virginia	Randolph County	County or local road	County Hwy 46/2	49.1	Bore
West Virginia	Randolph County	County or local road	County Hwy 46/2	49.7	Bore
West Virginia	Randolph County	County or local road	County Hwy 46	50.6	Bore
West Virginia	Randolph County	County or local road	County Hwy 45	56.2	Bore
West Virginia	Randolph County	U.S. or State Hwy	State Hwy 15	59.5	Bore
West Virginia	Randolph County	County or local road		59.5	Bore
West Virginia	Randolph County	County or local road	County Hwy 49	60.7	Bore
West Virginia	Randolph County	County or local road	County Rte 219/14	65.4	Bore
West Virginia	Randolph County	County or local road	County Hwy 51/1	66.6	Bore
West Virginia	Pocahontas County	County or local road	County Rte	67.5	Bore
West Virginia	Pocahontas County	Railroad	Western Maryland Railway	68.6	Bore
West Virginia	Pocahontas County	U.S. or State Hwy	US Hwy 219	69.1	Bore
West Virginia	Pocahontas County	County or local road	4WD Road	70.7	Bore
West Virginia	Pocahontas County	County or local road	Driveway	72.8	Bore
West Virginia	Pocahontas County	County or local road	Beverage Rd	74.6	Bore
West Virginia	Pocahontas County	County or local road	County Hwy 9/2	75.3	Bore
West Virginia	Pocahontas County	County or local road		75.6	Bore
West Virginia	Pocahontas County	County or local road	County Hwy 15	75.9	Bore
West Virginia	Pocahontas County	County or local road	County Hwy 1	76.5	Bore
West Virginia	Pocahontas County	Railroad	C and O Railroad	76.6	Bore
West Virginia	Pocahontas County	County or local road	County Hwy 1/4	76.6	Bore
West Virginia	Pocahontas County	U.S. or State Hwy	State Hwy 28	79.2	Bore
West Virginia	Pocahontas County	U.S. or State Hwy	State Hwy 92	81.1	Bore
West Virginia	Pocahontas County	Forest Service road	FS Road 1014	83.2	Bore
West Virginia	Pocahontas County	Forest Service road	FS Road 1017	83.3	Bore
West Virginia	Pocahontas County	Forest Service road	FS Road 55	83.7	Bore
West Virginia	Pocahontas County	Forest Service road	FS Road 55	83.8	Bore
West Virginia	Pocahontas County	Forest Service road	FS Road 55	83.8	Bore
Virginia	Highland County	U.S. or State Hwy	State Hwy 84	87.2	Bore
Virginia	Highland County	U.S. or State Hwy	State Hwy 604	88.5	Bore
Virginia	Highland County	County or local road	Bratton McGuffin Trl	89.2	Bore
Virginia	Highland County	County or local road		89.7	Bore
Virginia	Highland County	County or local road		91.2	Bore
Virginia	Highland County	U.S. or State Hwy	US Hwy 220	91.3	Bore
Virginia	Bath County	County or local road		92.1	Bore
Virginia	Bath County	County or local road		92.1	Bore
Virginia	Bath County	County or local road		92.2	Bore
Virginia	Bath County	U.S. or State Hwy	State Hwy 694	93.0	Bore
Virginia	Bath County	County or local road		93.7	Bore
Virginia	Bath County	U.S. or State Hwy	State Hwy 614	94.7	Bore
Virginia	Bath County	U.S. or State Hwy	State Hwy 609	95.3	Bore
Virginia [b]	Bath County	Forest Service trail	Fort Lewis Trail	96.5	Conventional

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
			(Decommissioned)		
Virginia	Bath County	U.S. or State Hwy	State Hwy 678	97.7	Bore
Virginia [b]	Bath County	Forest Service road	Shenandoah Mt. Trail (FS Trail 447)	98.7	Bore
Virginia [b]	Bath County	Forest Service trail	Great Eastern Trail (Planned)	99.5	Conventional
Virginia	Bath County	U.S. or State Hwy	State Hwy 627	100.8	Bore
Virginia	Bath County	U.S. or State Hwy	State Hwy 629	101.4	Bore
Virginia	Bath County	County or local road	Driveway	102.7	Bore
Virginia	Bath County	County or local road	Route 640	103.1	Bore
Virginia	Bath County	U.S. or State Hwy	State Hwy 641	105.5	Bore
Virginia [b]	Bath County	Forest Service trail	Brushy Ridge Trail (FS Trail 718)	105.9	Conventional
Virginia	Augusta County	U.S. or State Hwy	Deerfield Valley Rd	108.3	Bore
Virginia	Augusta County	County or local road		108.5	Bore
Virginia	Augusta County	County or local road		108.6	Bore
Virginia	Augusta County	County or local road		108.8	Bore
Virginia	Augusta County	County or local road		109.5	Bore
Virginia	Augusta County	U.S. or State Hwy	Deerfield Valley Rd	110.0	Bore
Virginia	Augusta County	County or local road	Hug Hart Fort Ln	110.6	Bore
Virginia	Augusta County	County or local road		111.3	Bore
Virginia	Augusta County	County or local road		111.7	Bore
Virginia	Augusta County	County or local road	Pauley Mill Rd	111.9	Bore
Virginia	Augusta County	U.S. or State Hwy	Deerfield Valley Rd	112.5	Bore
Virginia	Augusta County	County or local road	Hodges Draft Ln	112.7	Bore
Virginia	Augusta County	County or local road	Clay Hill CH Ln	113.1	Bore
Virginia	Augusta County	County or local road	Methodist Church Ln	113.4	Bore
Virginia	Augusta County	County or local road	W Augusta Rd	113.6	Bore
Virginia	Augusta County	U.S. or State Hwy	U.S Highway 250	115.2	Bore
Virginia	Augusta County	County or local road		115.5	Bore
Virginia	Augusta County	County or local road		115.8	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 348.1	116.5	Bore
Virginia [b]	Augusta County	Forest Service road	Braley Pond Rd/FS Road 715	116.7	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 449	117.0	Bore
Virginia [b]	Augusta County	Forest Service trail	Dowells Draft Trail (FS Trail 650)	117.1	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 449A	118.7	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 449B	118.8	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 449B	119.1	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 466A	120.2	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 466/White Oak Draft Trail (FS Trail 486)	120.4	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 728	121.0	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 1755	121.2	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 1755	121.4	Bore
Virginia [b]	Augusta County	Forest Service road	FS Road 1757	121.8	Bore
Virginia	Augusta County	County or local road	Jennings Gap Rd	124.5	Bore
Virginia	Augusta County	County or local road	Dryden Rd	124.9	Bore
Virginia	Augusta County	County or local road		125.0	Bore
Virginia	Augusta County	U.S. or State Hwy	State Hwy 42	125.9	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	Augusta County	County or local road		126.5	Bore
Virginia	Augusta County	County or local road	Private Dr	126.9	Bore
Virginia	Augusta County	County or local road	Hotchkiss Rd	127.4	Bore
Virginia	Augusta County	U.S. or State Hwy	Churchville Ave	129.3	Bore
Virginia	Augusta County	County or local road	Vinegar Hill Rd	129.7	Bore
Virginia	Augusta County	County or local road		129.7	Bore
Virginia	Augusta County	County or local road	Eagle Rock Ln	130.5	Bore
Virginia	Augusta County	County or local road	Driveway	130.8	Bore
Virginia	Augusta County	County or local road		130.8	Bore
Virginia	Augusta County	County or local road	Driveway	130.9	Bore
Virginia	Augusta County	County or local road	Morris Mill Rd	131.6	Bore
Virginia	Augusta County	County or local road		133.5	Bore
Virginia	Augusta County	County or local road	Driveway	133.5	Bore
Virginia	Augusta County	U.S. or State Hwy	Parkersburg Tpke	134.2	Bore
Virginia	Augusta County	County or local road	Miss Phillips Rd	134.5	Bore
Virginia	Augusta County	Railroad	C and O Railroad	135.1	Bore
Virginia	Augusta County	County or local road	Hebron Rd	135.1	Bore
Virginia	Augusta County	U.S. or State Hwy	Middlebrook Rd	137.1	Bore
Virginia	Augusta County	County or local road	Stingy Hollow Rd	137.5	Bore
Virginia	Augusta County	County or local road	Old Greenville Rd	139.1	Bore
Virginia	Augusta County	U.S. or State Hwy	Lee Jackson Hwy	140.0	Bore
Virginia	Augusta County	County or local road	Folly Mills Station Rd	140.3	Bore
Virginia	Augusta County	County or local road	Folly Mills Station Rd	140.6	Bore
Virginia	Augusta County	U.S. or State Hwy	I 64	140.8	Bore
Virginia	Augusta County	County or local road	Guthrie Rd	143.0	Bore
Virginia	Augusta County	County or local road		143.1	Bore
Virginia	Augusta County	County or local road	Tinkling Spring Rd	144.1	Bore
Virginia	Augusta County	U.S. or State Hwy	Stuarts Draft Hwy	145.3	Bore
Virginia	Augusta County	County or local road		146.6	Bore
Virginia	Augusta County	County or local road	Wayne Ave	147.3	Bore
Virginia	Augusta County	Railroad	Norfolk and Western Railroad	147.6	Bore
Virginia	Augusta County	County or local road	Cisco Ln	148.1	Bore
Virginia	Augusta County	County or local road	Patton Farm Rd	148.8	Bore
Virginia	Augusta County	County or local road	Lyndhurst Rd	149.4	Bore
Virginia	Augusta County	County or local road	Schages Ln	149.4	Bore
Virginia	Augusta County	County or local road		152.0	Bore
Virginia	Augusta County	U.S. or State Hwy	Howardsville Tpke	152.2	Bore
Virginia	Augusta County	County or local road	Clear Meadows Ln	152.3	Bore
Virginia	Augusta County	County or local road	Mt Torrey Rd	153.4	Bore
Virginia	Augusta County	County or local road		154.5	Bore
Virginia	Augusta County	County or local road	Bear Path Ln	155.3	Bore
Virginia	Augusta County	County or local road	Hibernia Cir	156.6	Bore
Virginia [b]	Augusta County	Trail	Appalachian National Scenic Trail (FS Trail 1)	158.1	HDD
Virginia	Augusta County	County or local road	Blue Ridge Pkwy	158.2	HDD
Virginia	Nelson County	County or local road	Beech Grove Rd	158.6	HDD
Virginia	Nelson County	County or local road		158.8	Bore
Virginia	Nelson County	U.S. or State Hwy	Beech Grove Rd	158.9	Bore
Virginia	Nelson County	County or local road		162.5	Bore
Virginia	Nelson County	County or local road		162.8	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	Nelson County	U.S. or State Hwy	State Hwy 151	163.1	Bore
Virginia	Nelson County	County or local road	Glenthorne Loop	163.3	Bore
Virginia	Nelson County	County or local road		165.7	Bore
Virginia	Nelson County	County or local road	Gullysville Ln	166.2	Bore
Virginia	Nelson County	County or local road	Grape Lawn Dr	168.8	Bore
Virginia	Nelson County	County or local road	Thomas Nelson Hwy	169.0	Bore
Virginia	Nelson County	U.S. or State Hwy	Thomas Nelson Hwy	169.0	Bore
Virginia	Nelson County	County or local road	Old Ridge Rd	169.5	Bore
Virginia	Nelson County	County or local road	Stagebridge Rd	170.4	Bore
Virginia	Nelson County	County or local road	Wheelers Cove Rd	171.0	Bore
Virginia	Nelson County	Railroad	Southern Railroad	175.4	Bore
Virginia	Nelson County	County or local road	Laurel Rd	176.2	Bore
Virginia	Nelson County	County or local road		176.3	Bore
Virginia	Nelson County	County or local road		178.5	Bore
Virginia	Nelson County	County or local road	Glade Rd	179.9	Bore
Virginia	Nelson County	County or local road		181.0	Bore
Virginia	Nelson County	U.S. or State Hwy	State Hwy 646	181.1	Bore
Virginia	Nelson County	County or local road	Dillard Ln	183.1	Bore
Virginia	Nelson County	U.S. or State Hwy	State Hwy 626	183.3	Bore
Virginia	Nelson County	County or local road	Midway Mills Ln	184.5	HDD
Virginia	Nelson County	Railroad	Chesapeake and Ohio Railroad	184.5	HDD
Virginia	Buckingham County	County or local road		185.2	Bore
Virginia	Buckingham County	County or local road		185.6	Bore
Virginia	Buckingham County	County or local road		185.7	Bore
Virginia	Buckingham County	County or local road		186.1	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 604	186.4	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 737	188.6	Bore
Virginia	Buckingham County	County or local road		188.8	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 660	190.5	Bore
Virginia	Buckingham County	County or local road	Union Hill Rd	192.2	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 56	192.6	Bore
Virginia	Buckingham County	U.S. or State Hwy	US Hwy 60	196.3	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 644	198.2	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 641	199.9	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 638	200.8	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 640	202.3	Bore
Virginia	Buckingham County	County or local road	Appomattox Buckingham SF	202.4	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 633	204.0	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 609	206.0	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 633	208.8	Bore
Virginia	Buckingham County	U.S. or State Hwy	US Hwy 15	209.4	Bore
Virginia	Buckingham County	U.S. or State Hwy	State Hwy 769	209.9	Bore
Virginia	Cumberland County	County or local road	Pleasant Valley Rd	212.0	Bore
Virginia	Cumberland County	County or local road	Pleasant Valley Rd	212.7	Bore
Virginia	Cumberland County	County or local road	Raines Rd	213.5	Bore
Virginia	Cumberland County	County or local road	Plank Rd	214.3	Bore
Virginia	Cumberland County	U.S. or State Hwy	Cumberland Rd	215.8	Bore
Virginia	Cumberland County	County or local road	Ingle Rd	217.3	Bore
Virginia	Cumberland County	County or local road	River Rd	219.9	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	Prince Edward County	U.S. or State Hwy	State Hwy 619	222.6	Bore
Virginia	Prince Edward County	County or local road	Gully Tavern Ln	223.7	Bore
Virginia	Prince Edward County	County or local road	Gully Tavern Rd	224.7	Bore
Virginia	Prince Edward County	U.S. or State Hwy	State Hwy 617	225.8	Bore
Virginia	Nottoway County	U.S. or State Hwy	Holly Farm Rd	226.4	Bore
Virginia	Nottoway County	County or local road	S Genito Rd	227.0	Bore
Virginia	Nottoway County	County or local road	Dutchtown Rd	228.7	Bore
Virginia	Nottoway County	County or local road	Jennings Ordinary Rd	230.2	Bore
Virginia	Nottoway County	Railroad	Southern Railroad	231.5	Bore
Virginia	Nottoway County	U.S. or State Hwy	E Patrick Henry Hwy	231.6	Bore
Virginia	Nottoway County	County or local road	Good Hope Rd	232.8	Bore
Virginia	Nottoway County	County or local road	W Creek Rd	233.2	Bore
Virginia	Nottoway County	County or local road	Namozine Rd	234.8	Bore
Virginia	Nottoway County	County or local road	Mountain Hall Rd	235.6	Bore
Virginia	Nottoway County	County or local road	Winningham Rd	237.2	Bore
Virginia	Nottoway County	County or local road	Indian Oak Rd	237.8	Bore
Virginia	Nottoway County	County or local road	Bible Rd	239.6	Bore
Virginia	Nottoway County	County or local road	Piney Green Rd	241.0	Bore
Virginia	Nottoway County	County or local road	Cellar Creek Rd	242.2	Bore
Virginia	Nottoway County	County or local road	Cottage Rd	243.6	Bore
Virginia	Nottoway County	County or local road	Hawthorne Dr	244.8	Bore
Virginia	Nottoway County	County or local road	Yellow Bird Rd	245.2	Bore
Virginia	Nottoway County	County or local road	Green Gable Rd	246.6	Bore
Virginia	Nottoway County	U.S. or State Hwy	US Hwy 460	247.1	Bore
Virginia	Nottoway County	Railroad	Norfolk and Western Railroad	247.3	Bore
Virginia	Nottoway County	County or local road	Reservation Rd	247.4	Bore
Virginia	Nottoway County	County or local road	Wellville Rd	247.9	Bore
Virginia	Nottoway County	County or local road	Fort Pickett Military Reserve	248.0	Bore
Virginia	Dinwiddie County	County or local road	Green Meadows Ln	250.1	Bore
Virginia	Dinwiddie County	County or local road	Zilles Rd	250.9	Bore
Virginia	Dinwiddie County	County or local road	White Oak Rd	254.6	Bore
Virginia	Dinwiddie County	U.S. or State Hwy	Darvills Rd	255.9	Bore
Virginia	Dinwiddie County	County or local road	Whitmore Rd	257.6	Bore
Virginia	Dinwiddie County	County or local road	Harpers Rd	259.6	Bore
Virginia	Brunswick County	County or local road	Gills Bridge Rd	260.9	Bore
Virginia	Brunswick County	County or local road	Gills Bridge Rd	261.0	Bore
Virginia	Brunswick County	County or local road	Gills Bridge Rd	261.0	Bore
Virginia	Brunswick County	County or local road	Gills Bridge Rd	261.0	Bore
Virginia	Brunswick County	County or local road	Lew Jones Rd	262.3	Bore
Virginia	Brunswick County	County or local road	Rawlings Rd	263.9	Bore
Virginia	Brunswick County	Railroad	Seaboard System Railroad	265.4	Bore
Virginia	Brunswick County	County or local road	Waqua Creek Rd	266.9	Bore
Virginia	Brunswick County	U.S. or State Hwy	US Hwy 1	267.7	Bore
Virginia	Brunswick County	U.S. or State Hwy	I 85	268.1	Bore
Virginia	Brunswick County	U.S. or State Hwy	I 85	268.2	Bore
Virginia	Brunswick County	County or local road	Pine Ridge Rd	268.4	Bore
Virginia	Brunswick County	County or local road	Antioch Rd	269.4	Bore
Virginia	Brunswick County	County or local road	Ebenezer Rd	269.9	Bore
Virginia	Brunswick County	County or local road	Great Oak Rd	271.2	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	Brunswick County	County or local road	Blackbottom Rd	273.0	Bore
Virginia	Brunswick County	Railroad	Norfolk and Western Railroad	274.4	Bore
Virginia	Brunswick County	County or local road	Liberty Rd	274.5	Bore
Virginia	Brunswick County	County or local road	Old Stage Rd	274.9	Bore
Virginia	Brunswick County	County or local road	County Pond Rd	275.7	Bore
Virginia	Brunswick County	County or local road		276.5	Bore
Virginia	Brunswick County	County or local road		276.5	Bore
Virginia	Brunswick County	County or local road		276.6	Bore
Virginia	Brunswick County	County or local road		276.6	Bore
Virginia	Brunswick County	County or local road		276.8	Bore
Virginia	Brunswick County	County or local road		276.8	Bore
Virginia	Brunswick County	County or local road		277.3	Bore
Virginia	Brunswick County	County or local road		277.8	Bore
Virginia	Brunswick County	U.S. or State Hwy	Governor Harrison Pkwy	279.6	Bore
Virginia	Brunswick County	County or local road		279.8	Bore
Virginia	Brunswick County	County or local road	Walton Rd	279.9	Bore
Virginia	Brunswick County	County or local road	Freemans Cross Rd	280.5	Bore
Virginia	Brunswick County	County or local road	Markum Rd	281.2	Bore
Virginia	Brunswick County	Railroad	Norfolk and Western Railroad	281.9	Bore
Virginia	Brunswick County	County or local road		282.7	Bore
Virginia	Brunswick County	County or local road	Belfield Rd	283.0	Bore
Virginia	Greensville County	County or local road	Radium Rd	284.0	Bore
Virginia	Greensville County	County or local road		284.8	Bore
Virginia	Greensville County	County or local road	Rodgers Rd	285.6	Bore
Virginia	Greensville County	County or local road		285.7	Bore
Virginia	Greensville County	County or local road		285.8	Bore
Virginia	Greensville County	County or local road		286.0	Bore
Virginia	Greensville County	County or local road		286.1	Bore
Virginia	Greensville County	County or local road		287.3	Bore
Virginia	Greensville County	County or local road		287.7	Bore
Virginia	Greensville County	County or local road	Dry Bread Rd	288.1	Bore
Virginia	Greensville County	County or local road		289.4	Bore
Virginia	Greensville County	U.S. or State Hwy	Brink Rd	290.5	Bore
Virginia	Greensville County	County or local road	Collins Rd	291.2	Bore
Virginia	Greensville County	County or local road	Rock Bridge Rd	292.2	Bore
Virginia	Greensville County	U.S. or State Hwy	State Hwy F 129	293.1	Bore
Virginia	Greensville County	U.S. or State Hwy	I 95	293.1	Bore
Virginia	Greensville County	U.S. or State Hwy	Skippers Rd	293.5	Bore
Virginia	Greensville County	Railroad	Seaboard System Railroad	293.6	Bore
Virginia	Greensville County	County or local road	Zion Church Rd	294.9	Bore
Virginia	Greensville County	County or local road		295.3	Bore
Virginia	Greensville County	County or local road		295.3	Bore
Virginia	Greensville County	County or local road		296.3	Bore
Virginia	Greensville County	County or local road	Taylors Mill Rd	296.4	Bore
Virginia	Greensville County	County or local road		297.5	Bore
Virginia	Greensville County	County or local road		299.2	Bore
Virginia	Greensville County	U.S. or State Hwy	State Hwy 662	300.1	Bore
AP-2					
North Carolina	Northampton County	County or local road		2.4	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Northampton County	County or local road	Hickory Tree Rd	2.4	Bore
North Carolina	Northampton County	County or local road	Big John Store Rd	3.5	Bore
North Carolina	Northampton County	County or local road	Old Garysburg Rd	4.2	Bore
North Carolina	Northampton County	County or local road		4.3	Bore
North Carolina	Northampton County	U.S. or State Hwy	US Hwy 301	4.9	Bore
North Carolina	Northampton County	Railroad	Seaboard Coast Line Railroad	5.0	Bore
North Carolina	Northampton County	County or local road	Stephenson Rd	5.8	Bore
North Carolina	Northampton County	Railroad	Seaboard Coast Line Railroad	6.4	Bore
North Carolina	Northampton County	U.S. or State Hwy	US Hwy 301	6.4	Bore
North Carolina	Northampton County	U.S. or State Hwy	State Hwy 186	7.2	Bore
North Carolina	Northampton County	Railroad	Seaboard Coast Line Railroad	7.6	Bore
North Carolina	Northampton County	County or local road	Ellis St	7.6	Bore
North Carolina	Northampton County	County or local road	Old Highway Rd	8.1	Bore
North Carolina	Northampton County	U.S. or State Hwy	US Hwy 158	8.2	Bore
North Carolina	Northampton County	County or local road		9.4	Bore
North Carolina	Halifax County	County or local road	River Rd	10.4	Bore
North Carolina	Halifax County	County or local road		10.9	Bore
North Carolina	Halifax County	County or local road		12.8	Bore
North Carolina	Halifax County	U.S. or State Hwy	US Hwy 301	13.5	Bore
North Carolina	Halifax County	County or local road	White Hill Rd	13.5	Bore
North Carolina	Halifax County	County or local road		14.4	Bore
North Carolina	Halifax County	County or local road		14.9	Bore
North Carolina	Halifax County	County or local road	Reeses Store Rd	15.0	Bore
North Carolina	Halifax County	Railroad	Seaboard Coast Line Railroad	15.1	Bore
North Carolina	Halifax County	U.S. or State Hwy	NC Hwy 125	15.1	Bore
North Carolina	Halifax County	County or local road	Dog Pound Rd	16.1	Bore
North Carolina	Halifax County	U.S. or State Hwy	NC Highway 903	16.3	Bore
North Carolina	Halifax County	County or local road	J S Pope Rd	18.2	Bore
North Carolina	Halifax County	County or local road	Grapevine Rd	18.7	Bore
North Carolina	Halifax County	U.S. or State Hwy	State Hwy 561	20.5	Bore
North Carolina	Halifax County	County or local road	Justice Branch Rd	20.9	Bore
North Carolina	Halifax County	County or local road	Williams Scott Rd	21.9	Bore
North Carolina	Halifax County	County or local road	Whitehead Rd	22.5	Bore
North Carolina	Halifax County	County or local road	Richneck Rd	23.4	Bore
North Carolina	Halifax County	County or local road	Beaver Dam Rd	24.9	Bore
North Carolina	Halifax County	County or local road	S Brown Rd	25.7	Bore
North Carolina	Halifax County	County or local road	Bryant Rd	26.1	Bore
North Carolina	Halifax County	County or local road	Heathsville Rd	27.2	Bore
North Carolina	Halifax County	County or local road		27.8	Bore
North Carolina	Halifax County	County or local road		28.1	Bore
North Carolina	Halifax County	County or local road	Ringwood Rd	28.2	Bore
North Carolina	Halifax County	County or local road		28.8	Bore
North Carolina	Halifax County	U.S. or State Hwy	I 95	28.9	Bore
North Carolina	Halifax County	County or local road	4WD Road	29.9	Bore
North Carolina	Halifax County	County or local road	Sneed Rd	30.1	Bore
North Carolina	Halifax County	County or local road	Driveway	30.2	Bore
North Carolina	Halifax County	County or local road	Driveway	30.2	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Halifax County	County or local road	Wagon Wheel Rd	30.8	Bore
North Carolina	Halifax County	County or local road	Wagon Wheel Rd	30.9	Bore
North Carolina	Halifax County	County or local road	Hope Rd	31.0	Bore
North Carolina	Halifax County	County or local road	Faith Rd	31.3	Bore
North Carolina	Halifax County	County or local road		31.4	Bore
North Carolina	Halifax County	U.S. or State Hwy	State Hwy 481	31.5	Bore
North Carolina	Halifax County	County or local road		32.6	Bore
North Carolina	Halifax County	County or local road		33.0	Bore
North Carolina	Halifax County	County or local road		33.1	Bore
North Carolina	Halifax County	County or local road	Bellamy Lake Rd	33.1	Bore
North Carolina	Halifax County	County or local road		33.4	Bore
North Carolina	Nash County	U.S. or State Hwy	NC Highway 48	34.7	Bore
North Carolina	Nash County	County or local road	Swift Creek School Rd	35.1	Bore
North Carolina	Nash County	County or local road	Hickory Rd	36.9	Bore
North Carolina	Nash County	County or local road	Straight Gate Rd	38.0	Bore
North Carolina	Nash County	County or local road	Watson Seed Farm Rd	39.6	Bore
North Carolina	Nash County	County or local road	Massengale Rd	40.2	Bore
North Carolina	Nash County	County or local road	N Browntown Rd	40.8	Bore
North Carolina	Nash County	County or local road	Wollett Mill Rd	41.9	Bore
North Carolina	Nash County	County or local road	Deans Rd	43.2	Bore
North Carolina	Nash County	County or local road	Red Oak Battleboro Rd	44.1	Bore
North Carolina	Nash County	U.S. or State Hwy	Red Oak Blvd	45.0	Bore
North Carolina	Nash County	County or local road	Turkey Foot Rd	45.5	Bore
North Carolina	Nash County	County or local road	Big Jim Rd	45.9	Bore
North Carolina	Nash County	County or local road	Lacy Ln	46.2	Bore
North Carolina	Nash County	County or local road	N Old Carriage Rd	46.5	Bore
North Carolina	Nash County	County or local road	Lacy Ln	46.5	Bore
North Carolina	Nash County	County or local road	Hunter Hill Rd	46.9	Bore
North Carolina	Nash County	County or local road	Reges Store Rd	48.4	Bore
North Carolina	Nash County	U.S. or State Hwy	US Hwy 64	49.3	Bore
North Carolina	Nash County	County or local road	Eastern Ave	49.8	Bore
North Carolina	Nash County	County or local road	Kamlar Rd	50.1	Bore
North Carolina	Nash County	Railroad	Seaboard Coast Line Railroad	50.7	Bore
North Carolina	Nash County	County or local road	Oak Level Rd	51.2	Bore
North Carolina	Nash County	U.S. or State Hwy	State Hwy 58	52.2	Bore
North Carolina	Nash County	County or local road	E Old Spring Hope Rd	52.3	Bore
North Carolina	Nash County	County or local road	Bone Ln	52.6	Bore
North Carolina	Nash County	County or local road	Lindsay Rd	56.8	Bore
North Carolina	Nash County	County or local road	Sandy Cross Rd	57.9	Bore
North Carolina	Nash County	County or local road	Bend of the River Rd	58.7	Bore
North Carolina	Nash County	U.S. or State Hwy	E NC Highway 97	60.0	Bore
North Carolina	Nash County	County or local road	Old Bailey Hwy	60.4	Bore
North Carolina	Nash County	County or local road	Graham Brantley Rd	60.5	Bore
North Carolina	Nash County	County or local road	Back 40 Ln	61.4	Bore
North Carolina	Nash County	County or local road	Ada Taylor Rd	61.6	Bore
North Carolina	Nash County	County or local road	Maudis Rd	62.2	Bore
North Carolina	Nash County	County or local road	Old Smithfield Rd	62.8	Bore
North Carolina	Nash County	County or local road	Old Smithfield Rd	63.6	Bore
North Carolina	Nash County	County or local road	W Hornes Church Rd	64.0	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Nash County	County or local road	Bull Head Rd	65.2	Bore
North Carolina	Nash County	County or local road	Friday Rd	65.7	Bore
North Carolina	Wilson County	County or local road	Green Pond Rd	66.0	Bore
North Carolina	Wilson County	County or local road	Countryside Rd	66.4	Bore
North Carolina	Wilson County	U.S. or State Hwy	US Hwy 264	66.4	Bore
North Carolina	Wilson County	County or local road	Bruce Rd	66.6	Bore
North Carolina	Wilson County	County or local road		67.4	Bore
North Carolina	Wilson County	U.S. or State Hwy	US Hwy 264A	67.5	Bore
North Carolina	Wilson County	Railroad	Norfolk Southern Railroad	67.5	Bore
North Carolina	Wilson County	County or local road	Sims School Rd	68.2	Bore
North Carolina	Wilson County	County or local road	Rock Ridge Sims Rd	68.2	Bore
North Carolina	Wilson County	County or local road	Winborne Rd	69.2	Bore
North Carolina	Wilson County	County or local road	Marsh Swamp Rd	69.4	Bore
North Carolina	Wilson County	County or local road	Nobles Chapel Rd	69.7	Bore
North Carolina	Wilson County	County or local road		69.8	Bore
North Carolina	Wilson County	County or local road	Boykin Rd	70.8	Bore
North Carolina	Wilson County	County or local road	Wilkerson Loop	71.1	Bore
North Carolina	Wilson County	County or local road	Healthy Plaines Church Rd	71.6	Bore
North Carolina	Wilson County	County or local road	Rock Ridge School Rd	72.2	Bore
North Carolina	Wilson County	County or local road	Leonard Rd	72.6	Bore
North Carolina	Wilson County	U.S. or State Hwy	State Hwy 581	74.2	Bore
North Carolina	Wilson County	U.S. or State Hwy	State Hwy 42	74.7	Bore
North Carolina	Wilson County	County or local road	Exum Rd	75.9	Bore
North Carolina	Wilson County	County or local road	Shaw Rd	76.9	Bore
North Carolina	Johnston County	U.S. or State Hwy	NC Highway 222 W	78.8	Bore
North Carolina	Johnston County	County or local road	Bay Valley Rd	79.2	Bore
North Carolina	Johnston County	County or local road	Beulahtown Rd	79.3	Bore
North Carolina	Johnston County	County or local road	Glendale Rd	80.0	Bore
North Carolina	Johnston County	County or local road	Abednego Rd	80.3	Bore
North Carolina	Johnston County	County or local road	Hales Rd	80.9	Bore
North Carolina	Johnston County	County or local road	Moore Rd	81.4	Bore
North Carolina	Johnston County	County or local road	Old Beulah Rd	82.1	Bore
North Carolina	Johnston County	County or local road	Micro Rd W	83.6	Bore
North Carolina	Johnston County	County or local road	Old Beulah Rd	83.9	Bore
North Carolina	Johnston County	County or local road	Davis Homestead Rd	84.6	Bore
North Carolina	Johnston County	County or local road	Old Creech Rd	85.5	Bore
North Carolina	Johnston County	County or local road	Hawkins Rd	86.8	Bore
North Carolina	Johnston County	U.S. or State Hwy	US Highway 301 N	87.3	Bore
North Carolina	Johnston County	Railroad	Seaboard Coast Line Railroad	88.2	Bore
North Carolina	Johnston County	County or local road	Lizzie Mill Rd	88.4	Bore
North Carolina	Johnston County	U.S. or State Hwy	I 95	88.6	Bore
North Carolina	Johnston County	County or local road	Campground Rd	89.3	Bore
North Carolina	Johnston County	County or local road	Futrell Rd	89.5	Bore
North Carolina	Johnston County	County or local road	Pine Level Selma Rd	90.4	Bore
North Carolina	Johnston County	Railroad	Southern Railroad	90.4	Bore
North Carolina	Johnston County	County or local road	Firetower Rd	91.0	Bore
North Carolina	Johnston County	U.S. or State Hwy	US Highway 70A E	91.4	Bore
North Carolina	Johnston County	U.S. or State Hwy	US Hwy 70	92.1	Bore
North Carolina	Johnston County	County or local road		92.2	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Johnston County	U.S. or State Hwy	US Highway 70 Bus E	93.5	Bore
North Carolina	Johnston County	County or local road		94.3	Bore
North Carolina	Johnston County	County or local road		94.3	Bore
North Carolina	Johnston County	County or local road		94.4	Bore
North Carolina	Johnston County	County or local road	Casey Rd	94.9	Bore
North Carolina	Johnston County	County or local road	Brogden Rd	95.7	Bore
North Carolina	Johnston County	County or local road	Stevens Sausage Rd	96.4	Bore
North Carolina	Johnston County	County or local road	Stevens Sausage Rd	97.3	Bore
North Carolina	Johnston County	County or local road	Guin Rd	99.6	Bore
North Carolina	Johnston County	County or local road	Devils Racetrack Rd	100.7	Bore
North Carolina	Johnston County	U.S. or State Hwy	US Highway 701 S	102.2	Bore
North Carolina	Johnston County	County or local road	Lees Union Church Rd	102.7	Bore
North Carolina	Johnston County	County or local road	Coats Rd	103.6	Bore
North Carolina	Johnston County	County or local road	Stricklands Crossroads Rd	104.1	Bore
North Carolina	Johnston County	County or local road		105.3	Bore
North Carolina	Johnston County	County or local road	Oak Forest Rd	106.0	Bore
North Carolina	Johnston County	County or local road	W Johnson Rd	107.8	Bore
North Carolina	Johnston County	County or local road	Enoch Rd	108.2	Bore
North Carolina	Johnston County	U.S. or State Hwy	I 40	108.2	Bore
North Carolina	Johnston County	County or local road	Meadowbrook Rd	108.5	Bore
North Carolina	Johnston County	County or local road	Godwin Lake Rd	109.4	Bore
North Carolina	Johnston County	U.S. or State Hwy	NC Highway 50 S	109.6	Bore
North Carolina	Johnston County	U.S. or State Hwy	NC Highway 96 S	111.0	Bore
North Carolina	Johnston County	County or local road	Godwin Lake Rd	112.0	Bore
North Carolina	Johnston County	County or local road	Mamie Rd	112.1	Bore
North Carolina	Johnston County	County or local road	Holly Grove Rd	112.5	Bore
North Carolina	Johnston County	County or local road	Golda Rd	112.9	Bore
North Carolina	Johnston County	U.S. or State Hwy	NC Highway 242 S	113.5	Bore
North Carolina	Sampson County	County or local road	Hay Barn Rd	115.0	Bore
North Carolina	Sampson County	County or local road	Godwin Lake Rd	115.3	Bore
North Carolina	Sampson County	U.S. or State Hwy	Harnett Dunn Hwy	115.9	Bore
North Carolina	Sampson County	County or local road	Green Path Rd	116.3	Bore
North Carolina	Sampson County	County or local road	Larry Ln	116.4	Bore
North Carolina	Sampson County	County or local road	Timothy Rd	117.6	Bore
North Carolina	Sampson County	County or local road	Green Path Rd	117.7	Bore
North Carolina	Sampson County	U.S. or State Hwy	Plain View Hwy	118.6	Bore
North Carolina	Sampson County	County or local road	Old US 421 Hwy S	118.8	Bore
North Carolina	Sampson County	County or local road	N Spring Branch Rd	120.3	Bore
North Carolina	Sampson County	County or local road	Green Path Rd	121.0	Bore
North Carolina	Sampson County	County or local road	Ottis Rd	121.3	Bore
North Carolina	Cumberland County	County or local road	Sherrill Baggett Rd	125.0	Bore
North Carolina	Cumberland County	U.S. or State Hwy	I 95	125.1	Bore
North Carolina	Cumberland County	County or local road	Leitha Ln	125.1	Bore
North Carolina	Cumberland County	County or local road	Leitha Ln	125.7	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Godwin Falcon Rd	126.4	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Dunn Rd	128.1	Bore
North Carolina	Cumberland County	Railroad	Seaboard System Railroad	128.3	Bore
North Carolina	Cumberland County	County or local road	Sisk Culbreth Rd	129.9	Bore
North Carolina	Cumberland County	County or local road		130.8	Bore
North Carolina	Cumberland County	County or local road	River Rd	131.6	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Cumberland County	County or local road		132.7	Bore
North Carolina	Cumberland County	County or local road	Swamp Rd	132.8	Bore
North Carolina	Cumberland County	County or local road	Jackie Lee Rd	133.6	Bore
North Carolina	Cumberland County	Railroad	Seaboard System Railroad	133.6	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Dunn Rd	134.6	Bore
North Carolina	Cumberland County	U.S. or State Hwy	I 95	134.9	Bore
North Carolina	Cumberland County	County or local road		135.7	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Goldsboro Rd	136.1	Bore
North Carolina	Cumberland County	County or local road		137.1	Bore
North Carolina	Cumberland County	County or local road	Murphy Rd	138.7	Bore
North Carolina	Cumberland County	County or local road		140.2	Bore
North Carolina	Cumberland County	County or local road		140.4	Bore
North Carolina	Cumberland County	County or local road	Maxwell Rd	140.7	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Clinton Rd	142.1	Bore
North Carolina	Cumberland County	Railroad	Seaboard System Railroad	142.8	Bore
North Carolina	Cumberland County	County or local road		144.5	Bore
North Carolina	Cumberland County	U.S. or State Hwy	State Hwy 210	145.0	Bore
North Carolina	Cumberland County	County or local road	Stedman Cedar Creek Rd	146.6	Bore
North Carolina	Cumberland County	County or local road	Bogie Island Rd	146.6	Bore
North Carolina	Cumberland County	U.S. or State Hwy	Cedar Creek Rd	148.2	Bore
North Carolina	Cumberland County	County or local road	Sophia Bill Rd	148.4	Bore
North Carolina	Cumberland County	County or local road	Dudley Rd	150.1	Bore
North Carolina	Cumberland County	County or local road		150.4	Bore
North Carolina	Cumberland County	County or local road	Johnson Rd	151.1	Bore
North Carolina	Cumberland County	County or local road	Tabor Church Rd	153.0	Bore
North Carolina	Cumberland County	County or local road	Matt Hair Rd	153.7	Bore
North Carolina	Cumberland County	County or local road	Cheraw St	155.0	Bore
North Carolina	Cumberland County	County or local road	Marsh Rd	155.1	Bore
North Carolina	Cumberland County	U.S. or State Hwy	NC Highway 87 S	156.0	Bore
North Carolina	Cumberland County	County or local road	Yarborough Rd	156.9	Bore
North Carolina	Cumberland County	County or local road	Fire Department Rd	157.8	Bore
North Carolina	Cumberland County	County or local road	Chickenfoot Rd	159.3	Bore
North Carolina	Cumberland County	County or local road	Yarborough Rd	159.4	Bore
North Carolina	Robeson County	County or local road	Ballance Farm Rd	161.5	Bore
North Carolina	Robeson County	Railroad	Seaboard System Railroad	163.5	Bore
North Carolina	Robeson County	County or local road	Willow Dr	163.7	Bore
North Carolina	Robeson County	County or local road	Freedom Dr	164.0	Bore
North Carolina	Robeson County	U.S. or State Hwy	I 95	164.1	Bore
North Carolina	Robeson County	County or local road	W McRainey Rd	164.3	Bore
North Carolina	Robeson County	U.S. or State Hwy	US Hwy 301	164.9	Bore
North Carolina	Robeson County	County or local road	Carolina Church Rd	165.2	Bore
North Carolina	Robeson County	U.S. or State Hwy	NC Highway 20 W	167.2	Bore
North Carolina	Robeson County	County or local road	W Great Marsh Church Rd	168.6	Bore
North Carolina	Robeson County	County or local road	Coy Rd	169.6	Bore
North Carolina	Robeson County	County or local road	M Strong Rd	169.8	Bore
North Carolina	Robeson County	County or local road	M Strong Rd	169.9	Bore
North Carolina	Robeson County	County or local road	Mary C Rd	170.4	Bore
North Carolina	Robeson County	County or local road	Waldron Rd	170.5	Bore
North Carolina	Robeson County	County or local road	Tolar Rd	171.3	Bore
North Carolina	Robeson County	County or local road	Rennert Rd	172.4	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
North Carolina	Robeson County	County or local road	Shannon Rd	173.7	Bore
North Carolina	Robeson County	County or local road	Snipes Rd	174.9	Bore
North Carolina	Robeson County	County or local road	McQueen Rd	175.2	Bore
North Carolina	Robeson County	U.S. or State Hwy	NC Highway 211 W	176.1	Bore
North Carolina	Robeson County	County or local road	Buies Mill Rd	176.5	Bore
North Carolina	Robeson County	County or local road	Buie-Philadelphus Rd	177.8	Bore
North Carolina	Robeson County	County or local road	Evergreen Church Rd	178.6	Bore
North Carolina	Robeson County	County or local road	Stafford Dr	179.0	Bore
North Carolina	Robeson County	Railroad	Seaboard Coast Line Railroad	179.2	Bore
North Carolina	Robeson County	County or local road	Townsends Chapel Rd	179.4	Bore
North Carolina	Robeson County	U.S. or State Hwy	State Hwy 72	179.8	Bore
North Carolina	Robeson County	County or local road	Philadelphus Rd	180.7	Bore
North Carolina	Robeson County	County or local road	Frank Rd	181.3	Bore
North Carolina	Robeson County	County or local road	Whistling Rufus Rd	181.3	Bore
North Carolina	Robeson County	U.S. or State Hwy	NC Highway 710	182.9	Bore
AP-3					
North Carolina	Northampton County	County or local road		1.1	Bore
North Carolina	Northampton County	County or local road	Concord Church Rd	2.0	Bore
North Carolina	Northampton County	County or local road	Dr Parker Rd	2.5	Bore
North Carolina	Northampton County	County or local road	Big John Store Rd	3.3	Bore
North Carolina	Northampton County	County or local road	Peanut Market Rd	3.4	Bore
North Carolina	Northampton County	County or local road		4.4	Bore
North Carolina	Northampton County	County or local road		4.5	Bore
North Carolina	Northampton County	County or local road		6.4	Bore
North Carolina	Northampton County	County or local road	Mount Zion Church Rd	7.5	Bore
North Carolina	Northampton County	County or local road	Big John Store Rd	7.9	Bore
North Carolina	Northampton County	County or local road		9.4	Bore
North Carolina	Northampton County	County or local road		9.5	Bore
North Carolina	Northampton County	County or local road		9.6	Bore
North Carolina	Northampton County	U.S. or State Hwy	State Hwy 186	9.9	Bore
North Carolina	Northampton County	Railroad	Seaboard Coast Line Railroad	10.0	Bore
North Carolina	Northampton County	County or local road		10.9	Bore
North Carolina	Northampton County	U.S. or State Hwy	State Hwy 186	11.3	Bore
North Carolina	Northampton County	County or local road		11.8	Bore
Virginia	Southampton County	Railroad	Seaboard Coast Line Railroad	13.3	Bore
Virginia	Southampton County	County or local road	The Hall Rd	13.4	Bore
Virginia	Southampton County	County or local road		14.2	Bore
Virginia	Southampton County	County or local road		15.1	Bore
Virginia	Southampton County	County or local road	Whitehead Rd	16.0	Bore
Virginia	Southampton County	County or local road	Old Branchville Rd	16.4	Bore
Virginia	Southampton County	County or local road		17.4	Bore
Virginia	Southampton County	County or local road	Powells Hill Rd	19.0	Bore
Virginia	Southampton County	U.S. or State Hwy	State Hwy 35	19.6	Bore
Virginia	Southampton County	County or local road	Lassiters Dr	19.8	Bore
Virginia	Southampton County	County or local road	Cross Keys Rd	20.8	Bore
Virginia	Southampton County	County or local road	Three Bees Rd	22.0	Bore
Virginia	Southampton County	County or local road		22.6	Bore
Virginia	Southampton County	County or local road		22.7	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	Southampton County	County or local road		23.5	Bore
Virginia	Southampton County	County or local road	Grays Shop Rd	23.5	Bore
Virginia	Southampton County	County or local road	Blackhead Signpost Rd	24.2	Bore
Virginia	Southampton County	County or local road	Thomaston Rd	25.5	Bore
Virginia	Southampton County	County or local road	Thomaston Rd	26.6	Bore
Virginia	Southampton County	County or local road	Cypress Bridge Rd	26.9	Bore
Virginia	Southampton County	County or local road	Bishop Poquoson Rd	28.8	Bore
Virginia	Southampton County	U.S. or State Hwy	General Thomas Hwy	29.2	Bore
Virginia	Southampton County	Railroad	Seaboard Coast Line Railroad	29.2	Bore
Virginia	Southampton County	County or local road	Beale Rd	29.5	Bore
Virginia	Southampton County	County or local road	Handsom Rd	30.2	Bore
Virginia	Southampton County	County or local road	Nottoway Farms Dr	31.1	Bore
Virginia	Southampton County	County or local road	Nottoway Farms Dr	31.2	Bore
Virginia	Southampton County	County or local road	Nottoway Farms Dr	31.3	Bore
Virginia	Southampton County	County or local road		31.9	Bore
Virginia	Southampton County	County or local road	Campbell's Run Rd	32.9	Bore
Virginia	Southampton County	County or local road	Delaware Rd	33.2	Bore
Virginia	Southampton County	County or local road	Sycamore Church Rd	34.7	Bore
Virginia	Southampton County	County or local road		34.7	Bore
Virginia	Southampton County	U.S. or State Hwy	Smiths Ferry Rd	35.8	Bore
Virginia	Southampton County	County or local road		37.1	Bore
Virginia	Southampton County	County or local road		37.4	Bore
Virginia	Southampton County	County or local road		38.0	Bore
Virginia	Southampton County	County or local road	Hemlock St	38.2	Bore
Virginia	City of Suffolk	Railroad	Seaboard Systen Railroad	39.1	Bore
Virginia	City of Suffolk	U.S. or State Hwy	S Quay Rd	39.9	Bore
Virginia	City of Suffolk	County or local road	New Rd	40.6	Bore
Virginia	City of Suffolk	County or local road	S Quay Rd	41.1	Bore
Virginia	City of Suffolk	U.S. or State Hwy	US Hwy 58	41.5	Bore
Virginia	City of Suffolk	County or local road	Holy Neck Rd	41.9	Bore
Virginia	City of Suffolk	County or local road	Harvest Dr	43.1	Bore
Virginia	City of Suffolk	County or local road	Barnes Rd	44.4	Bore
Virginia	City of Suffolk	County or local road	Elwood Rd	44.6	Bore
Virginia	City of Suffolk	County or local road	Brentwood Rd	45.5	Bore
Virginia	City of Suffolk	U.S. or State Hwy	S Quay Rd	45.9	Bore
Virginia	City of Suffolk	County or local road	Okelly Dr	46.5	Bore
Virginia	City of Suffolk	County or local road	Dutch Rd	47.5	Bore
Virginia	City of Suffolk	County or local road	Longstreet Ln	48.5	Bore
Virginia	City of Suffolk	County or local road	Quince Rd	48.8	Bore
Virginia	City of Suffolk	County or local road	Pioneer Rd	49.6	Bore
Virginia	City of Suffolk	Railroad	Norfolk and Western Railroad	50.4	Bore
Virginia	City of Suffolk	U.S. or State Hwy	Holland Rd	50.6	Bore
Virginia	City of Suffolk	County or local road	Chappell Dr	51.8	Bore
Virginia	City of Suffolk	Railroad	Seaboard Coast Line Railroad	53.6	Bore
Virginia	City of Suffolk	County or local road	Deer Path Rd	53.9	Bore
Virginia	City of Suffolk	Railroad	Norfolk and Western Railroad	54.6	Bore
Virginia	City of Suffolk	County or local road	Indian Trl	55.5	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Virginia	City of Suffolk	County or local road	Little Creek Rd	56.3	Bore
Virginia	City of Suffolk	Railroad	Norfolk and Western Railroad	56.8	Bore
Virginia	City of Suffolk	County or local road	Archers Mill Rd	57.0	Bore
Virginia	City of Suffolk	U.S. or State Hwy	Pruden Blvd	59.0	Bore
Virginia	City of Suffolk	County or local road	Lake Prince Dr	60.2	Bore
Virginia	City of Suffolk	County or local road	Labrador Ln	60.6	Bore
Virginia	City of Suffolk	County or local road	Matoaka Rd	61.4	Bore
Virginia	City of Suffolk	County or local road	Mockingbird Ln	61.9	Bore
Virginia	City of Suffolk	County or local road	Waters Ave	62.7	Bore
Virginia	City of Suffolk	U.S. or State Hwy	State Hwy 10	63.2	Bore
Virginia	City of Suffolk	U.S. or State Hwy	Nansemond Pkwy	66.1	Bore
Virginia	City of Suffolk	Railroad	Railway	66.3	Bore
Virginia	City of Suffolk	Railroad	Railway	66.9	Bore
Virginia	City of Suffolk	U.S. or State Hwy	W Military Hwy	71.3	Bore
Virginia	City of Chesapeake	Railroad	Seaboard Coast L Railroad	71.4	Bore
Virginia	City of Chesapeake	County or local road	Peach Rd	73.6	Bore
Virginia	City of Chesapeake	Railroad	Norfolk Southern Railway	76.0	Bore
Virginia	City of Chesapeake	County or local road	Galberry Rd	77.6	HDD
Virginia	City of Chesapeake	County or local road		77.6	HDD
Virginia	City of Chesapeake	U.S. or State Hwy	I 64	77.8	HDD
Virginia	City of Chesapeake	U.S. or State Hwy	I 64	77.9	HDD
Virginia	City of Chesapeake	U.S. or State Hwy	George Washington Hwy N	78.7	HDD
Virginia	City of Chesapeake	County or local road	Fenway Ave	78.7	HDD
Virginia	City of Chesapeake	County or local road		79.0	HDD
Virginia	City of Chesapeake	County or local road	Hopewell Dr	79.3	Bore
Virginia	City of Chesapeake	County or local road	Baywood Trl	79.6	Bore
Virginia	City of Chesapeake	County or local road	Shell Rd	79.9	Bore
Virginia	City of Chesapeake	County or local road	Jarvis Rd	79.9	Bore
Virginia	City of Chesapeake	County or local road	Richwood Ave	80.0	Bore
Virginia	City of Chesapeake	County or local road	Steel St	80.8	Bore
Virginia	City of Chesapeake	County or local road	Currie Ave	81.0	Bore
Virginia	City of Chesapeake	County or local road	Vepco St	81.1	Bore
Virginia	City of Chesapeake	Railroad	N P B Railroad	82.2	Bore
Virginia	City of Chesapeake	U.S. or State Hwy	Bainbridge Blvd	82.4	Bore
Virginia	City of Chesapeake	County or local road	Driveway	82.7	Bore
AP-4					
Virginia	Brunswick County	County or local road	Walton Rd	0.3	Bore
AP-5					
Virginia	Greensville County	County or local road		0.3	Bore
Virginia	Greensville County	County or local road	Radium Rd	0.5	Bore
Virginia	Greensville County	County or local road		0.6	Bore
Virginia	Greensville County	County or local road		0.6	Bore
SUPPLY HEADER PROJECT					
TL-636					
Pennsylvania	Westmoreland County	County or local road	Borland Farm Rd	0.3	Bore
Pennsylvania	Westmoreland County	County or local road	Wilson St	0.9	Bore
Pennsylvania	Westmoreland County	County or local road	Kemerer Hollow Rd	1.4	Bore

TABLE M-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Road, Railroad, and Trail Crossings [a]

Facility/State or Commonwealth	County/City	Road Type	Road/Railroad Name	Milepost	Construction Method
Pennsylvania	Westmoreland County	County or local road	Wiestertown Rd	2.7	Bore
Pennsylvania	Westmoreland County	County or local road	Evans Rd	3.3	Bore
Pennsylvania	Westmoreland County	County or local road		3.4	Bore
Pennsylvania	Westmoreland County	County or local road	Hills Church Rd	3.6	Bore
TL-635					
West Virginia	Harrison County	County or local road		0.2	Bore
West Virginia	Doddridge County	County or local road	County Hwy 27	1.4	Bore
West Virginia	Doddridge County	County or local road	County Hwy 25	2.1	Bore
West Virginia	Doddridge County	County or local road	County Hwy 46/3	4.0	Bore
West Virginia	Doddridge County	County or local road	County Hwy 46	4.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 15	5.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 15/11	5.9	Bore
West Virginia	Doddridge County	County or local road	County Hwy 17	6.7	Bore
West Virginia	Doddridge County	County or local road	County Hwy 17/1	7.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 42	7.9	Bore
West Virginia	Doddridge County	Railroad	Baltimore and Ohio Railroad	9.4	Bore
West Virginia	Doddridge County	County or local road	County Hwy 38	9.4	Bore
West Virginia	Doddridge County	U.S. or State Hwy	US Hwy 50	10.6	Bore
West Virginia	Doddridge County	County or local road	Old US 50	10.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 3	13.0	Bore
West Virginia	Doddridge County	County or local road	County Hwy 20/2	15.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 55/8	17.8	Bore
West Virginia	Doddridge County	U.S. or State Hwy	State Hwy 23	18.6	Bore
West Virginia	Doddridge County	County or local road	County Hwy 6	20.7	Bore
West Virginia	Doddridge County	County or local road	County Hwy 4	22.8	Bore
West Virginia	Tyler County	County or local road	County Hwy 13	23.1	Bore
West Virginia	Wetzel County	County or local road	County Hwy 82	23.8	Bore
West Virginia	Wetzel County	County or local road		26.8	Bore
West Virginia	Wetzel County	Railroad	Baltimore and Ohio Railroad	29.5	Bore
West Virginia	Wetzel County	U.S. or State Hwy	State Hwy 20	29.5	Bore
West Virginia	Wetzel County	County or local road	County Hwy 20/10	29.7	Bore
West Virginia	Wetzel County	County or local road	County Hwy 20/10	30.1	Bore
West Virginia	Wetzel County	County or local road	County Hwy 7/6	30.9	Bore
West Virginia	Wetzel County	County or local road	County Hwy 20/4	31.8	Bore

[a] Road and railroad data obtained from RexTag Strategies, December 2016.
[b] Located entirely or partially within NFS land.

APPENDIX N

FOREIGN UTILITIES CROSSED BY THE ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

TABLE N-1

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
ATLANTIC COAST PIPELINE				
AP-1 Mainline				
West Virginia	Harrison County	0.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Harrison County	0.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Harrison County	0.1	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Harrison County	0.3	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	1.9	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	3.3	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Lewis County	5.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	6.0	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Lewis County	6.4	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	6.5	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	6.5	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	7.3	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	7.5	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	7.7	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	7.9	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.1	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.4	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.4	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.4	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.4	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.5	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.6	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	8.6	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	9.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	9.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	9.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	10.8	Electric Transmission Line	Monongahela Power Company
West Virginia	Lewis County	11.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	11.0	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Lewis County	12.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	13.3	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	13.3	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	13.8	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	14.0	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	14.3	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	15.5	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	15.9	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	16.6	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	17.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Lewis County	18.2	Natural Gas Pipeline	Dominion Transmission, Inc.
West Virginia	Lewis County	18.6	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Lewis County	19.0	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Lewis County	19.3	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	22.5	Electric Transmission Line	
West Virginia	Upshur County	22.7	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
West Virginia	Upshur County	23.1	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Upshur County	25.5	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	26.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	26.6	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	27.1	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	27.1	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	27.1	Electric Transmission Line	Monongahela Power Company
West Virginia	Upshur County	27.2	Natural Gas Pipeline	Appalachia Midstream Services, LLC
West Virginia	Upshur County	27.4	Natural Gas Pipeline	Appalachia Midstream Services, LLC
West Virginia	Upshur County	27.5	Electric Transmission Line	
West Virginia	Upshur County	30.1	Electric Transmission Line	Monongahela Power Company
West Virginia	Upshur County	30.9	Electric Transmission Line	Monongahela Power Company
West Virginia	Upshur County	31.4	Electric Transmission Line	Monongahela Power Company
West Virginia	Upshur County	33.0	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	33.1	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	33.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	33.6	Natural Gas Pipeline	Appalachia Midstream Services, LLC
West Virginia	Upshur County	33.7	Natural Gas Pipeline	Appalachia Midstream Services, LLC
West Virginia	Upshur County	34.2	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Upshur County	37.1	Natural Gas Pipeline	CONE Midstream Partners, LP
West Virginia	Upshur County	37.4	Natural Gas Pipeline	CONE Midstream Partners, LP
West Virginia	Upshur County	37.7	Electric Transmission Line	
West Virginia	Upshur County	38.6	Natural Gas Pipeline	CONE Midstream Partners, LP
West Virginia	Upshur County	40.7	Natural Gas Pipeline	Eastern America Energy Corporation
West Virginia	Randolph County	45.2	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	45.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	45.5	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	45.9	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	46.1	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	46.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	47.2	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	47.3	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Randolph County	47.3	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Randolph County	47.3	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Randolph County	47.3	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	47.3	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	47.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	47.5	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	48.1	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	48.2	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	48.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	48.4	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	49.6	Natural Gas Pipeline	Chesapeake Midstream Development, LP
West Virginia	Randolph County	50.8	Electric Transmission Line	Monongahela Power Company
West Virginia	Randolph County	56.7	Electric Transmission Line	Monongahela Power Company
West Virginia	Randolph County	59.2	Electric Transmission Line	
West Virginia	Randolph County	62.6	Electric Transmission Line	Monongahela Power Company
West Virginia	Pocahontas County	67.7	Electric Transmission Line	Monongahela Power Company
West Virginia	Pocahontas County	75.8	Electric Transmission Line	
Virginia	Highland County	90.0	Electric Transmission Line	Dominion Virginia Power Company

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
Virginia	Augusta County	114.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Augusta County	124.4	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Augusta County	136.5	Electric Transmission Line	
Virginia	Augusta County	142.8	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Augusta County	142.8	Electric Transmission Line	
Virginia	Augusta County	145.3	Electric Transmission Line	
Virginia	Augusta County	147.2	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	Augusta County	148.1	Electric Transmission Line	
Virginia	Augusta County	153.3	Electric Transmission Line	
Virginia	Nelson County	177.0	Electric Transmission Line	
Virginia	Nelson County	179.2	Electric Transmission Line	
Virginia	Buckingham County	191.6	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
Virginia	Buckingham County	191.6	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
Virginia	Buckingham County	191.6	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
Virginia	Buckingham County	191.6	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
Virginia	Buckingham County	196.5	Electric Transmission Line	
Virginia	Buckingham County	199.9	Electric Transmission Line	
Virginia	Buckingham County	200.8	Electric Transmission Line	
Virginia	Buckingham County	209.5	Electric Transmission Line	
Virginia	Buckingham County	211.3	Electric Transmission Line	
Virginia	Cumberland County	213.5	Electric Transmission Line	
Virginia	Cumberland County	214.5	Electric Transmission Line	
Virginia	Cumberland County	215.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Cumberland County	219.9	Electric Transmission Line	
Virginia	Cumberland County	220.0	Electric Transmission Line	
Virginia	Prince Edward County	225.7	Electric Transmission Line	
Virginia	Nottoway County	231.6	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Nottoway County	232.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Nottoway County	247.4	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Brunswick County	267.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	283.5	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	284.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	288.3	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	288.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	291.9	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
Virginia	Greensville County	293.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Greensville County	293.2	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	Greensville County	293.2	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
AP-2 Mainline				
North Carolina	Northampton County	2.0	Natural Gas Pipeline	Transcontinental Gas P.l. Co., LLC
North Carolina	Northampton County	4.9	Electric Transmission Line	
North Carolina	Northampton County	5.1	Electric Transmission Line	Dominion Virginia Power Company
North Carolina	Northampton County	6.2	Electric Transmission Line	Dominion Virginia Power Company
North Carolina	Northampton County	6.4	Electric Transmission Line	
North Carolina	Halifax County	12.7	Electric Transmission Line	
North Carolina	Halifax County	15.0	Electric Transmission Line	
North Carolina	Halifax County	16.3	Electric Transmission Line	
North Carolina	Halifax County	20.5	Electric Transmission Line	
North Carolina	Halifax County	22.2	Electric Transmission Line	

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
North Carolina	Halifax County	22.2	Electric Transmission Line	Dominion Virginia Power Company
North Carolina	Halifax County	22.2	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Halifax County	24.9	Electric Transmission Line	
North Carolina	Halifax County	28.2	Electric Transmission Line	
North Carolina	Halifax County	28.4	Electric Transmission Line	
North Carolina	Halifax County	31.9	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Nash County	48.1	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Nash County	48.1	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Nash County	52.6	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Nash County	62.5	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Wilson County	74.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	91.1	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	91.5	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	92.9	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Johnston County	92.9	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	92.9	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Johnston County	93.5	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	100.8	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	109.6	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Johnston County	113.0	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Sampson County	115.0	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Sampson County	115.9	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Sampson County	119.8	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Sampson County	119.8	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Cumberland County	125.3	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	129.6	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	129.9	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	130.6	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Cumberland County	131.1	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Cumberland County	131.1	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	132.8	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Cumberland County	133.9	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	134.6	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	140.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	143.3	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	151.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	152.0	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	152.3	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	152.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	152.8	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	153.2	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	154.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	155.8	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	157.3	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	157.6	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	157.7	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	158.2	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Cumberland County	159.3	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Robeson County	163.0	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Robeson County	163.0	Electric Transmission Line	Progress Energy Carolinas, LLC

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
North Carolina	Robeson County	167.3	Natural Gas Pipeline	Piedmont Natural Gas Company
North Carolina	Robeson County	171.8	Electric Transmission Line	Progress Energy Carolinas, LLC
North Carolina	Robeson County	182.9	Natural Gas Pipeline	Piedmont Natural Gas Company
AP-3 Lateral				
North Carolina	Northampton County	6.1	Electric Transmission Line	Dominion Virginia Power Company
North Carolina	Northampton County	8.6	Electric Transmission Line	Dominion Virginia Power Company
North Carolina	Northampton County	8.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	14.4	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	16.5	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	16.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	17.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	18.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	18.2	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	19.7	Electric Transmission Line	
Virginia	Southampton County	20.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	20.8	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	22.3	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	25.6	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	26.9	Electric Transmission Line	
Virginia	Southampton County	27.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	28.6	Electric Transmission Line	Dominion Virginia Power Company
Virginia	Southampton County	35.9	Electric Transmission Line	
Virginia	City of Suffolk	41.9	Electric Transmission Line	
Virginia	City of Suffolk	42.8	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	43.9	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	44.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	44.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	44.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	44.4	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	45.9	Electric Transmission Line	
Virginia	City of Suffolk	47.3	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	48.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	49.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	56.5	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	56.5	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	59.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	62.1	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	62.2	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Suffolk	62.3	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Suffolk	63.2	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	65.0	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	65.9	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Suffolk	66.1	Electric Transmission Line	
Virginia	City of Suffolk	68.8	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Chesapeake	73.1	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Chesapeake	73.1	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Chesapeake	73.5	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Chesapeake	77.7	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Chesapeake	77.9	Electric Transmission Line	Dominion Virginia Power Company
Virginia	City of Chesapeake	78.7	Electric Transmission Line	

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
Virginia	City of Chesapeake	78.7	Electric Transmission Line	
Virginia	City of Chesapeake	79.5	Electric Transmission Line	
Virginia	City of Chesapeake	79.8	Electric Transmission Line	
Virginia	City of Chesapeake	79.8	Electric Transmission Line	
Virginia	City of Chesapeake	80.7	Electric Transmission Line	
Virginia	City of Chesapeake	80.7	Electric Transmission Line	
Virginia	City of Chesapeake	80.7	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Chesapeake	80.8	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Chesapeake	80.8	Electric Transmission Line	
Virginia	City of Chesapeake	80.8	Electric Transmission Line	
Virginia	City of Chesapeake	82.7	Natural Gas Pipeline	Columbia Gas Transmission
Virginia	City of Chesapeake	82.7	Natural Gas Pipeline	Columbia Gas Transmission
SUPPLY HEADER PROJECT				
Tl-636 Loopline				
Pennsylvania	Westmoreland County	0.0	Electrical Transmission Line	West Penn Power Company
Pennsylvania	Westmoreland County	0.4	Natural Gas Pipeline	West Penn Power Company
Pennsylvania	Westmoreland County	0.6	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	0.7	Products Pipeline	Sunoco Pipeline, LP
Pennsylvania	Westmoreland County	1.1	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	1.6	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	1.8	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	2.6	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	3.2	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	3.6	Natural Gas Pipeline	Peoples Natural Gas
Pennsylvania	Westmoreland County	3.8	Natural Gas Pipeline	Peoples Natural Gas
TL-635 Loopline				
West Virginia	Doddridge County	6.3	Natural Gas Pipeline	Eastern America Energy Corporation
West Virginia	Doddridge County	6.3	Natural Gas Pipeline	MarkWest Liberty Midstream & Resources, LLC
West Virginia	Doddridge County	6.3	Natural Gas Pipeline	Crestwood Marcellus Pipeline
West Virginia	Doddridge County	6.3	Natural Gas Pipeline	Mountaineer Midstream Company, LLC
West Virginia	Doddridge County	7.5	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Doddridge County	8.5	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Doddridge County	9.0	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Doddridge County	9.1	Natural Gas Pipeline	MarkWest Liberty Midstream & Resources, LLC
West Virginia	Doddridge County	12.0	Natural Gas Pipeline	MarkWest Liberty Midstream & Resources, LLC
West Virginia	Doddridge County	12.1	Electrical Transmission Line	Monongahela Power Company
West Virginia	Doddridge County	12.3	Natural Gas Pipeline	Mountaineer Midstream Company, LLC
West Virginia	Doddridge County	13.0	Natural Gas Pipeline	Columbia Gas Transmission

TABLE N-1 (cont'd)

Atlantic Coast Pipeline and Supply Header Project Crossings of Existing Pipelines and Other Facilities [a]

Facility/State or Commonwealth	County/City	Milepost	Type	Operator
West Virginia	Doddridge County	14.0	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Doddridge County	14.5	Natural Gas Pipeline	Mountaineer Midstream Company, LLC
West Virginia	Doddridge County	14.6	Natural Gas Pipeline	Chesapeake Energy, Inc.
West Virginia	Doddridge County	14.8	Natural Gas Pipeline	Mountaineer Midstream Company, LLC
West Virginia	Doddridge County	15.0	Electrical Transmission Line	Monongahela Power Company
West Virginia	Doddridge County	16.2	Natural Gas Pipeline	Mountaineer Midstream Company, LLC
West Virginia	Doddridge County	16.3	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Doddridge County	17.8	Natural Gas Pipeline	MarkWest Liberty Midstream & Resources, LLC
West Virginia	Doddridge County	18.9	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Doddridge County	19.1	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Doddridge County	20.2	Natural Gas Pipeline	Columbia Gas Transmission
West Virginia	Doddridge County	20.2	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	23.9	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	23.9	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	24.0	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	24.0	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	24.0	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	24.0	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	24.1	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	25.4	Natural Gas Pipeline	Caiman Energy
West Virginia	Wetzel County	25.8	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	30.6	Natural Gas Pipeline	Caiman Energy
West Virginia	Wetzel County	31.2	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	31.4	Electrical Transmission Line	Monongahela Power Company
West Virginia	Wetzel County	31.4	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	31.6	Natural Gas Pipeline	Eureka Hunter Holdings, LLC
West Virginia	Wetzel County	31.8	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	32.3	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	33.1	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)
West Virginia	Wetzel County	33.2	Natural Gas Pipeline	EQT Midstream Partners (Equitrans)

[a] Utility data obtained from RexTag Strategies, June 2016.

APPENDIX O

BEDROCK GEOLOGY CROSSED BY THE
ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

Appendix O

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
ATLANTIC COAST PIPELINE					
West Virginia					
AP-1 Mainline					
	0 - 1.2	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	1.2 - 1.4	Pennsylvanian	Monongahela Group	sandstone	siltstone
	1.4 - 1.5	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	1.5 - 1.6	Pennsylvanian	Monongahela Group	sandstone	siltstone
	1.6 - 2.2	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	2.2 - 3.1	Pennsylvanian	Monongahela Group	sandstone	siltstone
	3.1 - 3.1	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	3.1 - 4.7	Pennsylvanian	Monongahela Group	sandstone	siltstone
	4.7 - 4.8	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	4.8 - 5.7	Pennsylvanian	Monongahela Group	sandstone	siltstone
	5.7 - 5.9	Pennsylvanian	Conemaugh Group	shale	siltstone
	5.9 - 7.1	Pennsylvanian	Monongahela Group	sandstone	siltstone
	7.1 - 8.1	Pennsylvanian	Conemaugh Group	shale	siltstone
	8.1 - 8.3	Quaternary	Quaternary Alluvium	alluvium	N/A
	8.3 - 9.1	Pennsylvanian	Conemaugh Group	shale	siltstone
	9.1 - 9.9	Quaternary	Quaternary Alluvium	alluvium	N/A
	9.9 - 11.6	Pennsylvanian	Conemaugh Group	shale	siltstone
	11.6 - 11.9	Quaternary	Quaternary Alluvium	alluvium	N/A
	11.9 - 15.2	Pennsylvanian	Conemaugh Group	shale	siltstone
	15.2 - 15.2	Pennsylvanian	Monongahela Group	sandstone	siltstone
	15.2 - 15.5	Pennsylvanian	Conemaugh Group	shale	siltstone
	15.5 - 15.7	Quaternary	Quaternary Alluvium	alluvium	N/A
	15.7 - 15.8	Pennsylvanian	Conemaugh Group	shale	siltstone
	15.8 - 16.2	Pennsylvanian	Monongahela Group	sandstone	siltstone
	16.2 - 16.4	Pennsylvanian	Conemaugh Group	shale	siltstone
	16.4 - 16.9	Pennsylvanian	Monongahela Group	sandstone	siltstone
	16.9 - 17.3	Pennsylvanian	Conemaugh Group	shale	siltstone
	17.3 - 17.8	Pennsylvanian	Monongahela Group	sandstone	siltstone

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	17.8 - 18.4	Pennsylvanian	Conemaugh Group	shale	siltstone
	18.4 - 19.7	Pennsylvanian	Monongahela Group	sandstone	siltstone
	19.7 - 20.7	Pennsylvanian	Conemaugh Group	shale	siltstone
	20.7 - 20.9	Pennsylvanian	Monongahela Group	sandstone	siltstone
	20.9 - 21.9	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	21.9 - 22.2	Pennsylvanian	Monongahela Group	sandstone	siltstone
	22.2 - 22.2	Permian/Pennsylvanian	Dunkard Group	sandstone	siltstone
	22.2 - 23.2	Pennsylvanian	Monongahela Group	sandstone	siltstone
	23.2 - 23.3	Pennsylvanian	Conemaugh Group	shale	siltstone
	23.3 - 23.9	Pennsylvanian	Monongahela Group	sandstone	siltstone
	23.9 - 24.1	Pennsylvanian	Conemaugh Group	shale	siltstone
	24.1 - 24.6	Pennsylvanian	Monongahela Group	sandstone	siltstone
	24.6 - 24.9	Pennsylvanian	Conemaugh Group	shale	siltstone
	24.9 - 25.1	Pennsylvanian	Monongahela Group	sandstone	siltstone
	25.1 - 25.2	Pennsylvanian	Conemaugh Group	shale	siltstone
	25.2 - 25.4	Pennsylvanian	Monongahela Group	sandstone	siltstone
	25.4 - 25.7	Pennsylvanian	Conemaugh Group	shale	siltstone
	25.7 – 26.0	Quaternary	Quaternary Alluvium	alluvium	N/A
	26.0 - 30.0	Pennsylvanian	Conemaugh Group	shale	siltstone
	30.0 - 30.2	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	30.2 - 30.3	Pennsylvanian	Conemaugh Group	shale	siltstone
	30.3 - 31.1	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	31.1 - 31.4	Pennsylvanian	Conemaugh Group	shale	siltstone
	31.4 - 32.5	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	32.5 - 32.6	Pennsylvanian	Conemaugh Group	shale	siltstone
	32.6 - 33.5	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	33.5 - 33.8	Pennsylvanian	Conemaugh Group	shale	siltstone
	33.8 - 34.0	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	34.0 - 34.3	Pennsylvanian	Conemaugh Group	shale	siltstone
	34.3 - 34.5	Pennsylvanian	Allegheny Formation	sandstone	siltstone

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	34.5 - 34.8	Pennsylvanian	Kanawha Formation	sandstone	shale
	34.8 - 34.9	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	34.9 - 35.0	Pennsylvanian	Kanawha Formation	sandstone	shale
	35.0 - 35.4	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	35.4 - 35.5	Pennsylvanian	Conemaugh Group	shale	siltstone
	35.5 - 35.6	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	35.6 - 35.8	Pennsylvanian	Conemaugh Group	shale	siltstone
	35.8 - 35.9	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	35.9 - 36.0	Pennsylvanian	Kanawha Formation	sandstone	shale
	36.0 - 36.3	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	36.3 - 36.5	Pennsylvanian	Conemaugh Group	shale	siltstone
	36.5 - 36.7	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	36.7 - 36.9	Pennsylvanian	Kanawha Formation	sandstone	shale
	36.9 - 37.2	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	37.2 - 37.4	Pennsylvanian	Conemaugh Group	shale	siltstone
	37.4 - 37.5	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	37.5 - 38.1	Pennsylvanian	Kanawha Formation	sandstone	shale
	38.1 - 39.5	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	39.5 - 39.7	Pennsylvanian	Kanawha Formation	sandstone	shale
	39.7 - 41.1	Pennsylvanian	Allegheny Formation	sandstone	siltstone
	41.1 - 50.5	Pennsylvanian	Kanawha Formation	sandstone	shale
	50.5 - 50.6	Pennsylvanian	New River Formation	sandstone	shale
	50.6 - 51.9	Pennsylvanian	Kanawha Formation	sandstone	shale
	51.9 - 52.1	Pennsylvanian	New River Formation	sandstone	shale
	52.1 - 52.2	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	52.2 - 52.3	Pennsylvanian	New River Formation	sandstone	shale
	52.3 - 54.1	Pennsylvanian	Kanawha Formation	sandstone	shale

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	54.1 - 54.5	Pennsylvanian	New River Formation	sandstone	shale
	54.5 - 55.2	Pennsylvanian	Kanawha Formation	sandstone	shale
	55.2 - 55.5	Pennsylvanian	New River Formation	sandstone	shale
	55.5 - 58.0	Pennsylvanian	Kanawha Formation	sandstone	shale
	58.0 - 58.1	Pennsylvanian	New River Formation	sandstone	shale
	58.1 - 58.3	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	58.3 - 58.7	Pennsylvanian	New River Formation	sandstone	shale
	58.7 - 59.8	Pennsylvanian	Kanawha Formation	sandstone	shale
	59.8 - 60.1	Pennsylvanian	New River Formation	sandstone	shale
	60.1 - 60.3	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	60.3 - 60.4	Mississippian	Hinton Formation	shale	sandstone
	60.4 - 61.1	Mississippian	Bluefield Formation	shale	sandstone
	61.1 - 61.6	Mississippian	Hinton Formation	shale	sandstone
	61.6 - 61.9	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	61.9 - 62.8	Pennsylvanian	New River Formation	sandstone	shale
	62.8 - 62.8	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	62.8 - 63.9	Pennsylvanian	New River Formation	sandstone	shale
	63.9 - 64.1	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	64.1 - 64.6	Mississippian	Hinton Formation	shale	sandstone
	64.6 - 64.9	Mississippian	Bluefield Formation	shale	sandstone
	64.9 - 65.5	Mississippian	Greenbrier Limestone	limestone	shale
	65.5 - 66.5	Mississippian	Bluefield Formation	shale	sandstone
	66.5 - 66.7	Mississippian	Greenbrier Limestone	limestone	shale
	66.7 - 67.3	Mississippian	Bluefield Formation	shale	sandstone
	67.3 - 67.7	Mississippian	Greenbrier Limestone	limestone	shale
	67.7 - 68.5	Mississippian	Bluefield Formation	shale	sandstone
	68.5 - 68.6	Mississippian	Greenbrier Limestone	limestone	shale

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	68.6 - 68.7	Mississippian	Bluefield Formation	shale	sandstone
	68.7 - 69.4	Mississippian	Greenbrier Limestone	limestone	shale
	69.4 - 69.6	Mississippian	Bluefield Formation	shale	sandstone
	69.6 - 70.4	Mississippian	Hinton Formation	shale	sandstone
	70.4 - 70.8	Mississippian	Bluefield Formation	shale	sandstone
	70.8 - 71.1	Mississippian	Hinton Formation	shale	sandstone
	71.1 - 71.6	Mississippian	Bluestone and Princeton Formations	shale	sandstone
	71.6 - 72.4	Mississippian	Hinton Formation	shale	sandstone
	72.4 - 72.6	Mississippian	Bluefield Formation	shale	sandstone
	72.6 - 73.0	Mississippian	Greenbrier Limestone	limestone	shale
	73.0 - 73.5	Mississippian	Bluefield Formation	shale	sandstone
	73.5 - 73.7	Mississippian	Hinton Formation	shale	sandstone
	73.7 - 74.0	Mississippian	Bluefield Formation	shale	sandstone
	74.0 - 74.2	Mississippian	Bluefield Formation	shale	sandstone
	74.2 - 74.6	Mississippian	Greenbrier Limestone	limestone	shale
	74.6 - 74.7	Mississippian	Maccrady Formation	shale	sandstone
	74.7 - 75.1	Mississippian	Greenbrier Limestone	limestone	shale
	75.1 - 75.2	Mississippian	Maccrady Formation	shale	sandstone
	75.2 - 75.6	Mississippian	Pocono Formation	sandstone	shale
	75.6 - 78.1	Devonian	Hampshire Formation	shale	sandstone
	78.1 - 78.6	Devonian	Chadakoin Formation	siltstone	sandstone
	78.6 - 79.4	Devonian	Brallier Formation	shale	siltstone
	79.4 - 80.0	Devonian	Millboro Shale	shale	black shale
	80.0 - 80.1	Devonian	Oriskany Sandstone and Helderberg Group, undivided	sandstone	limestone
	80.1 - 80.2	Silurian	Tonoloway, Wills Creek, and Williamsport Formations	limestone	shale
	80.2 - 80.3	Silurian	McKenzie Formation and Clinton Group	shale	sandstone

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	80.3 - 80.4	Silurian	Tuscarora Formation	sandstone	N/A
	80.4 - 80.6	Silurian	McKenzie Formation and Clinton Group	shale	sandstone
	80.6 - 80.7	Silurian	Tonoloway, Wills Creek, and Williamsport Formations	limestone	shale
	80.7 - 80.8	Devonian	Oriskany Sandstone and Helderberg Group, undivided	sandstone	limestone
	80.8 - 81.2	Devonian	Millboro Shale	shale	black shale
	81.2 - 81.7	Devonian	Brallier Formation	shale	siltstone
	81.7 - 82.8	Devonian	Chadakoin Formation	siltstone	sandstone
Virginia					
AC-1 Mainline	82.8 - 83.9	Devonian	Hampshire Formation	shale	sandstone
	83.9 - 83.9	Devonian	Hampshire Formation	sandstone	limestone
	83.9 - 84.1	Devonian	Hampshire Formation	sandstone	limestone
	84.1 - 86.9	Devonian	Chadakoin Formation	shale	sandstone
	86.9 - 87.1	Devonian	Brallier Formation	shale	siltstone
	87.1 - 87.4	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	87.4 - 87.5	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	87.5 - 87.7	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	87.7 - 88.0	Ordovician	Juniata, Oswego, Martinsburg (Reedsville and Dolly Ridge), and Eggleston Formations	shale	mudstone
	88.0 - 88.1	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	88.1 - 88.5	Ordovician	Juniata, Oswego, Martinsburg (Reedsville and Dolly Ridge), and Eggleston Formations	shale	mudstone
	88.5 - 88.9	Ordovician	Moccasin or Bays Formation through Blackford Formation	shale	mudstone

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	88.9 - 89.3	Ordovician	Juniata, Oswego, Martinsburg (Reedsville and Dolly Ridge), and Eggleston Formations	shale	mudstone
	89.3 - 90.3	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	90.3 - 90.9	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	90.9 - 92.0	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	92.0 - 92.2	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	92.2 - 92.8	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	92.8 - 93.6	Ordovician	Juniata, Oswego, Martinsburg (Reedsville and Dolly Ridge), and Eggleston Formations	shale	mudstone
	93.6 - 94.6	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	94.6 - 95.8	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	95.8 - 96.8	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale
	96.8 - 97.3	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	97.3 - 97.8	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	97.8 - 101.8	Devonian	Brallier Formation	shale	siltstone
	101.8 - 102.2	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	102.2 - 102.4	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	102.4 - 102.5	Silurian	Keefer, Rose Hill, and Tuscarora Formations	arenite	shale

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	102.5 - 103.7	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	103.7 - 105.2	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	105.2 - 108.4	Silurian-Devonian	Ridgeley Sandstone, Helderberg and Cayugan Groups	limestone	sandstone
	108.4 - 108.9	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	108.9 - 109.1	Devonian	Brallier Formation	shale	siltstone
	109.1 - 110.5	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	110.5 - 115.2	Devonian	Brallier Formation	shale	siltstone
	115.2 - 115.3	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	115.3 - 117.2	Devonian	Brallier Formation	shale	siltstone
	117.2 - 120.2	Devonian	Chadakoin Formation	shale	sandstone
	120.2 - 121.2	Devonian	Brallier Formation	shale	siltstone
	121.2 - 122.1	Devonian	Chadakoin Formation	shale	sandstone
	122.1 - 122.6	Devonian	Brallier Formation	shale	siltstone
	122.6 - 122.8	Devonian	Millboro Shale and Needmore Formation	black shale	shale
	122.8 - 123.4	Silurian-Devonian	Lower Devonian and Silurian Formations Undivided	sandstone	limestone
	123.4 - 123.7	Ordovician	Juniata, Oswego, Martinsburg (Reedsville and Dolly Ridge), and Eggleston Formations	shale	mudstone
	123.7 - 123.9	Ordovician	Edinburg Formation, Lincolnshire and New Market Limestones	limestone	black shale
	123.9 - 125.0	Cambrian	Elbrook Formation	dolostone (dolomite)	limestone
	125.0 - 128.6	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)
	128.6 - 131.5	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	131.5 - 132.1	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	132.1 - 132.1	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	132.1 - 132.3	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)
	132.3 - 135.0	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	135.0 - 137.0	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)
	137.0 - 137.7	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	137.7 - 138.7	Cambrian	Elbrook Formation	dolostone (dolomite)	limestone
	138.7 - 139.2	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)
	139.2 - 140.6	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	140.6 - 141.0	Ordovician	Edinburg Formation, Lincolnshire and New Market Limestones	limestone	black shale
	141.0 - 142.1	Ordovician	Martinsburg Formation	shale	sandstone
	142.1 - 143.1	Ordovician	Edinburg Formation, Lincolnshire and New Market Limestones	limestone	black shale
	143.1 - 144.8	Ordovician	Beekmantown Group	dolostone (dolomite)	limestone
	144.8 - 145.9	Cambrian-Ordovician	Conococheague Formation	limestone	dolostone (dolomite)
	145.9 - 147.5	Cambrian	Elbrook Formation	dolostone (dolomite)	limestone
	147.5 - 149.6	Cambrian	Elbrook Formation	dolostone (dolomite)	limestone
	149.6 - 152.4	Cambrian	Waynesboro Formation	dolostone (dolomite)	shale
	152.4 - 153.3	Cambrian	Shady Dolomite	dolostone (dolomite)	limestone
	153.3 - 155.5	Cambrian	Chilhowee Group	quartzite	conglomerate
	155.5 - 155.8	Proterozoic Z-Cambrian	Catoctin Formation - Metabasalt	meta-basalt	N/A
	155.8 - 156.6	Cambrian	Chilhowee Group	quartzite	conglomerate
	156.6 - 157.0	Proterozoic Z-Cambrian	Catoctin Formation - Metabasalt	meta-basalt	N/A
	157.0 - 157.3	Cambrian	Chilhowee Group	quartzite	conglomerate
	157.3 - 158.6	Proterozoic Z-Cambrian	Catoctin Formation - Metabasalt	meta-basalt	N/A
	158.6 - 161.0	Proterozoic Y	Charnockite	granitic gneiss	N/A
	161.0 - 161.8	Proterozoic Z-Cambrian	Catoctin Formation - Metabasalt	meta-basalt	N/A
	161.8 - 162.2	Proterozoic Y	Charnockite	granitic gneiss	N/A

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	162.2 - 162.9	Proterozoic Y	Layered Pyroxene Granulite	granulite	N/A
	162.9 - 163.1	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	163.1 - 163.6	Proterozoic Y	Biotite-Muscovite Leucogranite Gneiss	granitic gneiss	N/A
	163.6 - 164.0	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	164.0 - 164.3	Proterozoic Y	Layered Biotite Granulite and Gneiss	gneiss	granulite
	164.3 - 165.3	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	165.3 - 165.8	Proterozoic Y	Charnockite	granitic gneiss	N/A
	165.8 - 166.5	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	166.5 - 167.1	Proterozoic Y	Charnockite	granitic gneiss	N/A
	167.1 - 167.2	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	167.2 - 168.5	Proterozoic Y	Charnockite	granitic gneiss	N/A
	168.5 - 168.7	Proterozoic Y	Charnockite	granitic gneiss	N/A
	168.7 - 168.8	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	168.8 - 169.5	Proterozoic Y	Charnockite	granitic gneiss	N/A
	169.5 - 169.9	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	169.9 - 170.6	Proterozoic Y	Layered Biotite Granulite and Gneiss	gneiss	granulite
	170.6 - 171.2	Proterozoic Y	Layered Quartzofeldspathic Augen Gneiss and Flaser Gneiss	felsic gneiss	flaser gneiss
	171.2 - 172.4	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	172.4 - 172.5	Proterozoic Z-Cambrian	Metagabbro	amphibolite	amphibolite
	172.5 - 173.0	Proterozoic Z	Rockfish River Pluton	granodiorite	N/A
	173.0 - 173.7	Proterozoic Y	Alkali Feldspar Leucogranite	granite	N/A

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	173.7 - 174.1	Proterozoic Y	Porphyoblastic Biotite-Plagioclase Augen Gneiss	augen gneiss	N/A
	174.1 - 175.0	Proterozoic Z-Cambrian	Metagabbro	amphibolite	amphibolite
	175.0 - 177.1	Proterozoic Z	Linville Metadiabase	meta-argillite	schist
	177.1 - 179.2	Proterozoic Z	Ashe Formation - Biotite gneiss	biotite gneiss	N/A
	179.2 - 179.7	Proterozoic Z-Cambrian	Alligator Back Formation - Feldspathic metagraywacke	meta-argillite	schist
	179.7 - 180.0	Proterozoic Z-Cambrian	Mafic Igneous Complex Undivided	mafic metavolcanic rock	N/A
	180.0 - 180.9	Proterozoic Z-Cambrian	Alligator Back Formation - Feldspathic metagraywacke	meta-argillite	schist
	180.9 - 181.2	Proterozoic Z-Cambrian	Catoctin Formation - Metabasalt	meta-basalt	N/A
	181.2 - 183.2	Cambrian	Candler Formation - Phyllite and schist	phyllite	schist
	183.2 - 183.4	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	183.4 - 184.0	Proterozoic Z-Cambrian	Alligator Back Formation - Feldspathic metagraywacke	meta-argillite	schist
	184.0 - 184.2	Cambrian	Candler Formation - Phyllite and schist	phyllite	schist
	184.2 - 184.8	Upper Triassic	Newark Supergroup; Triassic Sandstone, Siltstone, and Shale	sandstone	siltstone
	184.8 - 186.9	Cambrian	Candler Formation - Phyllite and schist	phyllite	schist
	186.9 - 188.7	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	188.7 - 189.2	Cambrian	Candler Formation - Phyllite and schist	phyllite	schist
	189.2 - 193.4	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	193.4 - 193.7	Proterozoic Z-Pennsylvanian	Buckingham Complex - Metamorphosed mafic and ultramafic rocks	metamorphic rock	N/A

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	193.7 - 193.9	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	193.9 - 196.7	Proterozoic Z-Pennsylvanian	Buckingham Complex - Metamorphosed mafic and ultramafic rocks	metamorphic rock	N/A
	196.7 - 196.8	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	196.8 - 197.1	Proterozoic Z-Pennsylvanian	Buckingham Complex - Metamorphosed mafic and ultramafic rocks	metamorphic rock	N/A
	197.1 - 197.6	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	197.6 - 197.8	Proterozoic Z-Pennsylvanian	Buckingham Complex - Metamorphosed mafic and ultramafic rocks	metamorphic rock	N/A
	197.8 - 198.0	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	198.0 - 198.2	Proterozoic Z-Pennsylvanian	Buckingham Complex - Metamorphosed mafic and ultramafic rocks	metamorphic rock	N/A
	198.2 - 200.7	Proterozoic Z-Cambrian	Metagraywacke, Quartzose Schist, and Melange	meta-argillite	schist
	200.7 - 200.8	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	200.8 - 202.2	Cambrian	Chopawamsic Formation - Interlayered felsic and mafic metavolcanic rocks	metavolcanic rock	N/A
	202.2 - 203.5	Ordovician	Axemann Formation	slate	schist
	203.5 - 204.3	Cambrian	Interlayered Mafic and Felsic Metavolcanic Rocks - Amphibolite, hornblende-biotite gneiss, and schist.	amphibolite	biotite gneiss
	204.3 - 204.4	Proterozoic	Ultramafic Rocks	ultramafitite (komatiite)	N/A
	204.4 - 210.3	Cambrian	Interlayered Mafic and Felsic Metavolcanic Rocks - Amphibolite, hornblende-biotite gneiss, and schist.	amphibolite	biotite gneiss

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	210.3 - 211.4	Upper Triassic	Newark Supergroup; Breccia, mixed clasts	breccia	N/A
	211.4 - 214.3	Upper Triassic	Newark Supergroup; Triassic Sandstone, Siltstone, and Shale	sandstone	siltstone
	214.3 - 215.5	Triassic	Newark Supergroup, Chatham Group; Sanford Formation	sandstone	siltstone
	215.5 - 215.5	Upper Triassic	Newark Supergroup; Arkosic Sandstone	sandstone	N/A
	215.5 - 217.0	Proterozoic	Migmatitic Paragneiss	paragneiss	N/A
	217.0 - 217.1	Proterozoic	Porphyroblastic Biotite Gneiss	biotite gneiss	N/A
	217.1 - 220.0	Proterozoic	Migmatitic Paragneiss	paragneiss	N/A
	220.0 - 220.5	Proterozoic	Porphyroblastic Biotite Gneiss	biotite gneiss	N/A
	220.5 - 220.7	Proterozoic	Biotite Granite Gneiss	granitic gneiss	N/A
	220.7 - 221.7	Proterozoic	Porphyroblastic Biotite Gneiss	biotite gneiss	N/A
	221.7 - 223.5	Proterozoic	Biotite Granite Gneiss	granitic gneiss	N/A
	223.5 - 223.8	Proterozoic	Porphyroblastic Biotite Gneiss	biotite gneiss	N/A
	223.8 - 224.3	Proterozoic	Migmatitic Paragneiss	paragneiss	N/A
	224.3 - 228.2	Proterozoic	Biotite Granite Gneiss	granitic gneiss	N/A
	228.2 - 229.4	Proterozoic	Migmatitic Paragneiss	paragneiss	N/A
	229.4 - 234.4	Proterozoic	Burkeville Pluton	granodiorite	monzonite
	234.4 - 235.9	Proterozoic	Amphibolite and Amphibole-Bearing Gneiss and Schist	amphibolite	gneiss
	235.9 - 236.2	Proterozoic	Migmatitic Paragneiss	paragneiss	N/A
	236.2 - 236.6	Proterozoic Y-Pennsylvanian	Quartzofeldspathic Gneiss	felsic gneiss	N/A
	236.6 - 236.7	Proterozoic Y	Porphyroblastic Garnet-Biotite Gneiss	biotite gneiss	N/A
	236.7 - 237.0	Proterozoic Y-Pennsylvanian	Quartzofeldspathic Gneiss	felsic gneiss	N/A
	237.0 - 239.9	Proterozoic Y	Porphyroblastic Garnet-Biotite Gneiss	biotite gneiss	N/A

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	239.9 - 240.1	Proterozoic Y	Amphibolite, Amphibole Gneiss, and Schist	schist	gneiss
	240.1 - 240.6	Proterozoic Y-Pennsylvanian	Granite Gneiss	granitic gneiss	N/A
	240.6 - 241.5	Proterozoic Y	Porphyroblastic Garnet-Biotite Gneiss	biotite gneiss	N/A
	241.5 - 244.7	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	244.7 - 245.9	Proterozoic	Gneissic Granite and Granodiorite	granite	granodiorite
	245.9 - 248.4	Proterozoic	Biotite Gneiss	biotite gneiss	N/A
	248.4 - 248.7	Proterozoic	Gneissic Granite and Granodiorite	granite	granodiorite
	248.7 - 250.7	Proterozoic	Biotite Gneiss	biotite gneiss	N/A
	250.7 - 251.2	Proterozoic	Gneissic Granite and Granodiorite	granite	granodiorite
	251.2 - 260.0	Proterozoic	Biotite Gneiss	biotite gneiss	N/A
	260.0 - 260.3	Proterozoic	Gneissic Granite and Granodiorite	granite	granodiorite
	260.3 - 262.7	Proterozoic	Biotite Gneiss	biotite gneiss	N/A
	262.7 - 264.0	Proterozoic	Gneissic Granite and Granodiorite	granite	granodiorite
	264.0 - 270.6	Proterozoic	Biotite Gneiss	biotite gneiss	N/A
	270.6 - 272.3	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	272.3 - 276.2	Proterozoic	Porphyroblastic Biotite Granite	granite	N/A
	276.2 - 278.2	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A
	278.2 – 280.0	Proterozoic - Paleozoic ?	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
	280.0 - 281.1	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A
	281.1 - 281.4	Proterozoic	Granite	granite	granodiorite
	281.4 - 282.1	Tertiary	Pliocene Sand and Gravel	gravel	sand
	282.1 - 283.1	Proterozoic	Granite	granite	granodiorite
	283.1 - 283.3	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A
	283.3 - 284.4	Tertiary	Pliocene Sand and Gravel	gravel	sand

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	284.4 - 284.5	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A
	284.5 - 285.6	Tertiary	Pliocene Sand and Gravel	gravel	sand
	285.6 - 287.2	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A
	287.2 - 289.7	Tertiary	Pliocene Sand and Gravel	gravel	sand
	289.7 - 290.2	Proterozoic	Granite	granite	granodiorite
	290.2 - 297.8	Tertiary	Bacons Castle Formation	gravel	sand
	297.8 - 298.1	Tertiary-Quaternary	Windsor Formation	gravel	sand
	298.1 - 298.7	Quaternary	Charles City Formation	sand	silt
	298.7 - 299.4	Quaternary	Alluvium	alluvium	clay or mud
	299.4 - 300.1	Tertiary	Bacons Castle Formation	gravel	sand
	300.1 - 300.2	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
North Carolina					
AP-2 Mainline	0.0 - 6.5	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	6.5 - 9.4	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	9.4 - 11.3	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	11.3 - 13.9	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	13.9 - 14.2	Paleozoic/Late Proterozoic	Metamorphosed Quartz Diorite	metamorphic rock	N/A
	14.2 - 14.9	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	14.9 - 15.6	Paleozoic/Late Proterozoic	Metamorphosed Quartz Diorite	metamorphic rock	N/A
	15.6 - 16.5	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	16.5 - 16.8	Paleozoic/Late Proterozoic	Metamorphosed Quartz Diorite	metamorphic rock	N/A
	16.8 - 19.4	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	19.4 - 20.0	Paleozoic/Late Proterozoic	Metamorphosed Quartz Diorite	metamorphic rock	N/A

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	20.0 - 22.7	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	22.7 - 23.1	Paleozoic/Late Proterozoic	Metamorphosed Quartz Diorite	metamorphic rock	N/A
	23.1 - 29.0	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	29.0 - 29.2	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	29.2 - 32.5	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	32.5 - 32.8	Permian/Pennsylvanian	Foliated to Massive Granitic Rock	granite	N/A
	32.8 - 33.6	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	33.6 - 34.1	Permian/Pennsylvanian	Foliated to Massive Granitic Rock	granite	N/A
	34.1 - 37.4	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	37.4 - 39.3	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	39.3 - 41.6	Permian/Pennsylvanian	Foliated to Massive Granitic Rock	granite	N/A
	41.6 - 42.9	Permian/Pennsylvanian	Foliated to Massive Granitic Rock	granite	N/A
	42.9 - 43.6	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	43.6 - 44.9	Permian/Pennsylvanian	Foliated to Massive Granitic Rock	granite	N/A
	44.9 - 46.9	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	46.9 - 49.4	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	49.4 - 50.2	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	50.2 - 50.5	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	50.5 - 51.7	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	51.7 - 52.0	Cambrian/Late Proterozoic	Felsic Metavolcanic Rock	felsic metavolcanic rock	mafic metavolcanic rock

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	52.0 - 52.8	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	52.8 - 57.1	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	57.1 - 58.2	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	58.2 - 58.8	Cambrian/Late Proterozoic	Felsic Metavolcanic Rock	felsic metavolcanic rock	mafic metavolcanic rock
	58.8 - 59.5	Cambrian/Late Proterozoic	Felsic Metavolcanic Rock	felsic metavolcanic rock	mafic metavolcanic rock
	59.5 - 60.6	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	60.6 - 60.9	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	60.9 - 62.4	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	62.4 - 63.0	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	63.0 - 65.6	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	65.6 - 66.2	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	66.2 - 66.7	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	66.7 - 67.4	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	67.4 - 69.0	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	69.0 - 69.1	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	69.1 - 69.7	Permian/Pennsylvanian	Granitic Rock	granite	N/A
	69.7 - 69.9	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	69.9 - 70.3	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	70.3 - 71.2	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite
	71.2 - 72.6	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	72.6 - 74.1	Cambrian/Late Proterozoic	Metamudstone and Meta-Argillite	metasedimentary rock	meta-argillite

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	74.1 - 78.6	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	78.6 - 79.7	Cambrian/Late Proterozoic	Felsic Metavolcanic Rock	felsic metavolcanic rock	mafic metavolcanic rock
	79.7 - 82.3	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	82.3 - 83.9	Cambrian/Late Proterozoic	Felsic Metavolcanic Rock	felsic metavolcanic rock	mafic metavolcanic rock
	83.9 - 87.2	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	87.2 - 92.5	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	92.5 - 92.8	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	92.8 - 95.3	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
	95.3 - 96.0	Tertiary	Terrace Deposits and Upland Sediment	terrace	gravel
	96.0 - 103.1	Cretaceous	Cape Fear Formation	sandstone	mudstone
	103.1 - 106.6	Cretaceous	Black Creek Formation	clay or mud	sand
	106.6 - 107.0	Cretaceous	Cape Fear Formation	sandstone	mudstone
	107.0 - 116.7	Cretaceous	Black Creek Formation	clay or mud	sand
	116.7 - 117.3	Cretaceous	Cape Fear Formation	sandstone	mudstone
	117.3 - 122.9	Cretaceous	Black Creek Formation	clay or mud	sand
	122.9 - 135.3	Cretaceous	Cape Fear Formation	sandstone	mudstone
	135.3 - 182.9	Cretaceous	Black Creek Formation	clay or mud	sand
North Carolina		Cretaceous	Cape Fear Formation	sandstone	mudstone
AP-3 Lateral	0.0 - 12.2	Tertiary	Yorktown Formation and Duplin Formation, Undivided	clay or mud	sand
Virginia					
AP-3 Lateral	12.2 - 13.5	Quaternary	Alluvium	alluvium	clay or mud

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	13.5 - 17.3	Quaternary	Shirley Formation	gravel	sand
	17.3 - 17.6	Tertiary	Moorings Unit of Oaks and Coch (1973)	sand	silt
	17.6 - 18.3	Quaternary	Alluvium	alluvium	clay or mud
	18.3 - 19.5	Quaternary	Shirley Formation	gravel	sand
	19.5 - 28.3	Tertiary-Quaternary	Windsor Formation	gravel	sand
	28.3 - 32.1	Quaternary	Shirley Formation	gravel	sand
	32.1 - 32.8	Quaternary	Alluvium	alluvium	clay or mud
	32.8 - 34.4	Quaternary	Dune Sand	dune sand	N/A
	34.4 - 38.0	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	38.0 - 38.5	Quaternary	Alluvium	alluvium	clay or mud
	38.5 - 39.2	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	39.2 - 39.5	Quaternary	Chuckatuck Formation	gravel	sand
	39.5 - 40.0	Tertiary-Quaternary	Windsor Formation	gravel	sand
	40.0 - 41.8	Quaternary	Charles City Formation	sand	silt
	41.8 - 44.0	Tertiary-Quaternary	Windsor Formation	gravel	sand
	44.0 - 44.3	Quaternary	Alluvium	alluvium	clay or mud
	44.3 - 44.7	Quaternary	Charles City Formation	sand	silt
	44.7 - 49.1	Tertiary-Quaternary	Windsor Formation	gravel	sand
	49.1 - 49.7	Quaternary	Alluvium	alluvium	clay or mud
	49.7 - 50.0	Quaternary	Charles City Formation	sand	silt
	50.0 - 50.4	Quaternary	Alluvium	alluvium	clay or mud
	50.4 - 51.3	Tertiary-Quaternary	Windsor Formation	gravel	sand
	51.3 - 55.3	Quaternary	Charles City Formation	sand	silt
	55.3 - 55.5	Tertiary	Chesapeake Group	sand	silt
	55.5 - 55.8	Quaternary	Charles City Formation	sand	silt
	55.8 - 56.4	Tertiary	Chesapeake Group	sand	silt
	56.4 - 57.4	Quaternary	Charles City Formation	sand	silt

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
	57.4 - 58.1	Tertiary	Chesapeake Group	sand	silt
	58.1 - 60.6	Quaternary	Charles City Formation	sand	silt
	60.6 - 61.3	Tertiary	Chesapeake Group	sand	silt
	61.3 - 61.9	Quaternary	Charles City Formation	sand	silt
	61.9 - 62.3	Tertiary	Chesapeake Group	sand	silt
	62.3 - 62.4	Holocene	water	water	N/A
	62.4 - 62.7	Tertiary	Chesapeake Group	sand	silt
	62.7 - 63.4	Quaternary	Charles City Formation	sand	silt
	63.4 - 64.2	Quaternary	Alluvium	alluvium	clay or mud
	64.2 - 64.6	Holocene	water	water	N/A
	64.6 - 65.1	Quaternary	Alluvium	alluvium	clay or mud
	65.1 - 65.2	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	65.2 - 65.5	Holocene	water	water	N/A
	65.5 - 66.5	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	66.5 - 70.4	Quaternary	Swamp Deposits	peat	clay or mud
	70.4 - 71.4	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	71.4 - 72.6	Quaternary	Swamp Deposits	peat	clay or mud
	72.6 - 73.5	Quaternary	Tabb Formation; Sedgefield Member	sand	N/A
	73.5 - 76.3	Quaternary	Swamp Deposits	peat	clay or mud
	76.3 - 81.7	Quaternary	Tabb Formation; Lynnhaven Member	sand	silt
	81.7 - 81.8	Holocene	water	water	N/A
	81.8 - 82.7	Quaternary	Tabb Formation; Lynnhaven Member	sand	silt
Virginia					
AP-4 Lateral	0.0 - 0.4	Proterozoic - Paleozoic	Mylonite, Mylonite Gneiss, and Cataclastic Rocks	mylonite	gneiss
Virginia					
AP-5 Lateral	0.0 - 1.0	Proterozoic	Mafic and Felsic Volcanic Rocks	metavolcanic rock	N/A

Appendix O (cont'd)

Bedrock Geology Crossed by the Atlantic Coast Pipeline and Supply Header Project

Project/State or Commonwealth/ Component	Milepost Range	Unit Age	Geologic Unit	Primary Lithology	Secondary Lithology
SUPPLY HEADER PROJECT					
Pennsylvania					
TL-636 Loopline	0.0 - 1.1	Pennsylvanian	Monongahela Group	limestone	shale
	1.1 - 2.5	Pennsylvanian	Casselman Formation	shale	siltstone
	2.5 - 3.4	Pennsylvanian	Glenshaw Formation	shale	sandstone
	3.4 - 3.5	Pennsylvanian	Casselman Formation	shale	siltstone
	3.5 - 3.9	Pennsylvanian	Glenshaw Formation	shale	sandstone
West Virginia					
TL-635 Loopline	0.0 - 33.6	Permian-Pennsylvanian	Dunkard Group	sandstone	siltstone

APPENDIX P

SOIL ANALYSES

P1 REVISED UNIVERSAL SOIL LOSS EQUATION 2 ANALYSIS

P2 MONONGAHELA NATIONAL FOREST ABOVE AND BELOWGROUND CARBON CALCULATION METHODOLOGIES

P1 REVISED UNIVERSAL SOIL LOSS EQUATION 2 ANALYSIS

Appendix P

Revised Universal Soil Loss Equation 2 Analysis

The Revised Universal Soil Loss Equation 2 (RUSLE2) equation is used to evaluate potential erosion rates at specific sites as well as guide conservation and erosion control planning. RUSLE2 uses factors that represent the effects of climate, soil erodibility, topography, cover management and support practices to compute soil erosion.

RUSLE2 estimates average annual soil loss from the eroding portion of the overland-flow path, deposition on the depositional portion of the path, and sediment load along the overland flow path. Sediment yield (delivery) is the sediment load at the end of the overland flow path, at the outlet of terrace/diversion channels, or discharged from sediment basins that are considered in the overland flow path (profile) representation used in a particular RUSLE2 computation. These quantities are expressed in units of mass per unit area per year.

The RUSLE2 computer model estimates soil loss from rill and interrill erosion caused by rainfall on cropland and can be used to predict the long-term average rate of rill and interrill erosion for several alternative combinations of crop system and management practices. When the predicted losses are compared with soil loss tolerances, RUSLE2 can provide insights for effective erosion control measures. However, there are several limitations to the RUSLE2 model, a summary of which is provided in the following table.

TABLE P-1

Summary of RUSLE2 Input Factors and Limitations [a]

RUSLE2 Input Factor	Applicability	Limitation
Soil	RUSLE2 is most applicable to medium textured soils. It works moderately well for fine textured soils and acceptably for coarse textured soils and least well for high sand soils.	RUSLE2 should not be applied to organic soils, such as peat.
Topography	RUSLE2 works best for overland flow path lengths between 50 (15m) and 300ft (100m) long. It works moderately well for overland flow path lengths less than 20ft long, including overland flow path lengths as short as 1 inch (25mm), and for overland flow path lengths between 300 and 600ft (100 and 200m). It works acceptably for overland flow path lengths between 600 and 1000ft long (200 and 300m).	RUSLE2 should not be applied to overland flow path lengths greater than 1000ft (300m). The RUSLE2 program will not accept input values greater than 1000ft (305m).
	RUSLE2 works best for overland flow path steepness between 3 and 20 percent. It works moderately well for steepness less than 3 percent and between 20 and 35 percent. It works acceptably for steepness between 35 and 100 percent. It should not be applied to steepness greater than 100 percent.	RUSLE2 should not be used for overland flow path steepness greater than 100 percent. The RUSLE2 program does not accept input values greater than 100 percent.
Geographic Region	RUSLE2 works best where rainfall occurs regularly, rainfall is the dominant precipitation, and average annual rainfall exceeds 20 inches.	RUSLE2 does not explicitly estimate erosion caused by snowmelt.
Land Use	RUSLE2 is land use independent and works best for cropland, construction sites, landfills, and moderate to highly disturbed military training sites. It works moderately well on pastureland, mine spoil and disturbed forestland. It works acceptably on rangeland, abandoned crop and pastureland, and similar wildlife lands with few trees.	RUSLE2 should not be used for undisturbed forestland.
Temporal Values	RUSLE2 is designed to estimate average annual erosion.	RUSLE2 is not designed to estimate erosion from individual storms, specific time periods, probability distributions of erosion by storm, season, or year. Also, it is not designed to estimate erosion for a storm with a given recurrence interval.

[a] USDA Draft User's Reference Guide, Revised Universal Soil Loss Equation Version 2.

RUSLE2 computes net detachment each day using the factors: [a = r k l S c p] where: a = net detachment (mass/unit area), r = erosivity factor, k = soil erodibility factor, l = slope length factor, S = slope steepness factor, c = cover-management factor, and p = supporting practices factor.

The R factor represents the erosivity of the climate at a particular location. An average annual value of R is determined from historical weather records using erosivity values determined for individual storms. The erosivity of an individual storm is computed as the product of the storm's total energy, which is closely related to storm amount, and the storm's maximum 30-minute intensity. Erosivity range from less than 8 (US customary units) in the western US to about 700 for New Orleans.

The K factor represents a relative quantitative index of the susceptibility of bare soil to particle detachment and transport by water, and is one of the factors used in the Revised Universal Soil Loss Equation to calculate soil loss. K factor values range from 0.02 to 0.69. Fine textured soils high in clay have low K values, about 0.02 to 0.15, because they are resistant to detachment. Coarse texture soils, such as sandy soils, have low K values, about 0.05 to 0.2, because of low runoff even though these soils are easily detached. Medium textured soils, such as silt loam soils, have moderate K values, about 0.25 to 0.40, because they are moderately susceptible to detachment and they produce moderate runoff. Soils having a high silt content are the most erodible of all soils. They are easily detached and they tend to crust and produce large amounts and rates of runoff. Values of K for these soils tend to be greater than 0.4.

The l and S factors jointly represent the effect of slope length, steepness, and shape on sediment production. The c factor accounts for the effects of cover-management and the p factor accounts for supporting management practices. Support practices include contouring, filter and buffer strips, rotational strip cropping, terraces and diversions, and small impoundments These practices are referred as support practices because they are used to support primary cultural erosion control practices based on vegetation, crop residue, plant litter, and applied mulch (Foster 2004).

We received a comment that Atlantic and DETI are not adequately investigating the influence of slope percent as a variable factor in predicting soil erosion potential in rugged mountainous terrain. The commenter notes that using the RUSLE2 computer model, and "holding constant the otherwise variable factors of slope length and width, soil type or class, rainfall patterns, and construction disturbance" and analyzing slope percent values ranging from 10 percent to 90 percent, they obtained output values of potential soil erosion rates that ranged from 34 tons/acre/year to 549 tons/acre/year, respectively. However, because no adjustments were made for the other variable factors used in the computer model, we find that this commenter's analysis overestimates the actual erosion potential in the project area, especially once permanent erosions controls are installed and the right-of-way is revegetated.

In order to further address this comment, we used the RUSLE2 computer model to analyze two random soil map units that would be crossed by ACP in Bath County, Virginia, the area the commenter had indicated they also analyzed. Settings in the model were adjusted to account for the specific climate zone, slope length, and construction and restoration practices that are proposed for ACP. The computer model was used to analyze four different scenarios: preconstruction conditions, construction conditions with no vegetative cover, construction conditions with temporary seeding and mulch application, and post-construction restoration conditions. Outlines of each scenario are below. Additional inputs and RUSLE2 computer model output values are summarized in table P-2.

1. "Preconstruction"
    a. 100' slope length
    b. Slope Steepness = representative slope value as defined in SSURGO for each soil map unit
    c. Crop Management Zone: CMZ 64
    d. Base management = Permanent pasture, average annual canopy 95%, residue 30%

2. Construction, no cover
    a. 100' slope length[1]
    b. Slope Steepness = representative slope value as defined in SSURGO for each soil map unit
    c. Crop Management Zone: CMZ 64
    d. Base management = Construction site, no vegetative cover

3. Construction, with temporary seed and mulch
    a. 100' slope length[2]
    b. Slope Steepness = representative slope value as defined in SSURGO for each soil map unit
    c. Crop Management Zone: CMZ 64
    d. Base management = Construction site, temporary seed annual ryegrass with mulch

4. Restoration
    a. 100' slope length
    b. Slope Steepness = representative slope value as defined in SSURGO for each soil map unit
    c. Crop Management Zone: CMZ 64
    d. Base management = Permanent pasture, average annual canopy 50%, residue 5%

[1] A slope length of 100' was used to align with the temporary slope breaker spacing requirement outlined in Atlantic's *Restoration and Rehabilitation Plan* and FERC *Plan.*

[2] A slope length of 100' was used to align with the temporary slope breaker spacing requirement outlined in Atlantic's *Restoration and Rehabilitation Plan* and FERC *Plan.*

TABLE P-2

Summary of RUSLE2 Computer Model Inputs and Outputs for Selected Soil Map Units in Bath County, VA

	Input Values							Output Values			
Scenario	**Management Practices**	**Crop Mgmt Zone [a]**	**R Factor**	**K Factor [b]**	**Slope Length**	**Slope Steepness [c]**	**Slope T Value, t/ac/yr**	**Conservation Plan Soil Loss, t/ac/yr**	**Sediment Delivery, t/ac/yr**	**Soil Conditioning Index (SCI)**	**Annual Event Runoff, in/yr**
Bath County, VA; 16E, Dekalb-Watahala-McClung complex, 35 to 55 percent slopes											
"Preconstruction"	Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	CMZ 64	150	0.15	100	45	2	0.015	0.015	1.9	0.57
Construction A	Construction Site, no vegetation	CMZ 64	150	0.15	100	45	2	120	120	-9.7	3.6
Construction B	Construction Site, Temporary Seed Annual Ryegrass with Mulch	CMZ 64	150	0.15	100	45	2	69	69	-5.3	3.5
Restoration	Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	CMZ 64	150	0.15	100	45	2	3.7	3.7	0.42	1.6
Bath County, VA; 50D, Shelocta-Berks complex, 15 to 35 percent slopes											
"Preconstruction"	Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	CMZ 64	150	0.37	100	25	5	0.022	0.022	1.9	2
Construction A	Construction Site, no vegetation	CMZ 64	150	0.37	100	25	5	180	180	-14	6.1
Construction B	Construction Site, Temporary Seed Annual Ryegrass with Mulch	CMZ 64	150	0.37	100	25	5	97	97	-7.5	6.2
Restoration	Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	CMZ 64	150	0.37	100	25	5	5	5	0.31	3.8

[a] Crop Management Zone selected based on county; http://fargo.nserl.purdue.edu/rusle2_dataweb/NRCS_Crop_Management_Zone_Maps.htm

[b] K Factor inputs obtained from the SSURGO database for each soil map unit

[c] Slope Steepness inputs obtained from the representative slope value as defined in SSURGO for each soil map unit

References/Additional Resources

Foster, George R. *Revised Universal Soil Loss EquationVersion 2, Draft User's Reference Guide*. Prepared for USDA-Agricultural Research Service, Washington D.C. December 22, 2004.

USDA, Agricultural Research Service, Overview or RUSLE2. https://www.ars.usda.gov/southeast-area/oxford-ms/national-sedimentation-laboratory/watershed-physical-processes-research/docs/revised-universal-soil-loss-equation-2-overview-of-rusle2/

VA RUSLE2 Plan Printout w/

Detailed printout of RUSLE2 calculation for multiple fields, one or more management alternatives per field

I. Client/Tract ID & Summary

Client/Owner name:
Tract #:
Location: USA\Virginia\Bath County

Printout date: June 27, 2017
Prepared by (name):
USDA Service Center/Location:

Narrative description of plan, fields, and/or management alternatives being compared:
Info: Analysis of runoff potential for individual soil types within the analysis area. Slopes entered were extracted from SSURGO database, "Slope Gradient - Representative Value" field.

Notes on collection of input data, field visits, etc.:

Summary of RUSLE2 output for each field & management alternative:

Field name	*Description*	*Cons. plan. soil loss, t/ac/yr*	*Soil conditioning index (SCI)*	*STIR value*
VA017_16E	**Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%**	**0.015**	**1.9**	**2.9**
VA017_16E	**Construction Site, 100' slope length, All default values used**	**120**	**-9.7**	**49**
VA017_16E	**Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch**	**69**	**-5.3**	**27**
VA017_16E	**Post-Construction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%**	**3.7**	**0.42**	**7.3**
VA017_50D	**Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%**	**0.022**	**1.9**	**2.9**
VA017_50D	**Construction Site, 100' slope length, All default values used**	**180**	**-14**	**49**
VA017_50D	**Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch**	**97**	**-7.5**	**27**
VA017_50D	**Post-Construction: 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%**	**5.0**	**0.31**	**7.3**

Recommendations / Comments:

II. RUSLE2 Plan Inputs

1. CLIMATE (R FACTOR)

Climate Location: USA\Virginia\Bath County (R Factor: 150 US)

2 & 3. SOIL & TOPOGRAPHY (K and LS FACTORS)

Field name	*Soil*	*Slope T Value, t/ac/yr*	*Slope length, ft*	*Slope steepness, %*
VA017_16E	soils\Bath County, Virginia\16E Dekalb-Watahala-McClung complex, 35 to 55 percent slopes\Dekalb Channery sandy loam 35%	2.0	100	45.0
VA017_16E	soils\Bath County, Virginia\16E Dekalb-Watahala-McClung complex, 35 to 55 percent slopes\Dekalb Channery sandy loam 35%	2.0	100	45.0
VA017_16E	soils\Bath County, Virginia\16E Dekalb-Watahala-McClung complex, 35 to 55 percent slopes\Dekalb Channery sandy loam 35%	2.0	100	45.0

Field name	*Soil*	*Slope T Value, t/ac/yr*	*Slope length, ft*	*Slope steepness, %*
VA017_16E	soils\Bath County, Virginia\16E Dekalb-Watahala-McClung complex, 35 to 55 percent slopes\Dekalb Channery sandy loam 35%	2.0	100	45.0
VA017_50D	soils\Bath County, Virginia\50D Shelocta-Berks complex, 15 to 35 percent slopes\Shelocta Silt loam 60%	5.0	100	25.0
VA017_50D	soils\Bath County, Virginia\50D Shelocta-Berks complex, 15 to 35 percent slopes\Shelocta Silt loam 60%	5.0	100	25.0
VA017_50D	soils\Bath County, Virginia\50D Shelocta-Berks complex, 15 to 35 percent slopes\Shelocta Silt loam 60%	5.0	100	25.0
VA017_50D	soils\Bath County, Virginia\50D Shelocta-Berks complex, 15 to 35 percent slopes\Shelocta Silt loam 60%	5.0	100	25.0

4A. CROP MANAGEMENT (C FACTOR) SUMMARY – ALL FIELDS/ALTERNATIVES

RUSLE2 crop management file name for each field & management alternative:

Field name	*Description*	*Management*
VA017_16E	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	managements\CMZ 64\a.Single Year/Single Crop Templates\F01. PERMANENT PASTURE\01. PASTURE, PERMANENT. Avg annual canopy 95%, residue 30%
VA017_16E	Construction Site, 100' slope length, no vegetation	managements\CMZ 64\d.Construction Site Templates\Construction site
VA017_16E	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	managements\CMZ 64\d.Construction Site Templates\Temporary Seed Annual Ryegrass with mulch
VA017_16E	Post-Construction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	managements\CMZ 64\a.Single Year/Single Crop Templates\F01. PERMANENT PASTURE\06. PASTURE, PERMANENT. Avg annual canopy 50%, residue 5%
VA017_50D	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	managements\CMZ 64\a.Single Year/Single Crop Templates\F01. PERMANENT PASTURE\01. PASTURE, PERMANENT. Avg annual canopy 95%, residue 30%
VA017_50D	Construction Site, 100' slope length, no vegetation	managements\CMZ 64\d.Construction Site Templates\Construction site
VA017_50D	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	managements\CMZ 64\d.Construction Site Templates\Temporary Seed Annual Ryegrass with mulch
VA017_50D	Post-Construction: 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	managements\CMZ 64\a.Single Year/Single Crop Templates\F01. PERMANENT PASTURE\06. PASTURE, PERMANENT. Avg annual canopy 50%, residue 5%

4B. CROP MANAGEMENT (C FACTOR) DETAILS – SELECTED ALTERNATIVES

Key crop management details can be printed for one or more management alternatives in this plan. Details that can be printed include:

- *Rotation duration (years)*
- *Crops / vegetations in rotation and long-term yield averages (table)*
- *Key dates and list of field operations (table)*
- *Details about external residue (manure, compost) additions (table)*

In order to print these details:

- *Return to this Plan in RUSLE2.*
- *Open relevant Worksheet(s) within the Plan, then relevant Profile(s) within the Worksheet(s).*
- *From the Profile screen(s), print using "VA RUSLE2 Profile Printout w Details.2007".*
- *Copy the desired crop management details from the resulting Word Profile printout(s).*
- *Paste the crop management details below and clearly identify the alternative(s) to which they apply.*
- *Delete these instructions.*

a. Alternative 1: …

b. Alternative 2: …

c. Alternative 3: …

5. SUPPORT PRACTICES (P FACTOR) SUMMARY

Summary of support practices selected for each field & management alternative:

Field name	*Description*	*Contouring system*	*Support practices*	*Terrace/diversion system*
VA017_16E	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	contour-systems\default	-- none --	-- none --
VA017_16E	Construction Site, 100' slope length, All default values used	contour-systems\default	-- none --	-- none --
VA017_16E	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	contour-systems\default	-- none --	-- none --
VA017_16E	Post-Construction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	contour-systems\default	-- none --	-- none --
VA017_50D	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	contour-systems\default	-- none --	-- none --

Field name	*Description*	*Contouring system*	*Support practices*	*Terrace/diversion system*
VA017_50D	Construction Site, 100' slope length, All default values used	contour-systems\default	-- none --	-- none --
VA017_50D	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	contour-systems\default	-- none --	-- none --
VA017_50D	Post-Construction: 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	contour-systems\default	-- none --	-- none --

6. RUSLE2 SOFTWARE DETAILS

- Program version: Feb 23 2016
- Database name: BASE_NRCS_MOSES_03302016
- Plan file name: plans\ACP_Analysis_ByMUSYM_16E

III. RUSLE2 Plan Outputs & Definitions

1. SOIL LOSS ESTIMATES & SOIL QUALITY SCORES – ALL FIELDS & ALTERNATIVES:

Field name	*Description*	*Cons. plan. soil loss, t/ac/yr*	*Sed. delivery, t/ac/yr*	*Soil conditioning index (SCI)*	*STIR value*
VA017_16E	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	0.015	0.015	1.9	2.9
VA017_16E	Construction Site, 100' slope length, All default values used	120	120	-9.7	49

Field name	*Description*	*Cons. plan. soil loss, t/ac/yr*	*Sed. delivery, t/ac/yr*	*Soil conditioning index (SCI)*	*STIR value*
VA017_16E	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	69	69	-5.3	27
VA017_16E	Post-Construction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	3.7	3.7	0.42	7.3
VA017_50D	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	0.022	0.022	1.9	2.9
VA017_50D	Construction Site, 100' slope length, All default values used	180	180	-14	49
VA017_50D	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	97	97	-7.5	27
VA017_50D	Post-Construction: 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	5.0	5.0	0.31	7.3

Cons. Plan. Soil Loss, t/ac/yr = Soil loss for conservation planning in tons/acre/year
Estimate of average annual rainfall-induced soil loss (detachment of soil particles & transport downhill) over the length of the modeled slope. It is critical to understand that this value represents a long-term (20- to 30-year) average, not a prediction of actual soil loss in any single year. This is the number to use for conservation planning and to compare with the field's "T" soil loss tolerance value. This number is a measure of the likelihood of degradation by erosion of the soil resource in upslope (steeper) areas of the field. Very little credit is given for any sediment deposition that may occur towards the bottom of the modeled slope (for example, due to an end-of-slope filter strip), because upslope areas are still being degraded.

Sed. Delivery, t/ac/yr = Sediment delivery, tons/acre/year
Estimate of the amount of sediment delivered by runoff to the end of the modeled slope. This is RUSLE2's best estimate of long-term average "edge of field" soil loss. Full credit is given for any sediment deposition that occurs anywhere on the modeled slope due to reductions in slope grade, filter strips, terraces, etc. This number is not used for conservation planning, but may be used for other environmental applications (e.g., P-Index). In many cases, RUSLE2 users will model slopes as uniform with no structural practices, vegetative features (filter strips), or breaks in topography that result in sediment deposition. In this typical situation, results for sediment delivery and soil loss for conservation planning will be identical.

Soil conditioning index (SCI)
Soil organic matter (SOM) or soil carbon (C) trend score. If SCI is negative (less than zero), SOM and soil C and soil quality are predicted to decline over time on the modeled slope under the modeled management system. If SCI is positive (greater than zero), SOM and soil C and soil quality are predicted to stay the same or to increase over time. SCI scores usually range from -1 to +1 in typical VA situations, although more extreme values are possible. SCI is an index score (no units) designed solely for comparing the relative impact of different management alternatives on long-term soil quality trends. When calculating SCI, RUSLE2 considers three key factors: (1) amount of surface and subsurface biomass returned to the soil; (2) tillage-induced oxidation of soil carbon; and (3) predicted sheet & rill erosion. Climate and soil type inputs are also considered due to the influence of these factors on soil C oxidation trends.

STIR = Soil Tillage Intensity Rating (average annual value for the overall crop rotation)
Measure of intensity of tillage or soil disturbance. STIR is an index (no units) designed solely for comparing the relative impact of different management alternatives on soil disturbance. STIR increases with increasing tillage and can range from 0 to 200+. Average annual STIR values (shown in this printout) reflect the total amount of soil disturbance that occurs during the overall rotation, averaged across the number of years in the rotation. STIR values can also be calculated for individual crops (shown only in the VA Profile Printout w/ Details). The STIR for an individual crop represents the sum of all soil disturbance associated with establishing and harvesting that crop. STIR values in the 5 to 20 range are typical of no-till crops and/or continuous no-till or low soil disturbance cropping systems. In long rotations with a mix of tilled and no-till and/or perennial crops, the average annual STIR for the overall rotation may be relatively low even if significant tillage occurs in individual years and STIR values for one or more crops in the rotation are relatively high.

2. FUEL USAGE & COST ESTIMATES (adjusted for soil texture):

Field name	*Description*	*STIR value*	*Fuel cost, US$/ac*
VA017_16E	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	2.9	0
VA017_16E	Construction Site, 100' slope length, All default values used	49	0
VA017_16E	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	27	0
VA017_16E	Post-Construction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	7.3	0
VA017_50D	Preconstruction, 100' slope length, Permanent Pasture, Avg. Annual Canopy 95%, Residue 30%	2.9	0
VA017_50D	Construction Site, 100' slope length, All default values used	49	0
VA017_50D	Construction Site, 100' slope length, Temporary Seed Annual Ryegrass with Mulch	27	0
VA017_50D	Post-Construction: 100' slope length, Permanent Pasture, Avg. Annual Canopy 50%, Residue 5%	7.3	0

Fuel cost, US$/ac
Estimate of total cost of fuel consumed by all field operations over the full duration of the modeled crop rotation. RUSLE2 calculates this value using the Equivalent Diesel Use (gal/ac) output and the user-selected fuel type and cost ($/gal) (neither can be shown in a Plan printout).

In order to make a valid overall fuel cost comparison between management alternatives, it is especially important that a fuel type and unit fuel cost should be selected for each alternative under consideration. Therefore, the user should check RUSLE2 to verify that all fuel related inputs are correct before drawing conclusions from the fuel cost estimates in this printout.

RUSLE2 fuel usage results are expressed as total fuel used over the full duration of the rotation (i.e., gal/ac), **<u>not</u>** average annual fuel use (i.e., gal/ac/yr). Therefore, be very careful when using these values to compare relative fuel efficiency of two crop rotations that differ in duration!

Fuel usage results are derived from built-in estimates of "typical" fuel needs for each field operation in the RUSLE2 database. When interpreting these results, remember that most RUSLE2 management files were created with the goal of modeling operations and processes that impact soil loss. Therefore, some fuel-consuming operations with no impact on soil loss may not be listed in management files (e.g., post-emergence pesticide applications, hay tedding and raking, etc.). If you wish to improve the accuracy of fuel usage estimates and comparisons, make sure that all field operations (including those with no soil loss impact) are included in the relevant RUSLE2 management files.

RUSLE2 fuel usage estimates also reflect an adjustment based on soil type (i.e., finer texture requires more energy to till). RUSLE2 makes this soil type adjustment to fuel usage for every operation, including operations that do not disturb soil. Therefore, keeping soil type constant for all management alternatives under consideration will also help ensure a more accurate fuel usage comparison.

P2 MONONGAHELA NATIONAL FOREST ABOVE AND BELOWGROUND CARBON CALCULATION METHODOLOGIES

Methodology and Assumptions Used to Calculate Aboveground and Belowground Carbon Lost from ROW Clearing, Trench Excavation, and Cut Sites along the ACP Proposed ROW in the Monongahela National Forest

USDA Forest Service

May 8, 2017

This document describes the methodology and calculations used to calculate aboveground and belowground carbon that will be lost from ROW clearing, trench excavation, and cut sites along the ACP proposed ROW in the Monongahela National Forest.

Aboveground Carbon – Summary of Calculations

Aboveground calculations apply to bole wood expected to be removed from the ROW, temporary roads, other access corridors, and similar areas that will experience removal of trees. Because tops and roots typically will be left on site, they are not included in the carbon loss calculations. We acknowledge that some carbon from those sources will be lost to the atmosphere during microbial decomposition processes, but estimates are not available in the literature to separate the percentages of carbon lost to the atmosphere from percentages returned to the soil from decomposition of tree tops and roots. Consequently, the aboveground losses probably underestimate the actual C losses from tree removal.

Data for estimating aboveground carbon losses were obtained from the Forest Inventory and Analysis (FIA) branch of the US Forest Service. These are summaries by state and land owner from Miles (2016), so only the data pertaining to National Forest land in WV were employed. The values in the FIA estimates include all aboveground carbon, including tops for stems > 1 inch diameter at breast height (DBH). Consequently, those values were adjusted using a value of 70% to determine the portion of carbon associated with only bole wood. The 70% adjustment value was obtained from Jenkins et al. (2003), Freedman et al. (1982), and Ker (1980), as the estimate of the bole wood volume from total above-ground volume for hardwood species.

The total area that applies to the National Forest ownership and carbon estimate also was obtained from Miles (2016).

The acreage of disturbed lands related to the proposed ACP pipeline on the Monongahela National Forest (MNF) was calculated to be 82 acres (see Methods for Calculating Area of Disturbance on MNF Lands, below).

Aboveground Carbon – Calculations

Total above-ground carbon for live trees >1 in DBH in National Forest ownership in WV = 45,456,512 short tons (or US tons)

Acres of National Forest ownership in WV to which the carbon total applies = 1,041,443 ac

Total area that would be disturbed by proposed pipeline = 82 acres

45,456,512 US tons x 1/1,041,443 ac = 43.65 tons above-ground C per ac on WV National Forest lands

43.65 total tons x 0.7 = 30.55 tons C in bole wood per acre on WV National Forest Lands

30.55 tons C/ac x 82 ac of disturbance on MNF = 2505.4 tons of carbon in bole wood removed from areas proposed for disturbance on MNF by ACP

Aboveground Carbon – Methods for Calculating Area of Disturbance on MNF Lands

Tools Utilized:

- ArcMap
- Revised ACP Route Shapefiles
  - "ACP_Rev11b_Construction Footprint"
  - "Rev11b_Centerline_Mileposts_20170331"
- Most Recent MNF Surface Ownership layer
- Excel

Methods:
To calculate the acres disturbed within the MNF from the proposed ACP pipeline, a shapefile was created that encompassed the disturbance area and disturbance types clipped to the MNF surface ownership layer. This new shapefile included the area of disturbance within the MNF surface ownership. Another shapefile that included only the Permanent ROW disturbance, Temp ATWS, Temp CPY, and Temp ROW was created from the aforementioned shapefile. A field in the attribute table used to calculate disturbance dimensions in feet, and exported to an excel file to calculate areal disturbance in acres. See Table 1 below.

Table 1: Type and acres disturbed within the MNF from the ACP.

Type of Disturbance	**Acres Disturbed in MNF**
Permanent ROW	33
Temporary Additional Temporary Workspace	2
Temporary Contractor Project Yard	2
Temporary ROW	45
Grand Total	**82**

Note: Temporary and permanent access roads were not used in this analysis due to the fact that no new roads are to be constructed within the MNF. However, additional disturbance due to road improvements (e.g., widening) are factored into this total disturbance value for soil carbon calculations.

Belowground Carbon – Calculations

All data and calculations used to estimate soil carbon lost due to trench excavation and other soil excavation areas for the proposed ACP pipeline within the Monongahela National Forest are presented in the Microsoft Excel spreadsheet entitled "FS_ACPSoilCarbCalculation_2017." The contents of each specific Excel sheet are described below.

Sheet 1, "Sheet 1-Soil C Lab Data," contains field and laboratory data collected during the Order 1 Soil Survey along with the soil carbon stock calculations. The description of each column is listed below.

- Column A provides a numbering of the rows for ease when discussing specific rows of data. These numbers are not used in the calculation.
- Column B provides the lab identification name given to each sample sent for lab testing.
- Column C provides the field identification name assigned to the pit and each horizon in the pit during the Order 1 Soil Survey.
- Column D provides the soil polygon identification which correlates to the designated soil map units generated from data collected during the Order 1 Soil Survey. Labeling comes from the ACP soil mapping key which was provided to the FS by ACP with the Order 1 Soil Survey information.
- Column E provides a numbering of the rows associated with Column F. These numbers are not used in the calculation.
- Column F provides the soil horizon designation within each soil pit from Column C.
- Column G provides the top depth of each soil horizon, in inches below the surface.
- Column H provides the bottom depth of each soil horizon, in inches below the surface.
- Column I provides Column G in meters.
- Column J provides Column H in meters.
- Column K provides the abbreviated coarse fragment modifier identified in the field during the Order 1 Soil Survey and taken from the NRCS 232 description sheets used during the Order 1 Soil Survey.
- Column L provides the abbreviated field texture class assigned to each horizon during the Order 1 Soil Survey and taken from the NRCS 232 description sheets used during the Order 1 Soil Survey.
- Column M provides the percent organic matter value taken from lab data as determined by the loss on ignition test.
- Column N provides the total organic carbon in mg/kg taken from lab data results from the Order 1 Soil Survey.
- Column O provides the percent total organic carbon taken from lab data results from the Order 1 Soil Survey.
- Column P provides organic carbon in g/100 g taken from lab data results from the Order 1 Soil Survey.
- Column Q provides organic carbon in g/Mg soil (calculated by multiplying the values in Column P by 10,000).
- Column R provides bulk density for each soil horizon. This value was not taken from Order 1 Soil Survey data because no data for bulk density existed or if it did exist, it was not provided to the FS. The bulk density value for each horizon was based on the field

texture assigned to each horizon during the Order 1 Soil Survey. For horizons from which no texture was provided, the texture for the horizon located below was used for the bulk density, and the bulk density was determined from the NRCS, General guide for Estimating Moist Bulk Density (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/office/ssr10/tr/?cid=nrcs144p2_074844).

For organic horizons, bulk density values from Nottingham et al., (2015) "*Seasonal Dynamics of Surface Soil Bulk Density in a Forested Catchment*" were used. For organic horizons that were not included in this publication, for example Oa horizons, values for the Oe horizon were used.

- Column S provides the length of each soil polygon (from Column D) which is crossed by the proposed ACP trenchline. This length was calculated in ArcGIS using the most current ACP centerline shapefile clipped to the MNF surface boundary layer shapefile. The "identify" tool in ArcGIS then was used to identify the length of the proposed ACP trenchline in each soil polygon.
- Column T provides the horizon thickness for each horizon within each pit. This was calculated by subtracting Column J from Column I.
- Column U provides the weighted average width of each horizon in the trench. The trench dimensions came from dimensions provided in the most recent version of the ACP Construction, Operation, and Maintenance Plan (Draft 2, January 2017). See schematic below (Figure 1).
  - The average width of each horizon that has its bottom depth within the trapezoidal area of the trench (i.e., shallower than 0.914 meter) was determined by:

    Width=2(tan⊖)(0.914-((bottom depth + top depth)/2)))+1.6764

    Since tan⊖ = (0.6090.914)

    Width=2((1.45/0.914)(0.914-((bottom depth + top depth)/2))) +1.6764

  - If the bottom and top depth of a horizon are both greater than (i.e., deeper) than 0.914 m, the width of the horizon is 1.6764 m, based on the schematic trench dimensions (Figure 1).

  - If the bottom of the horizon is greater (deeper) than 0.914 and the top of the horizon is less (shallower) than 0.914 m, the average width is weighted by the amount of the horizon (i.e., depth) present in the trapezoidal and rectangular parts of the trench:

    $Width$= ((2(tan⊖)(0.914-((bottom depth + top depth)/2)))+1.6764)x(((0.914-top depth)/total horizon thickness)+(1.6764((bottom depth-0.914)/total horizon thickness))))/2

Again, since $tan\ominus$ = (1.45/0.914)

Width = ((2((1.45/0.914)x(0.914-((bottom depth + top depth)/2))) + 1.6764) x (((0.914-top depth)/total horizon thickness) + (1.6764((bottom depth-0.914)/total horizon thickness))))/2

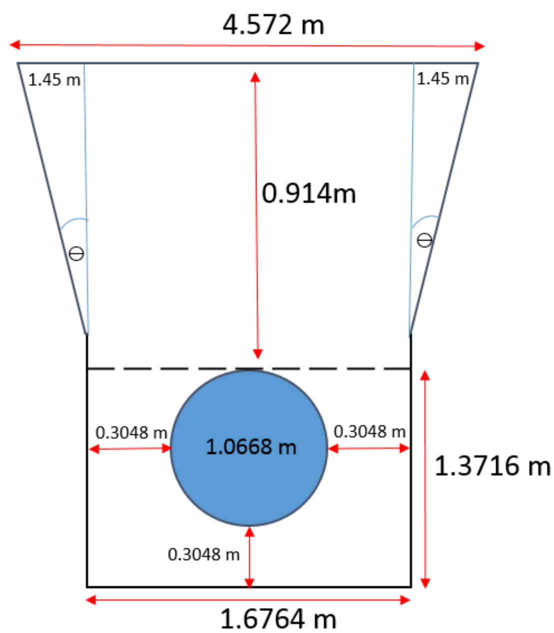

Figure 1. Assumed dimensions of the ACP Trench for carbon calculations. Dimensions were derived from ACP Construction, Operation, and Maintenance Plan (Draft 2, January 2017)

- Column V provides the coarse fragment percent identified in the field during the Order 1 Soil Survey.
- Column W provides the coarse fragments as a correction factor for each soil horizon (i.e., percent in column v divided by 100).
- Column X provides the amount of carbon in each horizon in grams. This value was calculated by:

C in each horizon = Column Q x Column R x Column S x Column T x Column U x Column W

- Column Y provides grams from Column X converted to Megagrams.

Note: If a soil polygon generated from the Order 1 Soil Survey did not cross the ACP proposed trench area, the soil pit information was not used in this calculation and was eliminated from the Excel sheet.

Sheet 2, “Sheet 2-Soil Pits No Lab Data,” contains the remaining soil pits dug during the Order 1 Soil Survey that do not have associated lab data. A description of each column is listed below.

- Column A provides a numbering of the rows for ease when discussing specific rows of data. These numbers are not used in the calculation.
- Column B provides the field identification name assigned to the pit and each horizon in the pit during the Order 1 Soil Survey.
- Column C provides the soil polygon identification that correlates to the designated soil map units generated from data collected during the Order 1 Soil Survey. Labeling comes from the ACP soil mapping key which was provided to the FS by ACP with the Order 1 Soil Survey information.
- Column D provides the length of each soil polygon (from Column C) which is crossed by the proposed ACP trenchline. This length was calculated in ArcGIS using the most current ACP centerline shapefile clipped to the MNF surface boundary layer shapefile. The “identify” tool in ArcGIS then was used to identify the length of the proposed ACP trenchline in each soil polygon.
- Column E provides a numbering of the rows associated with Column F. These numbers are not used in the calculation.
- Column F provides the soil horizon designation within each soil pit from Column B.
- Column G provides the top depth of each soil horizon, in inches below the surface.
- Column H provides the bottom of each soil horizon, in inches below the surface.
- Column I provides Column G in meters.
- Column J provides Column H in meters.
- Column K provides the abbreviated coarse fragment modifier identified in the field during the Order 1 Soil Survey and taken from the NRCS 232 description sheets used during the Order 1 Soil Survey.
- Column L provides the abbreviated field texture class assigned to each horizon during the Order 1 Soil Survey and taken from the NRCS 232 description sheets used during the Order 1 Soil Survey.
- Column M provides the horizon thickness for each horizon within each pit. This was calculated by subtracting Column J from Column I.
- Column N provides bulk density for each soil horizon. The values used in this column were taken from the same horizons selected for the highest C value as described below in Column O.
- Column O provides organic carbon in g/Mg soil. The values in this column were taken from known carbon values from Sheet 1. Laboratory data associated with the highest C value were substituted for missing data; the data were always obtained from the same soil series.
- Column P provides the weighted average width of each horizon in the trench. See calculations from above Sheet 1, Column U.
- Column Q provides the coarse fragment percent identified in the field during the Order 1 Soil Survey.
- Column R provides the coarse fragments as a correction factor for each soil horizon (i.e., percent in Column Q divided by 100).
- Column S provides the amount of carbon in each horizon in grams. This value was calculated by:

C in each horizon = Column D x Column M x Column N x Column O x Column P x Column R

- Column T provides the soil series identified on the 232 descriptions sheets by the soil scientist during the Order 1 Soil Survey.

Note: If a soil polygon generated from the Order 1 Soil Survey did not cross the ACP proposed trench area, the soil pit information was not used in this calculation and was eliminated from the Excel sheet.

Sheet 3, “Sheet 3-TOTAL Trench Carbon,” provides the results of the total C from sheet 1, sheet 2, and then Total C summed from Sheets 1 and 2. Sheet 3 also calculates the estimated percent of C for cut/fill sites. To calculate for cut/fill sites the FS performed the following:

- The FS does not have specific information related to locations or volumes for cut or excavation sites on the MNF. Consequently, the FS used topographic maps to estimate where ACP would need to perform the most intensive excavations on ridge tops. This length was estimated to be approximately 1 mile long, which is approximately one-quarter of the ROW length on the MNF. Therefore, to account for these areas of soil disturbance an additional 25% of the total C calculated from trench construction (i.e., from Sheet 3) was added to the total from trench construction (again, the Sheet 3 total) to obtain the total mass of carbon associated with disturbed soils on the MNF within the ACP ROW.

- Not all of the 1,974 megagrams of carbon would be lost from soil pools due to disturbance. Approximately 8% of the available carbon is considered to be active, and therefore, potentially lost due to increased oxidation and microbial activity/respiration. Consequently, the total soil carbon pool estimated to be lost from the proposed ACP pipeline was calculated as 8% of the total C presented in Sheet 3 (i.e., 0.08 x total in Sheet 3).

Sheet 4, “Sheet 4-Above G. Plus Below G.,” provides the results of the total aboveground C lost added to the total belowground C lost.

Sheet 5, “Sheet 4-Polygon Lengths,” lists all the soil polygons created from the Order 1 Soil Survey and the length of the trenchline within each soil polygon, calculated using ArcGIS as described for Sheets 1 and 2.

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Methodology and Assumptions Used to Calculate Carbon to be Added to ACP ROW in the Monongahela National Forest Through Application of Soil Amendments

USDA Forest Service

May 5, 2017

This document describes the methodology used to calculate the amount of carbon (C) that will be added to the ACP proposed ROW on Monongahela National Forest Lands during restoration. Carbon will be added through the use of organic soil amendments ProGanics™ Biotic Soil Media™ (ProGanics) and Flexterra® High Performance-Flexible Growth Medium™ (Flexterra).

Methods

The mass of ProGanics and Flexterra that will be applied per acre was calculated as a multiple of the minimum recommended application rate of 3,500 pounds/acre (for each product). The final amount of carbon, and therefore each product, to be added was that which approximately equaled or exceeded the total carbon calculated to be lost from below ground (trench and other soil disturbances) and above ground sources (tree bole removal). Those calculations and total values are given in the "FSCarbCalcMethodology_2017" attachment.

Calculations

Calculations are presented below and also in the attached Excel spreadsheet, "FS_ACPCarbCalculaton_2017," on Sheet 6, "Sheet 6-Addition of soil amend." Calculations are based on the manufacturer's minimum recommended rates of 3,500 pounds (dry weight) per acre per product (ProGanics and Flexterra).

ProGanics	**Flexterra**
49.69% C on a dry weight basis	40.00% C on a dry weight basis
(3,500 pounds/1 acre) x (1 kilogram/2.2 pounds) x (0.001 Megagrams/1 kilogram) = **1.59 Megagrams/1 acre**	(3,500 pounds/1 acre) x (1 kilogram/2.2 pounds) x (0.001 Megagrams/1 kilogram) = **1.59 Megagrams/1 acre**
0.4969 x 1.59 = **0.790 Megagrams of C/acre**	0.40 x 1.59 = 0.**636 Megagrams of C/acre**

ProGanics and Flexterra C additions combined:
0.790 + 0.636 = **1.426 Megagrams of C/acre**

Combined C additions x ACP Disturbance Area on MNF:

1.42 Megagrams of C/acre x 82 acres = **116.44 Megagrams C** or **116 Mg C**

The minimum application rates of 3,500 pounds/acre equates to 116 Mg C for the entire 82 acres of disturbance on MNF lands. Total aboveground and belowground C losses (described in aforementioned spreadsheet) were estimated to be 2,430 Mg for the entire 82 acres of disturbance. Consequently, difference between the estimated total carbon losses and carbon inputs, based on the minimum recommended applications for ProGanics and Flexterra is:

116 Mg – 2,430 Mg = -2,314 Mg

Thus, the minimum recommended combined application rates will result in a net loss of more than 2000 megagrams. Taking the 116 Mg of added C from ProGanics and Flexterra and applying it to the belowground C only (157 Mg), the project would result in a net loss of 41 Mg of C. Due to this net loss of belowground C, it is recommended that ACP double the application rate to account for belowground soil carbon loss.

116 Mg – 157 Mg = -41 Mg

Doubling the application rate of both ProGanics and Flexterra would result in 233.7 Mg of added C. Applying this to the belowground C only would result in a net gain of 76.7 Mg of C.

ProGanics	**Flexterra**
49.69% C on a dry weight basis	40.00% C on a dry weight basis
(7,000 pounds/1 acre) x (1 kilogram/2.2 pounds) x (0.001 Megagrams/1 kilogram) = 3.18 **Megagrams/1 acre**	(7,000 pounds/1 acre) x (1 kilogram/2.2 pounds) x (0.001 Megagrams/1 kilogram) = 3.18 **Megagrams/1 acre**
0.4969 x 3.18 = 1.58 **Megagrams of C/acre**	0.40 x 3.18 = 1.27 **Megagrams of C/acre**

ProGanics and Flexterra C additions combined:
1.58 + 1.27 = 2.85 **Megagrams of C/acre**

Combined C additions x ACP Disturbance Area on MNF:

2.85 Megagrams of C/acre x 82 acres = 233.7 **Megagrams C** or **233.7 Mg C**

233.7 Mg – 157 Mg = 76.7 Mg of C

However, doubling the application rate would still result in a net loss of 2,196.3 Mg C for aboveground C.

233.7 Mg – 2,430 Mg = -2,196.3 Mg

Sort	Lab ID	Field Name	Soil Polygon	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	OM (%)	TOC (mg/kg)	TOC (%)	Organic Carbon (g/100g)	Organic Carbon (g/Mg soil)	Bulk Density (Mg/m3)	Length (m)	Horizon Thickness (m)	Width (m)	CF (%)	CF	C in each horizon (g)	C in each horizon (Mg)
1	NA	P-003-160620-1025-rll-S1A	1F5A-05D	1	Oa	0	2	0	0.0508	0	NA	53.6	374000	37.4	37.4	374000	1.5	67.36	0.0508	4.491567	0	1	8622384	8.622384
2	S16-32385	P-003-160620-1025-rll-S2A	1F5A-05D	2	A	2	6	0.05	0.1524	0	CL	15.8	100000	10	10	100000	1.5	67.36	0.1016	4.250266	0	1	4363189	4.363189
3	S16-32386	P-003-160620-1025-rll-S3A	1F5A-05D	3	Bw	6	17	0.15	0.4318	ST	SiC	5	8780	0.878	0.878	8780	1.5	67.36	0.279401	3.647015	10	0.1	90396.72	0.090397
4	S16-32387	P-003-160620-1025-rll-S4A	1F5A-05D	4	Bt	17	32	0.43	0.8128	ST	CL	3.4	2270	0.227	0.227	2270	1.5	67.36	0.381001	2.601379	25	0.25	56831.45	0.056831
5	NA	P-010-160620-1315-mgw-S1A	1AB4A-04D	1	Oe	0	1	0	0.0254	0	NA	86.3	476000	47.6	47.6	476000	0.351	17.9832	0.0254	4.531783	0	1	345847.6	0.345848
6	S16-32751	P-010-160620-1315-mgw-S2A	1AB4A-04D	2	A	1	4	0.03	0.1016	GR	SL	41.4	185000	18.5	18.5	185000	1.6	17.9832	0.0762	4.370916	20	0.2	354582.3	0.354582
7	S16-32752	P-010-160620-1315-mgw-S3A	1AB4A-04D	3	AE	4	8	0.1	0.2032	GR	SCL	14.8	67200	6.72	6.72	67200	1.55	17.9832	0.1016	4.089399	15	0.15	116738.3	0.116738
8	S16-32753	P-010-160620-1315-mgw-S4A	1AB4A-04D	4	Bt1	8	13	0.2	0.3302	GR	CL	8.1	30500	3.05	3.05	30500	1.5	17.9832	0.127	3.727448	8	0.08	31157.62	0.031158
9	S16-32754	P-010-160620-1315-mgw-S5A	1AB4A-04D	5	Bt2	13	23	0.33	0.5842	GR	CL	5.1	7200	0.72	0.72	7200	1.5	17.9832	0.254001	3.124197	8	0.08	12329.73	0.01233
10	S16-32755	P-010-160620-1315-mgw-S6A	1AB4A-04D	6	Bt3	23	31	0.58	0.7874	GR	CL	4.3	3280	0.328	0.328	3280	1.5	17.9832	0.2032	2.400296	8	0.08	3452.323	0.003452
11	S16-32756	P-010-160620-1315-mgw-S7A	1AB4A-04D	7	Bt4	31	37	0.79	0.9398	GR	Cl	5.9	2360	0.236	0.236	2360	1.5	17.9832	0.1524	1.023829	10	0.1	993.3072	0.000993
12	S16-32758	P-010-160620-1315-mgw-S8A	1AB4A-04D	8	Bt3	37	44	0.94	1.1176	GR	C	5	2810	0.281	0.281	2810	1.45	17.9832	0.1778	1.6764	10	0.1	2183.995	0.002184
13	NA	P-012-160620-1115-mgw-S1A	4AB5D-13I	1	Oe	0	2	0	0.0508	0	NA	96.9	484000	48.4	48.4	484000	0.351	135.33	0.0508	4.491567	0	1	5245767	5.245767
14	S16-32389	P-012-160620-1115-mgw-S2A	4AB5D-13I	2	A	2	7	0.05	0.1778	GR	SL	18.1	147000	14.7	14.7	147000	1.6	135.33	0.127	4.210049	60	0.6	10211144	10.21114
15	S16-32390	P-012-160620-1115-mgw-S3A	4AB5D-13I	3	Bhs	7	10	0.18	0.254	GR	Sl	16.4	92400	9.24	9.24	92400	1.6	135.33	0.0762	3.888315	60	0.6	3556760	3.55676
16	S16-32391	P-012-160620-1115-mgw-S4A	4AB5D-13I	4	Bs	10	17	0.25	0.4318	GR	SL	8.7	49800	4.98	4.98	49800	1.6	135.33	0.1778	3.486148	50	0.5	3341888	3.341888
17	S16-32392	P-012-160620-1115-mgw-S5A	4AB5D-13I	5	BC	17	24	0.43	0.6096	GR	SCL	6.4	21600	2.16	2.16	21600	1.55	135.33	0.1778	2.923113	50	0.5	1177410	1.17741
18	NA	P-022-160614-1050-jsw-S1A	4E5D/A-15C/B	1	Oe	0	3	0	0.0762	0	NA	64.6	473000	47.3	47.3	473000	0.351	59.44	0.0762	4.45135	0	1	3347300	3.3473
19	S16-32394	P-022-160614-1050-jsw-S2A	4E5D/A-15C/B	2	Oa	3	5	0.08	0.127	0	SCL	33.3	238000	23.8	23.8	238000	1.55	59.44	0.0508	4.250266	0	1	4734435	4.734435
20	S16-32395	P-022-160614-1050-jsw-S3A	4E5D/A-15C/B	3	E	5	8	0.13	0.2032	GR	LS	1.3	5540	0.554	0.554	5540	1.65	59.44	0.0762	4.049182	15	0.15	25147.04	0.025147
21	S16-32396	P-022-160614-1050-jsw-S4A	4E5D/A-15C/B	4	Bs	8	14	0.2	0.3556	GR	SCL	4.1	13000	1.3	1.3	13000	1.55	59.44	0.1524	3.687232	5	0.05	33651.94	0.033652
22	S16-32397	P-022-160614-1050-jsw-S5A	4E5D/A-15C/B	5	Bt1	14	21	0.36	0.5334	CH	SiC	3.2	2230	0.223	0.223	2230	1.5	59.44	0.1778	3.164414	25	0.25	27966.67	0.027967
23	S16-32398	P-022-160614-1050-jsw-S6A	4E5D/A-15C/B	6	2Bt2	21	34	0.53	0.8636	NA	C	4.3	710	0.071	0.071	710	1.45	59.44	0.330201	2.360079	0	1	47688.06	0.047688
24	S16-32399	P-022-160614-1050-jsw-S7A	4E5D/A-15C/B	7	2BC	34	55	0.86	1.397	NA	C	6	1110	0.111	0.111	1110	1.45	59.44	0.533401	0.871275	0	1	44460.98	0.044461
25	NA	P-040-160615-1119-jcr-S1A	4E5C-05C	1	Oe	0	1	0	0.0254	GR	NA	38.8	411000	41.1	41.1	411000	0.351	91.44	0.0254	4.531783	10	0.1	151840.9	0.151841
26	S16-32401	P-040-160615-1119-jcr-S2A	4E5C-05C	2	A	1	3	0.03	0.0762	GR	L	10.1	75700	7.57	7.57	75700	1.55	91.44	0.0508	4.411133	10	0.1	240424.4	0.240424
27	S16-32402	P-040-160615-1119-jcr-S3A	4E5C-05C	3	Bw1	3	10	0.08	0.254	GR	SiCL	3.7	7880	0.788	0.788	7880	1.55	91.44	0.1778	4.049182	10	0.1	80407.04	0.080407
28	S16-32403	P-040-160615-1119-jcr-S4A	4E5C-05C	4	Bw2	10	17	0.25	0.4318	GR	CL	3.7	1790	0.179	0.179	1790	1.5	91.44	0.1778	3.486148	15	0.15	22827.07	0.022827
29	S16-32404	P-040-160615-1119-jcr-S5A	4E5C-05C	5	Bw3	17	25	0.43	0.635	GR	SiCL	2.5	1400	0.14	0.14	1400	1.55	91.44	0.2032	2.882897	35	0.35	40683.44	0.040683
30	NA	P-045-160614-1019-jcr-S1A	4D6C-05I	1	Oe	0	1	0	0.0254	CH	NA	49.4	273000	27.3	27.3	273000	0.351	257.25	0.0254	4.531783	15	0.15	425618.1	0.425618
31	S16-32760	P-045-160614-1019-jcr-S2A	4D6C-05I	2	A	1	2.5	0.03	0.0635	CH	L	9.6	53700	5.37	5.37	53700	1.55	257.25	0.0381	4.431241	15	0.15	542255.4	0.542255
32	S16-32761	P-045-160614-1019-jcr-S3A	4D6C-05I	3	BA	2.5	6	0.06	0.1524	VCH	SiL	3.2	4230	0.423	0.423	4230	1.55	257.25	0.0889	4.230158	45	0.45	285429.7	0.28543
33	S16-32762	P-045-160614-1019-jcr-S4A	4D6C-05I	4	Bw	6	10	0.15	0.254	VCH	CL	3.8	3480	0.348	0.348	3480	1.5	257.25	0.1016	3.928532	45	0.45	241192.2	0.241192
34	S16-32405	P-063-160614-0950-rll-S1A	9B3A-05D	1	Ap	0	6	0	0.1524	0	L	11.1	49800	4.98	4.98	49800	1.55	44.8	0.1524	4.3307	0	1	2282354	2.282354
35	S16-32406	P-063-160614-0950-rll-S2A	9B3A-05D	2	Bt	6	16	0.15	0.4064	0	C	3.5	2470	0.247	0.247	2470	1.45	44.8	0.254001	3.687232	0	1	150272	0.150272
36	S16-32407	P-063-160614-0950-rll-S3A	9B3A-05D	3	Btg	16	50	0.41	1.27	0	SiC	2.7	1100	0.11	0.11	1100	1.5	44.8	0.863602	1.226205	0	1	78277.79	0.078278
37	NA	P-068-160614-1338-sdd-S1A	4AB5C-13I	1	Oe	0	2	0	0.0508	CH	NA	60.3	270000	27	27	270000	0.351	39.6	0.0508	4.491567	25	0.25	214076.3	0.214076
38	S16-32409	P-068-160614-1338-sdd-S2A	4AB5C-13I	2	A	2	4	0.05	0.1016	CH	SL	8.8	62900	6.29	6.29	62900	1.6	39.6	0.0508	4.3307	25	0.25	219193.9	0.219194
39	S16-32411	P-068-160614-1338-sdd-S3A	4AB5C-13I	3	Bw	4	18	0.1	0.4572	CH	SCL	1.9	2280	0.228	0.228	2280	1.55	39.6	0.355601	3.687232	40	0.4	73398.09	0.073398
46	NA	P-077-160617-1035-sdd-S1A	4D5C-14I	1	Oe	0	2	0	0.0508	CH	NA	87.2	194000	19.4	19.4	194000	0.351	334.366	0.0508	4.491567	60	0.6	3117056	3.117056
47	S16-32764	P-077-160617-1035-sdd-S2A	4D5C-14I	2	A	2	8	0.05	0.2032	CH	L	8.7	68700	6.87	6.87	68700	1.55	334.366	0.1524	4.169833	60	0.6	13575825	13.57583
48	S16-32765	P-077-160617-1035-sdd-S3A	4D5C-14I	3	Bt1	8	21	0.2	0.5334	CH	CL	3.6	6160	0.616	0.616	6160	1.5	334.366	0.330201	3.405714	30	0.3	1042321	1.042321
49	S16-32766	P-077-160617-1035-sdd-S4A	4D5C-14I	4	Bt2	21	28	0.53	0.7112	CH	L	3.7	5130	0.513	0.513	5130	1.55	334.366	0.1778	2.601379	20	0.2	245944.7	0.245945
50	S16-32767	P-077-160617-1035-sdd-S5A	4D5C-14I	5	Bt3	28	50	0.71	1.27	CH	CL	3.7	1300	0.13	0.13	1300	1.5	334.366	0.558801	1.026754	15	0.15	56114.06	0.056114
																						Total:	**68879216**	**68.87922**

Sort	Field Name	Soil Polygon	Polygon Crossing Length (m)	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	Horizon Thickness (m)	Bulk Density (Mg/m3)	Organic C (g/Mg soil)	Width (m)	CF (%)	CF	C (g)	Series or Pit similar to with data
1	P-001-160620-1005-rll	1E4A-15D	89.0016	1	Oa	0	3	0	0.0762	NA	NA	0.0762	0.351	484000	4.451		1	5128578.493	Cateache (3-12)
2	P-001-160620-1005-rll	1E4A-15D	89.0016	2	Bw	3	10	0.076	0.254	ST	SiL	0.1778	1.6	185000	4.049	5	0.05	948328.3345	Cateache (3-12)
3	P-001-160620-1005-rll	1E4A-15D	89.0016	3	Bt	10	24	0.254	0.6096	CN	SiL	0.3556	1.6	185000	3.205	25	0.25	7505327.226	Cateache (3-12)
4	P-002-160620-1020-rll	1CD5A-14D	69.7992	1	Oa	0	3	0	0.0762	NA	NA	0.0762	0.351	484000	4.451		1	4022070.12	Cateache (3-12)
5	P-002-160620-1020-rll	1CD5A-14D	69.7992	2	Bt1	3	15	0.076	0.381	ST	SiCL	0.3048	1.6	185000	3.848	5	0.05	1211639.638	Cateache (3-12)
6	P-002-160620-1020-rll	1CD5A-14D	69.7992	3	Bt2	15	24	0.381	0.6096	ST	SiL	0.2286	1.6	185000	3.004	5	0.05	709289.0455	Cateache (3-12)
7	P-005-160620-1425-rll	1E5A-05D	108.204	1	Oa	0	3	0	0.0762	NA	NA	0.0762	0.351	484000	4.451		1	6235086.867	Cateache (3-12)
8	P-005-160620-1425-rll	1E5A-05D	108.204	2	Bw	3	22	0.076	0.5588	ST	SiL	0.4826	1.6	185000	3.567	20	0.2	11025663.04	Cateache (3-12)
9	P-005-160620-1425-rll	1E5A-05D	108.204	3	Bt	22	50	0.559	1.27	ST	SiL	0.7112	1.6	185000	1.122	40	0.4	10223012.53	Cateache (3-12)
10	P-006-160620-1509-dat	4E4A-05D	90.2208	1	Oe	0	1	0	0.0254	FL	NA	0.0254	0.351	484000	4.532	85	0.85	1499618.992	Cateache (3-12)
11	P-006-160620-1509-dat	4E4A-05D	90.2208	2	Oa	1	2	0.025	0.0508	FL	NA	0.0254	0.351	484000	4.451	70	0.7	1213061.032	Cateache (3-12)
12	P-006-160620-1509-dat	4E4A-05D	90.2208	3	AB	2	8	0.051	0.2032	CH	SiL	0.1524	1.6	185000	4.17	25	0.25	4242697.393	Cateache (3-12)
13	P-006-160620-1509-dat	4E4A-05D	90.2208	4	2Bt1	8	16	0.203	0.4064	GR	SiL	0.2032	1.6	185000	3.607	15	0.15	2935860.45	Cateache (3-12)
14	P-006-160620-1509-dat	4E4A-05D	90.2208	5	2Bt2	16	25	0.406	0.635	GR	SiCL	0.2286	1.6	185000	2.923	5	0.05	892258.6447	Cateache (3-12)
15	P-006-160620-1509-dat	4E4A-05D	90.2208	6	2Bt3	25	34	0.635	0.8636	GR	SiCL	0.2286	1.6	185000	2.199	5	0.05	671293.7957	Cateache (3-12)
16	P-007-160620-1245-dat	4C3AB-23F	90.8304	1	A	0	3	0	0.0762	CH	SiL	0.0762	1.6	185000	4.451	60	0.6	5471682.673	Cateache (3-12)
17	P-007-160620-1245-dat	4C3AB-23F	90.8304	2	Bt1	3	9	0.076	0.2286	CH	SiCL	0.1524	1.6	185000	4.089	20	0.2	3351177.976	Cateache (3-12)
18	P-007-160620-1245-dat	4C3AB-23F	90.8304	3	Bt2	9	17	0.229	0.4318	CH	SiCL	0.2032	1.6	185000	3.526	5	0.05	963261.3022	Cateache (3-12)
19	P-007-160620-1245-dat	4C3AB-23F	90.8304	4	2Bt3	17	28	0.432	0.7112	GR	SiC	0.2794	1.6	185000	2.762	5	0.05	1037486.194	Cateache (3-12)
20	P-007-160620-1245-dat	4C3AB-23F	90.8304	5	2Btx	28	44	0.711	1.1176	GR	SiC	0.4064	1.6	185000	0.943	10	0.1	1030332.817	Cateache (3-12)
21	P-007-160620-1245-dat	4C3AB-23F	90.8304	6	3BCt	44	50	1.118	1.27	CH	SiCL	0.1524	1.6	185000	1.676	85	0.85	5838542.995	Cateache (3-12)
22	P-008-160620-1057-dat	4B5C-13I	180.7464	1	A	0	3	0	0.0762	GR	SiL	0.0762	1.6	185000	4.451	40	0.4	7258854.195	Cateache (3-12)
23	P-008-160620-1057-dat	4B5C-13I	180.7464	2	Bw1	3	12	0.076	0.3048	GR	SiL	0.2286	1.6	185000	3.969	50	0.5	24269528.56	Cateache (3-12)
24	P-008-160620-1057-dat	4B5C-13I	180.7464	3	Bw2	12	20	0.305	0.508	CH	L	0.2032	1.6	185000	3.285	65	0.65	23213606.31	Cateache (3-12)
25	P-009-160620-1415-mgw	1AB5C-13I	106.9848	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	484000	4.532		1	2092075.78	Cateache (3-12)
26	P-009-160620-1415-mgw	1AB5C-13I	106.9848	2	A	1	6	0.025	0.1524	GR	SiL	0.127	1.6	185000	4.29	30	0.3	5176604.495	Cateache (3-12)
27	P-009-160620-1415-mgw	1AB5C-13I	106.9848	3	AB	6	13	0.152	0.3302	GR	SiL	0.1778	1.6	185000	3.808	35	0.35	7504076.021	Cateache (3-12)
28	P-009-160620-1415-mgw	1AB5C-13I	106.9848	4	Bw1	13	25	0.33	0.635	GR	SiL	0.3048	1.6	185000	3.044	40	0.4	11751683.89	Cateache (3-12)
29	P-009-160620-1415-mgw	1AB5C-13I	106.9848	5	Bw2	25	32	0.635	0.8128	GR	SiL	0.1778	1.6	185000	2.28	45	0.45	5775987.364	Cateache (3-12)
30	P-011-160620-1140-mgw	1A5C-13I	647.0904	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	484000	4.532		1	12653780.29	Cateache (3-12)
31	P-011-160620-1140-mgw	1A5C-13I	647.0904	2	A	1	3	0.025	0.0762	GR	SiL	0.0508	1.6	185000	4.411	30	0.3	12876321.75	Cateache (3-12)
32	P-011-160620-1140-mgw	1A5C-13I	647.0904	3	Bw1	3	10	0.076	0.254	GR	SiL	0.1778	1.6	185000	4.049	30	0.3	41369199.74	Cateache (3-12)
33	P-011-160620-1140-mgw	1A5C-13I	647.0904	4	Bw2	10	24	0.254	0.6096	GR	SiL	0.3556	1.6	185000	3.205	55	0.55	120049251.2	Cateache (3-12)
34	P-023-160614-1150-jsw	4E5A-15D	79.248	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	473000	4.532		1	1514465.632	Calvin-Dekalb-Berks (22)
35	P-023-160614-1150-jsw	4E5A-15D	79.248	2	BE	1	5	0.025	0.127	GR	L	0.1016	1.55	238000	4.331	15	0.15	1929478.896	Calvin-Dekalb-Berks (22)
36	P-023-160614-1150-jsw	4E5A-15D	79.248	3	Bt1	5	13	0.127	0.3302	CH	SiCL	0.2032	1.55	238000	3.848	20	0.2	4571903.074	Calvin-Dekalb-Berks (22)
37	P-023-160614-1150-jsw	4E5A-15D	79.248	4	Bt2	13	29	0.33	0.7366	CH	SiCL	0.4064	1.55	238000	2.883	25	0.25	8562887.77	Calvin-Dekalb-Berks (22)
38	P-024-160614-1440-jsw	1AB5A-05F	74.676	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	473000	4.492		1	2828856.169	Calvin-Dekalb-Berks (22)
39	P-024-160614-1440-jsw	1AB5A-05F	74.676	2	A	2	3	0.051	0.0762	CH	SiL	0.0254	1.55	238000	4.371	5	0.05	152920.5847	Calvin-Dekalb-Berks (22)
40	P-024-160614-1440-jsw	1AB5A-05F	74.676	3	Bt1	3	11	0.076	0.2794	GR	SiCL	0.2032	1.55	238000	4.009	1	0.01	224411.8837	Calvin-Dekalb-Berks (22)
41	P-024-160614-1440-jsw	1AB5A-05F	74.676	4	Bt2	11	18	0.279	0.4572	GR	SiC	0.1778	1.55	238000	3.406	5	0.05	834065.155	Calvin-Dekalb-Berks (22)
42	P-024-160614-1440-jsw	1AB5A-05F	74.676	5	BC	18	36	0.457	0.9144	CH	SiC	0.4572	1.55	238000	2.4	2	0.02	604632.4405	Calvin-Dekalb-Berks (22)

Sort	Field Name	Soil Polygon	Polygon Crossing Length (m)	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	Horizon Thickness (m)	Bulk Density (Mg/m3)	Organic C (g/Mg soil)	Width (m)	CF (%)	CF	C (g)	Series or Pit similar to with data
43	P-027-160617-0942-jcr	4ABC5C-13C	40.5384	1	Oe	0	0.5	0	0.0127	GR	NA	0.0127	0.351	473000	4.552	5	0.05	19453.62337	Dekalb- Hazelton
44	P-027-160617-0942-jcr	4ABC5C-13C	40.5384	2	A	0.5	3	0.013	0.0762	GR	SiL	0.0635	1.55	238000	4.431	10	0.1	420798.7296	Dekalb- Hazelton
45	P-027-160617-0942-jcr	4ABC5C-13C	40.5384	3	E	3	7	0.076	0.1778	GR	SiL	0.1016	1.55	238000	4.17	10	0.1	633559.8737	Dekalb- Hazelton
46	P-027-160617-0942-jcr	4ABC5C-13C	40.5384	4	Bw1	7	15	0.178	0.381	GR	SiL	0.2032	1.55	238000	3.687	10	0.1	1120468.325	Dekalb- Hazelton
47	P-027-160617-0942-jcr	4ABC5C-13C	40.5384	5	Bw2	15	19	0.381	0.4826	GR	SiL	0.1016	1.55	238000	3.205	20	0.2	973816.9023	Dekalb- Hazelton
48	P-028-160617-1100-jcr	4D5C-14I	334.3656	1	Oe	0	3	0	0.0762	NA	NA	0.0762	0.351	473000	4.451		1	18829403.5	Dekalb- Hazelton
49	P-028-160617-1100-jcr	4D5C-14I	334.3656	2	A	3	5	0.076	0.127	GR	L	0.0508	1.55	238000	4.25	10	0.1	2663238.969	Dekalb- Hazelton
50	P-028-160617-1100-jcr	4D5C-14I	334.3656	3	E	5	10	0.127	0.254	GR	L	0.127	1.55	238000	3.969	10	0.1	6217097.941	Dekalb- Hazelton
51	P-028-160617-1100-jcr	4D5C-14I	334.3656	4	Bw1	10	20	0.254	0.508	GR	L	0.254	1.55	238000	3.366	40	0.4	42176792.43	Dekalb- Hazelton
52	P-028-160617-1100-jcr	4D5C-14I	334.3656	5	Bw2	20	32	0.508	0.8128	GR	L	0.3048	1.55	238000	2.481	50	0.5	46633208.23	Dekalb- Hazelton
53	P-031-160615-1222-jsw	4F5C-13I	252.0696	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	411000	4.492		1	8297188.81	Weikert (same as 40)
54	P-031-160615-1222-jsw	4F5C-13I	252.0696	2	A	2	2.5	0.051	0.0635	GR	SiL	0.0127	1.55	75700	4.391	5	0.05	82468.42206	Weikert (same as 40)
55	P-031-160615-1222-jsw	4F5C-13I	252.0696	3	BA	2.5	5	0.064	0.127	CH	SiL	0.0635	1.55	75700	4.27	10	0.1	802024.7843	Weikert (same as 40)
56	P-031-160615-1222-jsw	4F5C-13I	252.0696	4	Bw	5	16	0.127	0.4064	CH	SiL	0.2794	1.55	75700	3.727	40	0.4	12321008.85	Weikert (same as 40)
57	P-031-160615-1222-jsw	4F5C-13I	252.0696	5	BC	16	24	0.406	0.6096	CH	SiL	0.2032	1.55	75700	2.963	70	0.7	12466665.3	Weikert (same as 40)
58	P-034-160615-1019-jsw	4D5A-14I	104.5464	1	Oe	0	3	0	0.0762	NA	NA	0.0762	0.351	411000	4.451		1	5115696.083	Weikert (same as 40)
59	P-034-160615-1019-jsw	4D5A-14I	104.5464	2	A	3	5	0.076	0.127	CH	SiL	0.0508	1.55	75700	4.25	12	0.12	317832.1295	Weikert (same as 40)
60	P-034-160615-1019-jsw	4D5A-14I	104.5464	3	BE	5	15	0.127	0.381	CH	SiL	0.254	1.55	75700	3.768	17	0.17	1995683.981	Weikert (same as 40)
61	P-034-160615-1019-jsw	4D5A-14I	104.5464	4	2Bt	15	31	0.381	0.7874	GR	SiL	0.4064	1.55	75700	2.722	25	0.25	3392530.865	Weikert (same as 40)
62	P-035-160615-1011-jsw	1AB6C-12C	53.6448	1	O	0	1	0	0.0254	NA	NA	0.0254	0.351	411000	4.532		1	890798.3897	Weikert (same as 40)
63	P-035-160615-1011-jsw	1AB6C-12C	53.6448	2	A	1	1.5	0.025	0.0381	GR	SiL	0.0127	1.55	75700	4.471	5	0.05	17872.20436	Weikert (same as 40)
64	P-035-160615-1011-jsw	1AB6C-12C	53.6448	3	Bw	1.5	10	0.038	0.254	CH	SiL	0.2159	1.55	75700	4.11	20	0.2	1116934.515	Weikert (same as 40)
65	P-036-160615-1557-jcr	4D5C-12I	261.8232	1	Oe	0	1	0	0.0254	CH	NA	0.0254	0.351	411000	4.532	10	0.1	434770.3505	Weikert (same as 40)
66	P-036-160615-1557-jcr	4D5C-12I	261.8232	2	A	1	2	0.025	0.0508	CH	SiL	0.0254	1.55	75700	4.451	20	0.2	694690.1798	Weikert (same as 40)
67	P-036-160615-1557-jcr	4D5C-12I	261.8232	3	Bw1	2	12	0.051	0.3048	CH	SiL	0.254	1.55	75700	4.009	30	0.3	9384758.92	Weikert (same as 40)
68	P-036-160615-1557-jcr	4D5C-12I	261.8232	4	Bw2	12	23	0.305	0.5842	CH	SiL	0.2794	1.55	75700	3.164	65	0.65	17655057.07	Weikert (same as 40)
69	P-037-160615-1532-jcr	1BC5C-11I	36.576	1	Oe	0	1	0	0.0254	CH	NA	0.0254	0.351	411000	4.532	10	0.1	60736.25385	Weikert (same as 40)
70	P-037-160615-1532-jcr	1BC5C-11I	36.576	2	A	1	2	0.025	0.0508	CH	SiL	0.0254	1.55	75700	4.451	10	0.1	48523.17903	Weikert (same as 40)
71	P-037-160615-1532-jcr	1BC5C-11I	36.576	3	Bw	2	11	0.051	0.2794	CH	SiL	0.2286	1.55	75700	4.049	40	0.4	1589012.978	Weikert (same as 40)
72	P-038-160615-1455-jcr	4E5C-13I	137.4648	1	Oe	0	2	0	0.0508	CH	NA	0.0508	0.351	411000	4.492	15	0.15	678724.0907	Weikert (same as 40)
73	P-038-160615-1455-jcr	4E5C-13I	137.4648	2	A	2	4	0.051	0.1016	CH	SiL	0.0508	1.55	75700	4.331	15	0.15	532270.2016	Weikert (same as 40)
74	P-038-160615-1455-jcr	4E5C-13I	137.4648	3	Bw1	4	12	0.102	0.3048	CH	SiL	0.2032	1.55	75700	3.929	60	0.6	7725462.32	Weikert (same as 40)
75	P-038-160615-1455-jcr	4E5C-13I	137.4648	4	Bw2	12	16	0.305	0.4064	CH	SiL	0.1016	1.55	75700	3.446	65	0.65	3670565.835	Weikert (same as 40)
76	P-039-160615-1344-jcr	4DE5C-14I	25.908	1	Oe	0	1	0	0.0254	GR	NA	0.0254	0.351	411000	4.532	10	0.1	43021.51314	Weikert (same as 40)
77	P-039-160615-1344-jcr	4DE5C-14I	25.908	2	A	1	3	0.025	0.0762	CH	SiL	0.0508	1.55	75700	4.411	15	0.15	102180.1704	Weikert (same as 40)
78	P-039-160615-1344-jcr	4DE5C-14I	25.908	3	Bw1	3	11	0.076	0.2794	CH	SiL	0.2032	1.55	75700	4.009	25	0.25	619095.4662	Weikert (same as 40)
79	P-039-160615-1344-jcr	4DE5C-14I	25.908	4	Bw2	11	19	0.279	0.4826	CH	SiL	0.2032	1.55	75700	3.366	50	0.5	1039452.789	Weikert (same as 40)
80	P-041-160614-1453-jcr	1D5A-12D	303.5808	1	Oe	0	0.5	0	0.0127	GR	NA	0.0127	0.351	411000	4.552	10	0.1	253173.8686	Weikert (same as 40)
81	P-041-160614-1453-jcr	1D5A-12D	303.5808	2	A	0.5	1	0.013	0.0254	GR	SiL	0.0127	1.55	75700	4.512	10	0.1	204100.1892	Weikert (same as 40)
82	P-041-160614-1453-jcr	1D5A-12D	303.5808	3	Bw	1	7	0.025	0.1778	GR	SiL	0.1524	1.55	75700	4.25	20	0.2	4614588.936	Weikert (same as 40)
83	P-041-160614-1453-jcr	1D5A-12D	303.5808	4	Bt	7	14	0.178	0.3556	CH	SiL	0.1778	1.55	75700	3.727	40	0.4	9442901.364	Weikert (same as 40)
84	P-046-160614-1050-def	1CD5C-13I	57.912	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	411000	4.532		1	961657.3526	Weikert

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85	P-046-160614-1050-def	1CD5C-13I	57.912	2	A	1	1.25	0.025	0.03175	CH	SiL	0.00635	1.55	75700	4.482	20	0.2	38674.47922	Weikert
86	P-046-160614-1050-def	1CD5C-13I	57.912	3	AB	1.25	6	0.032	0.1524	GR	SiL	0.12065	1.55	75700	4.28	20	0.2	701844.3011	Weikert
87	P-046-160614-1050-def	1CD5C-13I	57.912	4	Bw1	6	13	0.152	0.3302	CH	SiL	0.1778	1.55	75700	3.808	40	0.4	1840227.529	Weikert
88	P-046-160614-1050-def	1CD5C-13I	57.912	5	Bw2	13	19	0.33	0.4826	CH	SiL	0.1524	1.55	75700	3.285	75	0.75	2551447.046	Weikert
89	P-047-160614-1045-def	3E5C-05I	53.0352	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	473000	4.532		1	1013527	Berks
90	P-047-160614-1045-def	3E5C-05I	53.0352	2	A	1	5.5	0.025	0.1397	GR	SiL	0.1143	1.55	238000	4.311	40	0.4	3855813.086	Berks
91	P-047-160614-1045-def	3E5C-05I	53.0352	3	Bw1	5.5	17	0.14	0.4318	CH	SiL	0.2921	1.55	238000	3.667	40	0.4	8382819.758	Berks
92	P-047-160614-1045-def	3E5C-05I	53.0352	4	Bw2	17	25	0.432	0.635	GR	SiL	0.2032	1.55	238000	2.883	38	0.38	4355216.457	Berks
93	P-047-160614-1045-def	3E5C-05I	53.0352	5	2Bw3	25	44	0.635	1.1176	GR	SiL	0.4826	1.55	238000	1.155	40	0.4	4361896.273	Berks
94	P-047-160614-1045-def	3E5C-05I	53.0352	6	3Bw4	44	50	1.118	1.27	GR	SiL	0.1524	1.55	238000	1.676	15	0.15	749767.7299	Berks
95	P-048-160614-1035-def	4E5C-12I	133.5024	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	473000	4.492		1	5057302.049	Berks
96	P-048-160614-1035-def	4E5C-12I	133.5024	2	A	2	4.25	0.051	0.10795	CH	SiL	0.05715	1.55	238000	4.321	20	0.2	2432162.719	Berks
97	P-048-160614-1035-def	4E5C-12I	133.5024	3	AB	4.25	10.5	0.108	0.2667	GR	SiL	0.15875	1.55	238000	3.979	40	0.4	12442968.96	Berks
98	P-048-160614-1035-def	4E5C-12I	133.5024	4	Bw	10.5	18	0.267	0.4572	GR	SiL	0.1905	1.55	238000	3.426	40	0.4	12856355.53	Berks
99	P-048-160614-1035-def	4E5C-12I	133.5024	5	2BC	18	21	0.457	0.5334	CH	SiL	0.0762	1.55	238000	3.004	38	0.38	4283227.699	Berks
145	P-049-160614-1025-def	4F5C-13I	252.0696	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	473000	4.492		1	9548832.864	Berks
146	P-049-160614-1025-def	4F5C-13I	252.0696	2	A	2	6	0.051	0.1524	GR	SiL	0.1016	1.55	238000	4.25	25	0.25	10038735.77	Berks
147	P-049-160614-1025-def	4F5C-13I	252.0696	3	Bw1	6	20	0.152	0.508	GR	SiL	0.3556	1.55	238000	3.526	50	0.5	58302657.62	Berks
148	P-049-160614-1025-def	4F5C-13I	252.0696	4	Bw2	20	32	0.508	0.8128	GR	SiL	0.3048	1.55	238000	2.481	43	0.43	30233792.49	Berks
150	P-050-160614-1015-def	4F5C-13I	252.0696	1	Oe	0	1.25	0	0.03175	NA	NA	0.03175	0.351	473000	4.522		1	6008097.964	Berks
151	P-050-160614-1015-def	4F5C-13I	252.0696	2	A	1.25	2.5	0.032	0.0635	CH	L	0.03175	1.55	238000	4.421		1	13053043.66	Berks
152	P-050-160614-1015-def	4F5C-13I	252.0696	3	Bw	2.5	10	0.064	0.254	GR	SiL	0.1905	1.55	238000	4.069	38	0.38	27392175.35	Berks
153	P-050-160614-1015-def	4F5C-13I	252.0696	4	Bw2	10	22	0.254	0.5588	GR	SiL	0.3048	1.55	238000	3.285	45	0.45	41898723.46	Berks
154	P-050-160614-1015-def	4F5C-13I	252.0696	5	2BC	22	31	0.559	0.7874	CH	SiL	0.2286	1.55	238000	2.441	85	0.85	44096696.66	Berks
155	P-050-160614-1015-def	4F5C-13I	252.0696	6	3CB	31	35	0.787	0.889	CH	SiL	0.1016	1.55	238000	1.918	58	0.58	10508276.63	Berks
156	P-053-160613-1105-rll	1E5A-13C	17.6784	1	A	0	3	0	0.0762	CN	SiL	0.0762	0.351	473000	4.451	5	0.05	49776.90988	Berks
157	P-053-160613-1105-rll	1E5A-13C	17.6784	2	Bt1	3	15	0.076	0.381	CN	SiL	0.3048	1.55	238000	3.848	25	0.25	1912286.382	Berks
158	P-053-160613-1105-rll	1E5A-13C	17.6784	3	Bt2	15	24	0.381	0.6096	CN	SiL	0.2286	1.55	238000	3.004	40	0.4	1791111.799	Berks
167	P-055-160613-1110-rll	1CD5C-12I	352.9584	1	Oa	0	3	0	0.0762	NA	NA	0.0762	0.351	473000	4.451		1	19876435.05	Berks
168	P-055-160613-1110-rll	1CD5C-12I	352.9584	2	Bw1	3	9	0.076	0.2286	CN	SiL	0.1524	1.55	238000	4.089	10	0.1	8114779.753	Berks
169	P-055-160613-1110-rll	1CD5C-12I	352.9584	3	Bw2	9	16	0.229	0.4064	CN	SiL	0.1778	1.55	238000	3.567	40	0.4	33027545.61	Berks
170	P-056-160613-1117-rll	1C5C-12I	291.084	1	Oa	0	1	0	0.0254	NA	NA	0.0254	0.351	473000	4.532		1	5562748.764	Berks
171	P-056-160613-1117-rll	1C5C-12I	291.084	2	A	1	4	0.025	0.1016	NA	SiL	0.0762	1.55	238000	4.371		1	35764691.84	Berks
172	P-056-160613-1117-rll	1C5C-12I	291.084	3	Bw1	4	10	0.102	0.254	NA	SiL	0.1524	1.55	238000	4.009	10	0.1	6560612.721	Berks
173	P-056-160613-1117-rll	1C5C-12I	291.084	4	Bw2	10	16	0.254	0.4064	CN	SiL	0.1524	1.55	238000	3.526	40	0.4	23083380.77	Berks
174	P-056-160613-1117-rll	1C5C-12I	291.084	5	Cr	16	21	0.406	0.5334	CN	SiL	0.127	1.55	238000	3.084	50	0.5	21028715.1	Berks
175	P-057-160613-1041-jdf	4E5C-13I	137.4648	1	Oe	0	2	0	0.0508	SI	NA	0.0508	0.351	473000	4.492	8	0.08	416592.3697	Berks
176	P-057-160613-1041-jdf	4E5C-13I	137.4648	2	Bw1	2	12	0.051	0.3048	CN	SiL	0.254	1.55	238000	4.009	35	0.35	18073171.34	Berks
177	P-057-160613-1041-jdf	4E5C-13I	137.4648	3	2Bw2	12	20	0.305	0.508	GR	SiL	0.2032	1.55	238000	3.285	45	0.45	15232828.92	Berks
178	P-057-160613-1041-jdf	4E5C-13I	137.4648	4	2C	20	32	0.508	0.8128	GR	SiL	0.3048	1.55	238000	2.481	75	0.75	28757853.57	Berks
179	P-058-160613-1057-jdf	1C5A-13D	116.1288	1	Oe	0	1	0	0.0254	NA	NA	0.0254	0.351	473000	4.532		1	2219274.638	Berks
180	P-058-160613-1057-jdf	1C5A-13D	116.1288	2	A	1	2	0.025	0.0508	GR	SiL	0.0254	1.55	238000	4.451	10	0.1	484366.4496	Berks
181	P-058-160613-1057-jdf	1C5A-13D	116.1288	3	Bt1	2	12	0.051	0.3048	CN	SiL	0.254	1.55	238000	4.009	35	0.35	15268022.8	Berks

Sort	Field Name	Soil Polygon	Polygon Crossing Length (m)	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	Horizon Thickness (m)	Bulk Density (Mg/m3)	Organic C (g/Mg soil)	Width (m)	CF (%)	CF	C (g)	Series or Pit similar to with data
182	P-058-160613-1057-jdf	1C5A-13D	116.1288	4	Bt2	12	20	0.305	0.508	CN	SiL	0.2032	1.55	238000	3.285	25	0.35	10008858.03	Berks
183	P-059-160613-1107-jdf	1B5C-12I	74.3712	1	Oe	0	2	0	0.0508	GR	NA	0.0508	0.351	473000	4.492	5	0.05	140865.4909	Berks
184	P-059-160613-1107-jdf	1B5C-12I	74.3712	2	A	2	6	0.051	0.1524	GR	SiL	0.1016	1.55	238000	4.25	20	0.2	2369481.525	Berks
185	P-059-160613-1107-jdf	1B5C-12I	74.3712	3	Bw1	6	12	0.152	0.3048	GR	SiL	0.1524	1.55	238000	3.848	20	0.2	3217916.394	Berks
186	P-059-160613-1107-jdf	1B5C-12I	74.3712	4	Bw2	12	18	0.305	0.4572	GR	SiL	0.1524	1.55	238000	3.366	45	0.45	6332285.974	Berks
187	P-060-160613-1555-rll	1E5C-11C	44.8056	1	A	0	4	0	0.1016	NA	SiL	0.1016	1.55	238000	4.411		1	7407724.903	Berks
188	P-060-160613-1555-rll	1E5C-11C	44.8056	2	Bw	4	12	0.102	0.3048	ST	SiL	0.2032	1.55	238000	3.929	10	0.1	1319456.566	Berks
189	P-064-160614-1020-rll	4D3C-13C?	27.1272	1	Oa	0	1	0	0.0254	NA	NA	0.0254	0.351	270000	4.532		1	295922.9886	Paddyknob-Madsheep
190	P-064-160614-1020-rll	4D3C-13C?	27.1272	2	A	1	4	0.025	0.1016	ST	SiL	0.0762	1.55	68700	4.371	10	0.1	96210.15237	Paddyknob-Madsheep
191	P-064-160614-1020-rll	4D3C-13C?	27.1272	3	Bw1	4	19	0.102	0.4826	ST	SiL	0.381	1.55	68700	3.647	25	0.25	1003450.923	Paddyknob-Madsheep
192	P-064-160614-1020-rll	4D3C-13C?	27.1272	4	Bw2	19	30	0.483	0.762	ST	SiL	0.2794	1.55	68700	2.601	20	0.2	419908.0064	Paddyknob-Madsheep
193	P-067-160614-1441-sdd	4D5A-05D	71.0184	1	Oe	0	3	0	0.0762	CH	NA	0.0762	0.351	270000	4.451	20	0.2	456581.6725	Paddyknob-Madsheep
194	P-067-160614-1441-sdd	4D5A-05D	71.0184	2	A	3	7	0.076	0.1778	CH	SiL	0.1016	1.55	68700	4.17	20	0.2	640769.3343	Paddyknob-Madsheep
195	P-067-160614-1441-sdd	4D5A-05D	71.0184	3	BA	7	10	0.178	0.254	CH	SiL	0.0762	1.55	68700	3.888	25	0.25	560164.9431	Paddyknob-Madsheep
196	P-067-160614-1441-sdd	4D5A-05D	71.0184	4	Bt	10	30	0.254	0.762	CH	SiL	0.508	1.55	68700	2.963	30	0.3	3415268.025	Paddyknob-Madsheep
197	P-067-160614-1441-sdd	4D5A-05D	71.0184	5	2BC	30	50	0.762	1.27	CH	SiL	0.508	1.55	68700	0.998	65	0.65	2493101.914	Paddyknob-Madsheep
198	P-070-160614-1102-sdd	1A5C-13I	647.0904	1	Oe	0	3	0	0.0762	CH	NA	0.0762	0.351	270000	4.451	40	0.4	8320368.16	Paddyknob-Madsheep
199	P-070-160614-1102-sdd	1A5C-13I	647.0904	2	A	3	8	0.076	0.2032	CH	L	0.127	1.55	68700	4.13	40	0.4	14455291.18	Paddyknob-Madsheep
200	P-070-160614-1102-sdd	1A5C-13I	647.0904	3	Bw	8	18	0.203	0.4572	CH	L	0.254	1.55	68700	3.526	55	0.55	33945113.55	Paddyknob-Madsheep
201	P-071-160614-1001-sdd	4C5C-13I	64.6176	1	Oe	0	4	0	0.1016	CH	NA	0.1016	0.351	270000	4.411	40	0.4	1097805.971	Paddyknob-Madsheep
202	P-071-160614-1001-sdd	4C5C-13I	64.6176	2	A	4	9	0.102	0.2286	CH	SiL	0.127	1.55	68700	4.049	40	0.4	1415371.387	Paddyknob-Madsheep
203	P-071-160614-1001-sdd	4C5C-13I	64.6176	3	Bw	9	18	0.229	0.4572	CH	SiL	0.2286	1.55	68700	3.486	60	0.6	3290128.082	Paddyknob-Madsheep
204	P-072-160616-1447-sdd	4B5C-13I	180.7464	1	Oa	0	2	0	0.0508	GR	NA	0.0508	0.351	270000	4.492	55	0.55	2149635.317	Paddyknob-Madsheep
205	P-072-160616-1447-sdd	4B5C-13I	180.7464	2	A	2	4	0.051	0.1016	GR	L	0.0508	1.55	68700	4.331	55	0.55	2328855.771	Paddyknob-Madsheep
206	P-072-160616-1447-sdd	4B5C-13I	180.7464	3	Bw1	4	18	0.102	0.4572	CH	SL	0.3556	1.55	68700	3.687	40	0.4	10094398.75	Paddyknob-Madsheep
207	P-072-160616-1447-sdd	4B5C-13I	180.7464	4	Bw2	18	30	0.457	0.762	CH	SL	0.3048	1.55	68700	2.642	60	0.6	9298038.931	Paddyknob-Madsheep
208	P-074-160616-1238-sdd	1A5C-12I	135.3312	1	Oe	0	2	0	0.0508	CH	NA	0.0508	0.351	270000	4.492	40	0.4	1170551.072	Paddyknob-Madsheep
209	P-074-160616-1238-sdd	1A5C-12I	135.3312	2	A	2	4	0.051	0.1016	CH	SiL	0.0508	1.55	68700	4.331	40	0.4	1268142.833	Paddyknob-Madsheep
210	P-074-160616-1238-sdd	1A5C-12I	135.3312	3	Bw	4	24	0.102	0.6096	FL	SiL	0.508	1.55	68700	3.446	60	0.6	15135898.33	Paddyknob-Madsheep
211	P-075-160616-1140-sdd	4D5C-12I	261.8232	1	Oe	0	3	0	0.0762	GR	NA	0.0762	0.351	270000	4.451	40	0.4	3366554.993	Paddyknob-Madsheep
212	P-075-160616-1140-sdd	4D5C-12I	261.8232	2	A	3	5	0.076	0.127	GR	L	0.0508	1.55	68700	4.25	40	0.4	2407888.898	Paddyknob-Madsheep
213	P-075-160616-1140-sdd	4D5C-12I	261.8232	3	Bw	5	14	0.127	0.3556	CH	L	0.2286	1.55	68700	3.808	45	0.45	10921164.17	Paddyknob-Madsheep
214	P-076-160616-1055-sdd	4D5C-14I	334.3656	1	Oa	0	2	0	0.0508	GR	NA	0.0508	0.351	270000	4.492	30	0.3	2169078.592	Paddyknob-Madsheep
215	P-076-160616-1055-sdd	4D5C-14I	334.3656	2	A	2	4	0.051	0.1016	GR	SiL	0.0508	1.55	68700	4.331	30	0.3	2349920.081	Paddyknob-Madsheep
216	P-076-160616-1055-sdd	4D5C-14I	334.3656	3	BA	4	10	0.102	0.254	GR	L	0.1524	1.55	68700	4.009	35	0.35	7613695.119	Paddyknob-Madsheep
217	P-076-160616-1055-sdd	4D5C-14I	334.3656	4	2Bw	10	20	0.254	0.508	CH	L	0.254	1.55	68700	3.366	40	0.4	12174561.51	Paddyknob-Madsheep
218	P-078-160617-1201-sdd	3C4A-05D	19.812	1	Oe	0	2	0	0.0508	CH	NA	0.0508	0.351	270000	4.492	50	0.5	214205.5735	Paddyknob-Madsheep
219	P-078-160617-1201-sdd	3C4A-05D	19.812	2	A	2	6	0.051	0.1524	CH	SiL	0.1016	1.55	68700	4.25	50	0.5	455508.6682	Paddyknob-Madsheep
220	P-078-160617-1201-sdd	3C4A-05D	19.812	3	AB	6	12	0.152	0.3048	CH	SiL	0.1524	1.55	68700	3.848	40	0.4	494889.2981	Paddyknob-Madsheep
221	P-078-160617-1201-sdd	3C4A-05D	19.812	4	2Bt	12	26	0.305	0.6604	CH	SiL	0.3556	1.55	68700	3.044	30	0.3	685032.4085	Paddyknob-Madsheep
222	P-078-160617-1201-sdd	3C4A-05D	19.812	5	3BC	26	44	0.66	1.1176	CH	SiL	0.4572	1.55	68700	1.143	70	0.7	771738.7553	Paddyknob-Madsheep

Sort	Field Name	Soil Polygon	Polygon Crossing Length (m)	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	Horizon Thickness (m)	Bulk Density (Mg/m3)	Organic C (g/Mg soil)	Width (m)	CF (%)	CF	C (g)	Series or Pit similar to with data
223	P-079-160617-1251-sdd	1AB5A-13D	173.1264	1	Oe	0	2	0	0.0508	CH	NA	0.0508	0.351	270000	4.492	20	0.2	748730.8661	Paddyknob-Madsheep
224	P-079-160617-1251-sdd	1AB5A-13D	173.1264	2	A	2	4	0.051	0.1016	CH	SiL	0.0508	1.55	68700	4.331		1	4055772.123	Paddyknob-Madsheep
225	P-079-160617-1251-sdd	1AB5A-13D	173.1264	3	BA	4	6	0.102	0.1524	CH	SiL	0.0508	1.55	68700	4.17		1	3905117.831	Paddyknob-Madsheep
226	P-079-160617-1251-sdd	1AB5A-13D	173.1264	4	Bt	6	24	0.152	0.6096	CH	SiCL	0.4572	1.55	68700	3.366	30	0.3	8509985.203	Paddyknob-Madsheep
227	P-080-160617-1000-def	4D5C-14C	124.0536	1	Oi	0	0.5	0	0.0127	NA	NA	0.0127	0.351	270000	4.552		1	679635.2422	Paddyknob-Madsheep
228	P-080-160617-1000-def	4D5C-14C	124.0536	2	Oa	0.5	2	0.013	0.0508	GR	SL	0.0381	1.55	68700	4.471		1	2250463.487	Paddyknob-Madsheep
229	P-080-160617-1000-def	4D5C-14C	124.0536	3	A	2	6.5	0.051	0.1651	GR	SL	0.1143	1.55	68700	4.23	45	0.45	2874174.781	Paddyknob-Madsheep
230	P-080-160617-1000-def	4D5C-14C	124.0536	4	BA	6.5	14	0.165	0.3556	GR	SL	0.1905	1.55	68700	3.748	35	0.35	3300724.168	Paddyknob-Madsheep
231	P-080-160617-1000-def	4D5C-14C	124.0536	5	2Bw	14	34	0.356	0.8636	GR	SL	0.508	1.55	68700	2.642	30	0.3	5318018.332	Paddyknob-Madsheep
232	P-081-160617-1010-def	4C5C-13I	64.6176	1	Oi	0	1.5	0	0.0381	NA	NA	0.0381	0.351	270000	4.512		1	1052651.194	Paddyknob-Madsheep
233	P-081-160617-1010-def	4C5C-13I	64.6176	2	A	1.5	5	0.038	0.127	CB	SL	0.0889	1.55	68700	4.311	40	0.4	1054721.736	Paddyknob-Madsheep
234	P-081-160617-1010-def	4C5C-13I	64.6176	3	AB	5	8.5	0.127	0.2159	CB	SL	0.0889	1.55	68700	4.029	40	0.4	985839.8351	Paddyknob-Madsheep
235	P-081-160617-1010-def	4C5C-13I	64.6176	4	2Bw	8.5	20	0.216	0.508	GR	SL	0.2921	1.55	68700	3.426	20	0.2	1377101.609	Paddyknob-Madsheep
236	P-081-160617-1010-def	4C5C-13I	64.6176	5	2BC	20	36	0.508	0.9144	ST	SL	0.4064	1.55	68700	2.32	60	0.6	3892308.308	Paddyknob-Madsheep
237	P-082-160617-1020-jsw	1AB5C-13I	106.9848	1	Oe	0	1	0	0.0254	CH	NA	0.0254	0.351	270000	4.532		1	1167067.068	Paddyknob-Madsheep
238	P-082-160617-1020-jsw	1AB5C-13I	106.9848	2	A	1	4	0.025	0.1016	CH	SL	0.0762	1.55	68700	4.371	10	0.1	379435.5447	Paddyknob-Madsheep
239	P-082-160617-1020-jsw	1AB5C-13I	106.9848	3	BA	4	5	0.102	0.127	CH	SL	0.0254	1.55	68700	4.21	10	0.1	121823.6156	Paddyknob-Madsheep
240	P-082-160617-1020-jsw	1AB5C-13I	106.9848	4	Bw1	5	12	0.127	0.3048	CH	SL	0.1778	1.55	68700	3.888	12	0.12	945116.0619	Paddyknob-Madsheep
241	P-082-160617-1020-jsw	1AB5C-13I	106.9848	5	Bw2	12	24	0.305	0.6096	CH	SL	0.3048	1.55	68700	3.124	55	0.55	5966600.973	Paddyknob-Madsheep
242	P-083-160617-1011-jsw	4E5A-13C	37.4904	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	270000	4.492		1	810685.7089	Paddyknob-Madsheep
243	P-083-160617-1011-jsw	4E5A-13C	37.4904	2	A	2	5	0.051	0.127	CH	SL	0.0762	1.55	68700	4.29	10	0.1	130517.7865	Paddyknob-Madsheep
244	P-083-160617-1011-jsw	4E5A-13C	37.4904	3	BA	5	9	0.127	0.2286	CH	SL	0.1016	1.55	68700	4.009	12	0.12	195126.3445	Paddyknob-Madsheep
245	P-083-160617-1011-jsw	4E5A-13C	37.4904	4	Bt	9	21	0.229	0.5334	CH	SL	0.3048	1.55	68700	3.366	20	0.2	819036.1346	Paddyknob-Madsheep
246	P-084-160617-1005-jsw	4B5A-13D	119.1768	1	Oe	0	2	0	0.0508	NA	NA	0.0508	0.351	270000	4.492		1	2577057.823	Paddyknob-Madsheep
247	P-084-160617-1005-jsw	4B5A-13D	119.1768	2	A	2	5	0.051	0.127	GR	SiL	0.0762	1.55	68700	4.29	5	0.05	207449.0022	Paddyknob-Madsheep
248	P-084-160617-1005-jsw	4B5A-13D	119.1768	3	Bt1	5	11	0.127	0.2794	CH	SiL	0.1524	1.55	68700	3.929	12	0.12	911752.1809	Paddyknob-Madsheep
249	P-084-160617-1005-jsw	4B5A-13D	119.1768	4	Bt2	11	21	0.279	0.5334	CH	SiL	0.254	1.55	68700	3.285	10	0.1	1058907.586	Paddyknob-Madsheep
250	P-085-160616-1039-jcr	4C5C/A-14I	192.6336	1	Oe	0	1.5	0	0.0381	GR	NA	0.0381	0.351	270000	4.512	5	0.05	156904.612	Paddyknob-Madsheep
251	P-085-160616-1039-jcr	4C5C/A-14I	192.6336	2	A	1.5	4	0.038	0.1016	GR	SiL	0.0635	1.55	68700	4.351	35	0.35	1983499.967	Paddyknob-Madsheep
252	P-085-160616-1039-jcr	4C5C/A-14I	192.6336	3	BA	4	9	0.102	0.2286	GR	SiL	0.127	1.55	68700	4.049	40	0.4	4219409.041	Paddyknob-Madsheep
253	P-085-160616-1039-jcr	4C5C/A-14I	192.6336	4	Bw1	9	24	0.229	0.6096	GR	SiL	0.381	1.55	68700	3.245	50	0.5	12679732.21	Paddyknob-Madsheep
254	P-085-160616-1039-jcr	4C5C/A-14I	192.6336	5	2Bt	24	37	0.61	0.9398	CH	SiL	0.3302	1.55	68700	1.115	65	0.65	4910593.878	Paddyknob-Madsheep
255	P-087-160616-1316-jcr	3C5C-05I	57.6072	1	Oe	0	1	0	0.0254	GR	NA	0.0254	0.351	270000	4.532	10	0.1	62842.07287	Paddyknob-Madsheep
256	P-087-160616-1316-jcr	3C5C-05I	57.6072	2	A	1	3	0.025	0.0762	GR	L	0.0508	1.55	68700	4.411	10	0.1	137460.8736	Paddyknob-Madsheep
257	P-087-160616-1316-jcr	3C5C-05I	57.6072	3	Bw1	3	17	0.076	0.4318	GR	SL	0.3556	1.55	68700	3.768	25	0.25	2054657.491	Paddyknob-Madsheep
258	P-087-160616-1316-jcr	3C5C-05I	57.6072	4	Bw2	17	32	0.432	0.8128	GR	SL	0.381	1.55	68700	2.601	40	0.4	2431949.332	Paddyknob-Madsheep
259	P-088-160616-1506-jcr	4D5C-14I	334.3656	1	Oe	0	1	0	0.0254	GR	NA	0.0254	0.351	270000	4.532	10	0.1	364750.0208	Paddyknob-Madsheep
260	P-088-160616-1506-jcr	4D5C-14I	334.3656	2	A	1	2	0.025	0.0508	GR	SiL	0.0254	1.55	68700	4.451	15	0.15	603846.7656	Paddyknob-Madsheep
261	P-088-160616-1506-jcr	4D5C-14I	334.3656	3	AB	2	4	0.051	0.1016	GR	L	0.0508	1.55	68700	4.331	30	0.3	2349920.081	Paddyknob-Madsheep
262	P-088-160616-1506-jcr	4D5C-14I	334.3656	4	Bw1	4	14	0.102	0.3556	GR	L	0.254	1.55	68700	3.848	65	0.65	22620565	Paddyknob-Madsheep
263	P-088-160616-1506-jcr	4D5C-14I	334.3656	5	Bw2	14	28	0.356	0.7112	GR	L	0.3556	1.55	68700	2.883	65	0.65	23725463.88	Paddyknob-Madsheep
264	P-089-160616-1550-jcr	1C5C-12I	291.084	1	Oe	0	1.5	0	0.0381	GR	NA	0.0381	0.351	270000	4.512	40	0.4	1896758.284	Paddyknob-Madsheep

Sort	Field Name	Soil Polygon	Polygon Crossing Length (m)	Profile Sort	Horizon Designation	Top (in)	Bottom (in)	Top (m)	Bottom (m)	Coarse Fragment Modifier	Field texture	Horizon Thickness (m)	Bulk Density (Mg/m3)	Organic C (g/Mg soil)	Width (m)	CF (%)	CF	C (g)	Series or Pit similar to with data
265	P-089-160616-1550-jcr	1C5C-12I	291.084	2	A	1.5	2.5	0.038	0.0635	GR	SL	0.0254	1.55	68700	4.411		1	3472887.15	Paddyknob-Madsheep
266	P-089-160616-1550-jcr	1C5C-12I	291.084	3	AB	2.5	5	0.064	0.127	GR	SL	0.0635	1.55	68700	4.27	60	0.6	5043102.081	Paddyknob-Madsheep
267	P-089-160616-1550-jcr	1C5C-12I	291.084	4	Bw	5	20	0.127	0.508	GR	SL	0.381	1.55	68700	3.567	65	0.65	27377732.61	Paddyknob-Madsheep
																	Total C (g):	**1510018325**	
																	Total C (Mg):	**1510.02**	

Total C from Sheet 1			Total C from Sheet 2			Total C (sum of sheet 1 and sheet)			25% of Total C for cut/fill sites			Total with additional 25% for cut/fill sites			8% taken for loss of the entire active C pool due to decomposition		
grams	Megagrams	US tons	grams	Megagrams	US tons	grams	Megagrams	US tons	grams	Megagrams	US tons	grams	Megagrams	US tons	grams	Megagrams	US tons
68879216	68.8792162	75.9263174	1510018325	1510.02	1664.512	1578897541	1578.899216	1740.438	394724385	394.7248041	435.1095	1973621926	1973.62402	2175.5475	157889754	157.8899216	174.0438

Total Aboveground C for live trees >1 DBH in NFS ownership in WV = 45,456,512 short tons (or US tons)

Acres of National Forest ownership in WV to which the carbon total applies = 1,041,443 ac

Total area that would be disturbed by proposed pipeline = 82 acres

45,456,512 US tons x 1/1,041,443 ac = 43.65 tons above-ground C per ac on WV NFs

43.65 total tons x 0.7 = 30.55 tons C in bole wood per acre on WV NFs

30.55 tons C/ac x 82 ac of disturbance on MNF = 2505.4 tons of carbon in bole wood removed from areas proposed for disturbance on MNF by ACP

Tons of C in bole wood removed	**Belowground C loss due to decomposition (US tons)**	**Total aboveground and belowground C loss (US tons)**	**Total aboveground and belowground C loss (Mg)**
2505.4	174.0437966	2679.443797	2430.753415

Map Unit Name	Crossing Length (feet)	Crossing Length (meters)
1A5C-12I	444	135.3312
1A5C-13I	2123	647.0904
1A6C-12C	592	180.4416
1AB4A-04D	59	17.9832
1AB5A-05F	245	74.676
1AB5A-13D	568	173.1264
1AB5C-13I	351	106.9848
1AB6C-12C	176	53.6448
1B5C-12I	244	74.3712
1BC5C-11I	120	36.576
1C5A-12D	271	82.6008
1C5A-13D	381	116.1288
1C5C-12I	955	291.084
1C5C-13I	79	24.0792
1CD5A-14D	229	69.7992
1CD5C-12I	1158	352.9584
1CD5C-13I	190	57.912
1D5A-05D	432	131.6736
1D5A-12D	996	303.5808
1D5A-13D	92	28.0416
1D5A-13I	225	68.58
1D5C-12I	534	162.7632
1D5C-13I	535	163.068
1E4A-15D	292	89.0016
1E5A-05D	355	108.204
1E5A-13C	58	17.6784
1E5C-11C	147	44.8056
1E5C-13I	625	190.5
1F5A-05D	221	67.3608
2B4C-02I	24	7.3152
3AB5C-05I	110	33.528
3C4A-05D	65	19.812
3C5C-05I	189	57.6072
3E5C-05I	174	53.0352
3F5C-05I	326	99.3648
4AB5C-13I	444	135.3312
4AB5C-14C	246	74.9808
4AB5D-13I	130	39.624
4ABC5C-13C	133	40.5384
4B3C-13C	202	61.5696
4B5A-13D	391	119.1768
4B5C-13I	593	180.7464
4BC5A-13C	157	47.8536
4C3A-13B	214	65.2272

Map Unit Name	Crossing Length (feet)	Crossing Length (meters)
4C3AB-23F	298	90.8304
4C5A-05D	141	42.9768
4C5A-14D	19	5.7912
4C5C/A-14I	632	192.6336
4C5C-13I	212	64.6176
4C5C-14I	115	35.052
4D3C-13C	136	41.4528
4D3C-13C	89	27.1272
4D5A-05D	233	71.0184
4D5A-13D	89	27.1272
4D5A-14I	343	104.5464
4D5C/A-05D	577	175.8696
4D5C-05E/D/K	195	59.436
4D5C-12I	859	261.8232
4D5C-14C	407	124.0536
4D5C-14I	1097	334.3656
4D6C-05I	844	257.2512
4DE5C-14I	85	25.908
4E4A-05D	296	90.2208
4E5A-13C	123	37.4904
4E5A-15D	260	79.248
4E5C-05C	300	91.44
4E5C-12I	438	133.5024
4E5C-13I	451	137.4648
4E5C-14I	228	69.4944
4E5D/A-15C/B	195	59.436
4EF5C-13I	437	133.1976
4F5A-05D	2	0.6096
4F5C-12I	89	27.1272
4F5C-13I	827	252.0696
9B3A-05D	147	44.8056
Grand Total	26259	8003.7432

ProGanics
(3,500 $pounds/1\ acre$) × (1 $kilogram/2.2\ pounds$) × (1,000 $grams/1\ kilogram$) = 1,590,909.09 $grams$ 1 $acre$ of ProGanics
Since ProGanics is 49.69 percent carbon, this equals 790,522.73 grams of carbon per acre.

Flexterra
(3,500 $pounds/1\ acre$) × (1 $kilogram/2.2\ pounds$) × (1,000 $grams/1\ kilogram$) = 1,590,909.09 $grams$ 1 $acre$ of Flexterra
Since Flexterra is 40.00 percent carbon, this equals 636,363.64 grams of carbon per acre.

ProGanics (g C/ac)	Flexterra (g C/ac)	ProGanics/Flexterra Total (g C/ac)	ACP disturbance on MNF (acres)	Total addition of C (g)	Total addition of C (Mg)	Total loss of C from aboveground/belowground (Mg)	Total Net Loss of C (Mg)
790522.73	636363.64	1426886.37	82	117004682.3	117.0046823	2430.753415	-2313.748732

Sort	Pit ID	Serial Number Lab ID	Profile Sort	Horizon	Rock Frag. Type	Rock Frag. (%)	Bulk Density	Sand %	Silt %	Clay %	Soil Textural Class	Soil pH	TOC (mg/kg)	TOC (%)
1	P-003-160620-1025-rll-S1A	NA	1	Oa	0	0		NA	NA	NA	NA	4	374000	37.4
2	P-003-160620-1025-rll-S2A	S16-32385	2	A	0	0		33	38.8	28.2	Clay Loam	3.7	100000	10
3	P-003-160620-1025-rll-S3A	S16-32386	3	Bw	ST	10		16.9	42.6	40.5	Silty Clay	4.6	8780	0.878
4	P-003-160620-1025-rll-S4A	S16-32387	4	Bt	ST	25		22.8	47.2	29.9	Clay Loam	4.5	2270	0.227
5	P-010-160620-1315-mgw-S1A	NA	1	Oe	0	0		NA	NA	NA	NA	4.8	476000	47.6
6	P-010-160620-1315-mgw-S2A	S16-32751	2	A	GR	20		64.3	17.2	18.5	Sandy Loam	3.6	185000	18.5
7	P-010-160620-1315-mgw-S3A	S16-32752	3	AE	GR	15		45.4	25.1	29.5	Sandy Clay Loam	4.1	67200	6.72
8	P-010-160620-1315-mgw-S4A	S16-32753	4	Bt1	GR	8		42.6	25	32.4	Clay Loam	4.7	30500	3.05
9	P-010-160620-1315-mgw-S5A	S16-32754	5	Bt2	GR	8		43.3	22.9	33.8	Clay Loam	4.7	7200	0.72
10	P-010-160620-1315-mgw-S6A	S16-32755	6	Bt3	GR	8		43.3	21	35.7	Clay Loam	4.7	3280	0.328
11	P-010-160620-1315-mgw-S7A	S16-32756	7	Bt4	GR	10		41.4	20.7	37.9	Clay Loam	4.6	2360	0.236
12	P-010-160620-1315-mgw-S8A	S16-32758	8	Bt3	GR	10		23.5	19.8	56.7	Clay	4.6	2810	0.281
13	P-012-160620-1115-mgw-S1A	NA	1	Oe	0	0		NA	NA	NA	NA	5.1	484000	48.4
14	P-012-160620-1115-mgw-S2A	S16-32389	2	A	GR	60		54.9	27.3	17.8	Sandy Loam	3.9	147000	14.7
15	P-012-160620-1115-mgw-S3A	S16-32390	3	Bhs	GR	60		55.9	25.5	18.6	Sandy Loam	4.3	92400	9.24
16	P-012-160620-1115-mgw-S4A	S16-32391	4	Bs	GR	50		53.7	31	15.3	Sandy Loam	4.9	49800	4.98
17	P-012-160620-1115-mgw-S5A	S16-32392	5	BC	GR	50		49.2	24.6	26.2	Sandy Clay Loam	4.9	21600	2.16
18	P-022-160614-1050-jsw-S1A	NA	1	Oe	0	0		NA	NA	NA	NA	3.3	473000	47.3
19	P-022-160614-1050-jsw-S2A	S16-32394	2	Oa	0	0		57.5	19.4	23.1	Sandy Clay Loam	3.5	238000	23.8
20	P-022-160614-1050-jsw-S3A	S16-32395	3	E	GR	15		79.6	12.2	8.2	Loamy Sand	4.2	5540	0.554
21	P-022-160614-1050-jsw-S4A	S16-32396	4	Bs	GR	5		66.8	11.4	21.8	Sandy Clay Loam	4.3	13000	1.3
22	P-022-160614-1050-jsw-S5A	S16-32397	5	Bt1	CH	25		13.6	59.6	26.8	Silt Loam	4.4	2230	0.223
23	P-022-160614-1050-jsw-S6A	S16-32398	6	2Bt2	NA	NA		22.9	31.1	45.9	Clay	4.5	710	0.071
24	P-022-160614-1050-jsw-S7A	S16-32399	7	2BC	NA	NA		8.8	37.2	54	Clay	4.4	1110	0.111
25	P-040-160615-1119-jcr-S1A	NA	1	Oe	GR	10		NA	NA	NA	NA	4.5	411000	41.1
26	P-040-160615-1119-jcr-S2A	S16-32401	2	A	GR	10		35.9	46	18.1	Loam	4	75700	7.57
27	P-040-160615-1119-jcr-S3A	S16-32402	3	Bw1	GR	10		18.4	51.4	30.2	Silty Clay Loam	4.8	7880	0.788
28	P-040-160615-1119-jcr-S4A	S16-32403	4	Bw2	GR	15		29.2	39	31.8	Clay Loam	4.6	1790	0.179
29	P-040-160615-1119-jcr-S5A	S16-32404	5	Bw3	GR	35		19.6	44	36.4	Silty Clay Loam	4.7	1400	0.14
30	P-045-160614-1019-jcr-S1A	NA	1	Oe	CH	15		NA	NA	NA	NA	4.4	273000	27.3
31	P-045-160614-1019-jcr-S2A	S16-32760	2	A	CH	15		32.1	42.7	25.2	Loam	4.5	53700	5.37
32	P-045-160614-1019-jcr-S3A	S16-32761	3	BA	VCH	45		24.3	51.2	24.5	Silt Loam	4.9	4230	0.423
33	P-045-160614-1019-jcr-S4A	S16-32762	4	Bw	VCH	45		27	45.4	27.6	Clay Loam	5.3	3480	0.348
34	P-063-160614-0950-rll-S1A	S16-32405	1	Ap	0	0		34.8	41	24.2	Loam	6.5	49800	4.98
35	P-063-160614-0950-rll-S2A	S16-32406	2	Bt	0	0		21.7	37.6	40.7	Clay	5.8	2470	0.247
36	P-063-160614-0950-rll-S3A	S16-32407	3	Btg	0	0		8.8	48.7	42.4	Silty Clay	4.8	1100	0.11
37	P-068-160614-1338-sdd-S1A	NA	1	Oe	CH	25		NA	NA	NA	NA	6.1	270000	27
38	P-068-160614-1338-sdd-S2A	S16-32409	2	A	CH	25		74.1	16.6	9.3	Sandy Loam	5.3	62900	6.29
39	P-068-160614-1338-sdd-S3A	S16-32411	3	Bw	CH	40		53.5	25.1	21.4	Sandy Clay Loam	4.8	2280	0.228
40	P-068-160614-1338-sdd-S4A	S16-32412	4	2C	FL	70		37.3	32.7	30	Clay Loam	5.2	4200	0.42

Sort	Pit ID	Serial Number Lab ID	Profile Sort	Horizon	Rock Frag. Type	Rock Frag. (%)	Bulk Density	Sand %	Silt %	Clay %	Soil Textural Class	Soil pH	TOC (mg/kg)	TOC (%)
41	P-069-160614-1158-sdd-S1A	NA	1	Oe	CH	30		NA	NA	NA	NA	4.9	123000	12.3
42	P-069-160614-1158-sdd-S2A	NA	2	A	CH	30		NA	NA	NA	NA	4.2	72000	7.2
43	P-069-160614-1158-sdd-S3A	S16-32413	3	AB	CH	25		40.9	39	20.1	Loam	4.6	37600	3.76
44	P-069-160614-1158-sdd-S4A	S16-32414	4	Bt	CH	25		50.3	31.1	18.6	Loam	4.6	1630	0.163
45	P-069-160614-1158-sdd-S5A	S16-32415	5	2BC	CH	40		64.3	22.4	13.2	Sandy Loam	4.7	1530	0.153
46	P-077-160617-1035-sdd-S1A	NA	1	Oe	CH	60		NA	NA	NA	NA	5.1	194000	19.4
47	P-077-160617-1035-sdd-S2A	S16-32764	2	A	CH	60		50.3	32.5	17.1	Loam	4.9	68700	6.87
48	P-077-160617-1035-sdd-S3A	S16-32765	3	Bt1	CH	30		32.9	37	30.2	Clay Loam	5.1	6160	0.616
49	P-077-160617-1035-sdd-S4A	S16-32766	4	Bt2	CH	20		44.7	33.5	21.9	Loam	5.1	5130	0.513
50	P-077-160617-1035-sdd-S5A	S16-32767	5	Bt3	CH	15		32.8	34.5	32.7	Clay Loam	4.9	1300	0.13

APPENDIX Q

TERRESTRIAL VEGETATION COMMUNITIES CROSSED BY THE ATLANTIC COAST PIPELINE AND SUPPLY HEADER PROJECT

TABLE Q-1

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
WEST VIRGINIA					
Barren Land	Acidic Rock Outcrops, Cliffs, and Talus	Physiognomy is variable and includes sparsely vegetated rock faces, lichen and bryophyte dominated communities, sparse vertical shrublands, and boulderfield woodlands and forests. Boulderfield forests and woodlands occur in relatively moist topographic positions where deep rocky colluvium restricts tree growth to a few adapted species, notably Sweet Birch, Yellow Birch, Chestnut Oak, and Mountain Ash. In open habitats tree growth is limited by drought and/or lack of rooting medium.	Acidic Rock Outcrop, Cliff, and Talus habitats occupy a very small area of the state. Sparsely vegetated to wooded lithomorphic habitats, including rock outcrops, cliffs, talus, and boulderfields on acidic geologic formations across the state at all elevations. These habitats are restricted to certain geologic formations and are concentrated in certain areas.	2.1	1.8
Coniferous (Evergreen) Forest	Red Spruce Forests	Upland, mixed evergreen-deciduous forests and woodlands at high elevations dominated or codominated by Red Spruce. Associated trees may include the evergreen Eastern Hemlock, and deciduous Yellow Birch, Red Maple, American Beech, Mountain Ash, and Black Cherry. Common shrubs include Mountain Holly, Great Rhododendron, Striped Maple, Southern Mountain Cranberry, and Mountain Laurel. The herb layer is characterized by species adapted to short, cool growing seasons, including Intermediate Woodfern, Mountain Woodfern, Mountain Wood Sorrel, Canada Mayflower, and Painted Wakerobin. Mosses and liverworts often have heavy cover over the rocky ground.	These habitats are confined to high elevations in the Allegheny Mountains Ecoregion, There are five globally rare upland Red Spruce associations classified in West Virginia. These forests occur in small to large patches. Small areas of two forest seep associations are also included in this map class.	6.2	2.6
Deciduous Forest	Dry Calcareous Forests, Woodlands, and Glades [d]	Natural vegetation of forests is dominated by oak and hickory species, including Chinquapin Oak, White Oak, Red Oak, Bitternut Hickory, and Shagbark Hickory, with codominance by a variety of other hardwoods, including Black Maple, Sugar Maple, and White Ash. Common shrubs and small trees include Paw Paw, Muscletree, Redbud, Dogwood, Spicebush, Hop Hornbeam, and Black Haw. Herb layers are usually diverse, combining species with affinities for other oak-hickory forests in the region and more strict calciphiles. Open stand structure of woodland and glade habitats is maintained by drought stress to trees and in some cases by avalanches, fire, or grazing. Common woodland trees include Eastern Red Cedar, Chinquapin Oak, Red Oak, and White Ash.	Dry to dry-mesic calcareous forests, woodlands, and glades within the range of Chinquapin Oak at low to middle elevations, most abundant in areas with drier climates in the rain shadow on the lee side of the Allegheny Mountains. Some of the oldest known living trees in the eastern United States are Eastern Red Cedars found in this habitat in West Virginia. The herb layer is usually diverse and includes several globally and state rare species.	5.4	2.4

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Deciduous Forest	Dry-Mesic Oak Forests	Most stands have a large component of oaks, including red oak, chestnut oak, white oak, and black oak. A subset can be described as oak – hickory forests with a large component of hickory species including pignut, mockernut, and shagbark. Other common trees include red maple, sugar maple, white ash, tuliptree, black gum, and American beech. Common small trees and shrubs include sourwood, witch hazel, hop hornbeam, serviceberry, and dogwood. Heath shrubs may be present but are not abundant as in the Dry Oak (-Pine) Forest. Common vines include Virginia creeper and greenbrier. The herb layer ranges from sparse to moderate and is often quite diverse.	Upland, mostly deciduous forests at lower and middle elevations throughout the state. Soils are usually somewhat less acidic and more fertile compared to the Dry Oak (-Pine) Forest, but are dryer than the Mixed Mesophytic Forest or Northern Hardwood Forest. This map class also includes areas of pine plantations.	346.8	161.3
Deciduous Forest	Montane Red Oak Forests	Forests dominated by Red Oak at high elevations in the Ridge and Valley Ecoregion and along the border with Virginia on Allegheny Mountain in the Allegheny Mountains Ecoregion. Other oaks and hickories are generally excluded and canopy height is stunted due to severe climate. There is usually abundant coarse woody debris and an open canopy structure due to tree damage from wind and ice storms. Associated trees include Red Maple, Sugar Maple, Black Cherry and Sweet Birch. Common subcanopy trees and shrubs include Striped Maple, Witch Hazel, and Mountain Holly. Some stands have shrub layers dominated by heaths. Herb layers are variable, with variants dominated by combinations of grasses, forbs, and ferns.	Known occurrences of these habitats are restricted to the highest ridges in the Ridge and Valley Ecoregion and in the Allegheny Mountains Ecoregion along the border with Virginia. In these environments they occur as large or continuous linear patches, which dominate the ridgetops and upper slopes. The heath understory type is very rare in the state and known only in the southernmost counties near the Virginia border.	14.9	4.7
Deciduous Forest	Northern Hardwood Forests	Common deciduous tree species in natural forests include sugar maple, red maple, American beech, yellow birch, sweet birch, black cherry, red oak, cucumber-tree, and white ash. Some stands may include or be dominated by Eastern hemlock. Red spruce is often present but is not abundant in the tree canopy. Common shrubs include striped maple and mountain holly. The herb layer is characterized by species adapted to short, cool growing seasons, including intermediate woodfern, New York fern, mountain wood sorrel, and Canada mayflower.	Upland deciduous and mixed deciduous-evergreen forests at high elevations in the Allegheny Mountains Ecoregion. This upland forest ecosystem may include forest seeps which are too small to map as a separate wetland habitat. The map class may also include plantations of Red Pine, Eastern White Pine, Norway Spruce, and Red Spruce.	638.3	316.1
Mixed Forest	Dry Oak (-Pine) Forests	Dominant trees include chestnut oak, scarlet oak, black oak, white oak, and red maple. Sourwood is a common small tree, except in the Ridge and Valley Ecoregion, where it is absent. In the eastern counties there are large areas where Eastern white pine is codominant with oaks. Understories are usually dominated by heath shrubs, including mountain laurel, black huckleberry, and blueberries.	Upland deciduous and mixed evergreen-deciduous forests on warm, dry topographic positions and soils throughout the state, except at the highest elevations, most extensive in the Ridge and Valley Ecoregion.	409.2	177.0

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Mixed Forest	Mixed Mesophytic Forests	Common deciduous tree species in natural stands include Sugar Maple, American Basswood, American Beech, Red Maple, Tuliptree, Red Oak, Sweet Birch, White Ash, and Yellow Buckeye. Some stands may include or be dominated by Eastern Hemlock. Common shrubs include Great Rhododendron, Spicebush, Witch Hazel, and Striped Maple. The herb layers of are often lush and diverse, characterized by a flush of spring ephemerals followed by late season dominance by Wood Nettle and ferns.	These habitats are broadly distributed across the lower and middle elevations of the state but are most abundant in areas with more rainfall to the west of the Allegheny Front. They occur in large areas on cool aspects of mountain flanks and gorge slopes. In the dissected landscapes of the Western Allegheny Plateau Ecoregion and low-rainfall areas of the Ridge and Valley Ecoregion patches are smaller and are confined to lower slopes and the coolest aspects.	163.8	90.6
Mixed Forest	Pine-Oak Rocky Woodlands	Dominant pines which comprise distinct subtypes include Pitch Pine, Table Mountain Pine, Virginia Pine, and Red Pine. Oaks are sometimes codominant. Trees are often stunted and stand physiognomy is sometimes dwarf forest with canopy less than 16 feet tall. The understories are usually dominated by dense heath shrubs including Mountain Laurel, blueberries, and Black Huckleberry. The herb layer is typically sparse and has low diversity. This habitat type also includes sandstone glades with high exposure of bedrock pavement with scattered, dwarfed trees, including pines and Eastern Red Cedar	Upland evergreen and mixed evergreen-deciduous woodlands and forests in hot, very dry topographic positions. This habitat type is confined to the eastern counties where a dry climate is produced by the rain shadow on the lee side of the Allegheny Mountains. Stands are often small patches on rocky summits, outcrops, and cliffs. Trees are often stunted and stand physiognomy is sometimes dwarf forest with canopy less than 16 feet tall.	1.3	0.7
Herbaceous Emergent Wetland	Unknown Wetland [e]	Includes only a few wetlands that did not fall in the floodplain and riparian zones. These included some Laurentian-Acadian and Piedmont types that were renamed "unknown."		0.2	0.1
Woody Wetland	High Allegheny Wetlands	Forested swamps are dominated by Red Spruce, with varying cover by Red Maple, Eastern Hemlock, and Yellow Birch. Where limestone or calcareous shale influences seepage water, Balsam Fir and Black Ash are typical canopy dominants. Shrub swamps may be dominated by Speckled Alder, Bushy St. John's wort, Black Chokeberry, Common Winterberry, and/or Velvetleaf Blueberry. Herbaceous communities may be dominated by species of bulrushes, bur reeds, rushes, sedges, and grasses. Mosses, especially peat mosses have high ground cover in most communities.	These habitats are confined to higher elevations of the Allegheny Mountains Ecoregion in Preston, Mineral, Tucker, Grant, Randolph, Pendleton, Pocahantas, Nicholas, and Greenbrier counties. Large concentrations of these habitats are found in Canaan Valley, Cranesville Swamp, Cranberry Glades, and headwaters of the Greenbrier and Shavers Fork rivers. Wetlands in this system are drained by low-gradient, meandering, intermittent to small streams that form the headwaters of larger mountain rivers. These habitats form complex mosaics of small patch communities. Forested swamps occupy the drier margins or slightly higher "islands" in the wetland mosaic. Nutrient-poor fens with bog-like vegetation such as Cottongrass and *Sphagnum* mosses form the characteristic open portion of many of these wetlands. Ombrotrophic bogs, which receive all their water and nutrients from precipitation, are rare, but occur in undisturbed portions of a few of the larger wetlands.	<0.1	0.0

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Woody Wetland	River Floodplains	Common trees of forested floodplains at lower elevations include Sycamore, Silver Maple, River Birch, White Ash, Green Ash, Sugar Maple, Pin Oak, and Tuliptree. High elevation floodplain forests are often dominated by Red Spruce, Yellow Birch, and/or Eastern Hemlock. Shrub swamps of lower elevation floodplains are often dominated by Smooth Alder or Buttonbrush. Riverscour prairies are usually characterized by warm-season grasses such as Big Bluestem and Switch Grass, but these are lacking in riverscour prairies at higher elevations. Herbaceous wetland floodplain communities may be dominated by species of bulrushes, burreeds, rushes, sedges, water lilies and/or other species.	These habitats occupy a very small area of the state. Because they are along rivers, they are concentrated in the lower elevations, but they also include smaller areas along rivers at higher elevations. Thus they range from the lowest elevations in the state along the Ohio and Potomac rivers up to 3,600 feet elevation along the Shavers Fork River.	30.5	4.4
Woody Wetland	Small Stream Riparian Habitats	These habitats are mostly jurisdictional wetlands, but narrow riparian zones that are not wetlands may also be included. Habitats include headwater wetlands and seeps, and wetlands and riparian zones along creeks and other small streams. Beaver-influenced wetlands are common. Common names for these habitats include floodplain forests, swamp forests, riparian forests, riparian zones, forest seeps, shrub swamps, marshes, wet meadows, Beaver meadows, and Beaver ponds.	Natural vegetation of variable physiognomy in the floodplains of small streams, primarily at low to middle elevations. These habitats occur in linear zones and small patches throughout the state, and include specialized marl marshes that occur nowhere else in the state and host a high diversity of rare plants.	43.3	25.3
Scrub-Shrub	Anthropogenic Shrubland & Grassland	These habitats developed on land that was converted from natural habitats by humans, and then abandoned. Vegetation is highly variable and often includes a mixture of native and non-native plant species.	These habitats occur in small to large patches throughout the state at all elevations.	4.2	2.6
			ACP WEST VIRGINIA TOTAL:	**1,666.2**	**789.6**
VIRGINIA					
Barren Land	Acidic Cliff and Talus	A sparsely vegetated cliff or talus slope formed on granitic, sandstone, or other acidic bedrock. The lack of soil, highly acidic bedrock, and constant erosion, limits the vegetation to mosses, lichens, and herbs growing on bare rock or crevices, and to sparse trees and shrubs rooted in deeper soil pockets. Lichen cover may be extensive. In the Central Appalachians, red-cedar trees, poison ivy vines and rock polypody ferns are characteristic. Birch or spruce replaces red cedar in the north, where a shrubland of heaths and reindeer lichen may develop where cold air accumulates at the sheltered bottom of slopes. Areas of concentrated seepage are sometimes present.	Landforms in this system are associated with steeper mountains and hills, river bluffs, and gorges. In some cases this system may take the form of upper-slope boulderfields without adjacent cliffs, where talus forms from freeze/thaw action on the bedrock. This system is prone to harsh climatic conditions; frequent disturbances include drought stress and wind and storm damage.	1.1	1.0

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Barren Land	Circumneutral Cliff and Talus	A sparsely vegetated cliff or steep talus slope formed on calcareous sandstone or shale or other moderately calcareous bedrock. The vegetation varies from sparse to patchy as the lack of soil and constant erosion restricts vegetation growth to rock crevices or soil pockets. Trees are typically present and may form woodland or even forest vegetation. Basswood, ash, and bladdernut are woody indicators of the enriched setting; northern white cedar is sometimes present. The herb layer is typically not extensive but includes at least some species that are indicators of high nutrient conditions.	Vertical or near-vertical cliffs and steep talus slopes where weathering and/or bedrock lithology produce circumneutral to calcareous pH and heightened nutrient availability. Substrates include calcareous sandstone, calcareous shale, or other sedimentary mixtures containing limestone or dolomite.	1.2	0.5
Coniferous (Evergreen) Forest	Southern Appalachian Montane Pine Forest and Woodland	A conifer forest of slopes and ridges at high elevations in the Southern Appalachians. Table mountain pine is typical and often dominant, occurring with pitch pine, Virginia pine, or Carolina hemlock. Chestnut oak, scarlet oak, and scrub oak are usually present and are sometimes abundant in examples that have not burned recently. A dense heath shrub layer is typical; herbs are usually sparse but may be more abundant and shrubs less dense when fires occurred more frequently. Periodic fire presumably also maintained a more open woodland canopy structure in these communities. In some areas pines may be able to maintain dominance due to edaphic conditions, such as very shallow soil or extreme exposure, but most sites appear eventually to succeed to oak in the absence of fire.	This system occurs on the most extreme of convex landforms--sharp ridges and adjacent upper slopes. At the northern end of its range in the central Appalachians, it is found from elevations of about 1,750 to 4,000 feet. Underlying rocks are acidic and soils are infertile, shallow and droughty. A thick duff layer and volatile heath shrubs create a strongly fire-prone habitat. Disturbance from southern pine beetle outbreaks can be system-changing.	14.1	5.7
Deciduous Forest	Central and Southern Appalachian Montane Oak Forest	A high elevation hardwood forest dominated by red oak and white oak, with the individuals often stunted or wind-flagged. Chestnut oak and xeric hickories are also sometimes present. Chestnut trees were important in this system historically, but are now found only as stumps and sprouts. Early azalea and other heath shrubs, along with mountain holly, are common in understory vegetation, though graminoid species and ferns dominate in some examples.	This forest mostly occurs on exposed, inhospitable sites from about 3,000 to 4,500 feet. The weathered soils are thin, nutrient-poor, low in organic matter, and acidic. High winds and ice storms are commonplace, which probably explains the stunted appearance of many of these communities. Lightning-caused fires may suppress heath shrub development in the understory.	53.6	30.0
Deciduous Forest	Northeastern Interior Dry-Mesic Oak Forest	An oak-dominated, mostly closed canopy forest that occurs as a matrix (dominant) type through the central part of our region. Oak species characteristic of dry to mesic conditions and hickories are dominant in mature stands. With a long history of human habitation, many of the forests are mid-successional, in which pines (typically Virginia or eastern white) or tuliptree may be co-dominant or dominant.	Moderate moisture and heat loading are characteristic for this oak system. It occurs at low- to mid-elevations, where the topography is flat to gently rolling, occasionally steep. Substrate bedrock and soils are commonly, but not always acidic. Chestnut oak was formerly a prominent tree in these forests. A moist-cool subtype of this habitat may occur on north facing slopes with may provide particular habitat conditions for some wildlife species.	839.7	343.9

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Deciduous Forest	Southern Atlantic Coastal Plain Mesic Hardwood Forest	A hardwood forest of the coastal plain with a significant component of mesophytic (moist but non-wetland) species, such as American beech or southern sugar maple. Upland and bottomland oaks at the mid-range of moisture tolerance are usually also present, particularly white oak, but sometimes also southern red oak, cherrybark oak, or Shumard oak. Loblolly pine is sometimes present, but it is unclear if it is a natural component or has entered only as a result of past cutting. Understories are usually well developed. Shrub and herb layers may be sparse or moderately dense.	Found on lower slopes, along streams and rivers, on mesic flats between drier pine-dominated uplands and floodplains, and on local raised areas within bottomland terraces or wet flats. Soils are variable in texture and pH, excluding only the coarsest sands.	138.7	75.3
Deciduous Forest	Southern Piedmont Mesic Forest	A hardwood forest of moist low or north-facing slopes in the Piedmont. Vegetation is dominated by trees that favor conditions of moderate moisture (sweetgum, white oak, red oak, tuliptree, basswood), with American beech most prominent. Conifers are occasionally abundant. A few places support dense heath shrubs; otherwise shrubs layers tend to be sparse to moderate. Rock chemistry is an important determinant of variation, with denser and more diverse herb layers on richer examples.	Occurring on mesic sites in the Piedmont from Virginia southward. Most examples occur on lower or north-facing slopes where topography creates moister and cooler conditions.	538.7	198.8
Deciduous Forest	North Atlantic Coastal Plain Hardwood Forest	A hardwood forest largely dominated by oaks, often mixed with pine. White, red, chestnut, black, and scarlet oaks are typical, and American holly is sometimes present. Sassafras, birch, aspen, and hazelnut are common associates in earlier successional areas. In the northern half of the range, conditions can grade to dry-mesic, reflected in the local abundance of beech. A heath shrub layer is common; the herbaceous layer is sparse. In southern-more occurrences in Maryland or Virginia, pines (shortleaf, Virginia, and particularly loblolly) may be important, even strongly dominant canopy trees.	These forests occur on sandy to gravelly glacial deposits and outwash from Long Island north, and on deep, acidic, coarse-textured soils on the flat to rolling landscapes of the coastal plain to the south.	4.6	2.9
Grassland / Herbaceous	Central Appalachian Alkaline Glade and Woodland	A mosaic of woodlands and open glades on thin soils over limestone, dolostone or similar calcareous rock with its core distribution in the Central Appalachians. In some cases, the woodlands grade into closed-canopy forests. Eastern red-cedar is a common tree, filling in in the absence of fire, and chinquapin oak is indicative of the limestone substrate. Other locally occurring trees and shrubs are sugar maple, red and white oak, pignut hickory, eastern redbud, and hackberry. Prairie grasses are often dominant in the herb layer, and forb richness is often high, supporting species such as tall larkspur, American harebell, columbine, and four-leafed milkweed.	A moderately dry patch community that forms in shallow soils at high landscape positions (upper slopes, ridgetops), at elevations up to about 2,500 feet. It is known widely through the region. Fire is sometimes an important natural disturbance vector, but open physiognomies may also be maintained by drought and landslides. Lower elevation examples are often in highly fragmented agricultural landscapes.	57.6	23.9

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Op.
Herbaceous Emergent Wetlands	Laurentian-Acadian Freshwater Marsh	A freshwater emergent or submergent marsh dominated by herbaceous vegetation and associated with isolated basins, edges of streamways, and seepage slopes. Typical plants include cattails, marsh fern, touch-me-not, pondweeds, water lilies, pickerelweed, and tall rushes, species that tolerate sustained inundations and do not persist through the winter. Scattered shrubs are often present and usually total less than 25% cover. Trees are generally absent and, if present, are scattered. Zonation within a marsh is associated with water depth and length of inundation. This is a very broadly defined system, with many variants distributed widely in the Northeast.	Freshwater marshes are associated with lakes, ponds, headwater basins and slow-moving streams, impoundments, ditches, or any low lying basin that collects water. Such basins are often flat-bottomed and shallow, or marsh vegetation forms a ring around the edge of deeper basins. They typically occur on muck over mineral soil, and as part of a larger wetland complex that may include forested or shrubby swamps, peatlands, and/or open water.	0.2	0.1
Herbaceous Emergent Wetlands	Piedmont-Coastal Plain Freshwater Marsh	An herbaceous wetland that occurs in small basins and alluvial environments in the Piedmont and coastal plain of Virginia. Vegetation is zoned according to water depth, length of inundation, and substrate; submergent plants in the deepest water like pondweeds and water lilies give way to emergents like cattails and bulrushes, then shallower water species like arrow-arum and American bur-reed, and finally to species of periodically flooded shorelines like marsh St. John's-wort and various sedges.	Occurs most commonly in alluvial settings, at margins of streams, but also in headwater basins and in small, permanently flooded isolated basins and non-alluvial springheads. Substrates are generally muck over mineral soil; water chemistry and available nutrients vary.	32.5	21.6
Herbaceous Emergent Wetlands	Piedmont-Coastal Plain Shrub Swamp	Dominant overstory species are red maple and blackgum, with tulip-tree and loblolly pine also locally important. Common small trees and shrubs are sweetbay magnolia, sweet pepperbush, highbush blueberries, swamp azalea, smooth winterberry, and southern wild raisin. Compact dodder is often abundantly attached to the stems of shrubs in these swamps. Common herbaceous species include cinnamon fern, netted chain fern, and the sedges.	The habitats occupied by these saturated, deciduous or mixed forests include small headwaters stream bottoms and seeping toe-slopes with acidic, nutrient-poor soils. Similar seepage wetlands are known from most coastal states of the mid-Atlantic region. Characterized by diffuse drainage with braided channels and Sphagnum-covered hummocks in a sandy or peaty substrate, these habitats are generally wet and somewhat protected from fire.	17.8	11.8
Mixed Forest	Appalachian (Hemlock)-Northern Hardwood Forest	A hardwood forest of sugar maple, American beech, and yellow birch, sometimes mixed with, and sometimes dominated by, eastern hemlock. Northern red oak and white oak occur commonly, but do not dominate. Black cherry, black birch, white pine, and tulip tree are typical on nutrient rich or historically disturbed sites.	This habitat type is an ecological generalist in much of its range, occupying low to mid-elevations on a variety of landforms and bedrock types. Drier, typic, and moist/cool variants occur along a gradient from higher, more exposed sites to lower, more protected ones. To the south, the hemlock wooly adelgid and a warming climate may push this system to more closely resemble Southern Appalachian Oak Forests.	9.8	5.8
Mixed Forest	Central Appalachian Pine-Oak Rocky Woodland	A mixed forest or woodland of pitch pine and/or Virginia pine mixed with dry-site oaks (primarily scrub oak, scarlet oak, and chestnut oak). Red pine and shortleaf pine may also occur. Some areas have a fairly well-developed heath shrub layer; a graminoid herb layer dominated by Pennsylvania sedge, poverty grass, and common hairgrass may be more prominent in others. The vegetation is patchy, with woodland as well as open portions, or even sparse cover on dry rocky hilltops and outcrops.	This forest occurs as relatively small patches on exposed ridgetops, hilltops and outcrops, at elevations ranging up to about 4,000 feet. The substrate rock is granitic or other acidic lithology, including traprock in New England. Conditions are dry, and soils are thin and nutrient-poor. This system experiences moderately intense fires naturally every 5 to 25 years; fire history largely determines the vegetation character of individual occurrences.	25.2	10.0

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Mixed Forest	Dry Oak-Pine Forest/ Central Appalachian Southern Piedmont	An oak or oak-pine forest of dry sites, characterized by a variable mixture of drought tolerant oaks (chestnut oak, white oak, red oak, black oak, scarlet oak) and pines (pitch, white, Virginia). It occurs broadly in the Central Appalachians and northern Piedmont ecoregions, most commonly as a large (to very large) patch habitat. It has a much more limited range in New England, where hickories may be present. Community structure ranges from open woodlands to closed forest. Heath shrubs are common in the understory; the herb layer is often sparse and lacks diversity. In the absence of fire this system may tend to succeed to hemlock and locally common hardwoods.	A habitat of dry rolling hills, mid- to upper slopes and ridgetops, where soils are often thin, well-drained, and nutrient-poor. This system may occur on any kind of rock type; rock chemistry is an important determinant of variation. Regular low intensity fire helped maintain the oak-pine balance historically.	873.7	360.7
Mixed Forest	Plantation Forest	The most common species planted are loblolly, shortleaf and Virginia pines, with white pine sometimes planted in the western part of the state, yellow-poplar, and mixed hardwoods.	Plantation forests occur throughout the state, but plantation pine forests occur mostly in the Coastal Plain and Piedmont regions.	491.8	205.9
Mixed Forest	Southern and Central Appalachian Cove Forest	A hardwood or mixed forest with a high diversity of mesophytic (moisture loving but non-wetland) trees. Canopy species commonly include yellow buckeye, sugar maple, white ash, basswood, tuliptree, cucumber tree, and American beech, sometimes in a single stand. Hemlock is sometimes present, mostly in acidic coves. Shrub and herb layers are similarly rich, and calcium-bearing and circumneutral bedrock tends to support the richest examples. This forest is typical of sheltered, shady places in the Blue Ridge and central Appalachian Mountains, forming large patches (tens to hundreds of acres) on concave slopes that accumulate nutrients and moisture.	Found on sheltered coves and concave slopes. Soils are often rocky and may be coarse or fine-textured, and may be residual, alluvial, or colluvial.	37.2	20.9
Palustrine Emergent Wetland (Persistent)	Tidal Salt Marsh, Estuarine Marsh	The vegetation is primarily herbaceous marsh, most of it dominated by black needlerush. Areas near tidal inlets have salt marsh dominated by cordgrass. There are also salt flats dominated by saltgrass and swampfire, as well as salt-tolerant shrublands and a few treed hammocks that occur on small elevated areas closely associated with the marshes.	These brackish to salt intertidal marshes of the embayed region of southeastern Virginia and adjacent North Carolina are distinguished by the extensive brackish water and tidal flooding driven by winds that is characteristic of that region.	3.4	3.3
Scrub-Shrub	Shrubland / grassland; mostly ruderal shrublands, regenerating clearcuts	Upland shrubby, grassy, or mixed cover areas created or maintained in areas that would naturally revert to forest over time.	These shrublands occur primarily in central and southeast Virginia along the ACP.	263.3	108.1

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Woody Wetland	Atlantic Coastal Plain Blackwater / Brownwater Stream Floodplain Forest	A complex of wetland and upland vegetation on floodplains of coastal plain streams south of the James river in southeast Virginia. These are narrow but sometimes long dendritic patches of wetland forest dominated by bald cypress and tupelo with oaks and other bottomland hardwoods found in drier areas. Small shrubby sloughs may be present, and shrub and herb layers are generally well developed.	Two variants are recognized. "Blackwater" floodplains originate in sandy soils; their waters are strongly stained by tannins and carry little suspended clay sediment. Depositional landforms are limited. Streams in more nutrient rich and diverse "brownwater" floodplains carry substantial amounts of silt and clay. Natural levees are often distinctly present. Soils in blackwater systems tend to be strongly acidic; finer textured brownwater soils are generally more fertile.	56.4	32.7
Woody Wetland	Central Atlantic Coastal Plain Non-riverine Swamp and Wet Hardwood Forest	A hardwood or mixed forested swamp on poorly drained soils of the outer the acreage of this system. Today this phase is present only in high-quality examples. A mostly nonriverine, non-seepage, non-tidal hydrology is a distinguishing factor for swamps in this system, which is the dominant habitat type in the Great Dismal Swamp in Virginia.	Occurs on poorly drained, organic or mineral soil flats. Largest examples are on broad interfluvial flats. These areas are saturated by rainfall and seasonal high water tables with only secondary influence of river or tidal flooding. Fire is generally infrequent but may be important locally. Sea-level rise will have system-changing impact on near-coastal examples.	104.9	66.5
Woody Wetland	North-Central Appalachian Acidic Swamp	A conifer or mixed conifer-hardwood swamp of poorly drained acidic substrates throughout central New England and the Central Appalachians, encompassing a broad range of basin, seepage, and stream-associated wetland communities. Hemlock is usually present and may be dominant. It is often mixed with deciduous wetland trees such as red maple or black gum. Spruce is rarely present. Basin swamps tend to be more nutrient-poor than seepage swamps; in some settings, the two occur adjacent to each other with the basin swamp vegetation surrounded by seepage swamp vegetation on its upland periphery.	Occurs at low to mid elevations (generally <2,000 feet) in poorly drained depressions that may be in proximity to a stream. The acidic substrate is mineral soil, often with a component of organic muck; if peat is present, it usually forms a thin layer over the mineral soil rather than a true peat substrate.	0.5	0.2
Woody Wetland	North-Central Appalachian Large River Floodplain	A complex of wetland and upland vegetation on floodplains of medium to large rivers in Atlantic drainages. They are typical of larger rivers but they can occur on smaller rivers where the stream gradient is low and a broad floodplain develops. The vegetation complex includes floodplain forests in which silver maple, sycamore, box elder, and cottonwood are characteristic, as well as herbaceous sloughs, shrub wetlands, ice scours, riverside prairies, and woodlands. Most areas are underwater each spring; microtopography determining how long the various habitats are inundated. Depositional and erosional features may both be present depending on the particular floodplain.	Floodplains form on land adjacent to a stream or river that experiences periodic flooding when the river overflows its banks. A variety of microtopographic features form as a result of annual river activity. This broadly-defined system includes vegetation on deep alluvial deposits, on depositional levees and bars, in backwater sloughs, and (rarely) on bedrock where rivers cut through resistant geology.	3.5	1.9

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Woody Wetland	North-Central Interior and Appalachian Rich Swamp	A hardwood or occasionally mixed swamp of alkaline wetlands associated with limestone or other calcareous substrate in the southern portion of the region. Red maple and black ash are the dominant deciduous trees in most examples. Conifers may include larch, but typically not northern white cedar, which is characteristic of more northern wetlands. The canopy can be variable, as there may be shrubby or herbaceous openings within the swamp. A diverse ground cover is made up of some combination of herbs indicative of nutrient-rich conditions, ferns, and bryophytes characteristic of fens.	This forested wetland occurs at low to mid elevations. They are found in poorly drained depressions or at the margins of stream valley bottoms, where higher pH and/or nutrient levels are associated with a rich flora. The substrate is primarily mineral soil, but there may be some peat development. Basin settings may still be hydrologically connected to nearby streams.	0.8	0.5
Woody Wetland	Piedmont Upland Depression Swamp	A forested swamp of wetland oaks occurring in small, shallow basins in upland settings where water pools due to limited soil drainage. Most examples are isolated seasonally flooded wetlands dominated by wetland oaks (pin oak, swamp white oak, laurel oak, willow oak, overcup oak), but a few are treeless or open-canopied ponds. Vegetation is zoned with an outer ring of trees, a more interior ring of shrubs (buttonbush, heaths, greenbrier), vines, and wetland graminoids and ferns, and a central area with or without standing water year round depending on precipitation. Sphagnum moss is sometimes extensive in parts of the pools.	Occurs on nearly level Piedmont uplands with clay hardpans and shallow seasonal flooding. Most known examples are on mafic bedrock. Flooding depth is typically shallow (< 25 cm). Soils are typically loamy clays. There is substantial variation among the pools, related to substrate, basin morphology, and geographic location.	2.4	1.1
Woody Wetland	Piedmont-Coastal Plain Large River Floodplain	A complex of wetland and upland vegetation on floodplains along larger rivers, where temporary to seasonal flooding affects vegetation composition and dynamics. Vegetation includes both non-forested bar and scour communities and a diverse group of more extensive forests. Microtopographic heterogeneity is high, and forests tend to be differentiated by depositional landforms such as levees, sloughs, terraces, and abandoned channels. Better drained soils may support wet site oaks, shagbark hickory, and sweetgum. Wettest swamps are often dominated by green ash and red maple. Bald cypress may occur, but does not dominate. Understories are generally open, with sedges and grasses or moisture-loving forbs in the herb layer.	Occurs along large rivers or streams where topography and alluvial processes have resulted in a well-developed floodplain. The alluvial soils are variable in texture.	45.3	26.3
Woody Wetland	Riparian Forest, Southeast Virginia	The vegetation includes both non-forested bar and scour communities, as well as more extensive forested floodplain communities. The vegetation is often a mosaic of forest, woodland, shrubland, and herbaceous communities. Common trees include River birch and American sycamore. Open, flood-scoured rivershore prairies feature Switchgrass and Big bluestem, and Twisted sedge is typical of wetter areas near the channel.	This ecological system consists of vegetated communities along streams and small rivers in the Piedmont of the southeastern United States where flooding and flood-related environmental factors affect vegetation composition and dynamics.	39.2	17.6

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Woody Wetland	Southern Piedmont Lake Floodplain Forest	The vegetation includes both non-forested bar and scour communities and the more extensive forested floodplain communities. Forests are generally differentiated by depositional landforms such as levees, sloughs, ridges, terraces, and abandoned channel segments.	This ecological system consists of vegetated communities along Piedmont rivers, south of the James River in Virginia, where flooding and flood-related environmental factors affect vegetation composition and dynamics.	2.6	1.9
			ACP VIRGINIA TOTAL:	**3,659.8**	**1,578.9**
NORTH CAROLINA					
Coniferous (Evergreen) Forest	Atlantic Coastal Plain Upland Longleaf Pine Woodland	Vegetation is a set of associations that are most naturally woodlands or savannas dominated by Longleaf pine and having a well-developed grassy herb layer. A few associations have sparse herb layers due to excessively drained soils, and a few are dominated by scrub oaks. Other pine species may sometimes be present. Scrub oaks (and others) form an understory in most associations, all but the mesic ones. Low shrubs, most ericaceous, are often an important component. In most of the range, Pineland threeawn (wiregrass) is the dominant herb.	These communities occur on a variety of well- to excessively-drained sandy or sandy loam soils. Like other longleaf pine communities, this community is maintained by frequent, low-intensity wildland fire.	395.5	191.2
Deciduous Forest	Southern Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	Vegetation consists of forests dominated by combinations of upland oaks, particularly White oak, Southern red oak, and Post oak. In the northern part of the range, Red oak may be a component, while in the southern part, evergreen species such as Water oak or Darlington oak become more prominent. Hickories are also prominent, including Mockernut hickory, Pignut hickory, and Sand hickory.	This system occurs in dry-mesic to dry but not xeric sites, generally on upper to midslopes in bluff systems, but occasionally it occurs on broader uplands or on the highest parts of non-flooded river terraces	357.5	170.2
Deciduous Forest	Southern Atlantic Coastal Plain Mesic Hardwood Forest	Stands of this system include a significant component of mesophytic species such as American beech or Florida maple. Upland and bottomland oaks at the mid-range of moisture tolerance are usually also present, particularly White oak, but sometimes also Southern red oak, Swamp chestnut oak, Shumard oak, or Water Oak. Some typical smaller trees and shrubs include Flowering Dogwood, Common sweetleaf, Sourwood tree, Witch hazel, Red mulberry, and Silky camellia. Some typical herbs include Partridge berry and Arrowleaf ginger.	This system occurs in a variety of moist non-wetland sites that are naturally sheltered from frequent fire. Most common are lower slope and bluff examples along streams and rivers in dissected terrain, but some examples occur on mesic flats between drier pine-dominated uplands and floodplains or on local high areas within bottomland terraces or nonriverine wet flats.	33.0	18.6
Grassland / Herbaceous	Clearcut – Grassland / Herbaceous	Modified/managed communities are comprised of vegetation resulting from the management or modification of natural/near-natural vegetation, which produces a structural and floristic combination not clearly known to have a natural analogue. Modified vegetation may be easily restorable by either management, time, or restoration of ecological processes. An example would be unimproved pastures resulting from removal of trees.	Occurs throughout the state along the ACP.	168.4	77.1

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Mixed Forest	Managed Tree Plantation	Loblolly pine is the most planted species in North Carolina, followed by longleaf pine, and hardwoods including red and white oak, soft maple, sweetgum, ash, and yellow-poplar.	Occurs throughout the state along the ACP. The coastal plain (north and south) has the largest area of timberland followed by the piedmont and mountains	120.3	57.7
Mixed Forest	Southern Piedmont Dry Oak-(Pine) Forest	Vegetation consists of forests dominated by combinations of upland oaks, particularly White oak, Red oak, Black oak, Post oak, Scarlet oak, and Southern red oak, along with Pignut hickory, Mockernut hickory, and other hickories. Other common tree species include Loblolly pine, Shortleaf pine, Virginia pine, Red maple, American sweetgum, and Tuliptree. A well-developed understory and shrub layer is generally present, and the herb layer is sparse to at most moderate in density.	Occurs on upland ridges and upper to mid slopes, occupying most of the uplands where soils are not rocky or otherwise extreme. Moisture conditions, determined by topography, are dry to dry-mesic. This system may occur on any kind of rock type, with rock chemistry being an important determinant of variation.	0.1	0.0
Scrub-Shrub	Successional Shrub/Scrub	Scrub-shrub habitats are areas where the vegetation is dominated by small woody plants such as shrubs and young trees. Successional habitats are ephemeral and will have a limited longevity without repeated disturbance. These habitats often take place within the forest environment where removal of mature trees and natural regeneration of adjacent forest species has occurred.	Occurs throughout the state along the ACP.	12.0	5.6
Scrub-Shrub	Successional Shrub/Scrub (Clear Cut)	Scrub-shrub habitats are areas where the vegetation is dominated by small woody plants such as shrubs and young trees. Successional habitats are ephemeral and will have a limited longevity without repeated disturbance. These habitats often take place within the forest environment where trees have been removed (clear cut) and natural regeneration of adjacent forest species has occurred.	Occurs throughout the state along the ACP.	99.4	55.5
Woody Wetland	Atlantic Coastal Plain Blackwater Stream Floodplain Forest	Vegetation consists almost entirely of forests of wetland trees. Wetter examples are strongly dominated by Baldcypress and Swamp tupelo. Other examples have mixtures of these species with oak and other bottomland hardwoods tolerant of blackwater conditions. Except in the very wet examples, understory, shrub, and herb layers are generally well-developed, and woody vines are also prominent.	Occurs in floodplains of small streams that carry little mineral sediment (blackwater streams). Flooding is an important ecological factor in this system	51.4	28.6
Herbaceous Emergent Wetland	Atlantic Coastal Plain Clay-Based Carolina Bay Wetland	Vegetation includes a series of primarily herbaceous and woodland associations. The wettest sites have open water and floating-leaved aquatic vegetation, or marsh vegetation of tall graminoids. Drier sites often have an open canopy of Pond cypress, with a dense, often fairly species-rich herbaceous layer beneath. A large number of annual species are present.	Occurs in Carolina bays with mineral soils and with seasonal to permanent standing water. Carolina bays are oriented, oval, shallow depressions with nearly flat bottoms	3.1	1.9

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Woody Wetland	Atlantic Coastal Plain Peatland Pocosin and Canebrake	A characteristic suite of primarily evergreen shrubs, greenbriars, and Pond pine dominates. Inkberry holly, Fetterbush, Staggerbush, Swamp titi, Large gallberry, and Dusty zenobia are characteristic and usually dominant in some combination, along with Laurel greenbrier. Pond pine is the characteristic tree, and it along with a set of evergreen hardwoods, including Loblolly bay, Sweetbay magnolia, and Swamp bay, are generally the only trees present. Herbs are scarce and largely limited to small open patches.	This system occurs on broad interfluvial flats and in small to large, very gentle basins and swales, largely on the outermost terraces of the Outer Coastal Plain. The communities have in common a dense shrub layer of wetland shrubs tolerant of the organic soils, low nutrient conditions, and fire.	86.7	49.5
Woody Wetland	Atlantic Coastal Plain Small Blackwater River Floodplain Forest	Vegetation consists largely of forests dominated by wetland trees species. Non-forested vegetation is present only on recently deposited bars and in oxbow lakes. The lowest, wettest areas have some combination of Bald cypress, Pond cypress, and Swamp tupelo. Water tupelo is generally scarce or absent. Higher portions of the floodplain have forests with combinations of a small set of wetland oaks and other species, including Laurel oak, Overcup oak, Water oak, American sweetgum, Loblolly pine, Sweetbay magnolia, and other species.	Occurs in floodplains of medium to small Coastal Plain rivers that carry little mineral sediment (blackwater rivers).	82.1	51.5
Woody Wetland	Atlantic Coastal Plain Small Brownwater River Floodplain Forest	The lowest, wettest areas have some combination of Bald cypress and Water tupelo dominating. Natural levees and riverfronts have a diverse mixture of trees that typically includes American sycamore, Sugarberry, Green ash, Boxelder, and other species that benefit from the high light levels and heavy alluvial deposition of these sites. Moderate to high parts of the floodplain away from the levee are usually dominated by bottomland hardwoods, various mixtures of wetland oaks, including Laurel oak, Swamp chestnut oak, Cherrybark oak, and sometimes a number of other oak species, along with American sweetgum, but other species are sometimes codominant.	Occurs in floodplains of medium to small Coastal Plain rivers that carry significant mineral sediment (brownwater or redwater rivers).	53.9	31.6
Woody Wetland	Central Atlantic Coastal Plain Wet Longleaf Pine Savanna and Flatwoods	Vegetation is a set of associations that are naturally woodlands or savannas dominated by Longleaf pine or, less frequently, by Pond pine, Slash pine or some combination. Hardwoods are present in any abundance only in examples altered by fire suppression. The ground cover is a dense combination of herbs and low shrubs. A variety of ericaceous shrubs and hollies is common, with density determined by fire history. Grasses naturally dominate the ground cover. Pineland three-awn often dominates within its range, but Toothache grass, Carolina dropseed, Wireleaf dropseed, or other grasses may dominate. A great diversity of other herbs is often present, including composites, sedges, insectivorous plants, and variety of showy forbs. Communities in this system are often very high in species richness.	This system occurs on wet mineral soil sites. Landforms include low areas in relict beach ridge systems and eolian sand deposits, and poorly drained clayey, loamy, or sandy flats. They occasionally occur on river terraces above current flood levels.	79.1	43.5

TABLE Q-1 (cont'd)

Terrestrial Vegetation Communities Crossed by the Atlantic Coast Pipeline

NLCD Vegetation Community [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres)	
				Con.	Op.
Woody Wetland	Southern Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest	Vegetation is a closed-canopy forest of wetland trees. The wetter sites are dominated by combinations of Baldcypress, Black tupelo, and occasionally Water tupelo, Loblolly pine, Atlantic white-cedar, American sweetgum, and Tuliptree. Less wet sites have canopies of wetland oaks such as Laurel oak, Swamp chestnut oak, and Cherrybark oak. Most communities have a well-developed shrub layer that has more floristic affinities with pocosins or baygalls than with river floodplain communities that have similar canopies. The shrub layer is usually dominated by Summersweet, Coast Leucothoe, or species shared with pocosins. The herb layer is not usually well-developed but may be dense where shrubs are atypically sparse. Wetland ferns, such as Royal fern and Netted chain fern, and sedges usually dominate. The most common subcanopy species are Red maple, Swamp bay, and Sweetbay. Typical shrubs include Inkberry, Large gallberry, Sweetbells leucothoe, Virginia sweetspire, and Fetterbush. Herbs, chiefly ferns and sedges, are typically sparse, but mosses may be common.	This system consists of poorly drained, organic or mineral soil flats of the outer Atlantic Coastal Plain. These areas are saturated by rainfall and seasonal high water tables without influence of river or tidal flooding. The largest areas are on broad interfluvial flats, but substantial areas occur on organic deposits in drowned river valleys in the Embayed Region of North Carolina and Virginia, beyond the reach of the influence of wind tides.	5.7	3.5
Woody Wetland	Southern Piedmont Small Floodplain and Riparian Forest	Almost all of the extent of the system is naturally forested. The forest canopy is usually a mix of mesophytic and widespread species such as Tuliptree, American sweetgum, and Red maple, along with characteristic alluvial and bottomland species such as *Sycamore,* River birch, Boxelder, Sugarberry, Green ash, American sweetgum, Swamp chestnut oak, and Cherrybark oak. American beech may be present in drier portions, mixed with the other species. Successional areas are often strongly dominated by Loblolly pine, Virginia pine, American sweetgum, or Tuliptree.	Occurs near streams and small rivers, on floodplains and terraces affected by river flooding and on emergent bars and banks within channels. Depositional landforms, including levees, sloughs, ridges, terraces, and abandoned channel segments may be present, but are smaller than the scale of the communities of the floodplain.	0.1	0.0
			ACP NORTH CAROLINA TOTAL:	**1,548.3**	**786.0**
			ACP CUMULATIVE TOTAL:	**6,874.3**	**3,154.5**

[a] The corresponding National Land Cover Database (NLCD) vegetation communities were identified using the Northeast Terrestrial Wildlife Habitat Classification crosswalk table between each state's SWAP habitats (found in Appendix D of Gawler 2008).

[b] State Vegetation Community Types for West Virginia: WVDNR, 2015b.

State Vegetation Community Type data for Virginia: Nature Conservancy, 2015.

State Vegetation Community Type data for North Carolina: NatureServe. 2014.

[c] Dominant Vegetation Community descriptions were identified by using the NE Terrestrial Habitat Map Guide (Nature Conservancy, 2015), NatureServe Explorer (NatureServe, 2015) and state SWAPs.

[d] Includes 'previous calcareous", which include Calcareous Glades combined with the new Northeastern Interior Calcareous Oak Forest ecological system, and large areas with mostly acidic bedrock.

[e] Unknown wetlands include a few wetlands that do not fall in the floodplain and riparian zones. These included some Laurentian-Acadian and Piedmont types that were renamed "unknown."

TABLE Q-2

Terrestrial Vegetation Communities Crossed by the Supply Header Project

NLCD Vegetation Type [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Op.
PENNSYLVANIA					
Deciduous Forest	Northeastern Interior Dry-Mesic Oak Forest	An oak-dominated, mostly closed canopy forest that occurs as a matrix (dominant) type through the central part of our region. Oak species characteristic of dry to mesic conditions and hickories are dominant in mature stands. With a long history of human habitation, many of the forests are mid-successional, in which pines (typically Virginia or eastern white) or tuliptree may be co-dominant or dominant.	Moderate moisture and heat loading are characteristic for this oak system. It occurs at low- to mid-elevations, where the topography is flat to gently rolling, occasionally steep. Substrate bedrock and soils are commonly, but not always acidic. Chestnut oak was formerly a prominent tree in these forests. A moist-cool subtype of this habitat may occur on north facing slopes with may provide particular habitat conditions for some wildlife species.	9.3	3.3
Deciduous Forest	South-Central Interior Mesophytic Forest	Dominant species include sugar maple, American beech, American basswood, red oak, cucumber tree, and black walnut. Eastern may be a component of some stands. Trees may grow very large in undisturbed areas. The herb layer is rich, often with abundant spring ephemerals.	A high-diversity, predominately hardwood forest that occurs on deep and enriched lowland soils or in somewhat protected landscape positions such as coves or lower slopes.	1.0	0.5
Mixed Forest	Appalachian (Hemlock)-Northern Hardwood Forest	A hardwood forest of sugar maple, American beech, and yellow birch, sometimes mixed with, and sometimes dominated by, eastern hemlock. Northern red oak, and white oak occur commonly, but do not dominate. Black cherry, black birch, white pine, and tuliptree are typical on nutrient rich or historically disturbed sites.	This is the dominant forest system in Pennsylvania. This habitat type is an ecological generalist in much of its range, occupying low- to mid-elevations on a variety of landforms and bedrock types. Drier, typic, and moist/cool variants occur along a gradient from higher, more exposed sites to lower, more protected ones. This habitat can range from dry to typical to moist/cool sites with minor differences in plant species composition among them.	24.7	12.5
			SHP PENNSYLVANIA TOTAL	**35.0**	**16.3**
WEST VIRGINIA					
Deciduous Forest	Dry-Mesic Oak Forests	Most stands have a large component of oaks, including Red Oak, Chestnut Oak, White Oak, and Black Oak. A subset can be described as oak – hickory forests with a large component of hickory species including Pignut, Mockernut, and Shagbark. Other common trees include Red Maple, Sugar Maple, White Ash, Tuliptree, Black Gum, and American Beech. Common small trees and shrubs include Sourwood, Witch Hazel. Hop Hornbeam, Serviceberry,and Dogwood. Heath shrubs may be present but are not abundant as in the Dry Oak (-Pine) Forest. Common vines include Virginia Creeper and Greenbrier. The herb layer ranges from sparse to moderate and is often quite diverse.	Upland, mostly deciduous forests at lower and middle elevations throughout the state. Soils are usually somewhat less acidic and more fertile compared to the Dry Oak (-Pine) Forest, but are dryer than the Mixed Mesophytic Forest or Northern Hardwood Forest. This map class also includes areas of pine plantations.	146.1	58.9

TABLE Q-2 (cont'd)

Terrestrial Vegetation Communities Crossed by the Supply Header Project

NLCD Vegetation Type [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.
Mixed Forest	Dry Oak (-Pine) Forests	Dominant trees include chestnut oak, scarlet oak, black oak, white oak, and red maple. Sourwood is a common small tree, except in the Ridge and Valley Ecoregion, where it is absent. In the eastern counties there are large areas where eastern white pine is codominant with oaks. Understories are usually dominated by heath shrubs, including mountain laurel, black huckleberry, and blueberries.	Upland deciduous and mixed evergreen-deciduous forests on warm, dry topographic positions and soils throughout the state, except at the highest elevations, most extensive in the Ridge and Valley Ecoregion.	340.4	162.7
Mixed Forest	Mixed Mesophytic Forests	Sugar maple, American basswood, American beech, red maple, tuliptree, red oak, sweet birch, white ash, yellow buckeye, eastern hemlock, great rhododendron, spicebush, witch hazel, striped maple, wood nettle, ferns, and bryophytes.	Upland deciduous and mixed deciduous-evergreen forests in moist (mesic) habitats at lower to middle elevations throughout the state.	92.7	51.7
Scrub-Shrub	Anthropogenic Shrubland and Grassland	These habitats developed on land that was converted from natural habitats by humans, and then abandoned. Vegetation is highly variable and often includes a mixture of native and non-native plant species.	These habitats occur in small to large patches throughout the state at all elevations.	6.0	3.1
Woody Wetland	River Floodplains	Common trees of forested floodplains at lower elevations include sycamore, silver maple, river birch, white ash, green ash, sugar maple, pin oak, and tuliptree. High elevation floodplain forests are often dominated by red spruce, yellow birch, and/or Eastern hemlock. Shrub swamps of lower elevation floodplains are often dominated by smooth alder or buttonbrush. Riverscour prairies are usually characterized by warm-season grasses such as big bluestem and switch grass, but these are lacking in riverscour prairies at higher elevations. Herbaceous wetland floodplain communities may be dominated by species of bulrushes, burreeds, rushes, sedges, water lilies and/or other species.	These habitats occupy a very small area of the state. Because they are along rivers, they are concentrated in the lower elevations, but they also include smaller areas along rivers at higher elevations. Thus they range from the lowest elevations in the state along the Ohio and Potomac rivers up to 3,600 feet elevation along the Shavers Fork River.	2.5	1.0
Woody Wetland	Small Stream Riparian Habitats	These habitats are mostly jurisdictional wetlands, but narrow riparian zones that are not wetlands may also be included. Habitats include headwater wetlands and seeps, and wetlands and riparian zones along creeks and other small streams. Beaver-influenced wetlands are common. Common names for these habitats include floodplain forests, swamp forests, riparian forests, riparian zones, forest seeps, shrub swamps, marshes, wet meadows, Beaver meadows, and Beaver ponds.	Natural vegetation of variable physiognomy in the floodplains of small streams, primarily at low to middle elevations. These habitats occur in linear zones and small patches throughout the state, and include specialized marl marshes that occur nowhere else in the state and host a high diversity of rare plants.	11.5	7.0
			SHP WEST VIRGINIA TOTAL:	**599.2**	**284.4**
			SHP CUMULATIVE TOTAL:	**634.2**	**300.7**

TABLE Q-2 (cont'd)

Terrestrial Vegetation Communities Crossed by the Supply Header Project

NLCD Vegetation Type [a]	State Vegetation Community Type [b]	Dominant Vegetation Community [c]	Site Characteristics	Impacts (Acres) Con.	Impacts (Acres) Op.

[a] The corresponding National Land Cover Database (NLCD) vegetation communities were identified using the Northeast Terrestrial Wildlife Habitat Classification crosswalk table between each state's SWAP habitats (found in Appendix D of Gawler 2008).

[b] State Vegetation Community Types for West Virginia: WVDNR, 2015b.

State Vegetation Community Type data for Pennsylvania: Nature Conservancy, 2015.

[c] Dominant Vegetation Community descriptions were identified by using the NE Terrestrial Habitat Map Guide (Nature Conservancy, 2015), NatureServe Explorer (NatureServe, 2015) and state SWAPs.

APPENDIX R

FOREST SERVICE MANAGEMENT SPECIES TABLES

TABLE R-1

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
MAMMALS				
West Virginia northern flying squirrel *Glaucomys sabrinus fuscus*	G5T2/S2	Red spruce, fir, spruce-hardwood and northern hardwood forests with well-developed understory. Mostly in moist forests with mature trees and snags or cavity trees (NatureServe, 2015). Field surveys confirmed that AP-1 mainline construction workspace does not cross suitable habitat; however, suitable habitat occurs in proximity to a proposed access road near Gibson Knob.	Atlantic has realigned a portion of a proposed access road, and would not widen the access road approaching Gibson Knob to minimize loss of regenerating northern hardwood and spruce habitat; however, the proposed access road would require clearing of 0.03 acre of regenerating red spruce trees. Atlantic is currently working with the MNF to determine whether this affected area is within the MNF; if ownership is confirmed, these trees would be allowed to regenerate. Prior to clearing, red spruce saplings present in the construction area would be transplanted outside of the construction area and onto MNF land. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic has also committed to retaining large-diameter trees or snags at the periphery of the construction area, where possible, to further reduce habitat impacts.	*Pending consultation with the MNF on conservation measures.*
Southern Rock Vole *Microtus chrotorrhinus carolinensis*	G4T3/S2	Cool, moist talus slopes and rocky areas above 915 m in elevation within spruce and spruce-northern hardwood mixed forest types; also forested streamside riparian areas dominated by rocks greater than 0.2 m in diameter, all habitats require abundant rocks, woody debris, herbaceous vegetation, and moss. Optimal habitat is ferns/mossy debris near flowing water in coniferous forests (Cassola, 2016a; Orrock and Pagels, 2003). Field surveys identified two moderate-quality habitat for southern rock vole within the survey corridor; one within 200 feet of a proposed existing access road.	A Central Appalachian endemic, potential impacts on this subspecies include direct physical injury or mortality to adults and young, caused by construction equipment. Increased traffic on forest roads and new access roads could also increase road mortality of adults. Construction equipment may cause physical injury or mortality to adults and young caused by construction equipment. Increased traffic on forest roads and new access roads could also increase road mortality of adults. Construction activities would remove and/or degrade suitable habitat, and would cause disturbance through noise and vibrations, all of which may disrupt normal activities and lead to site abandonment, decreased fitness and breeding activity of adults, and a lower survivorship of adults. Because of its limited mobility, it is vulnerable to localized extirpation due to drastic changes in small areas occupied by the subspecies. Southern rock voles use subsurface tunnels which could also be filled by sediment transported from runoff from access roads or construction workspace. Atlantic would implement the measures it the *COM Plan* (appendix G) to minimize erosion and sedimentation from proposed access road use, including the installation of silt fencing in areas where sediment runoff is a possibility along Access Road 05-001-C009.AR1 (FS 1026). Although local populations could be significantly impacted or extirpated if located in the active construction area, due to limited road widening, and the presence of suitable habitat elsewhere in the MNF, impacts would be limited on the subspecies.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Eastern Small-Footed Myotis *Myotis leibii*	G3/S1	Hibernates in caves and mines; found in mountainous regions in the summer in rocky habitat (e.g., rocky outcrops, talus slopes, ledges), and man-made structures (WVDNR, 2003). Foraging habitat includes riparian forests, upland forests, clearings, strip mines, and ridgetops (NatureServe, 2015). Five suitable roosting locations were identified during 2016 and 2017 habitat surveys. No potential hibernacula were identified within 2,000-foot-wide corridor of the proposed ACP centerline.	The five potential roosting locations identified during surveys are located outside of the construction workspace; therefore, direct impacts are not anticipated. Tree clearing on rocky slopes may improve summer habitat for this species by increasing solar radiation on potential summer maternity habitat, making habitat more suitable for roosting; although tree removal would also contribute to loss of foraging habitat (FS et al., 2002). Atlantic intends to conduct tree clearing outside of the active season to avoid disturbance to foraging and roosting bats. Although potential hibernacula were not identified within the construction workspace within the MNF, there is the potential for construction activities to impact the subterranean karst system. Karst is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities. .	*Pending consultation with MNF on conservation measures.*
Little Brown Myotis *Myotis lucifugus*	G3G4/S2	Roost in cave, buildings, rocks, trees, mines, tunnels, and other man-made structures and under bridges. Hibernates in caves, tunnels, and mines (NatureServe, 2015). Based on MNF surveys of this area, primary roost trees are present and the MNF has stated that suitable habitat for this species occurs throughout most of the MNF based on past mist-netting surveys. Field surveys did not detect individuals. No potential hibernacula were identified within 2,000-foot-wide corridor of the proposed ACP centerline.	Atlantic would clear forested habitat during the winter season to minimize direct effects on roosting bats. Clearing of forested vegetation would reduce available roosting and foraging habitat. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Although potential hibernacula were not identified within the construction workspace within the MNF, there is the potential for construction activities to impact the subterranean karst system. Karst is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Allegheny Woodrat *Neotoma magister*	G3G4/S3	Rocky areas such as caves, deep crevices, and large boulder fields in or around hardwood forests with abundance oaks and other mast-bearing trees. Also known from northern hardwood and oak-pine forests. This species is nocturnal (WVDNR, 2003). Field surveys documented the presence of Allegheny woodrats along two rock formations along Buzzard Ridge within the MNF (Outrcrops #1 and #2), and suitable habitat near Cloverlick Mountain (Outcrop #6). Although the habitat is small it may be significant for this species because woodrats live in metapopulations and have small home ranges, often living their entire lieves in one rock outcrop.	Use of an access road (FS 1026) adjacent to and approximately 25 feet from Outcrops #1 and #2 would increase noise levels, disrupting normal activities. Vehicle collisions from increased traffic on the access road would be less likely because woodrats are nocturnal and Atlantic has agreed to limit most construction activity to between 6AM and 6PM. Access Road 05-001-C009.AR1 is an existing forest road that would not require widening where suitable habitat for this species has been identified. Construction activities would cause a direct loss of habitat and contribute to habitat fragmentation in a species that is already restricted to small, discrete metapopulations throughout the MNF. Construction activities may also reduce available foraging habitat for this species by removing mast-producing canopy trees and shrubs. Physical injury and direct mortality of adults and young could occur during construction and maintenance of ACP. Disturbance of or nearby occupied habitat could lead to site abandonment, decreased fitness and breeding activity of adults, and a lower survivorship of adults. Because of its limited mobility and tendency to live in metapopulations, it is vulnerable to localized extirpations due to changes in small areas occupied by the species. This species is a member of the packrat family; thus, it could be harmed by collection of anthropogenic trash and chemically-treated construction waste that is around the access road, Additionally, one of the biggest threats to the species is infection from a nematode parasite, *Baylisascaris procyonis*, which occurs in raccoon feces. Woodrats tend to collect the feces, bringing it back to their dens. While harmless to the raccoon, the parasite results in high mortality rates for Allegheny woodrats. ACP will need to take extra precautions to keep trash picked up, to avoid attracting more raccoons to the construction areas where suitable habitat for woodrats is present. Sedimentation from stormwater runoff during construction could fill underground crevices used as habitat, degrading suitable habitat. Silt fencing would be installed in areas where this is a possibility for run-off along the proposed access road. The AP-1 mainline construction workspace would cross Outcrop #6, eliminating this lower quality, but still potentially suitable habitat. Atlantic would implement the *COM Plan* (see appendix G) to control sediment erosion and restore the right-of-way. Atlantic has committed to having a Biological Monitor on site during access road improvements to ensure Allegheny woodrat habitat is avoided and undisturbed, and access road usage would be minimized to avoid dawn and dusk high activity periods for this species.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Tri-Colored Bat *Perimyotis subflavus*	G3G4/S2	Roost in caves, rock crevices, trees/foliage, and sometimes buildings in both wooded and cleared areas. Associated with forested landscapes; most foraging occurs along riparian areas. Hibernates in caves, rock crevices, and mines (NatureServe, 2015). The MNF has stated that suitable habitat for this species occurs throughout most of the MNF based on past mist-netting surveys. Field surveys did not detect individuals. No potential hibernacula were identified within 2,000-foot-wide corridor of the proposed ACP centerline.	Atlantic would clear forested habitat during the winter season to minimize direct effects on roosting bats. Clearing of forested vegetation would reduce available roosting and foraging habitat. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Although potential hibernacula were not identified within the construction workspace within the MNF, there is the potential for construction activities to impact the subterranean karst system. Karst is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending consultation with MNF on conservation measures.*
Long-tailed Shrew (Rock Shrew) *Sorex dispar*	G4/S2S3	High-elevation, deciduous or evergreen forest areas with loose talus; rocky damp areas with deep crevices covered by leaf mold, moss, and root are preferred. May also occur along small mountain streams (NatureServe, 2015). Field surveys identified two moderate-quality suitable habitat for long-tailed shrew within the survey corridor; one within 200 feet of a proposed existing access road.	Potential impacts would include temporary to permanent loss of suitable habitat, degradation of high quality habitat, and injury or mortality of adults or young because this species has limited mobility and may be unable to move from the area during construction and maintenance activities. Increased traffic on forest roads and new access roads could also increase road mortality of adults. Construction activities adjacent to suitable habitat would also increase noise levels and cause vibrations, all of which could lead to site abandonment, decreased fitness and breeding activity of adults, and a lower survivorship of adults. Contamination of the environment and its prey items, leading to bioaccumulation of heavy metals and pesticides is also a concern for this species. Because of its limited mobility, it is vulnerable to localized extirpations due to changes in small areas occupied by the subspecies. Long-tailed shrews use deep crevices in the ground which could also be filled by sediment transported from runoff from access roads or construction workspace. Atlantic would implement the measures it the *COM Plan* (appendix G) to minimize erosion and sedimentation from proposed access road use, including the installation of silt fencing in areas where sediment runoff is a possibility along Access Road 05-001-C009.AR1 (FS 1026). The proposed access road would not be widened where suitable habitat for this species has been identified. Although local populations could be significantly	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			impacted if located in the active construction area, impacts would be limited on the species.	
Southern Water Shrew *Sorex palustris punctulatus*	G5T3/S1	Undercut banks of high gradient and high elevation (above 900 m) first and second order streams with abundant cover from overhanging rocks, roots, logs, and crevices. Specific vegetation associated with the species include moss-covered rocks, rhododendron, yellow birch, hemlock, red spruce, red maple, sugar maple, beech , or tulip tree (NatureServe, 2015). Preferred habitat is along high-elevation small, swiftly-flowing, rocky, cold streams with abundant vegetation (Cassola, 2016b) The subspecies is dependent upon high quality, pristine mountain streams. This is a Central Appalachian endemic subspecies and exists in discrete populations across its range. Moderate-quality suitable habitat was identified during field surveys at two waterbody crossing locations on the MNF.	Potential impacts would include temporary to permanent loss of suitable habitat, degradation of high quality habitat, and injury or mortality of adults and young because the species has limited mobility and may be unable to move from the area during construction and maintenance activities. Increased traffic on forest roads and new access roads could also increase road mortality of adults. Sound pressure waves from blasting could also cause injury or mortality to individuals. Construction activities adjacent to suitable habitat would also increase noise levels and cause vibrations, all of which could lead to site abandonment, decreased fitness and breeding activity of adults, and a lower survivorship of adults. Because of its limited mobility, it is vulnerable to localized extirpations due to changes in small areas occupied by the subspecies. The species exists in discrete and isolated populations across its range in the Appalachians, making it even more susceptible to local extirpations. Habitat degradation is a major threat to this species, as it is dependent on high-quality streams and is apparently highly susceptible to environmental contamination. Construction across waterbodies would remove riparian habitat, resulting in decreased habitat suitability and increased erosion potential. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Increased sedimentation and turbidity from stormwater run-off during construction into suitable stream habitat could negatively impact this species and its foraging prey. The subspecies is also highly susceptible to environmental contamination of high-elevation streams. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would coordinate with the MNF to include potential food sources and other beneficial riparian shrubs for southern water shrew in the revegetation plan for riparian areas if commercially available, such as silky willow, rhododendron, mountain laurel, and yellow birch.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			Felled woody debris would also be retained along the edge of the right-of-way for burrow sites and shelter.	
Appalachian Eastern Spotted Skunk *Spilogale putorius putorius*	G4/S2	Prefers forested areas or habitats with significant cover. Refugia includes burrows (dug by the species or those abandoned by other mammals), under brush piles, in hollow logs or trees, rock crevices, under buildings, or other protected sites. This species is nocturnal (NatureServe, 2015). In the Appalachians, the species is often associated with a dense understory of rhododendron species and mountain laurel (*Kalmia latifoila*) (Thorne and Waggy, 2017, Diggins et al., 2015). Recent research found eastern spotted skunks to be associated with high elevation spruce forests, especially those with exposed rocky outcroppings in Virginia (Diggins et al., 2015). Research conducted in Pendleton County, West Virginia located the species in areas of oak species mixed with pitch pine canopy and dense mountain laurel understory (Thorne and Waggy, 2017), Field habitat assessments identified four sites containing moderate to high-quality habitat, and one side with low-quality habitat. No individual surveys were conducted.	Potential impacts would include temporary to permanent loss of suitable habitat and injury or mortality of adults and young that may be unable to move from the construction and maintenance areas. Other potential impacts are den site abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance from the increased noise levels and vibration in construction areas and increased use of nearby access roads. Sedimentation during construction could fill underground crevices used as habitat. Construction activities could also destroy dens, if present, and degrade suitable denning and foraging habitat through the removal of forested vegetation. This species also experiences significant increases in avian and mammalian depredation in more open forests, with sparse understory. Therefore, significant removal or thinning of understory and shrub layers during construction and maintenance could lead to an increase in predation of individuals in the area. Additionally, the species has shown an aversion to more open forests, and so habitat fragmentation leading to a lack of densely-vegetated travel corridors could lead to isolation of populations and/or individuals. Vehicle collisions causing injury or mortality are also possible; however, less likely because this species is nocturnal and construction activities would primarily occur between 6AM and 6PM. Access road usage adjacent to potential eastern spotted skunk rocky outcrop habitat would be minimized to avoid dawn and dusk high activity periods for this species. Access Road 05-001-C009.AR1 (FS 1026) would not be widened where suitable habitat for this species has been identified. Sedimentation from stormwater run-off during construction could fill underground dens. Atlantic would implement the *COM Plan* (see appendix G) to control sediment erosion and restore right-of-way. Atlantic has committed to pile excess rock along the edge of the temporary workspace to provide for den sites and shelter, as practicable and where it would not impede route pipeline inspection and maintenance. Atlantic would also retain felled woody debris along the edge of the right-of-way for den sites and shelter. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*
Southern Bog Lemming *Synaptomys cooperi*	G5/S3	Prefers boggy habitat, but also common in marshes, meadows, and upland forests with thick humus layer. Occupies burrows 6-12 inches deep	Potential impacts would include temporary to permanent loss of habitat, and potential injury or mortality of individuals if present and unable to move from the area during construction. Construction	*Pending results of desktop analysis.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
		and surface runaways (NatureServe, 2015). No suitable habitat for this species occurs within the ACP project area within the MNF.	activities adjacent to suitable habitat would also increase noise levels, which could disrupt normal activities. Sedimentation from stormwater runoff during construction could fill underground burrows. Atlantic would implement the *COM Plan* (appendix G) to control sediment erosion and restore right-of-way.	
BIRDS				
Northern Goshawk *Accipiter gentilis*	G5/S1B,S1N	Typically nest in mature or old-growth forests. In eastern U.S., prefer hardwood-hemlock forests where black birch and American birch are preferred nest trees. Forages in both heavily forested and relatively open habitat (NatureServe, 2015). Field surveys confirmed that suitable habitat occurs in 2 locations within the MNF. No northern goshawk activity was detected during callback surveys conducted in 2016.	Construction would cause loss of potential nesting habitat, and potentially cause disturbance to foraging goshawks. Atlantic would adhere to the migratory bird time of year restriction (TOYR) in the MNF as outlined in the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). If northern goshawks are identified prior to or during construction, an appropriate no-activity buffer, determined in consultation with MNF, would be placed around the active nest. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*
Long-Eared Owl *Asio otus*	G5/S1B,S1N	Deciduous and evergreen forests, orchards, wooded parks, farm woodlots, and river woods. Wooded areas with dense vegetation are used for roosting and nesting; open areas are used for hunting (NatureServe, 2015). Present based on known species range. Suitable habitat potentially present within the survey corridor based on general habitat conditions. Species-specific surveys were not conducted.	Construction would cause loss of nesting and roosting habitat and potentially cause disturbance to foraging owls. Atlantic would adhere to the migratory bird TOYR clearing restriction in the MNF as outlined in the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). If tree clearing is to take place during the nesting season, a qualified Biological Monitor would monitor for Long-Eared Owl nests or activity. Atlantic would notify the MNF if an individual or occupied nest is found in the ACP Project area during clearing or construction, and a suitable protection buffer based on parental response to clearing and construction activities would be established around active nests until the young have fledged. Retention of the nest tree is preferred, as this species is known to use the same nest for multiple years. If a nest tree or shrub must to be removed for construction following fledging, an artificial nest would be installed adjacent to the right-of-way where the suitable nesting habitat was removed. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
American Peregrine Falcon *Falco peregrinus anatum*	G4/S2B, S2N	Typically nest on ledges of vertical cliffs with a sheltering overhang; also use river banks, open bogs, large stick nests of other species, tree hollows, and man-made structures (NatureServe, 2015). Suitable habitat potentially present within the survey corridor based on general habitat conditions. No peregrine falcons were observed within a 2-mile-wide aerial survey area during eagle surveys.	Construction would cause loss of potential nesting and foraging habitat, and potentially cause disturbance to foraging falcons. Atlantic would implement the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). Atlantic would notify the MNF if an occupied nest is found in the ACP Project area during clearing or construction, and a suitable protection buffer based on parental response to clearing and construction activity would be established around active nests until the young have fledge. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*
Bald Eagle *Haliaeetus leucocephalus*	G5/S3B, S3N	Nests usually found in tall trees (usually confiers) or on pinnacles or cliffs near water. In winter, bald eagles may associate with waterfowl concentrations, areas with abundant dead fish, or in areas with abundant, readily available upland resources (e.g., rabbit, deer carrion) (NatureServe, 2015). Field surveys confirmed that potentially suitable habitat occurs in much of the analysis area. Three stick nests were identified 4,000 feet from the pipeline centerline, but were not confirmed to be bald eagle nests.	Construction would cause a loss of nesting and roosting habitat and potentially cause disturbance to foraging eagles. Atlantic would implement the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). For any tree clearing that would occur during the winter roosting season or nesting season, a qualified Biological Monitor would walk ahead of clearing crews and search for roosting and nesting bald eagles in areas where bald eagles are likely present. If a bald eagle nest is identified, Atlantic would establish a 1,500-foot-wide no-activity buffer around the inactive or active nests consistent with MNF Forestwide Standards, and would follow the National Bald Eagle Management Guidelines for identified winter roosts as stated in the *Migratory Bird Plan* (see table 2.3.1-1). Impacts and conservation measures related to bald eagles are described in more detail in in section 4.5.3. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*
Migrant Loggerhead Shrike *Lanius ludovicianus migrans*	G4T3Q/S1B, S1N	Open areas, grasslands (often grazed or occasionally mowed), and agricultural landscapes interspersed with forbs, scattered shrubs, and/or small trees. Usually nests in eastern red cedar or hawthorne (VDGIF, 2015b). Species-specific surveys were not conducted. Based on a desktop analysis, there is little open habitat that would support this species (near Gibson Knob).	Due to the mostly forested areas of the MNF that ACP will be utilizing for the route, there is limited suitable habitat for this species on the MNF. However, there is suitable habitat within the Proclamation Boundary of the MNF where suitable habitat exists and this species has been observed. Potential impacts could include temporary to permanent loss of suitable breeding and migration route habitat and increased habitat fragmentation, direct injury or mortality of adults and young as construction activities proceed during the breeding season, and loss of eggs and nestlings through nest abandonment and/or construction activities. Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Increased human activity and	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			construction and maintenance activities would increase noise levels and create vibrations, which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Atlantic would clear trees outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1). Construction activities would cause temporary habitat loss and disturbance to foraging shrikes; however, because this species prefers open grassland habitat (VDGIF, 2015b), clearing the right-of-way could provide additional suitable habitat for this species. Atlantic would mow the permanent right-of-way outside of the nesting season. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic has also committed to include thorny shrubs or other suitable plants beneficial to this species in the revegetation plan to enhance suitable hunting and nesting habitat for Migrant Loggerhead Shrike in and adjacent to the permanent right-of-way.	
Red-Headed Woodpecker *Melanerpes erythrocephalus*	G5/S3B,S3N	Open woodland, especially beech or oak, parks, cultivated areas, and gardens (NatureServe, 2015). Species-specific surveys were not conducted.	Suitable habitat for this species is present in the ACP project area. Potential impacts include temporary to permanent loss of suitable breeding and migration route habitat and increased habitat fragmentation, direct injury or mortality of adults and young as construction activities proceed during the breeding season, and loss of eggs and nestlings through nest abandonment and/or construction activities. Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Increased human activity and construction and maintenance activities would increase noise levels and create vibrations, which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Construction would cause a loss of potential nesting and foraging habitat and potentially cause disturbance to foraging woodpeckers. Atlantic would implement the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). Retention of standing snags would also benefit this species. Because this species requires open habitat for foraging (NatureServe, 2015), the permanently maintained right-of-way could provide additional suitable foraging habitat for this species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Golden-Winged Warbler *Vermivora chrysoptera*	G4/S1B	Requires higher elevation brushy early successional habitat. Prefers to nest in areas such as powerline rights-of-way, shrubby fields, abandoned strip mines, alder swamps, beaver-created wetlands, and abandoned orchards (WVDNR, 2003). Field surveys confirmed that there is no potentially suitable habitat on the MNF along the ACP survey corridor; however, suitable habitat was found adjacent to the MNF on Gibson Knob. No golden-winged warbler activity was detected on MNF lands, but was detected at several locations on private land adjacent to MNF near Gibson Knob.	Suitable habitat for this species is present in the ACP project areas within the MNF Proclamation Boundary. Potential impacts include temporary to permanent loss of suitable breeding and migration route habitat and increased habitat fragmentation, direct injury or mortality of adults and young as this species will be nesting on the ground in shrubby vegetation while construction activities proceed during the breeding season, and loss of eggs and nestlings through nest abandonment and/or construction activities. Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Increased human activity and construction and maintenance activities would increase noise levels and create vibrations, which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Construction would cause a loss of potential foraging and nesting habitat. Atlantic would adhere to the migratory bird TOYR clearing restriction in the MNF as outlined in the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). Based on this species' preference for early successional habitat, Atlantic may create additional suitable habitat for this species within the permanently maintained right-of-way. Atlantic would mow the permanent right-of-way outside of the nesting season. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic has also committed to include low-growing shrubs or other suitable plants beneficial to this species in the revegetation plan to enhance suitable hunting and nesting habitat for Golden-Winged Warbler in and adjacent to the permanent right-of-way.	*Pending consultation with MNF on conservation measures.*
REPTILES				
Timber Rattlesnake *Crotalus horridus*	G4/S3	Hibernates in fissures in rock ledges or talus slopes. Utilizes diverse forests and open habitats when active (WVDNR, 2006b). Field surveys confirmed no potentially suitable denning habitat on the MNF along the ACP survey corridor and no individuals were observed; however, six rattlesnakes were observed 1.5 miles from the survey corridor in the Seneca State Forest adjacent to the MNF.	Construction activities would increase noise and vibrations, which may disrupt normal activities, displace snakes, or increase stress for rattlesnakes adjacent to the construction workspace, all of which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Other potential impacts include temporary to permanent loss of suitable dens for breeding and hibernation, loss of dispersal route habitat, increased habitat fragmentation, a decrease in prey species that have dispersed due to construction and maintenance activities, and direct injury or mortality of adults and young. Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Finally, construction activities that take place during the winter season could disrupt	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			hibernating snakes, leading to direct or indirect mortality. Stormwater runoff from the construction workspace or access roads could also transport sediment and fill underground crevices used by rattlesnakes. Atlantic would maintain low speed limits on the construction right-of-way and access roads to minimize collisions with wildlife. In addition, removal of forested vegetation along the right-of-way could expose rock outcrops that are currently shaded, potentially providing sufficient solar radiation for suitable timber rattlesnake denning or gestating habitat. Atlantic would implement the *Protected Snake Conservation Plan* (see table 2.3.1-1) to minimize disturbance and impacts on timber rattlesnakes during construction, which includes implementing a Biological Monitor that would conduct visual inspections and temporary relocation of observed individuals out of harm's way within timber rattlesnake suitable habitat crossed by the construction workspace during the active season (April 1 through October 31).	
AMPHIBIANS				
Green salamander *Aneides aeneus*	G3G4/S3	Damp crevices in shaded outcrops and ledges, beneath loose bark and in cracks of standing or fallen trees, sometimes under logs on ground. This species is nocturnal (NatureServe, 2015). Surveys conducted in 2016 and 2017 did not identify suitable green salamander habitat, nor were individuals observed.	If this species is present, impacts would include removal of suitable habitat, creation of canopy gaps that could make otherwise shaded habitat unsuitable, direct injury or mortality of adults, juveniles, and egg masses resulting from collisions with construction equipment, and decreases in prey availability. Noise and vibrations from construction activities could disrupt normal activities and lead to decreased fitness, decreased breeding activity, and a lower survivorship of adults. This species has limited mobility and is dependent on a rare and restricted habitat type; therefore, it is likely that local population extirpations would result from construction activities in areas occupied by the species. Salamanders are especially susceptible to habitat degradation, including contamination of soil and water by gasoline, diesel, heavy metals, pesticides, herbicides, and any other chemicals. Habitat contamination can cause direct mortality in any stage of their lifecycle, as well as cause decreases in and contamination of their prey items, resulting in indirect mortality. Vehicle collisions would be less likely because green salamanders are nocturnal and most construction would occur between 6AM and 6PM. Sedimentation from stormwater runoff during construction and access road usage could fill underground crevices used as habitat, degrading suitable habitat. Atlantic would implement the *COM Plan* (see appendix G) to control sediment erosion and restore the right-of-way.	*Pending MNF conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Eastern Hellbender *Cryptobranchus alleganiensis*	G3G4T3T4/ S2	Permanent streams under flat rocks in the riverbed. Found in all elevation streams west of the Allegheny Front. This species has been documented in the West Fork Greenbrier River (Pauley, 2004).	There are four perennial waterbodies on the MNF (one unnamed tributary to Shock Run and three unnamed tributaries to Slaty Fork) that would be crossed by ACP. Atlantic would use a dry crossing technique (i.e., dam and pump or flume) to cross the unnamed tributary to Shock Run with the pipeline. Atlantic would use an existing access road that crosses the unnamed tributaries to Slaty Fork. Construction across waterbodies would remove riparian habitat, resulting in decreased habitat suitability and increased erosion potential. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Increased sedimentation and turbidity from stormwater run-off during construction into suitable stream habitat could negatively impact this species and its foraging prey. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Atlantic would implement the *COM Plan* (see appendix G), which includes sediment and erosion control measures, including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending MNF review of sedimentation analysis and conservation measures.*
FISH				
Candy Darter *Etheostoma osburni*	G3/S1	Riffles and runs of small cool and warm streams and rivers. Adults are typically found in large rubble to boulder substrates in the swiftest portions of their fast-flowing habitat. Endemic to the upper Kanawha River system (WVDNR, 2003). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Chipps et al., 1993; Burns, 2007). This species has been recently documented in Knapp Creek and Sitlington Creek. Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP.	This species is currently under review by FWS for listing under the ESA (refer to section 4.7.1.12). There is a potential for this species to occur within the MNF and downstream of the MNF within the ACP project area. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, reduced fish passage, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Based on Atlantic's erosion and sedimentation analysis, ACP is predicted to produce relatively higher erosion rates along the construction workspace in the Sitlington Creek, Headwaters Knapp Creek, and Clover Creek-Greenbrier River subwatersheds, which includes the construction workspace near Knapp Creek and Greenbrier River. Atlantic would implement the measures its construction and restoration plans (see table 2.3.1-1), and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G). In addition, we have recommended in section 4.7.12 and appendix K that if the candy darter is proposed or listed during the life of the project, Atlantic assume presence of candy darter at Knapp Creek, Clover Creek, Glade Run, Thomas Creek, and the Greenbrier River, and implement the FWS' enhanced conservation measures for ESA sensitive waterbodies outlined in section 4.7.1 for these waterbody crossings.	
New River Shiner *Notropis scabriceps*	G4/S2	Pools and slow runs of cool to warm creeks and small to medium rivers with rocky, gravely, or sand substrates, occasionally with moderate deposits of silt (NatureServe, 2015). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Chipps et al., 1993; Burns, 2007). Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP.	There is a potential for this species to occur downstream of the MNF within the ACP Project area. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, reduced fish passage, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Based on Atlantic's erosion and sedimentation analysis, ACP is predicted to produce relatively higher erosion rates along the construction workspace in the Sitlington Creek, Headwaters Knapp Creek, and Clover Creek-Greenbrier River subwatersheds, which includes the construction workspace near Greenbrier River. Atlantic would implement the measures its construction and restoration plans (see table 2.3.1-1), and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G).	*Pending MNF review of sedimentation analysis and conservation measures.*
Appalachia Darter *Percina gymnocephala*	G4/S2	Small to medium rivers in gravel and rubble riffles and raceways. Found in deeper waters in fall and winter. Known from the New River system above Kanawha Falls (NatureServe, 2015). A study has documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Burns, 2007). Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP.	The potential impacts and conservation measures for this species would be similar to those described for the New River Shiner above.	*Pending MNF review of sedimentation analysis and conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Kanawha Minnow *Phenacobius teretulus*	G3G4/S1	Riffles and runs of gravel, rubble, and boulder in cool to warm, small to medium rivers. Known from the New River drainage (NatureServe, 2015). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Chipps et al., 1993; Burns, 2007). Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP.	The potential impacts and conservation measures for this species would be similar to those described for the New River Shiner above	*Pending MNF review of sedimentation analysis and conservation measures.*
INVERTEBRATES				
Gastropods (Snails)				
Organ Cavesnail *Fontigens tartarea*	G2/S2	Inhabits caves under flat rocks in streams with moderate current. Limestone rocks are preferred. This species has been documented from Simmons-Mingo Cave in Randolph County, and Dreen Cave and Piddling Pit in Pocahontas County (NatureServe, 2015), located less than one mile from the ACP construction workspace.	This species is currently under review by the FWS. No caves or open throat karst features that could provide direct surface drainage into the subterranean environment were identified within 300 feet of the proposed ACP route on the MNF. Karst terrain is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending consultation with MNF on conservation measures.*
Bivalves (Freshwater Mussels)				
Elktoe *Alasmidonta marginata*	G4/S1	Found in small, medium and large streams with swift current and gravel, sand, or cobble substrate (NatureServe, 2015). Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP.	There is a potential for this species to occur downstream of the MNF within the ACP Project area. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water	*Pending MNF review of sedimentation analysis and conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			temperatures. Based on Atlantic's erosion and sedimentation analysis, ACP is predicted to produce relatively higher erosion rates along the construction workspace in the Sitlington Creek, Headwaters Knapp Creek, and Clover Creek-Greenbrier River subwatersheds, which includes the construction workspace near Greenbrier River. Atlantic would implement the measures its construction and restoration plans (see table 2.3.1-1), and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G). In addition, Atlantic would implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016) upon authorization from the WVDNR if mussels are present.	
Green Floater *Lasmigona subviridis*	G3/S2	Canals, rivers, and lakes on gravel, sand, or mud substrates (NatureServe, 2015). A study has documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Nature Conservancy, 2001). Suitable habitat for this species does not occur in waterbodies crossed by ACP within the MNF; however, suitable habitat is likely to occur in the Greenbrier River approximately 0.1 mile downslope of ACP. Presence of the green floater is assumed at the Greenbrier River.	This species is currently under review by FWS for listing under the ESA (see section 4.7.1.15). The potential impacts and conservation measures for this species would be similar to those described for the Elktoe above. In addition, we have recommended in appendix K that Atlantic adhere to the VDGIF TOYR from April 15 to June 15 and August 15 to September 30 in all waterbodies where this species has been assumed present in Virginia, and intermittent and perennial tributaries within 1 river mile of these waterbodies.	*Pending MNF review of sedimentation analysis and conservation measures.*
Crustaceans (Amphipods, Isopods, & Decapods)				
Cannulate Cave Isopod *Caecidotea cannula*	G2/S1	Subterranean streams and pools under flat rocks. Known from the Cave Hollow System and Red Run Cave on the MNF (NatureServe, 2015; Nature Conservancy, 2001).	This species is currently under review by the FWS. No caves or open throat karst features that could provide direct surface drainage into the subterranean environment were identified within 300 feet of the proposed ACP route on the MNF. Karst terrain is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			erosion and sedimentation into these features if they are identified or form during construction activities.	
Holsinger's Cave Isopod *Caecidotea holsingeri*	G5/S3	Caves in riffle area of streams, in stream gravel, under rocks, on decaying wood in streams and occasionally drip pools. Known from 10 caves in Pocahontas County and 5 caves in Randolph County (NatureServe, 2015). There are 4 NHI documented occurrences of this species within 1.5 miles of the ACP Project area.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
A cave obligate isopod *Caecidotea simonini*	G1/S1	Subterranean rivers. Known from Flower Pot, Stillhouse, Aquaterra and Commander Adama Killer Bat caves in Randolph County (NatureServe, 2015).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Elk River Crayfish *Cambarus elkensis*	G2/S1	Low gradient, medium-sized rivers with moderate gradient. Substrate includes sand, gravel, sandstone boulders, and cobbles. Endemic to the upper Elk River basin. Freshwater cave species occurring near entrances to very deep in cave systems (NatureServe, 2015). This species has been documented in Slaty Fork and Old Field Fork in Pocahontas County (Nature Conservancy, 2001).	This species is currently under review by the FWS. The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Greenbrier Cave Crayfish *Cambarus nerterius*	G2/S1?	Subterranean streams, usually in the upper portions of the cave or dry stream beds. Found in one cave in the Elk River Drainage in Pocahontas County on the MNF (NatureServe, 2015; Nature Conservancy, 2001). There is 1 NHI documented occurrences of this species on the MNF within 1.5 miles of the ACP Project area.	This species is currently under review by the FWS. The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Culver's Cave Amphipod *Stygobromus culveri*	G1G2/S1	Mud-bottom seep and drip pools in caves. Only known from one cave in Tucker County and two caves in Randolph County.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Greenbrier Cave Amphipod *Stygobromus emarginatus*	G3/S3	Relatively wide-spread obligate subterranean amphipod. Predominantly found in small, gravel bottom cave streams, or pools fed by ceiling drips or seepage water (NatureServe, 2015). There are 3 NHI documented occurrences of this species within 1.5 miles of the ACP Project area.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Pocahontas Cave Amphipod *Stygobromus nanus*	G1/S1	Only three specimens known from Piddling Pit Cave along the eastern flank of Cloverlick Mountain in Pocahontas County. Found in mud-bottom drip pools and associated seepage (NatureServe, 2015).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Minute Cave Amphipod *Stygobromus parvus*	G2G3/S1	Known from four cave sites in Randolph, Pocahontas, and Tucker Counties. Occupied caves are located along the eastern flank of the Allegheny and Cloverlick Mountains in the Greenbrier River drainage, west of Cheat Mountain in the upper Tygard River drainage, and southeast of Parsons, West Virginia. Found in mud-bottomed, drip, and seep pools in caves (NatureServe, 2015).	This species is currently under review by the FWS. The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Myriapods (Millipedes)				
Greenbrier Valley Cave Millipede *Pseudotremia fulgida*	G3/S3	Subterranean obligate. Reported from 10 caves in Pocahontas County (NatureServe, 2015).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Grand Caverns Blind Cave Millipede *Zygonopus weyeriensis*	G3G4/S2	Subterranean obligate (NatureServe, 2015). There are 2 NHI documented occurrences of this species within 1 mile of the ACP Project area.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Insects (Springtails)				
Gandy Creek Cove Springtail *Pseudosinella certa*	G1/S1	Subterranean obligate; habitat is poorly understood. Known only from a single cave in Randolph County where it is presumably found in moist organic litter or similar nutrient rich microhabitats (NatureServe, 2015; Lewis, 2001).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
A Springtail *Pseudosinella gisini gisini*	G3G4T3/S3	Species is only known from caves; frequently found in the wetter parts of caves containing organic debris (FS, 2001a).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
A Springtail *Sinella agna*	G3G4/S3	Subterranean obligate (NatureServe, 2015). There are 3 NHI documented occurrences of this species within 1 mile of the ACP Project area.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Insects (Cave Beetles)				
A Cave Beetle *Pseudanophthalmus fuscus*	G4/S2	Subterranean obligate (NatureServe, 2015). Documented from the Piddling Pit Cave in Pocahontas County (Nature Conservancy, 2001).	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
A Cave Beetle *Pseudanophthalmus hypertrichosis*	G3/S3	Subterranean obligate. Known from 14 caves in Pocahontas County and 2 caves in Randolph County (NatureServe, 2015). This species has been documented from Cass Cave and Dreen Cave in Pocahontas County (Nature Conservancy, 2001), located 3.8 miles and less than one mile, respectively, from the ACP construction workspace.	The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Dry Fork Valley Cave Beetle *Pseudanophthalmus montanus*	G1/S1	Subterranean obligate; usually found in the twilight zone or deeper in or on moist soil, often near streams or drip areas. Known from 3 caves in Tucker County (FS, 2001b; NatureServe, 2015).	This species is currently under review by the FWS. The potential impacts and conservation measures for this species would be similar to those described for the Cannulate Cave Isopod above.	*Pending consultation with MNF on conservation measures.*
Insects (Dragonflies)				
Rapids Clubtail Dragonfly *Gomphus quadricolor*	G3G4/S3	Clear streams and brooks with strong current over clean gravel, cobbles, or bedrock (NatureServe, 2015).	Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult dragonflies and larvae could also be crushed by construction equipment. There are four perennial waterbodies on the MNF that would be crossed by ACP. Atlantic would use a dry crossing technique (i.e., dam and pump or flume) to cross the unnamed tributary to Shock Run with the pipeline, and would utilize an existing access road that crosses the unnamed tributary to Slaty Fork at three locations. Construction across waterbodies would remove riparian habitat, resulting in loss of shelter and foraging habitat, and increased erosion potential. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds and increase water temperature, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Atlantic would implement the *COM Plan* (see appendix G), which includes sediment and erosion control measures, including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would coordinate with the MNF to include potential beneficial riparian shrubs for rapids clubtail in the revegetation plan for riparian areas.	*Pending MNF review conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Green-Faced Clubtail Dragonfly *Gomphus viridifrons*	G3G4/S3	Clear, rocky rivers and streams. Has also been found in reservoirs and other impoundments (Olcott, 2011).	The potential impacts and conservation measures for this species would be similar to those described for the Rapids Clubtail Dragonfly above.	*Pending MNF review of sedimentation analysis and conservation measures.*
Brook Snaketail Dragonfly *Ophiogomphus carolus*	G5/S2	Prefers clear, clean, rocky streams. Has been documented from the Greenbrier River (Olcott, 2011).	The potential impacts and conservation measures for this species would be similar to those described for the Rapids Clubtail Dragonfly above.	*Pending MNF review of sedimentation analysis and conservation measures.*
Insects (Butterflies and Moths)				
A Noctuid Moth *Aplectoides condita*	G4/S1	Habitat for this species has not been formally described. Its larval host plant include pine species, especially larch (*Larix laricina*) (VDCR and VDGIF, 2013). Adults fly from the end of May to July.	Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending MNF review of conservation measures.*
Early Hairstreak Butterfly *Erora laeta*	GU/S2	Woodland openings and moist, but well-drained mature American beech (*Fagus grandifolia*) forests. Its main larval host plant is American beech; beaked hazelnut (*Coylus cornuta*) is a secondary larval host plant. Adults are active from late April through May and late June through August (VDCR and VDGIF, 2013). Host plant was identified during botany surveys on the MNF. Individual surveys were not conducted.	Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species may benefit from the presence of woodland clearings, including rights-of-way, by creating additional suitable habitat. Atlantic would minimize use of herbicides and pesticides along the construction and permanent rights-of-way and would allow tree species to regenerate outside the permanent right-of-way after construction is complete. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would also coordinate with the MNF to include potential host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	*Pending MNF review of conservation measures.*
Milne's Euchlaena Moth *Euchlaena milnei*	G2G4/S2	Hardwood and mountain oak woodlands with acidic soil. Its larval host plant is unknown, but may include deciduous trees and shrubs based on the preference of other members of the genus (NatureServe, 2015). Adults are active in from early to mid-July (VDCR and VDGIF, 2013). Individual surveys were not conducted.	Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)				
RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia				
Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would also coordinate with the MNF to include potential host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	
Starry Campion Moth *Hadena ectypa*	G3G4/S1	Wooded areas or openings. Its larval host plant include species of the genera *Silene*, including starry campion (*Silene stellata)* and bladder campion (*Silene vulgaris)* (NatureServe, 2015). Host plant was identified during botany surveys on the MNF. Individual surveys were not conducted.	Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species may benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat. Atlantic would coordinate with the MNF to include potential host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	*Pending MNF review of conservation measures.*
Bronze Copper Butterfly *Lycaena hyllus*	G5/S2	Low, wet areas such as bogs, marshes, wet meadows, and ponds. Its larval host plants are members of the buckwheat family, including curly dock (*Rumex crispus*). Adults are active June-September in the northern part of their range, and May-November in southern part of their range (Lotts and Naberhaus, 2016). Host plant was identified during botany surveys on the MNF. Individual surveys were not conducted.	ACP would impact a limited amount of emergent wetland habitat in the MNF (<1 acre). Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species may benefit from the clearing of the right-of-way by encouraging the spread of its larval host plant, curly dock. Curly dock is an introduced species that adapts to disturbed areas, such as roadsides, farm fields, and other weedy habitats (Virginia Botanical Associates, 2016). Atlantic would coordinate with the MNF to include potential host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	*Pending MNF review of conservation measures.*
West Virginia White Butterfly *Pieris virginiensis*	G3?/S3	Moist deciduous woodlands or mixed woods. Its larval host plants are toothworts (*Dentaria diphylla* and *D. laciniata*). Adults are active from April-May (Lotts and Naberhaus, 2016). Individual surveys were not conducted.	This species is a weak flyer and will not fly across open areas including rights-of-way; therefore, if it is present, construction equipment could cause injury or mortality to adults and cause a decrease in breeding behavior by increasing barriers to movement. Adult butterflies, eggs, and larvae could also be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Tree and shrub species would be allowed to regenerate outside the permanent right-of-way after construction is complete. This species is also sensitive to the spread of invasive species, particularly garlic mustard. Atlantic would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) and *COM*	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			Plan (see appendix G) to mitigate the spread of invasive and noxious plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would also coordinate with the MNF to include potential host plants and suitable tree species, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	
Diana Fritillary Butterfly *Speyeria diana*	G3G4/S2S3	Favor wooded areas, particularly in low-lying valleys, pine woods, and cove forests, within or near mountain ranges. Its larval host plants are violets (*Viola* spp.). Adults are active from mid-June to early September (VDCR and VDGIF, 2013). Host plant was identified during botany surveys on the MNF. Individual surveys were not conducted.	Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species is known to benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat (FS et al., 2002). Atlantic would coordinate with the MNF to include potential host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	*Pending MNF review of conservation measures.*
FLATWORMS				
Hoffmaster's Cave Flatworm *Macrocotyla hoffmasteri*	G3G4/S2	Subterranean obligate (NatureServe, 2015).	No caves or open throat karst features that could provide direct surface drainage into the subterranean environment were identified within 300 feet of the proposed ACP route on the MNF. Karst terrain is found between MPs 73.1-76.6 and 80.6-80.9; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending consultation with MNF on conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
VASCULAR PLANTS				
Plant Species Documented during Surveys				
Roan Mountain Sedge *Carex roanensis*	G2G3/S2	Rich soils of mid- to high-elevation mesic forests in the southern Appalachians (NatureServe, 2015). Field surveys identified three populations of sedge on the MNF covering a total of 3.2 acres and 523 individuals.	Atlantic would remove 2.9 acres of Roan Mountain Sedge populations and suitable habitat, reducing the known populations within the survey corridor by a total of 89 percent. In addition, 1.4 acres of suitable mesic forest habitat would be permanently removed. Degradation of adjacent suitable habitat (e.g., hydrology, soil compaction, light) would also occur, reducing plant health and fecundity of individuals near the forest's edge. During the dormant season prior to clearing, Atlantic would relocate all Roan Mountain sedge plants located within the construction workspace to suitable habitat immediately adjacent to the existing population, determined in consultation with the MNF. Atlantic has also committed to include understory and overstory species associated with Roan Mountain sedge, if commercially available, in the revegetation plan for the temporary workspaces surrounding the existing population. Atlantic identified a population of invasive plant species in proximity to the Roan Mountain Sedge populations, which could spread into the disturbed right-of-way. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. No herbicides would be used within 60 feet of the Roan Mountain sedge populations; only hand-pulling of non-native invasive plant species would be used as a control method within this area.	*Pending MNF review of conservation measures.*
Appalachian Oak Fern *Gymnocarpium appalachianum*	G3/S2	Maple-birch-hemlock woods on mountain slopes and summits, in sandstone, talus slopes, or boulder colluvium, typically at elevations above 2,000 feet (NatureServe, 2015). Field survey identified one population of approximately 10,000 individuals adjacent to the ACP project area, covering 0.4 acre.	Atlantic would remove less than 0.1 acre (32 square feet) of Appalachian Oak Fern population and suitable habitat. Degradation of adjacent suitable habitat (e.g., hydrology, soil compaction, light) would also occur, reducing plant health and fecundity of individuals near the forest's edge. Atlantic has also committed to include understory and overstory species associated with Appalachian oak fern, if commercially available, in the revegetation plan for the temporary workspaces surrounding the existing population. Atlantic identified a population of invasive plant species in proximity to the Appalachian Oak Fern population, which could spread into the disturbed right-of-way. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. No herbicides would be used within 60 feet of the	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			Appalachian oak fern population; only hand-pulling of non-native invasive plant species would be used as a control method within this area.	
White Alumroot *Heuchera alba*	G2Q/S2	Acid rock outcrops, sandstone, roadsides, high summits, grassy balds, edge of sinkholes, and in hardwood and dwarf pine forests. Found in elevations ranging from 2,205 to 4,200 feet associated with Aquilegia spp., wall-rue, maidenhair spleenwort, and purple-stem cliffbrake (NatureServe, 2015). Field surveys identified one population of 75 individuals covering 0.6 acre on a ridge within an oak-hickory forest, and another individual outside of the ACP project area.	Atlantic would remove 0.4 acre of White Alumroot population and suitable habitat, reducing the known populations within the survey corridor by a total of 77 percent. Degradation of adjacent suitable habitat (e.g., hydrology, soil compaction, light) would also occur, reducing plant health and fecundity of individuals near the forest's edge. During the dormant season prior to clearing, Atlantic would relocate all white alumroot plants located within the construction workspace to suitable habitat immediately adjacent to the existing population, determined in consultation with the MNF. Atlantic has also committed to include understory and overstory species associated with white alumroot, if commercially available, in the revegetation plan for the temporary workspaces surrounding the existing population. Atlantic identified a population of invasive plant species in proximity to the Alumroot population, which could spread into the disturbed right-of-way. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. No herbicides would be used within 60 feet of the white alumroot population; only hand-pulling of non-native invasive plant species would be used as a control method within this area.	*Pending MNF review of conservation measures.*
Bristly Black Currant *Ribes lacustre*	G5/S2	Moist woods and streambanks to drier forest slopes at low to moderate elevations (Burke Museum of Natural History and Culture, 2016). Field surveys identified one population near an old access road; however, fruits were not available at the time of the field surveys and, therefore, identification was not confirmed but is assumed.	The individual identified is located about 24 feet upslope from the construction workspace. Although no individuals would be directly impacted by construction, construction activities could degrade suitable habitat adjacent to the right-of-way (e.g., hydrology, soil compaction, light). The bristly black currant would be flagged during construction to avoid impacts by vehicles, equipment, and supplies. Atlantic has committed to include understory and overstory species associated with bristly black currant, if commercially available, in the revegetation plan for the temporary workspaces surrounding the existing population. Atlantic identified a population of invasive plant species in proximity to the currant population, which could spread into the disturbed right-of-way. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. No herbicides would be used within 60 feet of the bristly black currant; only hand-pulling of non-native	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
			invasive plant species would be used as a control method within this area.	
Plant Species Found in Forested Habitat (Not Documented during Surveys)				
Allegheny Onion *Allium allegheniense*	G3?/S2	Thin soils on high-elevation amphibolite (metamorphic rock) or calcareous rock outcrops (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present in the ACP project area; however, no individuals were observed.	Construction activities would remove forested habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Lanceleaf Grapefern *Botrychium lanceolatum var. angustisegmentum*	G5T4/S1	Mainly found in shady woods; associated with rich maple-yellow birch woods, choke cherry, *Crategus* spp., and *Botrychium matricarifolium* in West Virginia. High elevation forests, rocky stream banks, and grassy balds. Documented in Pocahontas County. (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015; Virginia Botanical Associates, 2016). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Construction activities would remove forested habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Because this species is associated with secondary or tertiary forest regrowth, it could recolonize the cleared right-of-way; although recolonization would take many years (NatureServe, 2015). The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Bluntlobe Grapefern *Botrychium oneidense*	G4/S3	Found in moist, shady, acidic woods and swamps. Documented in Randolph and Pocahontas Counties. (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Removal of canopy would make habitat for this species unsuitable and recovery potential along the cleared right-of-way would be low (NatureServe, 2015). The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Roundleaf Dogwood *Cornus rugosa*	G5/S1	Rocky forests and boulder fields; rare in the mountains. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Box Huckleberry *Gaylussacia brachycera*	G3/S2	Acidic sandy soils in woodlands and slopes, frequently associated with pine and mountain laurel, or sourwood and black gum. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; Flora of North America	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
		Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.		
Crested Coralroot *Hexalectris spicata var. spicata*	G5T4T5/S1	Rich mesic forests, dry rocky woodlands over basic and calcareous soils. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Rock Skullcap *Scutellaria saxatilis*	G3/S2	Mesic to dry rocky forests and boulder fields. Documented in Pocahontas and Randolph Counties. (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed..	Creation of forest gaps and openings expose this species to sunlight, drying out the plants. This species is also sensitive to invasive plants and encroachment by woody plants (NatureServe, 2015). The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Canada Yew *Taxus canadensis*	G5/S2S3	Cliffs, bluffs, boulder fields, rocky forests, and seepage swamps, usually on sites underlain by calcareous or mafic rocks. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Bristle-fern *Trichomanes boschianum*	G4/S1	Deeply sheltered grottoes on non-calcaerous rocks. Documented in Pocahontas County (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Netted Chainfern *Woodwardia areolata*	G5/S2	Moist to wet, acidic soils of low mesic forests, floodplains, depressions swamps, bogs, and pocosins. Documented in Pocahontas County. Not commin high Appalachians (Virginia Botanical Associates, 2016; Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Allegheny Onion.	*Pending MNF review of conservation measures.*
Plant Species Found in or Tolerant of Open or Edge Habitat (Not Documented during Surveys)				
Lillydale Onion *Allium oxyphilum*	G2/S2	Bare rock, talus, and scree slopes. In West Virginia, a large population was documented on a shale barren, south-facing slope within an open hardwood forest with grass-sedge understory. Occurs on acidic soils. Endemic to west-central	Successful restoration of this species includes minimizing disturbance to shale barren habitat, controlling invasive and noxious weeds, and limiting encroachment of woody vegetation (NatureServe, 2015). Construction activities would remove shale barren habitat, which would degrade or make habitat unsuitable for	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
		Virginia and eastern West Virginia. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	
Bartram Shadbush *Amelanchier bartramiana*	G5/S2	Cool woods, mountain slopes, summits, bogs, poor fens, conifer swamps, acidic soil, sandy lake shores, stream banks, rocky ridges, and roadside thickets. Documented in Pocahontas and Randolph Counties (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Construction activities would remove vegetation, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities would remove shale barren habitat, which would degrade or make habitat unsuitable for this species. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Purple Clematis *Clematis occidentalis var. occidentalis*	G5T5/S2	Calcareous cliffs, rock ledges, talus slopes, gravelly embankments, rocky woods, and clearings. Documented in Pocahontas County (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Bartram Shadbush.	*Pending MNF review of conservation measures.*
Bentley's Coralroot *Corallorhiza bentleyi*	G2/S1	Found in Appalachian deciduous forest, often at forest edges in somewhat disturbed sites. Documented in Pocahontas County (Virginia Botanical Associates, 2016; Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	If present within the construction right-of-way, individuals would be killed. Construction activities would remove forested habitat, which would degrade or make habitat unsuitable for this species however, because this species is also known to occur at forest edges in somewhat disturbed sites, the permanent right-of-way could create additional suitable habitat. Because Atlantic would perform maintenance of the permanent right-of-way, this species could benefit from creation of additional suitable habitat. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Tall Larkspur *Delphinium exaltatum*	G3/S2	Rich woods and edges of woods, rocky slopes, semi-open woodlands, glades, and prairie openings. Tolerant of a limited amount of	If present within the construction right-of-way, individuals would be killed. Construction activities would remove woodland habitat, which would degrade or make habitat unsuitable for this species	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
		disturbance. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed..	however, because this species is also known to occur at woodland edges in somewhat disturbed sites, the permanent right-of-way could create additional suitable habitat. This species can be successfully restored through controlled burning and thinning or clearing of understory woody vegetation. Mowing and selective thinning of overstory trees and shrubs has been conducted at a site in North Carolina in early spring before leaf emergence to benefit this and other rare prairie plant species (NatureServe, 2015). Because Atlantic would perform maintenance of the permanent right-of-way outside of the migratory bird nesting season (April 1-August 31) and only every 3 years; this species could benefit from creation of additional suitable habitat. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	
Shriver's Frilly Orchid *Platanthera shriveri*	G1/S1	Mesic forests, seepage swamps, and forest edges at elevations of 2,350 to 4,000 feet. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Bentley's Coralroot.	*Pending MNF review of conservation measures.*
Beadle's Mountain-mint *Pycnanthemum beadlei*	G2G4/NR	Open forests, forest edges, and roadsides (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Bentley's Coralroot.	*Pending MNF review of conservation measures.*
Mountain Pimpernel *Taenidia montana*	G3/S3	Calcareous shale barrens, limestone, rock outcrops, narrow ridges, and open woods. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Construction activities would remove barren habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Appalachian Blue Violet *Viola appalachiensis*	G4/S3	Rich, moist forest communities in partially open to open sites generated naturally or by human disturbance, including streambanks, floodplains, glades, clearings, forest edges, and roadsides.	The potential impacts and conservation measures for this species would be similar to those described above for the Bentley's Coralroot.	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
		Found in habitats that are kept open by mowing. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.		
Plant Species Found in Wetland and Riparian Habitat (Not Documented during Surveys)				
Spreading Rockcress *Arabis patens*	G3/S2	Moist rocky woods, limestone outcrops, and shady riverbanks. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Riparian habitat crossed by ACP within the MNF is limited. Construction activities would remove woodland and riparian habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Showy Lady's-slipper *Cypripedium reginae*	G4/S1	Swampy thickets, bogs, woodland glades, ravines, stream and lake edges, seepages on limestone or sandstone bluffs, damp calcareous slopes or shores, limestone quarries, wet calcareous meadows, seep springs, forested fens, sandy shorelines, and talus slopes. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Atlantic would impact <0.1 acre of wetland habitat within the MNF, and riparian habitat is limited. Construction activities would remove wetland and riparian habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Blue Ridge St. John's-wort *Hypericum mitchellianum*	G3/S1	Seepage slopes and spray areas near falls at higher elevations. Also found in grassy balds, grassy openings, and forests. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015).	Construction activities would remove <0.1 acre of wetland habitat, and riparian habitat is limited, which would degrade or make habitat unsuitable for this species. However, because this species is also known to occur in openings, the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Long-stalk Holly *Ilex collina*	G3/S2	Bogs, seeps, and high-elevation stream banks. In West Virginia, it has been found in wetland areas, river edges, high energy and/or scoured riverbanks, sandstone soils, and northern hardwoods. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Showy Lady's-Slipper.	*Pending MNF review of conservation measures.*
Butternut *Juglans cinerea*	G4/S3	Optimal growth occurs on well-drained soils of bottomlands and floodplains. Found in rich mesophytic forests, lower slopes, ravines, and various types of bottomland. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Atlantic would impact <0.1 acre of wetland habitat within the MNF, and floodplain habitat is limited. Construction activities would remove forest habitat, which would degrade or make habitat unsuitable for this species. However, because this species is known to benefit from the creation of canopy gaps and some form of disturbance (NatureServe, 2015), the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. This species is primarily threatened by the spread of a canker fungus (NatureServe, 2015).	*Pending MNF review of conservation measures.*
Swamp Lousewort *Pedicularis lanceolata*	G5/S2	Mafic and calcareous fens, wet meadows, and rich open floodplains. Documented in Pocahontas and Randolph Counties (Virginia Botanical Associates, 2016; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Atlantic would impact <0.1 acre of wetland habitat within the MNF, and floodplain habitat is limited. Construction activities would remove wetland and floodplain habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*
Bog Bluegrass *Poa paludigena*	G3/S1	Shaded seeps and seepage swamps, usually over calcareous or mafic rocks; rare in the mountains (Virginia Botanical Associates, 2016). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Showy Lady's-Slipper.	*Pending MNF review of conservation measures.*
Pennsylvania Buttercup	G5/S1	Stream banks, bogs, moist clearings, and depressions in woodlands. Documented in	Atlantic would impact <0.1 acre of wetland habitat within the MNF, and floodplain habitat is limited. Construction activities would	*Pending MNF review of conservation measures.*

TABLE R-1 (cont'd)

RFSS with Potential Habitat or Populations within the Monongahela National Forest, West Virginia

Species	Global Rank/ State Rank [a]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Ranunculus pensylvanicus		Pocahontas County (Flora of North America Editorial Committee, eds., 1993+; NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	remove wetland and floodplain habitat, which would degrade or make habitat unsuitable for this species. However, because this species is also known to occur in clearings, the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	
NON-VASCULAR PLANTS				
Ammon's Tortula Moss *Tortula ammonsiana*	G1G3/S1	Rock outrcops in mixed hardwood forests communities. In West Virginia, it has been associated with yellow birch, mountain maple, and striped maple. Documented in Pocahontas County (NatureServe, 2015). Botanical sureys confirmed suitable habitat present; however, no individuals were observed.	Creation of forest gaps and openings expose this species to sunlight, drying out the plants. This species is also sensitive to trampling (NatureServe, 2015). If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending MNF review of conservation measures.*

[a] Global/State Conservation Rank: Global (G) /State (S) Conservation Rank: G1/S1 = Critically imperiled - At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors; G2/S2 = Imperiled - At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors; G3/S3 = Vulnerable - At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors; G4/S4 = Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors; G5/S5 = Secure - Common; widespread and abundant; GU/NR = Unranked; Q = Questionable Taxonomy – taxonomic distinctiveness of this entity at the current level is questionable; T = Infraspecific Taxon – for example, subspecies or variety; ? = Inexact Numeric Rank. State Rank (Birds): S_B: breeding status; these species typically inhabit the state only during the breeding season, S_B,S_N: breeding and non-breeding status when they differ. Global Rank is based on NatureServe, 2015 and State Rank is based on WVDNR, 2015a.

TABLE R-2

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
MAMMALS						
Eastern Small-Footed Bat *Myotis leibii*	-	3	G4/S2	Generally, roost on the ground under rocks, in crevices, and occasionally in buildings and under tree bark. Hibernates in solution and fissure caves and mine tunnels near the entrance (VDGIF, 2015b). No suitable hibernacula were found in the survey corridor and no individuals were detected.	Based on survey results, no direct impacts on eastern small-footed bat are anticipated. Tree clearing on rocky slopes may improve summer habitat for this species by increasing solar radiation on potential summer maternity habitat, making habitat more suitable for roosting (FS et al., 2002); however, tree clearing would also reduce foraging habitat. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Although potential hibernacula were not identified within the construction workspace within the GWNF, there is the potential for construction activities to impact the subterranean karst system. Karst terrain is found between MPs 96.8-97.2, 105.9-106.1, and 122.8-123.2; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending GWNF review of conservation measures*
Southern Water Shrew *Sorex palustris punctulatus*	LE	3	G5T3/S1S2	Undercut banks of high gradient and high elevation (above 900 m) first and second order streams with abundance cover from overhanging rocks, roots, logs, and crevices (NatureServe, 2015). Field surveys identified potential habitat at four streams crossed by the pipeline near the WV-VA state line; presence of water shrew is assumed.	Potential impacts would include temporary to permanent loss of suitable habitat, and potential injury or mortality of individuals if present and unable to move from the area during construction. Sound pressure waves from blasting could also cause injury or mortality to individuals. Construction activities adjacent to suitable habitat would also increase noise levels, which could disrupt normal activities. Construction across waterbodies would remove riparian habitat, resulting in decreased habitat suitability and increased erosion potential. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Increased sedimentation and turbidity	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
					from stormwater run-off during construction into suitable stream habitat could negatively impact this species and its foraging prey. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would coordinate with the GWNF to include potential food sources and other beneficial riparian shrubs for southern water shrew in the revegetation plan for riparian areas if commercially available, such as silky willow, rhododendron, mountain laurel, and yellow birch. Felled woody debris would also be retained along the edge of the right-of-way for den sites and shelter.	
BIRDS						
Peregrine Falcon *Falco peregrinus*	LT	6	G4/S1B,S2N	In western Virginia, peregrine falcon nest in natural, open, rocky cliffs in mountainous areas or river gorges, usually associated with water. In eastern Virginia, falcons use man-made structures such as unfinished bridge piers, bridges, or skyscrapers (VDGIF, 2015b). Suitable habitat potentially present within the survey corridor based on general habitat conditions; no, peregrine falcons were observed within a two-mile wide aerial survey area for eagles. Pending review of cliff habitat.	If present near the ACP project area during construction, construction activities could disturb falcons, displacing individuals and disrupting normal activities. If construction activities were to occur in proximity to a nest during the nesting season, prolonged or frequent disturbance could cause nest abandonment. Construction would also result in the loss of foraging habitat. Atlantic would implement the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1) to mitigate impacts on this species. Atlantic would notify the GWNF if an occupied nest is found in the ACP Project area during clearing or construction, and a 25-foot protection buffer would be established around active nests until the young have fledge. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
					combination of indigenous tree and shrub seedlings on NFS lands.	
Bald Eagle *Haliaeetus leucocephalus*	-	6	G5/S3S4B, S3S4N	Prefers coasts, lakes, and rivers, and seen along mountain ridges during migration. The James, Rappahonnock, and Potomac Rivers provide some of the most important eagle habitats in Virginia. Most nests are found amid large wooded areas adjacent to marshes or bodies of water, or in isolated trees located in marshes, farmland, or in logged areas where scattered trees remain (VDGIF, 2016b). Field survey confirmed that potentially suitable habitat occurs in much of the analysis area, and one unknown stick nest was identified approximately 314 feet from the centerline that had been tended during the season. No bald eagles were observed.	If present near the ACP project area during construction, construction activities could disturb eagles, displacing individuals and disrupting normal activities. If construction activities were to occur in proximity to a nest during the nesting season, prolonged or frequent disturbance could cause nest abandonment. Construction would cause loss of nesting and foraging habitat. Atlantic would implement the *COM Plan* (see appendix G) and *Migratory Bird Plan* (see table 2.3.1-1). For any tree clearing that would occur during the winter roosting season or nesting season, a qualified Biological Monitor would walk ahead of clearing crews and search for roosting bald eagles and nesting bald eagles. If active or inactive bald eagle nests are identified ahead of or during construction, Atlantic would follow the National Bald Eagle Management Guidelines for work within 660 feet of the nest. Additional information provided in section 4.5.3. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending GWNF review of conservation measures*
Migrant Loggerhead Shrike *Lanius ludovicianus migrans*	LT	3	G4/S1B,S2N	Open areas, grasslands (often grazed or occasionally mowed) and agricultural landscapes interspersed with forbs, scattered shrubs, and/or small trees. Usually nests in eastern redcedar or hawthorne (VDGIF, 2015b). An area of potentially suitable habitat was identified within the ACP survey corridor on the GWNF; however, no Migrant Loggerhead Shrike were observed.	Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1). This species prefers open grassland habitat (VDGIF, 2015b); therefore, clearing of the right-of-way during construction could provide suitable habitat for this species. Atlantic would mow the right-of-way outside of the nesting season. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would coordinate with the GWNF to include thorny shrubs or other suitable plants beneficial to Migrant Loggerhead Shrike in the revegetation plan to enhance suitable hunting and nesting habitat for this species in and adjacent to the permanent pipeline right-of-way.	*Beneficial Effect*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
AMPHIBIANS						
Cow Knob Salamander *Plethodon punctatus*	-	3	G3/S2	Found at high elevations in mixed deciduous forest interspersed with Virginia pine and hemlock and numerous rock outcrops. Most abundant in old-growth forests with many downed logs and abundant surface rocks, including talus (NatureServe, 2015; VDGIF, 2016k). ACP is outside the known range of this species. Field surveys were conducted in suitable habitat and during suitable field conditions and no individuals were observed.	No potential impacts on individuals are anticipated.	*No impact.*
FISH						
Roughhead Shiner *Notropis semperasper*	-	8	G2G3/S2S3	Endemic to the headwaters of the James River. Cool to warm streams of moderate gradient, gravel to boulder substrate, slight siltation, slow to moderate currents or in or just below the head of a pool, or in moderately calm water adjacent to runs (VDGIF, 2016b). This species has been found in the upper James watershed above the town of Buchanan, Botetourt County (FS, 2014). Based on correspondence from the GWNF, this species is known from Back Creek, Jackson River, Cowpasture River, and Calfpasture River (FS, 2016c) and the VDGIF has indicated that this species is known to occur in Back Creek and its tributaries, which are crossed by ACP on the GWNF. Atlantic has assumed presence of roughhead shiner in these waterbodies crossed by ACP. Surveys were conducted in 2016 on the GWNF; no roughhead shiner were observed at crossing locations and habitat was considered unsuitable.	Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, reduced fish passage, potential mortality during fish relocation efforts, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the *Virginia Fish Relocation Plan* (see table 2.3.1-1) to remove all fish species trapped within areas proposed for dewatering or in-stream work prior to initiating construction. Atlantic would also implement the measures in its construction and restoration plans (see table 2.3.1-1) and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G). Atlantic committed to adhering to the VDGIF TOYR (March 15 to June 30) (VDGIF, 2016a) at the waterbody crossing locations where this species is assumed to be present (see appendix K).	*Pending GWNF review of conservation measures*
Orangefin Madtom *Noturus gilberti*	LT	8	G2/S2	The native population of orange madtom occurs in the Roanoke River	Waterbody crossings and access road construction and use would temporarily degrade water quality	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
				drainage, and an introduced population is found in the James River drainage (VDGIF, 2016b). This species has been found in Mill Creek and Cowpasture River (FS, 2014; FS, 2016c). Surveys were conducted in 2016 on the GWNF; no orangefin madtom were observed at crossing locations.	through increased sedimentation and turbidity, reduced fish passage, potential mortality during fish relocation efforts, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the *Virginia Fish Relocation Plan* (see table 2.3.1-1) to remove all fish species trapped within areas proposed for dewatering or in-stream work prior to initiating construction. Atlantic would also implement the measures in its construction and restoration plans (see table 2.3.1-1) and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G). Because only the introduced population of orange madtom may be affected by ACP, the VDGIF TOYR (March 15-May 31) would not apply (VDGIF, 2016a).	
INVERTEBRATES						
Gastropods (Snails)						
Round Supercoil Snail *Paravitrea reesei*	-	3	G3/SU	Moist environments including damp areas under rocks, leaf litter, river bluffs and other slopes near water (Hotopp et al., 2013). This species was not identified during surveys on the GWNF.	Construction activities could cause mortality to individuals if present in the workspace. This species is known to inhabit leaf litter in forests, a habitat that is common across the GWNF. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Suitable habitat is very common across the GWNF (FS et al., 2002). Atlantic has committed to maintaining felled woody debris along the edge of the right-of-way on NFS lands to enhance habitat for this species. In addition, Atlantic would replant a combination of indigenous tree and shrub seedlings on NFS lands within all ATWS and the outermost portion of the construction right-of-way, including 20 feet on the working side and 13 feet on the spoil side.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Bivalves (Freshwater Mussels)						
Brook Floater *Alasmidonta varicosa*	LE	8	G3/S1	Fast-flowing, clean water in substrates that contain relatively firm rubble, gravel, and substrates swept free from siltation. Buried in the substrate in shallow riffle and shoal areas (VDGIF, 2016b). This species has been documented in Christians Creek and Back Creek. This species was not identified during mussel surveys on the GWNF and habitat was considered unsuitable.	This species was not identified in waterbodies crossed by ACP within the GWNF, and have not been documented within 1 mile of the ACP Project area, therefore no direct impacts are anticipated to this species. However, suitable habitat for this species could occur in waterbodies within the Canada Run-South River and Inch Branch-Back Creek subwatersheds crossed by ACP on the GWNF. Waterbody crossings and access road construction and use would temporarily degrade water quality through increased sedimentation and turbidity, and potentially introduce contaminants (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in its construction and restoration plans (see table 2.3.1-1) and the *COM Plan,* including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan* (see appendix G).	*Pending GWNF review of conservation measures*
Atlantic Pigtoe *Fusconaia masoni*	LT	7	G2/S2	Clean, swift-moving waters often found in gravel of gravel-sand substrate. FWS indicates potential presence of this species in the Mill Creek. This species was not identified during mussel surveys on the GWNF and habitat was considered unsuitable on NFS land.	This species is currently under review by FWS for listing under the ESA (see section 4.7.1.15). This species, nor suitable habitat for this species, was identified during surveys on the GWNF; however, there is a potential for downstream impacts on this species occurring within the Mill Creek watershed. Based on Atlantic's erosion and sedimentation analysis, ACP is predicted to produce relatively low to moderate erosion rates 250 percent above baseline along the construction workspace in the Cabin Creek-Mill Creek subwatershed crossed by ACP, which could result in increased sedimentation and turbidity and aquatic habitat degradation downstream where green floater mussel may be present. To minimize impacts, Atlantic would conclude construction activities as quickly as possible, and would implement the sediment and erosion control measures in its construction and restoration plans (see table 2.3.1-1) and the *COM Plan* (see appendix G).	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Green Floater *Lasmigona subviridis*	LT	8	G3/S2	Fast-flowing, clean water in firm rubble, gravel and sand substrates swept free from siltation. Found buried in substrate in shallow riffle and shoal areas (VDGIF, 2016b). This species has been documented in the upper James River watershed; however, the nearest documented occurrence is outside of the FS analysis area. This species was not identified during mussel surveys on the GWNF and habitat was considered unsuitable.	This species is currently under review by FWS for listing under the ESA (see section 4.7.1.15). This species, nor suitable habitat for this species, was identified during surveys on the GWNF; however, there is a potential for downstream impacts on this species occurring within the upper James River watershed. Based on Atlantic's erosion and sedimentation analysis, ACP is predicted to produce erosion rates 300-400 percent above baseline along the construction workspace in the Bolar Run-Jackson River, Dry Run, Scotchtown Draft-Cowpasture River, and Lick Run-Stuart Run subwatersheds of the upper James River subbasin crossed by ACP, which could result in increased sedimentation and turbidity and aquatic habitat degradation downstream where green floater mussel may be present. To minimize impacts, Atlantic would conclude construction activities as quickly as possible, and would implement the sediment and erosion control measures in its construction and restoration plans (see table 2.3.1-1) and the *COM Plan* (see appendix G).	*Pending GWNF review of conservation measures*
Crustaceans (Amphipods and Isopods)						
Racovitza's Terrestrial Cave Isopod *Miktoniscus racovitzai*	-	6	G3G4/S2	Subterrestrial, subterranean obligate species. This species has been documented in the Upper James watershed in Bath County, and South Fork Shenandoah watershed (NatureServe, 2015).	No caves or open throat karst features that could provide direct surface drainage into the subterranean environment were identified within 300 feet of the proposed ACP route on the GWNF. Karst terrain is found between MPs 96.8-97.2, 105.9-106.1, and 122.8-123.2; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Bath County Cave Amphipod *Stygobromus mundus*	-	8	G2G3/S1S2	Subaquatic, subterranean obligate species. Has been documented from both cave and surface stream collections. Full extent of subterranean habitat is unknown. This species has been documented in the Upper James watershed in Bath County (NatureServe, 2015) crossed by ACP in Bath and Highland Counties.	The potential impacts and conservation measures for this species would be similar to those described above for the Racovitza's Terrestrial Cave Isopod.	*Pending GWNF review of conservation measures*
Myriapods (Centipedes and Millipedes)						
Hoffman's Cleidognid Millipede *Cleidogona hoffmani*	-	5	G3/S2S3	Leaf litter in deciduous forest, which is common in the GWNF. Mountaintop species documented from Mt. Rogers, Whitetop Mountain, Elk Garden, and Helton Creek. This species was documented at nine sites during surveys on the GWNF.	There is the potential for mortality of individuals during tree clearing and other construction activities. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Suitable habitat is very common across the GWNF (FS et al., 2002). Atlantic has committed to maintaining felled woody debris along the edge of the right-of-way on NFS lands to enhance habitat for this species. In addition, Atlantic would replant a combination of indigenous tree and shrub seedlings on NFS lands within all ATWS and the outermost portion of the construction right-of-way, including 20 feet on the working side and 13 feet on the spoil side. In areas where Hoffman's Cledognid millipede were documented, Atlantic would coordinate with the GWNF to include overstory species associated with this species in the revegetation plan to more quickly restore deciduous forest habitat suitable for this species.	*Pending GWNF review of conservation measures*
Montane Centipede *Escaryus cryptorobius*	-	3	G2/S2	Endemic to the Blue Ridge Mountains of Virginia. Found in the upper soil horizons in mixed hardwood forests in the summer months (May through July); burrows deep into the soil matrix during winter (Pereira and Hoffman, 1993). This species was not documented during surveys.	There is the potential for mortality of individuals during tree clearing and other construction activities. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Suitable habitat is very common across the GWNF (FS et al., 2002). Atlantic has committed to maintaining felled woody debris along the edge of the right-of-way on NFS lands to enhance habitat for this species. In addition, Atlantic would replant a combination of indigenous tree and shrub seedlings on NFS lands within all ATWS and the outermost portion of the construction right-of-way, including 20 feet on the working side and 13 feet on the spoil side.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
A cave centipede *Nampabius turbator*	-	6	G1G2/S1	Subterrestrial, subterranean obligate species. Although this species has not been documented in counties crossed by ACP, it has been documented within the Upper James watershed (NatureServe, 2015) crossed by ACP in Bath and Highland Counties.	The potential impacts and conservation measures for this species would be similar to those described above for the Racovitza's Terrestrial Cave Isopod.	*Pending GWNF review of conservation measures*
Shenandoah Mountain Xystodesmid Millipede *Nannaria shenandoa*	-	5	G1/S1	Leaf litter in mixed forests, which is common in the GWNF, between 760 to 1,000 meters elevation (Hoffman, 1949). Surveys on the GWNF did not document this species; however, the survey documented six sites with unidentifiable *Nannaria* specimens, which may represent suitable habitat for this species. Atlantic has assumed presence of Shenandoah Mountain Xystodesmid Millipede at these six locations.	Four of the sites where *Nannaria* specimens were identified would be located within the ACP construction workspace. The potential impacts and conservation measures for this species would be similar to those described above for the Hoffman's Cleidognid Millipede.	*Pending GWNF review of conservation measures*
Mays Mountain Cave Millipede *Pseudotremia alecto*	-	6	N/A	Leaf litter and detritus in deciduous forests, which is common in the GWNF, at 330 meters elevation; has also been found in caves. Documented in Allegheny and Bath Counties (Shear, 2011). This species was not documented during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Hoffman's Cleidognid Millipede.	*Pending GWNF review of survey results and conservation measures*
Pleasing Xystodesmid Millipede *Semionellus placidus*	-	3	G3/S3	Leaf litter of deciduous forests, which his common in the GWNF, and cove habitats, usually near water (BugGuide, 2016). This species was not documented during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Montane Centipede.	*Pending GWNF review of survey results and conservation measures*
Insects (Springtails)						
A cave springtail *Pygmarrhopalites carolynae*	-	6	G4/S3	Subterrestrial, subterranean obligate species. This species has been documented in Bath County and in the South Fork Shenandoah and Upper James River watersheds (NatureServe, 2015), which would be crossed by ACP in Bath, Highland, and Augusta Counties.	The potential impacts and conservation measures for this species would be similar to those described above for the Racovitza's Terrestrial Cave Isopod.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
A cave springtail *Pygmarrhopalites sacer*	-	6	G1/S2	Subterrestrial, subterranean obligate species. Known from two caves in Bath County. This species has been documented in Bath County and in the Upper James River watershed (NatureServe, 2015), which would be crossed by ACP in Bath and Highland Counties.	The potential impacts and conservation measures for this species would be similar to those described above for the Racovitza's Terrestrial Cave Isopod.	*Pending GWNF review of conservation measures*
Insects (Beetles)						
Appalachian Tiger Beetle *Cicindela ancocisconensis*	-	3	G3/S2	Prefers open sand or a matrix of sand and cobble along permanent streams or medium-sized rivers; usually found along rocky mountain streams and small rivers in partially shaded areas, such as sand banks and sand bars. Occasionally reported along roads. This species is active April through June and late-July to September, but not always active in fall (NatureServe, 2015). Suitable habitat for this species was observed within the GWNF; however, no individuals were documented.	There is the potential for mortality of individuals during clearing and other construction activities. Construction and maintenance of the right-of-way would temporarily remove suitable habitat; however, based on this species preference of open habitat, right-of-way clearing and maintenance could have a beneficial effect by creating potentially suitable habitat (FS et al., 2002). Atlantic would replant a combination of indigenous tree and shrub seedlings on NFS lands within all ATWS and the outermost portion of the construction right-of-way, including 20 feet on the working side and 13 feet on the spoil side.	*Pending GWNF review of conservation measures*
Northern Barrens Tiger Beetle *Cicindela patruela*	-	3	G3/S2	Specialized to sandy/coarse gravel or eroding sandstone in pine barrens, open mixed, or deciduous woodlands where open ground exists. This species is active late April to June and mid-August into September, but not always active in fall (NatureServe, 2015). Suitable habitat for this species was observed within the GWNF; however, no individuals were documented.	The potential impacts and conservation measures for this species would be similar to those described above for the Appalachian Tiger Beetle.	*Pending GWNF review of conservation measures*
Maureen's Hydraenan minute Moss Beetle *Hydraena maureenae*	-	5	G2?/S2?	Along the edges of smaller, lower gradient streams in clean, fine shale gravels, typically gravel bars. This species is potentially active year-round (NatureServe, 2015). Surveys conducted on the GWNF identified suitable habitat for this species at eight stream locations and	This species has been documented along existing FS roads that have been proposed for use as access roads; therefore, construction activities could cause mortality to individuals if present in the workspace. Filing of the interstitial spaces between gravels with sediment, which would occur during construction activities, makes habitat no longer suitable for this species. In addition, riparian vegetation would be removed at crossing locations, and may facilitate the	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
				documented eight individuals at six of those stream locations.	spread of invasive species, further degrading habitat for this species. Atlantic has committed to limiting ground disturbance at waterbody crossings on NFS lands to the trench line and travel lane, rather than the entire 125-foot right-of-way. In addition, Atlantic would revegetate disturbed riparian areas with native species of conservation grasses, pollinator-friendly species, legumes, and woody species, similar in density to adjacent undisturbed lands. Atlantic would also implement the erosion control and sedimentation measures described in the *COM Plan* (see appendix G).	
Insects (Dragonflies)						
Alleghany Snaketail *Ophiogomphus incurvatus alleghaniensis*	-	3	G3T2T3/S1	Suitable habitat for this species was observed within the GWNF; however, no individuals were documented. This species has the potential to occur in Dowell's Draft, which is crossed or in proximity to ACP (VDCR, 2016b).	Dowell's Draft, one unnamed tributary to Dowell's Draft, and an unnamed tributary to East Branch Dowell's Draft would be crossed using a dry crossing technique. Atlantic also proposes to use existing roads that cross Dowell's Draft, East Branch of Dowell's Draft, and two unnamed tributaries to Dowell's Draft as permanent access roads. Construction across waterbodies would remove riparian habitat, resulting in loss of shelter and foraging habitat, and increased erosion potential. Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. In addition, increased sedimentation could result from use of access roads and stormwater run-off from access roads and the construction workspace. Removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Increased sedimentation threatens this species. Atlantic would implement the sediment and erosion control measures in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic has also committed to replant all ATWS and the outermost portions of the construction	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
					workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	
Insects (Butterfly, Skippers, and Moths)						
Frosted Elfin Butterfly *Callophyrs irus*	-	2	G3/S2?	Most often found in dry areas, especially oak woods, shale barrens, pine forests, sandhills, and coastal shrub. Larval host plants are wild lupine (*Lupinus perennis*) and wild indigo (*Baptisia tinctoria*). Adults active from May to June (VDCR and VDGIF, 2013). Surveys on the GWNF did not identify suitable habitat or individuals of this species. No surveys for this species were conducted.	Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species is known to benefit from the presence of open grassy habitat with nearby tree cover, including utility rights-of-way; however, herbicide application and spring time mowing can be detrimental to this species. Vehicle traffic can also drive off adults (Pennsylvania Natural Heritage Program, 2008). Atlantic would also not mow the permanent right-of-way during the migratory bird season from March 15-August 30 in Virginia, which would avoid spring time mowing. Atlantic has also committed to coordinating with the GWNF to include frosted elfin host plants, if commercially available, in the revegetation plan to help create suitable habitat for this species in the permanent right-of-way.	*Pending GWNF review of conservation measures*
Herodias Underwing Moth *Catocala herodias gerhardi*	-	6	G3T3/S2S3	Prefer pitch pine (*Pinus rigida*)-bear oak (*Quercus ilicifolia*) barrens, or sparse, open woodlands. Food plants plants are bear oak, and blackjack oak (*Quercus marilandica*); larvae feed mostly on bear oak and reared mostly on blackjack oak. Adults are active from July to August (VDCR and VDGIF, 2013). Suitable habitat and potential host plants for this species were observed within the GWNF; however, individual surveys were not conducted. Because individual surveys were not conducted, presence is assumed within suitable habitat.	Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species is known to benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat (FS et al., 2002). Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic would also coordinate with the GWNF to include potential host plants and suitable tree species, if commercially available, in the revegetation plan to help create suitable habitat for this species in and adjacent to the permanent right-of-way.	*Pending GWNF review of survey results and conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Milne's Euchlaena Moth *Euchlaena milnei*	-	6	G2G4/S2	Hardwood and mountain oak woodlands with acidic soil. Its larval host plant is unknown, but may include deciduous trees and shrubs based on the preference of other members of the genus (NatureServe, 2015). Adults are active in from early to mid-July (VDCR and VDGIF, 2013). Individual surveys were not conducted for this species. Because individual surveys were not conducted, presence is assumed within suitable habitat.	Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending GWNF review of survey results and conservation measures*
Hebard's Noctuid Moth *Psectrotarsia hebardi*	-	3	GU/SH	Prefers rich, deciduous forests with abundant larval food plants, such as stoneroot (*Collinsonia canadensis*). Larvae are active into September (VDCR and VDGIF, 2013). Individual surveys were not conducted for this species. Because individual surveys were not conducted, presence is assumed within suitable habitat.	This species has not been recently documented in Virginia (prior to 1950). Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	*Pending GWNF review of conservation measures*
Appalachian Grizzled Skipper *Pyrgus centaureae wyandot*	LT	6	G5T1T2/S1	Dry, open areas with shaley soils such as shale barrens, and artificially opened habitats such as clearcuts and utility rights-of-way. Its larval host is dwarf cinquefoil (*Potentilla canadensis*). Adults are active from mid-April to early May (VDCR and VDGIF, 2013). Field habitat assessments identified one host plant for this species within the GWNF; however, no caterpillars were observed. Adults could not be sampled as it was outside of their activity period; therefore, presence is assumed in suitable habitat.	The potential impacts and conservation measures for this species would be similar to those described above for the Herodias Underwing Moth. This species requires open areas with an abundance of *Potentilla canadensis*. In south facing dry, open shaley areas, and open woodlands, Atlantic would plant or enhance dwarf cinquefoil, Carolina vetch, *Silene caroliniana*, and bird's foot violet. Dwarf cinquefoil seed is not readily available, but plants that would otherwise be destroyed by construction activities can be removed to a temporary location and replanted after construction is complete.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Diana Fritillary Butterfly *Speyeria diana*	-	3	G3G4/S3	Favor wooded areas, particularly in low-lying valleys, pine woods, and cove forests, within or near mountain ranges. Its larval host plants are violets (*Viola* spp.) and nectar plants include butterfly bush, milkweeds, and other purple flowers. Adults are active from mid-June to early September (VDCR and VDGIF, 2013). Field habitat assessments identified host plants for this species within the GWNF; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Herodias Underwing Moth. Atlantic would plant appropriate nectar producing plants in suitable areas following construction.	*Pending GWNF review of conservation measures*
Regal Fritillary Butterfly *Speyeria idalia*	-	3	G3/S1	Uses violets (*Viola* spp.), especially birdfoot violet (*V. pedata*), as its larval host plants. Prefers tallgrass areas, such as prairies, fields, grasslands, and bogs; may have close ties with undisturbed native grasslands. Adults feed on nectar from thistle (*Cirsium* spp.), milkweeds (*Aesclepias* spp.), and red clover (*Trifolium* spp.). Adults are active mid-June through mid-August (VDCR and VDGIF, 2013). Field habitat assessments identified host plants for this species within the GWNF; however, no individuals were observed.	The potential impacts and conservation measures for this species would be similar to those described above for the Herodias Underwing Moth. Atlantic would plant appropriate nectar producing plants in suitable areas following construction.	*Pending GWNF review of conservation measures*
VASCULAR PLANTS						
Trailing White Monkshood *Aconitum reclinatum*	-	3	G3/S3	Seepage swamps, mafic fens, rocky high-elevation forests, rich cove forests, and periodically wet boulder fields, usually on base-rich substrates at middle to high elevations (Virginia Botanical Associates, 2016). Species not observed during surveys.	Construction activities would remove forested habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
					spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.	
Nodding Onion *Allium oxyphilum*	-	3	G2/S1	Bare rock, talus, and scree slopes. In West Virginia, a large population was documented on a shale barren, south-facing slope within an open hardwood forest with grass-sedge understory. Occurs on acidic soils. Endemic to west-central Virginia and eastern West Virginia. Not documented in counties crossed by ACP (Virginia Botanical Associates, 2016; NatureServe, 2015). Species not observed during surveys.	Successful restoration if this species includes minimizing disturbance to shale barren habitat, controlling invasive and noxious weeds, and limiting encroachment of woody vegetation (NatureServe, 2015). Construction activities would remove shale barren habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*
Variable Sedge *Carex polymorpha*	-	3	G3/S2	Dry, usually sandy, open oak/heath forests, pine oak/heath woodlands, clearings, and wetland ecotones (Virginia Botanical Associates, 2016). Species not observed during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood. This species requires open woods with sandy soils and responds well to fire.	*Pending GWNF review of conservation measures*
Small Spreading Pogonia *Cleistesiopsis bifaria*	-	3	G4?/S2	Dry, acidic soils of oak/heath forests and pine-oak/heath woodlands (Virginia Botanical Associates, 2016). Species not observed during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood. This species requires very open habitat with disturbance, such as fire, necessary to control woody trees and shrubs which would otherwise shade it out.	*Pending GWNF review of conservation measures*
Virginia White-haired Leatherflower *Clematis coactilis*		3	G3/S3	Barrens, cliffs, and open, rocky woodlands on shale, limestone, dolomite, and calcareous sandstone (Virginia Botanical Associates, 2016). Species not observed during surveys.	Construction activities would remove barren habitat, which would degrade or make habitat unsuitable for this species; however, because this species is also known to occur in openings, the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Bentley's Coralroot *Corallorhiza bentleyi*	LE	3	G2/S2	Dry-mesic to mesic forests, especially by roadsides. Rare in the mountains (Virginia Botanical Associates, 2016). This species is known to occur along the Duncan Knob FS road on the GWNF.	Surveys are pending along the Duncan Knob FS road which has been proposed as an access road for ACP. This species would be surveyed prior to construction during the appropriate biological window (late July to September). Identified populations would be marked and avoided with a 100-foot buffer.	*Pending GWNF review of conservation measures*
Glade Spurge *Euphorbia purpurea*	-	3	G3/S2	Rich cove and floodplain forests, boulder fields, montane oak-hickory forests, seeps, and seepage swamps; usually in habitats over calcareous or mafic rocks (Virginia Botanical Associates, 2016). Species not observed during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood.	*Pending GWNF review of conservation measures*
White Alumroot *Heuchera alba*	-	3	G2Q/S1	Moist shale roadside banks, acid rock and calcareous outcrops, mossy talus slopes, and on high summits from 3,250 to 3,920 feet (Virginia Botanical Associates, 2016; NatureServe, 2015). Species not observed during surveys.	Construction activities would remove rock outcrop habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*
Butternut *Juglans cinerea*	-	3	G4/S3?	Optimal growth occurs on well-drained soils of bottomlands and floodplains. Found in rich mesophytic forests, lower slopes, ravines, and various types of bottomland (Virginia Botanical Associates, 2016; NatureServe, 2015). Species not observed during surveys.	Construction activities would remove floodplain habitat, which would degrade or make habitat unsuitable for this species however, because this species is known to benefit from the creation of canopy gaps and some form of disturbance (NatureServe, 2015), the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants. This species is primarily threatened by the spread of a canker fungus (NatureServe, 2015).	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
Heller's Blazing Star *Liatris helleri*	-	3	GU/S3	Dry, rocky woodlands, barrens, outcrops, and clearings, at middle to high elevations; occur on both acidic and base-rich substrates (Virginia Botanical Associates, 2016). Species not observed during surveys.	Construction activities would remove woodland and barren habitat, which would degrade or make habitat unsuitable for this species; however, because this species is also known to occur in clearings, the permanent right-of-way could create additional suitable habitat. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*
Sweet Pinesap *Monotropsis odorata*	-	3	G3/S3	Mesic to dry upland forests, typically in acidic humus under oaks, pines, or ericaceous shrubs, but occasionally in base-rich soils (Virginia Botanical Associates, 2016). Species not observed during surveys.	This species is cryptic and very difficult to detect during surveys. The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood.	*Pending GWNF review of conservation measures*
Sword-leaf Phlox *Phlox buckleyi*	-	3	G2/S2	Dry open forests, woodlands, forest edges, clearings, and road banks on shale and metasiltstone (Virginia Botanical Associates, 2016). Species not observed during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood.	*Pending GWNF review of conservation measures*
Bog Bluegrass *Poa paludigena*	-	3	G3/S2	Found in shaded seeps and seepage swamps, usually over calcareous or mafic rocks (Virginia Botanical Associates, 2016). Species not observed during surveys.	Atlantic would impact 0.1 acre of wetland habitat within the GWNF. Construction activities would remove wetland habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*
Torrey's Mountain-mint *Pycnanthemum torreyi*	-	3	G2/S2	Dry, rocky or sandy woodlands and clearings; calcareous fens, occurs in both extremely acidic and basic soils	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood.	*Pending GWNF review of conservation measures*

TABLE R-2 (cont'd)

RFSS with Potential Habitat or Populations within the George Washington National Forest, Virginia

Species	VA Status [a]	OAR Rank [b]	Global Rank/ State Rank [c]	Suitable Habitat or Species Present?	Potential Impacts and Conservation Measures	Determination of Effects
				(Virginia Botanical Associates, 2016). Species not observed during surveys.		
Rock Skullcap *Scutellaria saxatilis*	-	3	G3/S3	Mesic to dry rocky forests and boulder fields; occasionally in cove forests and on stream banks. Frequent in the mountains (Virginia Botanical Associates, 2016). Species not observed during surveys.	The potential impacts and conservation measures for this species would be similar to those described above for the Trailing White Monkshood.	*Pending GWNF review of conservation measures*
Mountain Least Trillium *Trillium pusillum var. monticulum*	-	3	G3T2/S2	Montane populations are on acid ridgecrests and in mafic fen (Virginia Botanical Associates, 2016).	Atlantic would impact less than 1 acre of wetland habitat within the GWNF. Construction activities would remove wetland habitat, which would degrade or make habitat unsuitable for this species. If present within the construction right-of-way, individuals would be killed. Construction activities could also potentially introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the *COM Plan* (see appendix G) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement the *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.	*Pending GWNF review of conservation measures*

[a] LE =State Listed Endangered, LT=State Listed Threatened. VA Status is based on Roble, 2016 and Townsend, 2016.

[b] OAR Rank: 3 = Habitat present, but species not found in Analysis Area, 5 = Field survey located species in the activity areas, 6 = Species not seen during survey, but possibly occur in the activity area based on suitable habitat, 7 = Aquatic species or habitat known downstream of project or activity area, but outside identified geographic bounds of water resource effects area, 8 = Aquatic species known or assumed to be downstream of project or activity area and within identified geographic bounds of water resource cumulative effects analysis area, 9 = Federally listed mussel and/or fish species known in the 6th level watershed of the Analysis Area.

[c] Global/State Conservation Rank: Conservation status ranks are based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5). Status is assessed and documented at three distinct geographic scales-global (G), national (N), and state/province (S). Global/State Conservation Rank: G1 = Critically imperiled - At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors; G2 = Imperiled - At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors; G3 = Vulnerable - At moderate risk of extinction or elimination due to a restricted range, relatively few populations, 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; GU = Unranked; Q = Questionable Taxonomy – taxonomic distinctiveness of this entity at the current level is questionable; T = Infraspecific Taxon – for example, subspecies or variety; ? = Inexact Numeric Rank. State Rank (Birds): S_B: breeding status; these species typically inhabit the state only during the breeding season, S_B,S_N: breeding and non-breeding status when they differ; SH= Possibly Extirpated from State. Global Rank is based on NatureServe, 2015 and State Rank is based on Roble, 2016 and Townsend, 2016.

TABLE R-3

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
MONONGAHELA NATIONAL FOREST AND GEORGE WASHINGTON NATIONAL FOREST			
Eastern Wild Turkey *Meleagris gallopavo*	MNF: High-interest game species. GWNF: High-interest game species. Indicative of effective management of this species in meeting public demand for harvest. Inhabits forest and open woodland, scrub oak, deciduous or mixed-deciduous-coniferous areas, especially in mountainous regions. Feeds on seeds, nuts, fruits, grains, buds, young grass blades, insects, and small vertebrates (NatureServe, 2015).	Temporary modification of habitat and habitat loss, reduction in food availability; potential direct mortality associated with collisions with construction vehicles or equipment; disturbance during construction. This species may benefit from openings and clearings; forest thinning, prescribed burning, and grazing have shown an increase in suitable habitat (NatureServe, 2015). After restoration is complete, the permanent right-of-way may provide additional habitat for this species.	Atlantic would conduct restoration as outlined in the *COM Plan* (see appendix G) and construction and restoration plans (see table 2.3.1-1). Impacts on this species would be temporary; once construction is complete additional habitat would be available. With the implementation of these conservation measures, ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Wild Brook Trout *Salvelinus fontinalis*	MNF: High-interest game fish, and top-level predator. Population effects reflect an integration of effects to water quality and stream conditions in aquatic habitats influenced by the management on National Forest System Lands. GWNF: High-interest game fish, and top-level predator. Indicative of successful management in mitigating the acidification of streams and meeting public demand for harvest of this species. Found in clear, cool, well-oxygenated creeks, small to medium rivers, and lakes (NatureServe, 2015).	Waterbody crossings and access road construction and improvements would temporarily degrade water quality through increased sedimentation and turbidity, reduced fish passage, potential mortality during fish relocation efforts, disturbance, changes in hydrology, and disturbance and injury from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Pipeline construction activities, particularly in areas with steep slopes or otherwise highly sensitive soils, will increase risks for mass soil movement via landslides and slumps which can adversely alter physical characteristics of aquatic habitats as well as water quality for brook trout populations.	Atlantic's proposed pipeline route would cross 2 tributaries to wild brook trout streams on the MNF, and there are 19 proposed access road crossings of brook trout streams or tributaries to those streams. On the GWNF, Atlantic's proposed pipeline route would cross 10 trout streams or tributaries to trout streams that are known or have potential to contain wild brook trout; there are two existing access road crossing of a brook trout stream. Atlantic would adhere to the WVDNR TOYR of September 15 to March 31 for HQS on the MNF, and the VDGIF TOYR for brown and brook trout in the GWNF of October 1 to March 31. Atlantic would also implement enhanced erosion control measures within 100 feet of perennial waterbodies on the MNF. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. See section 4.6 for additional discussion on impacts and proposed mitigation measures in trout waters.

TABLE R-3 (cont'd)

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
MONONGAHELA NATIONAL FOREST			
West Virginia Northern Flying Squirrel *Glaucomys sabrinus fuscus*	High interest endangered species. Associated with certain late successional characteristics in mature spruce forest. Forest Standards require that suitable habitat for this species be identified and considered occupied. Objective WF11 is to maintain at least 20,000 acres of mid-late and late successional (>80 years old) spruce forest to provide optimum habitat for West Virginia northern flying squirrel. The long-term objective is to increase mid-late and late successional spruce forest to at least 40,000 acres.	The ACP mainline construction workspace does not cross suitable habitat for the West Virginia northern flying squirrel; however, a proposed access road on NFS lands near Gibson Knob would require clearing of red spruce trees. Construction activities would cause disturbance to squirrels within or adjacent to the ACP Project area, and potential mortality due to collision with construction vehicles or equipment.	Atlantic has realigned a portion of a proposed access road, and would not widen the access road approaching Gibson Knob to minimize loss of regenerating northern hardwood and spruce habitat; however, the proposed access road would require clearing of 0.03 acres of regenerating red spruce trees. Atlantic is currently working with the MNF to determine whether this affected area is within the MNF; if ownership is confirmed, these trees would be allowed to regenerate. Prior to clearing, red spruce saplings present in the construction area would be transplanted outside of the construction area and onto MNF land. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
Cerulean Warbler *Setophaga cerulean*	High-interest non-game species. Associated with large trees, gaps, and complex canopy layering characteristic of old-growth forests. Forest interior species sensitive to fragmentation. Forest Plan Objective WF09 is to maintain at 50,000 acres of mid-late and late successional (>80 years old) mixed mesophytic and cove forest to meet habitat needs for cerulean warbler. Currently, greater than 80-year-old mixed mesophytic and cove forest is estimated at around 320,000 acres.	Construction of the ACP would permanently remove 7.9 acres of mid-late and late successional mixed mesophytic/cove forest habitat within the MNF, and 9.3 acres would be cleared during construction, but allowed to regenerate. Removal of this habitat would also contribute to habitat fragmentation and degradation to the point that it may no longer be suitable for the species. Construction would cause disturbance, abandonment of territories and nests located near the activity, and potential mortality due to collision with construction vehicles or equipment.	Atlantic would adhere to TOYR for migratory birds in the MNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and *COM Plan* (see appendix G). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
GEORGE WASHINGTON NATIONAL FOREST			
Beaver *Castor canadensis*	Indicative of successful wetland restoration efforts. Inhabit permanent sources of water of almost any type; prefer low gradient streams, ponds, and small mud-bottomed lakes with dimmable outlets (NatureServe, 2015).	Removal and degradation of habitat, fragmentation of wildlife corridors, and disturbance to beaver, potential injury or mortality associated with collision with construction vehicles or equipment. The ACP would not occur at the sites where this species is currently being monitored by the GWNF.	Atlantic would impact less than 1 acre of wetlands within the GWNF, and would implement measures in the *COM Plan* (appendix G), and construction and restoration plans (see table 2.3.1-1) when crossing wetlands and restoring the right-of-way. Atlantic committed to low speed limits on all ACP access roads to minimize wildlife collisions. Based on the limited amount of wetlands and

TABLE R-3 (cont'd)

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
			natural pond habitats that would be removed within the GWNF, ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
White-tailed Deer *Odocoileus virginianus*	High-interest game species. Indicative of effective management of this species in meeting public demand for harvest. Occupy many types of habitat in mountains and in lowlands, including various forests, woodlands, forest edges, shrublands, grasslands with shrubs, and residential areas (NatureServe, 2015).	Removal and degradation of habitat, fragmentation of wildlife corridors, and disturbance to foraging deer, potential injury or mortality associated with collision with construction vehicles or equipment. Based on this species preference for early successional habitat, Atlantic may create additional suitable habitat for this species within the permanently maintained right-of-way.	Atlantic would implement the measures in the *COM Plan* (see appendix G) and construction and restoration plans (see table 2.3.1-1) to restore the right-of-way. Atlantic committed to maintaining low speed limits on all ACP access roads to minimize wildlife collisions. Based on the short-term nature of impacts on deer habitat, and potential to create additional foraging habitat following construction, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Black Bear *Ursus americanus*	High-interest game species. Indicative of effective management of this species in meeting public demand for harvest. In habitat forests and nearby openings, including forested wetlands. Prefer mixed forests with a thick understory. The occupy dens under fallen trees, tree cavities, hollow logs, underground caves, or dense cover when they are inactive (NatureServe, 2015).	Removal and degradation of habitat, fragmentation of wildlife corridors, and disturbance to foraging bears, potential injury or mortality associated with collision with construction vehicles or equipment.	Atlantic would implement the measures in the *COM Plan* (see appendix G) and construction and restoration plans (see table 2.3.1-1) to restore the right-of-way. Atlantic committed to maintaining low speed limits on all ACP access roads to minimize wildlife collisions. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Impacts associated with construction activities are anticipated to be temporary, and based on the limited amount of habitat removal relative to the available habitat in the surrounding area, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Pileated Woodpecker *Dryocopus pileatus*	Indicative of successful maintenance of desired habitat conditions relative to abundance of snags within mature, old growth forest types. Prefers dense deciduous forests in the southeast, but also found in coniferous or mixed forests. Prefers woods with a tall closed canopy and a high basal area. Nests in cavities and feeds on insects, especially carpenter ants and beetle larvae, fruits, and seeds (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting woodpeckers could result. Disturbance in winter could also affect individuals by displacing individuals, thereby increasing energy demands and lowering fitness. Habitat fragmentation could also cause an increase nest predation.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic has also committed to retaining large-diameter trees or snags at the periphery of

TABLE R-3 (cont'd)

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
			the construction area, where possible, to further reduce habitat impacts. Based on the limited amount of mature forest and snags that would be removed within the GWNF (see table 4.8.9-5), the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Acadian Flycatcher *Empidonax virescens*	Indicative of successful maintenance of desired conditions within mature riparian habitats. Moist deciduous forests with moderate understory, generally near a stream. Prefers large forests tracts (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting flycatchers could result. Because this is a forest interior species, habitat fragmentation would also contribute to loss of habitat loss and increased risk of parasitism and predation.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Based on the limited amount of mature riparian forest that would be removed within the GWNF, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Eastern Towhee *Pipilo erythrophthalmus*	Indicative of successful maintenance of desired conditions within early successional habitats. Inhabits forest and swamp edges, regenerating clearcuts, open-canopied forests, mid-late successional fields, riparian thickets, overgrown fencerows, shrub/small-tree thickets, and other brushy habitat (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting towhees could result. Based on this species preference for early successional habitat, Atlantic may create additional suitable habitat for this species within the permanently maintained right-of-way.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). In addition, Atlantic committed to conducting maintenance mowing outside of the nesting season during operations. Based on the short-term nature of impacts on towhee habitat, and potential to create additional habitat following construction, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Scarlet Tanager *Piranga olivacea*	Indicative of successful maintenance of desired conditions within drier mid- and late-successional oak and oak-pine forest habitats. Breeds in deciduous forest and mature deciduous woodland, including deciduous and mixed swamp and floodplain forests and rich moist upland forests, typically where oak is dominant. Common in relatively closed canopy with high diversity of shrubs, and sparse ground cover. They can successfully breed in small forest patches (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting tanagers could result. Habitat fragmentation could also cause an increase nest predation.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Based on the limited amount of oak and oak-pine forest that would be

TABLE R-3 (cont'd)

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
			removed within the GWNF, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Ovenbird *Seiurus aurocapilla*	Indicative of successful maintenance of desired conditions relative to interior forest habitat within mature mesic deciduous forests. This species is sensitive to forest fragmentation. Breeds in mid- to late-successional closed-canopied deciduous or mixed forests with deep leaf litter and limited understory. Ground-nesting bird; generally, found absent in regenerating clearcuts (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting ovenbirds could result. Disturbance in winter could also affect individuals by displacing individuals, thereby increasing energy demands and lowering fitness. Because this is a forest interior species, habitat fragmentation would also contribute to loss of habitat loss and increased risk of parasitism and predation.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Based on the limited amount of mature mesic deciduous forest that would be removed within the GWNF, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Hooded Warbler *Setophaga citrina*	Indicative of successful maintenance of providing dense understory and mid-story structure within mature mesic deciduous forests. Nests in the understory of deciduous forests, especially along streams and ravine edges, and thickets in riverine forests. Inhabits young and mature forest, but is more abundant in mature forests (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting warblers could result. Because this is a forest interior species, habitat fragmentation would also contribute to loss of habitat loss and increased risk of parasitism and predation.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Based on the limited amount of mature mesic deciduous forest that would be removed within the GWNF, the ACP is not have significant long-term, adverse effects on this species or its habitat.
Chestnut-sided Warbler *Setophaga pensylvanica*	Indicative of successful maintenance of desired conditions within high elevation early successional habitats. Inhabits second-growth thickets of deciduous trees and shrubs, orchards, pasturelands, forest edges, cut-over forests, roadsides, open deciduous woodlands, and powerline corridors (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting warblers could result. Habitat fragmentation could also cause an increase nest predation. Based on this species preference for early successional habitat, Atlantic may create additional suitable habitat for this species within the permanently maintained right-of-way.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). In addition, Atlantic committed to conducting maintenance mowing outside of the nesting season during operations. Based on the short-term nature of impacts on warbler habitat, and potential to create additional habitat following construction, the ACP is not

TABLE R-3 (cont'd)

Management Indicator Species in the Atlantic Coast Pipeline Project Area with Potential Habitat or Populations within the Monongahela National Forest and George Washington National Forest

Forest/Species (*Scientific Name*)	MIS / Forest Plan Objectives and Habitat Description	Potential Impacts from ACP Construction and/or Operation	Conservation Measures and Conclusion
			anticipated to have significant long-term, adverse effects on this species or its habitat.
Pine Warbler *Setophaga pinus*	Indicative of successful maintenance of mature pine forests. Strongly associated with pine and pine-hardwood forests during breeding and winter seasons. Adapts well to pine plantations (NatureServe, 2015).	Construction would cause permanent loss and potential modification of nesting and foraging habitat. If birds are present, disturbance, removal of the nest, and potential mortality of nesting warblers could result.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Based on the limited amount of pine forest that would be removed within the GWNF, the ACP is not anticipated to have significant long-term, adverse effects on this species or its habitat.
Cow Knob Salamander *Plethodon punctatus*	Indicative of successful management activities designed specifically to meet conservation objectives for this species. Standards and desired conditions for this species limit development within cow knob salamander suitable habitat, and limit activities that could cause fragmentation, isolation, edge effects, and invasion of non-native species. Found at high elevations in mixed deciduous forest interspersed with Virginia pine and hemlock and numerous rock outcrops. Most abundant in old-growth forests with many downed logs and abundant surface rocks, including talus (NatureServe, 2015; VDGIF, 2016k). Field survey confirmed that suitable habitat occurs on Tower Hill Mountain and on Gum Tree Hill within areas with high concentrations of rock cover. No individuals were detected.	Construction activities would contribute to habitat loss and degradation of potentially suitable habitat.	Atlantic would implement the *COM Plan* (see appendix G), and *Rehabilitation and Restoration Plan* (see appendix F) to restore the right-of-way. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. No direct impacts on individuals are anticipated.

Sources: Forest Service 2011 and 2014

TABLE R-4

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
MAMMALS				
Northern River Otter *Lontra canadensis lataxina*	All Counties Crossed	Semi-aquatic species that occurs in riparian areas; also require some heavy cover (VDGIF, 2016b).	There are 10 perennial waterbody crossings by the pipeline and 3 perennial waterbody crossings by access roads on the GWNF (refer to section 4.6.5). All mainline waterbody crossings would be dry crossings (i.e., dam and pump or flume). Potential impacts would include short- to long-term removal of riparian habitat, short-term increase in sedimentation and changes to hydrology, and potential short-term disturbance to foraging habitat and species. Potential mortality or injury from construction equipment could occur; however, it is anticipated that river otters would move out of the construction area.	Impacts on water quality would be temporary; based on Atlantic's Soil Erosion and Sedimentation Modeling Report, construction activities sedimentation would return to baseline erosion quantities within 3 years of construction. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Impacts on forested riparian habitat would be long term to permanent; however, these impacts would be localized and adjacent habitat would be available. Impacts on herbaceous and shrub-scrub riparian habitat would be short- to long-term depending on the species.
Fisher *Martes pennanti pennanti*	Highland, Bath, Augusta	Originally occurred in both red spruce and mixed hardwood forests in Virginia; survives best in extensive forest and wilderness areas. Found in high closed canopy spruce-fir, cedar, spruce-aspen, alder, pine, and oak-hickory forests. This species avoids open areas with no overhead cover (VDGIF, 2016b).	ACP would impact open pine, oak, and mixed hardwood forests within the GWNF (refer to section 4.4.6). Impacts include habitat loss and fragmentation, and introduction of barriers to wildlife corridors. The construction and permanent right-of-way would create an open area, which this species would likely avoid. By fragmenting continuously forested habitat, it may also reduce available foraging habitat. There is potential for mortality or injury during construction; however, it is anticipated that fishers would move out of the construction area.	If present, construction and operation of ACP would result in permanent habitat loss and fragmentation of forested habitat. Although woody species would be allowed to regenerate within the construction right-of-way, the permanent right-of-way would be maintained clear of tree and shrub species. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
Least Weasel *Mustela nivalis allegheniensis*	Highland, Bath, Augusta, Nelson, Buckingham	Edge of marshes, grasslands, open forests and woodlands, open grasslands, pastures, forest edges, and residential and urban environments (VDGIF, 2016b).	ACP would impact a limited amount of wetland and open grassland habitat within the GWNF; however, construction activities would impact open forests and woodland communities (refer to section 4.4.6). Impacts would include short term removal of habitat and disturbance. There is potential for mortality or injury during construction; however, it is anticipated that fishers would move out of the construction area.	This species is found in a variety of habitats, including grasslands and forest edges. After completion of construction, the construction right-of-way would be restored as outlined in the *COM Plan* (see appendix G), and least weasels could occupy this habitat.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
Allegheny Woodrat *Neotoma magister*	Highland, Bath, Augusta	Blue Ridge to the wet in wooded bottomlands, banks, caves, and cliffs (VDGIF, 2016l).	Field surveys documented four rock outcrops that are potentially suitable for woodrat; Allegheny woodrat presence is assumed at two rock outcrops crossed by the ACP construction workspace. Construction activities would result in Refer to the discussion of impacts on Allegheny woodrat in table R-1.	One of the rock outcrops with assumed Allegheny woodrat presence would be avoided by HDD. Atlantic would implement the *COM Plan* (see appendix G) to control sediment erosion and restore the right-of-way. Sedimentation from stormwater runoff during construction could fill underground crevices used as habitat, degrading suitable habitat. Silt fencing should be installed in areas where this is a possibility along the construction workspace. Based on FS comments filed February 1, 2017 regarding Atlantic's Allegheny woodrat survey reports, additional avoidance, minimization, and mitigation measures are required to address known woodrat habitat within the ACP project area and are currently pending.
BIRDS				
Cooper's Hawk *Accipter cooperii*	All Counties Crossed / uncommon permanent resident	Nests in a wide variety of forest types, including riverine woodlands. Forages in areas mixed with forests and openings. Winters in mostly mixed forests or pine woods; nests in trees and feeds on birds (VDGIF, 2016b).	ACP would primarily impact forested habitat within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting habitat. Construction could disturb nesting hawks if it occurs during the nesting season, and potentially result in loss of nest and eggs. Following construction, the permanent right-of-way could be used as foraging habitat.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Impacts on forested habitat would be long term to permanent; however, these impacts would be localized and adjacent habitat would be available. Atlantic could create additional foraging habitat within the permanent right-of-way following construction. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
Sharp-Shinned Hawk *Accipter striatus velox*	All Counties Crossed / uncommon and permanent resident; common during spring and fall migration	Breed in mature forests and riparian habitats; nests in trees and feeds on birds. More frequently found in conifers in low elevations and in deciduous trees at high elevations (VDGIF, 2016b).	ACP would primarily impact forested habitat within the GWNF (refer to section 4.4.6). Impacts would include short- to long-term impacts on foraging habitat, and long-term to permanent removal of nesting habitat. Construction could disturb nesting hawks if it occurs during the nesting season, and potentially result in loss of nest and eggs. Following construction, the permanent right-of-way could be used as foraging habitat.	The conservation measures for this species would be similar to those described above for the Cooper's Hawk.
Northern Saw-Whet Owl *Aegolius acadicus*	Highland, Bath, Augusta, Cumberland / probable breeder	Blue Ridge and mountains west of Shenandoah River. High elevation, mature, coniferous forests, sometimes mixed or	Call surveys were conducted on GWNF and no northern saw-whet owls were audibly or visually detected. Surveys determined that little to no habitat that would be considered	The conservation measures for this species would be similar to those described above for the Cooper's Hawk.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
	at high elevations in western Virginia; rare transient and winter visitor statewide; rare and local summer resident at higher elevations.	deciduous forest, with open understory, and riverside habitat nearby. Wooded habitat includes coniferous swamps, disturbed deciduous woods, savannas, riverside forest, and shrub-steppe habitat; nests in tree cavities and feeds on small mammals (CLO, 2016b).	suitable breeding habitat for this species would be crossed by the ACP construction workspace within the GWNF. Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting hawks if it occurs during the nesting season, and potentially result in loss of nest and eggs. Following construction, the permanent right-of-way could be used as foraging habitat.	
Golden Eagle *Aquila chrysaetos*	Highland, Augusta, Nelson / sub-population of 200-1,000 individuals winter in Virginia.	Build nests on cliffs or in the largest trees of forested stands. Avoid nesting near urban habitat or densely forested habitat; feeds primarily on small mammals, but can take large prey such as cranes, wild ungulates, and domestic livestock (FWS, 2011j).	Golden eagle surveys were conducted in the GWNF between March 5-8, 2016 and no eagles were observed. Although golden eagles were not observed along the route during the nesting season within the GWNF, they were observed outside the GWNF and there is a potential for wintering golden eagles to occur in the ACP project area along the Allegheny and Blue Ridge Mountains. Telemetry data collected from 2006-2015 identified 54,382 telemetry locations concentrated on high ridges throughout the GWNF. Construction activities could disturb golden eagles in their winter habitat. Disturbances near areas that are important for roosting or foraging can stress eagles to a degree that leads to reproductive failure or mortality elsewhere (FWS, 2011j).	Atlantic committed to having a qualified biological monitor walk ahead of clearing crews and search for golden eagles to make sure they are not inadvertently harmed by construction or clearing activities. Impacts and conservation measures related to golden eagles are described in more detail in in section 4.5.3.
Hermit Thrush *Catharus guttatus*	All Counties Crossed / common transient and uncommon winter resident; rare and local summer resident at higher elevations. Breeding occurs in Highland County.	Breeds in high elevation northern hardwood / coniferous forests in Bath and Highland Counties. Winters in borders of winter swamps in thick hummocks where there are plentiful fruits; ground-nesting and forages on insects, small amphibians and reptiles, and fruits (VDGIF, 2016b).	ACP would impact a limited amount of high elevation northern hardwood /coniferous forest (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting thrush if it occurs during the nesting season, and potentially result in loss of nest and eggs.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Impacts on forested habitat would be long term to permanent; however, these impacts would be localized and adjacent habitat would be available. Atlantic committed to conducting maintenance of the permanent right-of-way outside of the migratory bird nesting season. Atlantic also committed to incorporate regionally-specific and native forb seeds based on GWNF consultation in its traditionally all-grass seed mix during restoration, and has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
				13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
Swainson's Thrush *Catharus ustulatus*	All Counties Crossed / common transient and rare winter visitor statewide; rare summer resident and probable breeder at Mt. Rogers.	Breeds in high elevation spruce and northern hardwood forests especially in low damp areas near water, where understory is sparse to moderate. Occurs in both young stands and mature forests. Prefers forests interiors; occasionally breeds in mixed woodlands. Nests in crotch close to trunk or on a horizontal limb of a spruce of fir tree. Forages on insects and wild fruits (VDGIF, 2016b).	ACP would impact limited high elevation coniferous or northern hardwood forest habitat (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting thrush if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Brown Creeper *Certhia americana*	All Counties Crossed / uncommon to common transient and winter visitor; rare summer resident at higher elevations.	Breeds in dense, high elevation coniferous, deciduous, or mixed woodlands, wooded swamps with standing dead trees and loose bark; nests and forages insects on trees, also forages on seeds and other plant material (VDGIF, 2016b).	ACP would primarily impact deciduous forested and woodland habitat within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting creepers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Sedge Wren *Cistothorus platenis*	Augusta, Bath / rare transient; rare and irregular summer visitor/resident; nomadic breeder; breeding occurs in Augusta and Bath Counties.	Breeds in sedge meadows, and shallow sedge marshes with scattered shrubs and little to no standing water. Winters in drier portions of fresh marshes; nests in shrubs and tall sedges or grasses and is an insectivore. Very limited in available habitat in Virginia (VDGIF, 2016b).	ACP would impact a limited amount of wetland and open grassland habitat (less than one acre) within the GWNF. Impacts would include short term removal of nesting, foraging, and wintering habitat. Construction could disturb nesting wrens if it occurs during the nesting season, and potentially result in loss of nest and eggs.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Impacts on herbaceous habitat would be short term and localized. Atlantic also committed to wetland restoration, as well as conducting maintenance of the permanent right-of-way outside of the migratory bird nesting season. Atlantic also committed to incorporate regionally-specific and native forb seeds based on GWNF consultation.
Olive-Sided Flycatcher *Contopus cooperi*	Highland / rare transient statewide, possible breeder in extreme northern Virginia along border with West Virginia, mostly above 5,000 feet.	Breeds in high elevation coniferous (spruce) forests near edges and clearings, often along wooded streams and borders of northern bogs and muskegs, burned over areas with a few dead trees for perches. Prefers to be near water. Mainly found in	ACP would impact limited suitable habitat for this species (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting and foraging habitat. Construction could disturb nesting flycatchers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
		spruce-fir forest areas with dead trees and openings; nests in trees and is an insectivore (especially bees) (VDGIF, 2016b).		
Mourning Warbler *Geothlypis philadelphia*	Highland, Bath, Augusta / rare transient; rare summer resident in Highland, Bath, and western Augusta Counties.	Breeds in dense underbrush in high elevation coniferous and northern hardwood forest, as well as high elevation forest clearings grown to brambles, shrubs and saplings. Prefers blackberry thickets; ground nesting bird and forages on insects and fruits (VDGIF, 2016b).	ACP would impact a limited amount of high elevation coniferous and northern hardwood forest within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting and foraging habitat in mature high elevation forest habitat, as well as short term removal of nesting and foraging habitat in high elevation shrub-scrub habitat. Construction could disturb nesting warblers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	Atlantic would adhere to TOYR for migratory birds in the GWNF as outlined in the *Migratory Bird Plan* (see table 2.3.1-1) and the *COM Plan* (see appendix G), and construction and restoration plans (see table 2.3.1-1). Impacts on shrub-scrub habitat would be short- to long-term depending on the species. These impacts would be localized and adjacent habitat would be available. This species occupies high elevation forest clearings grown to brambles; therefore, the ACP has the potential to create suitable habitat for this species through regeneration of parts of the cleared right-of-way.
Red Crossbill *Loxia curvirostra*	Highland, Bath, Augusta / rare and irregular transient and winter visitor; rare and irregular summer resident at high elevations	Breeds and winters in high elevation coniferous forests; occasionally winters in hardwood forests; tree nesting bird that forages on conifer seeds (VDGIF, 2016b).	ACP would impact limited high elevation coniferous forest that could serve as suitable habitat for this species within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting crossbill if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Swamp Sparrow *Melospiza georgiana*	All Counties Crossed / uncommon to locally common transient and uncommon to rare winter resident; rare summer resident in Highland County.	Breeds in high elevation bogs in Highland County; winters in fresh waters with herbaceous cover; nests in shrubs and tall grasses and forages on seeds, fruits, and aquatic vegetation (VDGIF, 2016b).	ACP would impact a limited amount of high elevation wetland and successional terrestrial herbaceous habitat within the GWNF (refer to section 4.4.6). Impacts would include short term removal of nesting, foraging, and wintering habitat. Construction could disturb nesting sparrows if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Sedge Wren.
Nashville Warbler *Oreothlypis ruficapilla*	All Counties Crossed / rare to uncommon transient; rare and local summer resident in Bath,	Breeds mainly in small- to medium sized spruce or fir trees along edges of high elevation bogs and edges of spruce-fir forests. Prefers forest openings above 4,000 feet; ground-nesting bird that forages on	ACP would impact a limited amount of high elevation wetland and successional terrestrial forest and herbaceous habitat within the GWNF (refer to section 4.4.6). Impacts would include short term, long-term to permanent removal of nesting, foraging, and wintering habitat. Construction could	The conservation measures for this species would be similar to those described above for the Hermit Thrush. Atlantic also committed to conducting maintenance of the permanent right-of-way outside of the migratory bird nesting season.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
	Augusta, and Highland Counties	insects and insect larvae (VDGIF, 2016b).	disturb nesting warblers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	
Northern Waterthrush *Parkesia noveboracensis*	All Counties Crossed / uncommon transient; rare and local summer resident at higher elevations; summer residency recorded in Highland County.	Breeds in high elevation riparian corridors, wooded swamps and bogs; ground-nesting bird that forages on insects, snails, and occasionally small fish (VDGIF, 2016b).	ACP would impact a limited amount of high elevation riparian habitat (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting waterthrush if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Cerulean Warbler *Setophaga cerulea*	All Counties Crossed / uncommon to locally common transient and summer resident; rare local summer resident near Blue Ridge and mountains farther west.	Favors mature mixed mesophytic hardwood forests with canopy gaps, generally above 2,000 feet; nests in trees and forages on insects and plant material (VDGIF, 2016b).	ACP would primarily impact deciduous forested and woodland habitat, including a limited amount of alluvial forest, within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting warblers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
Blackburnian Warbler *Setophaga fusca*	Highland, Bath, Augusta, Nelson / rare to uncommon transient; uncommon summer resident above 1,600 feet elevation.	Breeds in high elevation mature conifer forests (spruce-fir, hemlock) in northern areas; prefers ridgetop oak forests with closed canopies mixed with conifers in Southern Appalachians. Most prevalent above 3,500 feet and occurs less frequently down to 1,600 feet elevation; nests in trees and forages on insects and spiders (VDGIF, 2016b).	ACP would primarily impact deciduous forested and woodland habitat, including a limited amount of high-elevation forests, within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting warblers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Magnolia Warbler *Setophaga magnolia*	All Counties Crossed / uncommon spring and common fall transient east of the Blue Ridge; common transient	Nests in high elevation conifers, hemlock, larch, spruce, and fir. Favors spruce or fir forests of both mature and young stands. Also found around bogs with spruce and fir present. May occur in mixed forests; rarely	ACP would impact little to no coniferous forest habitat that could serve as suitable habitat for this species (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting warblers if it occurs during the	The conservation measures for this species would be similar to those described above for the Hermit Thrush.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
	and common resident and breeder in northwest Highland County. Rare to uncommon at other high elevations.	occurs in hemlocks and avoids pure hardwood forests; nests in trees and forages on insect larvae, adult insects, and spiders (VDGIF, 2016b).	nesting season, and potentially result in loss of nest and eggs.	
Red-Breasted Nuthatch *Sitta canadensis*	All Counties Crossed / locally common transient and winter visitor; locally common summer resident in Mt. Rogers area; and locally uncommon to rare resident elsewhere at high elevations.	Breeds in high elevation coniferous forests, sometimes mixed woodlands, Winters mainly in coniferous forests, but also frequents mixed woodlands with cone-bearing trees. Favors mature conifers and often found in residential woodlands. Nests in rotten stub or dead branch usually excavated. Forages on small insects of seeds, especially of spruce, pine, and fir (VDGIF, 2016b).	ACP would impact limited high elevation coniferous forest habitat; however, it would impact pine-oak woodlands which could provide suitable wintering habitat for this species (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting nuthatch if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Yellow-Bellied Sapsucker *Sphyrapicus varius*	All Counties Crossed / common to uncommon transient and winter resident; rare and local summer resident over 3,500 feet in the mountains.	Breeds in high elevation mixed hardwood-conifer forests, especially near fresh water and openings. Also found in high elevation orchards. Typically, not found in deep, dense woods; nests in tree cavities and forages on tree sap, insects, and fruit (VDGIF, 2016b).	ACP would primarily impact deciduous forested and woodland habitat, including a limited amount of high-elevation forests, within the GWNF (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting sapsuckers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.
Winter Wren *Troglodytes troglodytes*	All Counties Crossed / uncommon transient and winter resident. Uncommon to locally common summer resident in spruce-dominated forest in Mt. Rogers area; uncommon to rare in summer in	Breeds in or near dense undergrowth of high elevation damp coniferous forests, in thickets near woodland streams, banks of marshy ditches, piles of slash, boreal bogs, usually with a dead log from which to sing. Mainly breed in spruce-fir forests that have tangles, uprooted trees, and other cover. Also use dark ravines, under hemlocks or beneath hardwoods; nests in tree cavities and forages on	ACP would impact little to no coniferous forest or woodland habitat that could serve as suitable habitat for this species (refer to section 4.4.6). Impacts would include long term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting sapsuckers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
	Shenandoah National Park and scattered locations elsewhere, mostly at high elevations, through present in summer at lower elevations in extreme southwest.	insects, insect larvae, millipedes, and spiders (VDGIF, 2016b).		
Golden-Winged Warbler *Vermivora chrysoptera*	Bath, Highland, Augusta, Nelson / rare to uncommon transient; very local summer resident in the mountains and valleys.	Prefer old field grassland, shrubland areas with scattered trees above 2,500 feet elevation, generally near edges of mature forests. Once a disturbed area becomes too old, this species disappears; ground-nesting bird that forages on caterpillars, moths, and other insects and spiders (VDGIF, 2015b).	ACP would impact a limited amount of successional terrestrial forest and herbaceous habitat within the GWNF (refer to section 4.4.6). Impacts would include short term, long-term to permanent removal of nesting, foraging, and wintering habitat. Construction could disturb nesting warblers if it occurs during the nesting season, and potentially result in loss of nest and eggs.	The conservation measures for this species would be similar to those described above for the Hermit Thrush. Because this species prefers early-successional habitats, ACP has the potential to create suitable habitat for this species through maintenance of the right-of-way outside of the nesting season.
REPTILES				
Spotted Turtle *Clemmys guttata*	Augusta, Nelson, Buckingham, Cumberland, Prince Edward, Dinwiddie, Brunswick, Greensville, Southampton, Suffolk, Chesapeake	Shallow fresh water wetlands including vernal pools, sinkhole ponds, ponds, ditches, flooded fields, streams, floodplains, bogs, marshy pastures, and forested wetlands (VDGIF, 2016b).	Atlantic would cross limited wetland habitat (less than 1 acre), alluvial and floodplain forests, and woodland seep habitat within the GWNF (refer to section 4.4.6). Potential impacts would include short- to long-term removal of habitat, short-term increase in sedimentation and changes to hydrology; potential short-term disturbance to foraging habitat and species. Potential mortality or injury from construction equipment; however, it is anticipated that turtles would move out of the construction area.	Impacts on water quality would be temporary. Atlantic would implement the *COM Plan* (see appendix G), which includes sediment and erosion control measures for both the wetland and waterbody crossings. Impacts on forested habitat would be long term to permanent; however, these impacts would be localized and adjacent habitat would be available.
Timber Rattlesnake *Crotalus horridus* *(Not currently included on GWNF locally rare list; however, GWNF plans to add this species)*	Highland, Bath, Augusta, Nelson, Buckingham	Hibernates in fissures in rock ledges or talus slopes. Utilizes diverse forests and open habitats when active (VDGIF, 2015b).	GWNF has reported an occurrence of the timber rattlesnake within the ACP project area. Potential impacts on timber rattlesnake suitable denning habitat located within the construction workspace would be permanent, as construction would require the removal of rocky outcrops and boulder slabs. However, removal of forested vegetation along the right-of-way could increase solar radiation of adjacent rocky outcrops, potentially creating more favorable	Atlantic would implement Atlantic's *Snake Conservation Plan* (see table 2.3.1-1) to minimize impacts on this species and its habitat. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
			habitat. Based on 2016 surveys on GWNF, no timber rattlesnakes or signs of rattlesnakes were observed. However, suitable habitat exists for this species throughout the proposed pipeline corridor, so presence is assumed for this species.	
Smooth Greensnake *Opheodrys vernalis*	Highland, Bath, Augusta, Nelson	Found in upper elevations in the Blue Ridge Mountains. Grassy fields, balds, bogs, open woods, and bramble patches. Will take cover under rock piles and logs; sometimes found as road kills. May aggregate in winter months in ant mounds (VDGIF, 2016b).	ACP would impact woodlands and a limited amount of successional terrestrial forest and herbaceous habitat within the GWNF (refer to section 4.4.6). Potential impacts would include short-to long-term removal of habitat. Potential mortality or injury from construction vehicles and equipment; however, it is anticipated that greensnakes would move out of the construction area.	After completion of construction, the construction right-of-way would be restored as outlined in the *COM Plan* (see appendix G), and smooth greensnake could occupy this habitat. Atlantic committed to maintaining low speed limits on the construction right-of-way and access roads to minimize collisions with wildlife.
Northern Coal Skink *Plestiodon anthracinus anthracinus*	Highland, Bath, Augusta, Nelson	Rarely encountered in Virginia. Have been found on limestone ledges, beneath flat slabs of sandstone, and under rocks on slopes of road cut through mixed forest or in hardwood forests. Forage on insects and other invertebrates (VDGIF, 2016b).	ACP would primarily impact deciduous forested and woodland habitat, including a limited amount dry-mesic calcareous forest and boulderfield forest and woodland, within the GWNF (refer to section 4.4.6). Impacts include long term to permanent habitat loss, degradation of habitat quality (potential change in microclimate habitat), and fragmentation, and potential introduction of barriers to wildlife corridors. There is potential for mortality or injury during construction; however, it is anticipated that skinks would move out of the construction area.	Construction and operation of ACP would result in permanent habitat loss and fragmentation of woodland habitat; however, these impacts would be localized and adjacent habitat would be available. Although woody species would be allowed to regenerate within the construction right-of-way, the permanent right-of-way would be maintained clear of tree and shrub species. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic has also committed to maintaining low speed limits on the construction right-of-way and access roads to minimize collisions with wildlife.
AMPHIBIANS				
Eastern Tiger Salamander *Ambystoma tigrinum tigrinum*	Augusta, Nelson	Breeding habitat includes limestone sinkhole ponds associated with wetlands. Terrestrial habitat includes mature forests (VDGIF, 2016m). 2016 surveys No tiger salamanders were identified on GWNF during 2016 surveys.	Additional surveys pending; to be completed in June 2017. The greatest threat to this species is the loss of breeding ponds and adjacent woodlands. Direct impacts on breeding habitat include temporary sedimentation and potentially long-term alteration of hydrology associated with the sinkhole pond. Removal of adjacent mature forests would reduce terrestrial habitat available to adults. Construction activities could also fragment or isolate salamanders from their breeding or terrestrial habitat.	GWNF recommended additional surveys of sinkhole ponds within the GWNF, and a 1,000-foot buffer of all sinkhole ponds regardless of presence as they may serve as breeding habitat. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Atlantic continues to consult with the GWNF regarding the conservation measures for this species.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
FISH				
Potomac Sculpin *Cottus girardi*	Highland, Bath, Augusta	Rocky runs and pools of creeks and small to medium rivers, often near vegetation (Page and Burr, 1991). Per correspondence with the GWNF, this species is known in the Cowpasture River (FS, 2016c).	Atlantic would cross the Cowpasture River and unnamed perennial tributaries of Cowpasture River at six crossing locations, one of which is located within the GWNF. Surveys were conducted in 2016 on the GWNF; no Potomac sculpin were observed at crossing locations. Potential impacts would include short- to long-term removal of riparian habitat, short-term increase in sedimentation and changes to hydrology; potential short-term disturbance to foraging habitat and species. Potential mortality or injury from construction equipment; however, it is anticipated that sculpin would move out of the construction area.	Although the crossing of the Cowpasture River is not located within the GWNF, there is potential for this species to also occur within the perennial tributaries to the Cowpasture River, which are crossed by ACP on the GWNF. In addition, there is potential for increased turbidity and sedimentation from the crossings of the Cowpasture River and its tributaries on downstream populations. These waterbodies would be crossed utilizing a dry crossing technique (i.e., cofferdam, dam and pump, or flume). Atlantic would implement the *Virginia Fish Relocation Plan* (see table 2.3.1-1) to remove all fish species trapped within areas proposed for dewatering or in-stream work prior to initiating construction. Based on Atlantic's Soil Erosion and Sedimentation Modeling Report, construction activities would result in increased erosion for the first two years within the Scotchtown Draft-Cowpasture River watershed (374 percent above baseline levels), after which it is suggested that sedimentation would return to baseline erosion quantities. See section 4.3.2.6 in the FEIS for a more thorough discussion of the sediment report. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*.
GASTROPODS (Snails)				
Organ Cavesnail *Fontigens tartarea*	Highland, Bath	Inhabits caves under flat rocks in streams with moderate current. Limestone rocks are preferred (NatureServe, 2015).	Although no caves were identified within the survey corridor on the GWNF, ACP would cross approximately 1.2 miles of karst terrain within the GWNF, and a cave entrance within the Poplar Hollow Karst area is located within 650 feet of the proposed ACP centerline. The subterranean connectivity of these systems are unknown; therefore there is the potential for impacts on adjacent or connected cave systems downstream of the construction right-of-way. Construction activities could alter water flow patterns or increase sediment and contaminant loads,	Atlantic would implement sediment and erosion control measures and the *SPCC Plan* (see table 2.3.1-1) to minimize contamination of surface or groundwater systems. Atlantic would also implement the *Karst Mitigation Plan* (see appendix I) to minimize potential impacts on this species and its habitat. Consultation with GWNF is ongoing regarding impacts on karst and potential impacts on this species.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
			which could lead to a reduction or degradation of available habitat. Organ cavesnail habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush snails, or alter travel corridors (FWS, 2011i).	
BIVALVES (Freshwater Mussels)				
Notched Rainbow *Villosa constricta*	Bath, Augusta, Buckingham, Cumberland, Nottoway, Dinwiddie, Brunswick, Greensville, Southampton	Fast-flowing, clean water in substrates that contain relatively firm rubble, gravel, and sand substrates swept free from silt. Bury in the substrate in shallow riffle and shoal areas. Known or likely from the Cowpasture, Calfpasture, Stuart Run, Lick Run, and Mill Creek drainages (VDGIF, 2016b).	Atlantic would cross Cowpasture River, Calfpasture River, Stuart Run, Lick Run, and Mill Creek, and numerous perennial tributaries to these waterbodies either within or outside the boundaries of the GWNF. Surveys were conducted in 2016 on the GWNF; no notched rainbow mussels were observed at crossing locations. All mainline waterbody crossings would be dry crossings (i.e., dam and pump or flume); and there are 8 permanent access road crossings. Potential impacts would include mortality to mussels located at the waterbody crossing location, and short-term increase in sedimentation and changes to hydrology.	Atlantic would implement the FWS and VDGIF Freshwater Mussel Guidelines for Virginia (FWS and VDGIF, 2015) if mussels found in subsequent surveys. Based on Atlantic's Soil Erosion and Sedimentation Modeling Report, construction activities would result in increased erosion for the first year within the Cabin Creek-Mill Creek, Chair Draft-Calfpasture River, Lick Run-Stuart Run, and Scotchtown Draft-Cowpasture River watersheds (approximately 250 to 400 percent above baseline levels), after which it is suggested that sedimentation would return to baseline erosion quantities. See section 4.3.2.6 in the FEIS for a more thorough discussion of the sediment report. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*.
CRUSTACEANS (Amphipods and Isopods)				
Sherando Spinosoid Amphipod *Stygobromus* sp. 7	Augusta	Cave and springs (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.
Big Levels Springs Amphipod *Stygobromus* sp. 18	N/A	Cave and springs.	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.
Greenbrier Valley Cave Isopod *Caecidotea holsingeri*	Bath / Butler Sinking Creek Cave System	Inhabits caves in riffle area of streams, in stream gravel, under rocks, on decaying wood in streams and occasionally drip pools (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
ARACHNIDS				
A cave obligate spider *Phanetta subterranea*	N/A	Subterranean obligate species; found on the undersides of rocks (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.
MYRIAPODS (Centipedes and Millipedes)				
Faithful Millipede *Cleidogona fidelitor*	Augusta / Mt. Torry near Sherando Lake	Leaf litter within mixed hardwoods (NatureServe, 2015).	Construction activities would result in the permanent removal of forested habitat and potential mortality of individuals by construction vehicles or equipment.	This species is known to inhabit leaf litter in deciduous forests, a habitat that is common across the GWNF. Atlantic has committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Suitable habitat is very common across the GWNF (FS et al., 2002).
Grand Caverns Blind Cave Millipede *Zygonopus weyeriensis*	Highland, Bath, Augusta / Butler Sinking Creek Cave System	Cave and springs (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.
INSECTS				
Springtails				
A springtail *Cliforga alleganiensis*	Bath / Warm Springs Mountain and James River	Oak forests with predominately rhododendron understory (NatureServe, 2015).	Construction activities would result in the permanent removal of forested habitat and potential mortality of individuals by construction vehicles or equipment.	Atlantic committed to avoidance of potential habitat for this species in the Warm Springs Mountain area and areas along the James River. Atlantic would cross the James River utilizing the HDD method, therefore, impacts would not be anticipated in that area. Atlantic has also committed to replant all ATWS and the outermost portions of the construction workspace (20 feet on working side and 13 feet on spoil side) with a combination of indigenous tree and shrub seedlings on NFS lands.
A cave springtail *Pseudosinella gisini virginia*	No documented occurrences of this species from counties crossed by the ACP.	Species is only known from caves; frequently found in the wetter parts of caves containing organic debris (FS, 2001a).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.
Beetles				
A cave beetle	No documented occurrences of this species from	Damp mud banks and caves (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
Pseudanophthalmus hypertrichosis	counties crossed by the ACP.			
Maddens Cave Beetle *Pseudanophthalmus limicola*	No documented occurrences of this species from counties crossed by the ACP.	This species has no means of dispersal from caves. Occur in the twilight zone or deeper in or on moist soil, near streams or drip areas. Found under rocks or debris (NatureServe, 2015).	The potential project impacts on this species would be similar to those described above for the Organ Cavesnail.	The conservation measures for this species would be similar to those described above for the Organ Cavesnail.
Dragonflies				
Black-Tipped Darner Dragonfly *Aeshna tuberculifera*	Highland, Bath, Augusta	Boggy ponds and lakes with emergent vegetation. Adults are active late June to late October; most common in the fall (VDCR and VDGIF, 2013).	Atlantic would impact less than 1 acre of wetland habitat within the GWNF. Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove suitable sinkhole pond habitat, including emergent vegetation that could provide shelter and foraging habitat; habitat assessment results are pending. Vehicle collisions could cause injury or mortality to adult dragonflies.	Atlantic would implement the *COM Plan* (see appendix G), which includes implementation of the VDEQ *Virginia Erosion and Sediment Control Handbook*. GWNF has requested that Atlantic conduct surveys for sinkhole ponds; consultation is ongoing for this species.
Harpoon Clubtail Dragonfly *Gomphus descriptus*	Highland / U.S. 250 near Head Waters	Clean, sandy and rocky rivers with strong current. Adults are active late May to late June (VDCR and VDGIF, 2013).	There are 10 perennial waterbody crossings by the pipeline and three perennial waterbody crossings by access roads on the GWNF (refer to section 4.6.5). Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove suitable riparian habitat that could provide shelter and foraging habitat. Vehicle collisions could cause injury or mortality to adult dragonflies.	Impacts on water quality would be temporary; based on Atlantic's Soil Erosion and Sedimentation Modeling Report, construction activities sedimentation would return to baseline erosion quantities within 3 years of construction. Additional discussion on the sediment report can be found in section 4.3.2.6. Impacts on water quality would be limited to the time needed to construct the waterbody crossing. Atlantic would implement the sediment and erosion control measures identified in the *COM Plan* (appendix G), including monitoring turbidity at all state-designated coldwater fisheries on NFS lands as outlined in the Water Quality Monitoring Plan section of the *COM Plan*. Atlantic would implement the *COM Plan* (see appendix G), which includes implementation of the VDEQ *Virginia Erosion and Sediment Control Handbook*.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
Rapids Clubtail Dragonfly *Gomphus quadricolor*	Bath, GWNF correspondence indicates this species has been documented in Cowpasture River.	Inhabits pools of rapid streams and rivers. Adults are active early May to mid-July (VDCR and VDGIF, 2013).	The potential project impacts on this species would be similar to those described above for the Harpoon Clubtail Dragonfly.	The conservation measures for this species would be similar to those described above for the Harpoon Clubtail Dragonfly.
Northern Pygmy Clubtail Dragonfly *Lanthus parvulus*	Highland	Running waters with strong currents over clean gravel that contains sand and silt deposits. Adults are active May through July (VDCR and VDGIF, 2013). Desktop habitat assessment of the proposed route within the GWNF identified no potential habitat for these species.	The potential project impacts on this species would be similar to those described above for the Harpoon Clubtail Dragonfly.	The conservation measures for this species would be similar to those described above for the Harpoon Clubtail Dragonfly.
Butterflies and Moths				
Silver-Bordered Fritillary Butterfly *Boloria selene*	Bath, Highland, Nelson	Lives in wet meadows and marshes, often at sites with taller vegetation. Larval hosts on various violet species (*Viola* spp.) found in wetlands. Adults are active from June through September (VDCR and VDGIF, 2013). Potential host plants for this species were observed within the GWNF; however, no individuals were documented.	Atlantic would impact less than 1 acre of wetland habitat within the GWNF. Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Construction activities could remove suitable larval host plants and foraging plants; and could kill larvae if present.	Although suitable habitat for this species was observed during surveys on the GWNF, no individuals were observed, therefore, impacts are not anticipated. As outlined in the *COM Plan* (see appendix G), and *Restoration and Rehabilitation Plan* (see appendix F), Atlantic committed to incorporate regionally-specific and native forb seeds in its traditionally all-grass seed mix to create pollination habitat, which may reduce impacts on this species. Atlantic has also committed to limiting the use of pesticides and herbicides along the construction and permanent rights-of way.
Northern Crescent Butterfly *Phycoides cocyta*	Augusta, Bath	Prefers barren habitats, but also associated with streams; more woodland-based than similar species. Its larval host plants are in the genus *Aster* (VDCR and VDGIF, 2013). Adults are active from June through July. Field habitat assessments identified larval host plants for this species within the GWNF; however, no individuals were observed.	Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Construction activities could remove suitable larval host plants and foraging plants; and could kill larvae if present.	This species may benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat. In addition, as outlined in the *Restoration and Rehabilitation Plan* (see appendix F), Atlantic committed to incorporate regionally-specific and native forb seeds in its traditionally all-grass seed mix to create pollination habitat, which may reduce impacts on this species. *Aster* species would be incorporated into some seed mixes. Management of the right-of-way that encourages nectar sources would be beneficial to this species. Atlantic has also committed to limiting the use of pesticides and herbicides along the construction and permanent rights-of way.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
Chestnut Clearwing Moth *Synanthedon castaneae*	N/A; this species has not been recently documented in Virginia; the only record is from Falls Church.	Its host plant is the American chestnut (*Castanea dentata*) and possibly the chinquapin (*Castanea pumila*) (VDCR and VDGIF, 2013). Potential host plants for this species were observed within the GWNF; however, individual surveys were not conducted. Because individual surveys were not conducted, presence is assumed in suitable habitat.	Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Construction activities could remove suitable larval host plants and foraging plants; and could kill larvae if present.	Surveys indicate that American chestnut trees were uncommon along the survey corridor in the GWNF. Atlantic would minimize use of herbicides and pesticides along the construction and permanent rights-of-way, and would allow tree species to regenerate outside the permanent right-of-way after construction is complete as outlined in the *Restoration and Rehabilitation Plan* (see appendix F). Atlantic has also committed to limiting the use of pesticides and herbicides along the construction and permanent rights-of way.
VASCULAR PLANTS				
American Willow-herb *Epilobium ciliatum ssp. ciliatum*	Highland, Bath, Augusta	Bogs, seeps, wet meadows, and wet clearings; usually at higher elevations (Virginia Botanical Associates, 2016). Surveys completed in 2015 identified this species within the GWNF.	Although construction activities would not directly remove individuals, they may encourage the spread of invasive and noxious plants. Regular maintenance of the construction right-of-way would also cause regular disturbance and potential mortality of this species located adjacent to the construction workspace.	Atlantic would implement the *COM Plan* (see appendix G), which includes measures to control the spread of invasive and noxious weeds, and to control erosion and sedimentation. Atlantic would implement dust control as described in the *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1).
Fraser's Marsh St. John's-wort *Hypericum fraseri*	Bath, Highland	Bog, mafic fens, seeps, seepage swamps, depression ponds, and swamps, usually in peaty, nutrient-poor soils (Virginia Botanical Associates, 2016). Surveys identified three populations with a total of approximately 3,815 individuals of this species 1,000 feet downslope from a proposed access road associated with Brown's Pond Conservation Site.	Although construction activities would not directly remove individuals, access road use could contribute to increased dust cover on plants, erosion and sedimentation issues, and may also encourage the spread of invasive and noxious plants.	Atlantic would implement the *COM Plan* (see appendix G), which includes measures to control the spread of invasive and noxious weeds, and to control erosion and sedimentation. Atlantic would implement dust control as described in the *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1).
American Ginseng *Panax quinquefolius (Not a GWNF locally rare species; state-threatened species)*	Highland, Bath, Augusta, Nelson, Buckingham, Cumberland, Prince Edward	Cove forests, and mesic to dry slope forests in base-rich soils (Virginia Botanical Associates, 2016). Identified 20 populations of this species in Highland County within GWNF within the NFS Road Conservation Site.	Construction activities would directly remove individuals located within the construction right-of-way, remove or degrade suitable habitat for this species within and adjacent to the construction right-of-way, and disturb the seed bed. Construction activities may also encourage the spread of invasive and noxious plants. Regular maintenance of the construction right-of-way would also cause	Atlantic would develop and implement an American Ginseng Relocation Plan, which will be provided to the GWNF for review and approval in Spring 2017. This plan will specify when and how harvest and transplantation will occur where there are potential impacts on this species. Replanting would be done in accordance to FS BMPs in coordination with the FS.

TABLE R-4 (cont'd)

Locally Rare Species with Potential Habitat or Populations within the George Washington National Forest

Species *Scientific Name*	County / Occurrence	Habitat	Potential Project Impacts	Conservation Measures
			regular disturbance and potential mortality of this species.	
Yellow Nodding Ladies'-tresses *Spiranthes ochroleuca*	Highland, Bath	Open forests, clearings, and meadows often at higher elevations (Virginia Botanical Associates, 2016). Surveys identified 1 individual of this species along a proposed access road.	Construction activities would directly remove individuals located within the access road, remove or degrade suitable habitat for this species within and adjacent to the access road, and disturb the seed bed. Access road use could contribute to increased dust cover on plants, erosion and sedimentation issues, and may also encourage the spread of invasive and noxious plants.	Atlantic would adjust or reduce the proposed access road footprint to avoid individual plants where feasible. Atlantic would implement the *COM Plan* (see appendix G), which includes measures to control the spread of invasive and noxious weeds, and to control erosion and sedimentation. Atlantic would implement dust control as described in the *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1).
Three Birds Orchid *Triphora trianthophora ssp. tranthophora*	Bath, Augusta	Mesic slope forests, montane alluvial forests, and large-river floodplain forest. Most often found under hemlocks or in moist soils and moss of old logging roads (Virginia Botanical Associates, 2016). Surveys identified 26 individuals of this species 1,000 feet downslope of a proposed access road associated with Brown's Pond Conservation Site.	Although construction activities would not directly remove individuals, access road use could contribute to increased dust cover on plants, erosion and sedimentation issues, and may also encourage the spread of invasive and noxious plants.	Atlantic would implement the *COM Plan* (see appendix G), which includes measures to control the spread of invasive and noxious weeds, and to control erosion and sedimentation. Atlantic would implement dust control as described in the *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1).
American Vetch *Vicia americana ssp. americana*	Nelson	Dry, shaley or rocky woodlands, forest edges and clearings, riverside prairies and outcrops (Virginia Botanical Associates, 2016). Surveys completed in 2015 identified this species within the GWNF; however, it was not found during re-surveys in 2016.	Construction activities would directly remove individuals located within the construction right-of-way, remove or degrade suitable habitat for this species within and adjacent to the construction right-of-way, and disturb the seed bed. Construction activities may also encourage the spread of invasive and noxious plants. Regular maintenance of the construction right-of-way would also cause regular disturbance and potential mortality of this species.	Atlantic would implement the *COM Plan* (see appendix G), which includes measures to control the spread of invasive and noxious weeds, and to control erosion and sedimentation. Atlantic would implement dust control as described in the *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1).

APPENDIX S

STATE-SENSITIVE SPECIES TABLES

TABLE S-1

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
MAMMALS					
West Virginia northern flying squirrel *Glaucomys sabrinus fuscus*	Priority 1 / S2[b]	Pocahontas, Randolph	Red spruce, fir, spruce-hardwood and northern hardwood forests with well-developed understory. Mostly in moist forests with widely spaced mature trees and an abundance of snags (NatureServe, 2015).	Field surveys confirmed that suitable habitat occurs in proximity to a proposed access road near Gibson Knob on the MNF.	Based on West Virginia Terrestrial Habitat data, ACP would impact 6.2 acres of red spruce forest between MPs 63.3 and 71.7, in addition to regenerating red spruce forest in the MNF (refer to table R-1 in appendix R). Clearing of red spruce forest would reduce available suitable habitat for this species, and if species present, there is potential for injury or mortality of this species during tree clearing.
Eastern red bat *Lasiurus borealis*	Priority 1/ S4	Pocahontas, Randolph	Wide range of forested and semi-forested habitats, including developed areas with large trees and intensively managed forests. Roost trees are usually large hardwood trees in foliage. Active throughout the year when conditions are suitable (NatureServe, 2015).	Eight individuals of this species were captured during mist-net surveys along the ACP and 19 were captured during mist-net surveys along the SHP.	Clearing of forested vegetation would reduce available roosting and foraging habitat. Atlantic and DETI would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. However, because this species is active year-round, there is still potential for injury or mortality of this species during tree clearing. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities.
Hoary bat *Lasiurus cinereus*	Priority 1 / S3	All Counties Crossed	Deciduous and coniferous forests and woodlands, including areas altered by humans. Forages in open areas, including spaces over water and along riparian corridors. Roosts in foliage of large deciduous or coniferous trees, sometimes in rock crevices, rarely in caves. Have been found hibernating in tree trunks, tree cavities, and squirrel's nests. May be found in the southeastern U.S. during the winter months (NatureServe, 2015).	Three individuals of this species were captured during mist-net surveys along the SHP.	Clearing of forested vegetation would reduce available foraging and roosting habitat, although this species is not as common in the southeastern U.S. during the summer months (NatureServe, 2015). Atlantic and DETI would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. However, because this species uses trees to hibernate and may be found in the southeastern U.S. during the winter months, there is also potential for injury or mortality of this species during tree clearing.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Snowshoe hare *Lepus americanus*	S3	Pocahontas, Randolph	Prefers the dense cover of coniferous and mixed forests with abundance understory. Also uses coniferous swamps and second-growth areas adjacent to mature forests, alder fens, and conifer bogs (NatureServe, 2015). The WVDNR indicates that this species has the potential to occur in Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Atlantic has rerouted the ACP to avoid the Cheat Mountain and Back Allegheny Mountain, thus no impacts are anticipated to this species or its habitat.
Southern rock vole *Microtus chrotorrhinus carolinensis*	Priority 1/S2[b]	Pocahontas, Randolph	Cool, moist talus slopes and rocky areas above 915 m elevation within spruce and spruce-northern hardwood mixed forest types; also forested streamside riparian areas dominated by rocks greater than 0.2 m diameter and with abundant woody debris, all habitats require abundant rocks, herbaceous vegetation, and moss. Optimal habitat is ferns/mossy debris near flowing water in coniferous forests (Cassola, 2016a; Orrock and Pagels, 2003).	Surveys were not conducted for this species outside the MNF; 2 moderate-quality habitat sites were identified on the MNF (see table R-1 in appendix R). Suitable habitat potentially present for this species within the project area.	A Central Appalachian endemic, potential impacts on the subspecies include temporary to permanent loss or degradation of habitat; potential injury or mortality of adults and young, as they may be unable to move from the area during construction; direct mortality of adults due to an increase in vehicle activity along roadways used for ACP; site abandonment and decreased fitness, breeding activity, and survivorship of adults due to disturbance from increased noise levels and vibration. Southern rock voles use subsurface burrows which could also be filled by sediment transported from runoff from access roads or construction workspace. Because of its limited mobility, it is vulnerable to localized extirpations due to changes in small occupied area. Atlantic would implement the waterbody crossing methods and sediment and erosion control measures in the FERC *Plan* and *Procedures* (see table 2.3.1-1) to minimize impacts on this species.
Eastern small-footed bat *Myotis leibii*	Priority 1/S1[b]	Pocahontas, Randolph	Hibernates in caves and mines. Also found in mountainous regions in the summer in rocky habitats (e.g., rocky outcrops, talus slopes, ledges) and man-made structures (WVDNR, 2003). Foraging habitat includes riparian forests, upland forests, clearings, strip mines, and ridgetops (NatureServe, 2015).	Five suitable roosting locations were identified during 2016 and 2017 habitat surveys along the ACP survey corridor within the MNF; none of the roosting areas are located within the ACP construction workspace.	Refer to table R-1 of appendix R for discussion of impacts on eastern small-footed bat on the MNF. Atlantic and DETI would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. Tree clearing on rocky slopes may improve summer habitat for this species by increasing solar radiation on potential summer maternity habitat, making habitat more suitable for roosting; however, tree removal would contribute to loss of foraging habitat (FS et al., 2002). Karst

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Little brown bat *Myotis lucifugus*	Priority 1[i]/S2[b]	All Counties Crossed	Roost in cave, buildings, rocks, mines, tunnels, and other man-made structures, and under bridges. Hibernates in caves, tunnels, and mines (NatureServe, 2015).	No bats observed during the 2015 or 2016 surveys on the MNF. Additionally, seven individuals were captured during mist-net surveys along the SHP survey corridor.	Refer to table R-1 of appendix R for discussion of impacts on little brown bat on the MNF. Atlantic and DETI would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. Clearing of forested vegetation reduces available foraging and roosting habitat. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Karst is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Allegheny woodrat *Neotoma magister*	Priority 1/S3[b]	Pocahontas, Randolph	Rocky areas such as caves, deep crevices, and large boulder fields in or around hardwood forests with abundance oaks and other mast-bearing trees. Also known from northern hardwood and oak-pine forests. This species is nocturnal (WVDNR, 2003).	Surveys conducted in 2016 on the Lewis Wetzel WMA resulted in no observations of individuals and identified one low quality potentially suitable habitat location outside of the survey corridor. Surveys conducted in 2016 on the MNF documented Allegheny woodrats along two rock formations along Buzzard Ridge, and suitable habitat near Cloverlick Mountain, although the habitat was considered small.	Because suitable habitat was identified outside SHP project area at Lewis Wetzel WMA, impacts on individuals or suitable habitat are not anticipated at that location. Refer to table R-1 of appendix R for a discussion of impacts on Allegheny woodrat within the MNF. Additional suitable habitat for this species may occur outside the MNF and Lewis Wetzel WMA. Construction activities would cause a direct loss of habitat and contribute to habitat fragmentation. Construction activities may also reduce available foraging habitat for this species. Sedimentation during construction could also fill underground crevices used as habitat. Physical injury and direct mortality of adults and young could occur during construction and maintenance of ACP. Disturbance of or nearby occupied habitat could lead to site abandonment, decreased fitness and breeding activity of adults, and a lower survivorship of adults. Because of its limited mobility and tendency to live in metapopulations, it is vulnerable to localized extirpations due to changes in small areas occupied by the species. This species is a member of the packrat family; thus, it could be harmed by collection of anthropogenic trash and chemically-treated construction waste that is around the access road, Additionally, one of the biggest threats to the species is infection from a nematode parasite, *Baylisascaris procyonis*, which occurs in raccoon feces. Woodrats tend to collect the feces, bringing it back to their dens. While harmless to the raccoon, the parasite results in high mortality rates for Allegheny woodrats. ACP will need to take extra precautions to keep trash picked up, to avoid attracting more raccoons to the construction areas where suitable habitat for woodrats is present. Atlantic and DETI would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1) to minimize impacts on this species.
Tri-colored bat *Perimyotis subflavus*	Priority 1/S2[b]	All Counties Crossed	Roost in caves, rock crevices, trees/foliage, and sometimes in	Bats were observed at Eb's Cave and Waterfall	Refer to table R-1 of appendix R for discussion of impacts on tri-colored bat on the MNF.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			buildings in both wooded and cleared areas. Associated with forested landscapes; most foraging occurs along riparian areas. Hibernates in caves, rock crevices, and mines (NatureServe, 2015).	Cave located within 1 mile of the ACP route during winter surveys on ACP. Two individuals were captured during mist-net surveys along the SHP.	Atlantic and DETI would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. Clearing of forested vegetation reduces available foraging and roosting habitat Karst is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Long-tailed shrew (Rock shrew) *Sorex dispar*	S2S3[b]	Pocahontas, Randolph, Upshur	Deciduous or evergreen forest mountainous areas with loose talus; rocky damp areas with deep crevices covered by leaf mold and root are preferred. May also occur along small mountain streams (NatureServe, 2015).	Surveys were not conducted for this species outside of the MNF; however, suitable habitat potentially present for this species within the ACP project area. Field surveys identified two moderate-quality suitable habitat for long-tailed shrew within the survey corridor on the MNF.	Refer to table R-1 of appendix R for discussion of impacts on long-tailed shrew on the MNF. Potential impacts would include temporary to permanent loss of habitat, and potential injury or mortality of adults and young because this species has limited mobility and may be unable to move from the construction or maintenance areas, or access roads utilized during construction or operations. Other potential impacts are site abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance from the increased noise levels and vibration. Long-tailed shrews use deep crevices in the ground which could also be filled by sediment transported from runoff from access roads or construction workspace. Contamination of the environment and its prey items, leading to bioaccumulation of heavy metals and pesticides is also a concern for this species. Because of its limited mobility, it is vulnerable to localized extirpations due to changes in small occupied area. Atlantic would implement the FERC *Plan*

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					and *Procedures* (see table 2.3.1-1) to minimize impacts on this species.
Southern Water Shrew *Sorex palustris punctulatus*	Priority 1/S1[b]	Pocahontas, Randolph	Undercut banks of high gradient and high elevation (above 900 m), first and second order streams with abundant cover from overhanging rocks, roots, logs, and crevices; the southern water shrew is most abundant along small, swiftly-flowing, rocky, cold streams with abundant vegetation. Specific vegetation associated with the species include moss-covered rocks, rhododendron, yellow birch, hemlock, red spruce, red maple, sugar maple, beech, or tulip tree. The species is dependent on high-quality water. The subspecies is dependent upon high-quality, pristine mountain streams. This is a Central Appalachian endemic subspecies, and exists in discrete and isolated populations across its range in the Appalachians. (Cassola 2016a; NatureServe, 2015).	Surveys were not conducted for this species outside of the MNF; however, suitable habitat is potentially present for this species within the ACP project area. Moderate-quality suitable habitat was identified during field surveys at two waterbody crossing locations on the MNF.	Refer to table R-1 of appendix R for discussion of impacts on southern water shrew on the MNF. Potential impacts would include temporary to permanent loss of suitable habitat, potential injury or mortality of adults and young because this species has limited mobility and may be unable to move from the construction or maintenance areas, as well as access roads utilized during construction or operations. Other potential impacts are site abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance from the increased noise levels and vibration. Sound pressure waves from blasting could also cause injury or mortality to individuals. The species exists in discrete and isolated populations across its range in the Appalachians, making it even more susceptible to local extirpations. Habitat degradation is a major threat to this species, as it is dependent on high-quality streams and is apparently highly susceptible to environmental contamination. Increased sedimentation and turbidity from stormwater run-off during construction into suitable stream habitat could negatively impact this species and its foraging prey. Construction across waterbodies would remove riparian habitat, resulting in decreased habitat suitability and increased erosion potential. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Atlantic would implement the sediment and erosion control measures identified in the FERC *Plan* and *Procedures* (see table 2.3.1-1).
Appalachian eastern spotted skunk	Priority 1/S2[b]	Pocahontas	Prefers forested areas or habitats with significant cover. Occupies burrows (dug by species or those abandoned by	Surveys were not conducted for this species outside of the MNF;	Refer to table R-1 of appendix R for discussion of impacts on Appalachian eastern spotted skunk on the MNF. Suitable habitat potentially present

TABLE S-1 (cont'd)					
West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area					
Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Spilogale putorius putorius			other mammals), underbrush piles, in hollow logs or trees, rock crevices, under buildings or other protected sites (NatureServe, 2015). In the Appalachians, the subspecies is often associated with a dense understory of rhododendron species and mountain laurel (*Kalmia latifoila*) (Thorne and Waggy, 2017; Diggins et al., 2015). Recent research found eastern spotted skunks occupying high elevation spruce forests, especially those with exposed rocky outcroppings in Virginia (Diggins et al., 2015). Research conducted in Pendleton County, West Virginia located the subspecies in areas of oak species mixed with pitch pine canopy and dense mountain laurel understory (Thorne and Waggy, 2017). This subspecies is nocturnal (NatureServe, 2015).	however, suitable habitat potentially present for this species within the ACP project area. Field habitat assessments identified four sites containing moderate to high-quality habitat, and one site with low-quality habitat on the MNF.	for this species within the ACP project area. Potential impacts would include temporary to permanent loss of suitable habitat and potential injury or mortality of adults and young, which may be unable to move from the construction and maintenance areas. Other potential impacts are site abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance from the increased noise levels and vibration in construction areas and increased use of nearby access roads. Vehicle collisions causing injury or mortality are also possible; however, less likely because this species is nocturnal and construction activities would primarily occur between 6AM and 6PM. Sedimentation during construction could fill underground crevices used as habitat. Construction activities could also destroy dens, if present, and degrade suitable denning and foraging habitat through the removal of forested vegetation. This species also experiences significant increases in avian depredation in more open forests, with sparse understory. Therefore, significant removal or thinning of understory and shrub layers during construction and maintenance could lead to an increase in predation of individuals in the area. Additionally, the species has shown an aversion to more open forests, and so habitat fragmentation leading to a lack of densely-vegetated travel corridors could lead to isolation of populations and/or individuals. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1) to minimize impacts on this species.
Southern bog lemming *Synaptomys cooperi*	S3[b]	Pocahontas, Randolph, Upshur	Prefers boggy habitat, but also common in marshes, meadows, and upland forests with thick humus layer. Occupies burrows 6-12 inches deep and surface runaways (NatureServe, 2015).	Surveys were not conducted for this species.	Suitable habitat potentially present for this species within the ACP project area. Potential impacts would include temporary to permanent loss of habitat, and potential injury or mortality of individuals if present and unable to move from the area during construction. Construction activities adjacent to suitable habitat would also increase noise levels, which could disrupt normal activities. Sedimentation from stormwater runoff

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					during construction could fill underground burrows. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1) to minimize impacts on this species.
BIRDS					
Northern Goshawk *Accipiter gentilis*	Priority 1/S1B/S1N[b]	Randolph, Pocahontas	Typically nest in mature or old-growth forests. In the eastern U.S., prefer hardwood-hemlock forests where black birch and American birch are preferred nest trees. Forages in both heavily forested and relatively open habitats (NatureServe, 2015). Per WVDNR correspondence, this species has been observed at Cheat Mountain and Back Allegheny Mountain, and Rocky Run adjacent to Kumbrabow State Forest, Gauley Mountain, and Middle Fork Williams River.	Suitable habitat identified within the MNF and the Seneca State Forest during 2016 surveys; however, no northern goshawks were observed.	Refer to table R-1 of appendix R for discussion of impacts on Northern Goshawk on the MNF. Construction would remove suitable nesting habitat, and potentially cause disturbance to foraging goshawks. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impacts on this species. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species.
Northern Saw-Whet Owl *Aegolius acadicus*	S2B/S2N	Randolph	Dense coniferous or mixed forests, cedar groves, alder thickets, swamps and tamarack bogs. Often roost in dense evergreens in winter. Forages in heavy shrub habitat (NatureServe, 2015). Per WVDNR correspondence, this species has been observed at Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Construction would remove suitable nesting and foraging habitat, and potentially cause disturbance to foraging owls. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impacts on this species.
Great Blue Heron *Ardea herodias*	S3B/S4N	Lewis	Nests in colonies in swamps or edges of bodies of waters in the tops of the tallest trees, usually in remote areas. Mature oak-gum-cypress forests are optimal breeding habitat (VDGIF, 2016b).	An active great blue heron rookery was documented with the ACP survey corridor in Lewis County during 2016 bald and golden eagle surveys. The rookery is located 800 feet (0.15 miles) from the ACP centerline.	WVDNR recommends a time of year restriction (TOYR) from February 15 to July 31 for activities within 0.5 mile of a rookery and undisturbed naturally vegetated buffer of at least 500 feet around the rookery be maintained. Atlantic is currently consulting with WVDNR on appropriate mitigation for the rookery located within the 0.5-mile buffer (see section 4.5.3).
Long-Eared Owl *Asio otus*	Priority 1/S1B/S1N[b]	N/A	Deciduous and evergreen forests, orchards, wooded parks, farm woodlots, and river woods. Wooded areas with dense vegetation are used for roosting and nesting; open areas are used for hunting (NatureServe, 2015).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Long-Eared Owl on the MNF. Construction would remove suitable nesting and roosting habitat, and potentially cause disturbance to foraging owls. Atlantic and DETI would clear outside of the nesting season and implement the mitigation measures outlined in

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					the *Migratory Bird Plan* (see table 2.3.1-1). Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species.
Ruffed Grouse *Bonasa umbellus*	Priority 1/S3B/S3N	N/A	Dense forest with some deciduous trees in both wet and dry conditions. Young forests provide best conditions. Nests on the ground (NatureServe, 2015). Per WVDNR correspondence, this species has been observed at Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Suitable habitat for this species is present in the ACP and SHP project areas. Potential impacts include temporary to permanent loss of suitable habitat and increased habitat fragmentation, potential injury or mortality of adults and young as construction activities proceed during the breeding season, loss of eggs and nestlings through nest abandonment and/or construction activities, and loss of wintering food sources and refugia, Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Increased human activity and construction and maintenance activities would increase noise levels and create vibrations, which could lead to territory abandonment, decreased breeding activity, and a lower survivorship of adults due to disturbance. Atlantic and DETI would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impacts on this species.
Broad-Winged Hawk *Buteo platypterus*	Priority 1/S3B	N/A	Breeds in broadleaf and mixed forests, often near wet areas and forest openings, edges, and woodlands. Migrates along ridges, river valleys, and shorelines (NatureServe, 2015).	This species was incidentally observed during 2016 northern goshawk surveys near the Kumbrabow State Forest survey corridor and within the MNF.	Potential impacts on this species and the proposed mitigation are the same as described above for the Long-Eared Owl.
Canada Warbler *Cardellina canadensis*	Priority 1/S3B	N/A	Breeding habitat consists of moist thickets of woodland undergrowth, bogs, tall shrubbery along streams or near swamps, and deciduous second growth. Nests are on or near the ground (NatureServe, 2015).	Surveys were not conducted for this species.	Suitable habitat for this species is present in the ACP and SHP project areas. Potential impacts include temporary to permanent loss of suitable breeding and migration route habitat and increased habitat fragmentation, potential injury or mortality of adults and young as construction activities proceed during the breeding season, and loss of eggs and nestlings through nest abandonment and/or construction activities. Vehicle collisions causing injury or mortality are

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					also possible with increased access road traffic. Increased human activity and construction and maintenance activities would increase noise levels and create vibrations, which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Atlantic and DETI would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impacts on this species.
Olive-Sided Flycatcher *Contopus cooperi*	Priority 1/S1B	Pocahontas	Breeding occurs in forest or woodland areas, especially burned-over areas with standing dead trees. Forage from a variety of forest, woodland, and open habitats with scattered trees (NatureServe, 2015). Per WVDNR correspondence, this species is known from Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler.
Alder Flycatcher *Empidonax alnorum*	S3B	No Occurrences in Counties Crossed by SHP or ACP	Brush and shrubby growth, thickets, deciduous forest edge, open second growth, and swamps (NatureServe, 2015). Per WVDNR correspondence, this species is known from Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler. Due to this species preference for forest edge and secondary growth, the creation of additional forest edge, and secondary regrowth outside of the permanent right-of-way after restoration could provide additional suitable habitat for this species.
Peregrine Falcon *Falco peregrinus*	Priority 1/S2BS2N[b]	Pocahontas	Typically nest on ledges of vertical cliffs with a sheltering overhang; will also use river banks, open bogs, large stick nests of other species, tree hollows, and man-made structures (NatureServe, 2015).	No peregrine falcons were observed during 2016 bald and golden eagle aerial surveys.	Refer to table R-1 of appendix R for discussion of impacts on Peregrine Falcon on the MNF. Suitable habitat for this species is likely to occur in the ACP project area. If present near the ACP project area during construction, construction activities could disturb falcons, displacing individuals and disrupting normal activities. If construction activities were to occur in proximity to a nest during the nesting season, prolonged or frequent disturbance could cause nest abandonment. Construction would cause loss of potential foraging habitat, and potentially cause disturbance to foraging falcons. Atlantic would

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impacts on this species. Maintenance of the permanent right-of-way in an herbaceous / scrub-shrub state could increase foraging habitat for this species.
Migrant Loggerhead Shrike *Lanius ludovicianus migrans*	Priority 1/S1B/S1N[b]	Pocahontas	Open areas, grasslands (often grazed or occasionally mowed) and agricultural landscapes interspersed with forbs, scattered shrubs, and/or small trees. Usually nests in eastern red cedar or hawthorne (VDGIF, 2015b).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Migrant Loggerhead Shrike on the MNF. Suitable habitat for this species is present in the ACP project area. Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Due to this species preference for open herbaceous and occasionally mowed habitats, ACP has the potential to create suitable habitat for this species through maintenance of the right-of-way outside of the nesting season.
Swainson's Warbler *Limnothlypis swainsonii*	Priority 1/S3B	No Occurrences in Counties Crossed by SHP or ACP	Breeding habitat consists of rich, damp, deciduous floodplain and swamp forests. In the mountains, moist lower slopes of mountain ravines at elevations up to 900 meters are preferred (NatureServe, 2015). Per WVDNR correspondence, this species is known from Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler.
Red Crossbill *Loxia curvirostra*	S2B/S2N	N/A	Coniferous and mixed coniferous-deciduous forests, pine savanna and pine-oak habitat. Migrate and winter in deciduous forest and more open scrubby areas (NatureServe, 2015). Per WVDNR correspondence, this species is known from Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler.
Red-Headed Woodpecker *Melanerpes erythrocephalus*	S3B/S3N[b]	Pocahontas	Open woodland, especially beech or oak, parks, cultivated areas, and gardens (NatureServe, 2015).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Red-Headed Woodpecker on the MNF. Suitable habitat for this species is likely to occur in the ACP project area. Potential impacts on this species and the proposed mitigation are

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

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					the same as described above for the Canada Warbler. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Because this species requires open habitat for foraging (NatureServe, 2015), the permanently maintained right-of-way could provide additional suitable foraging habitat for this species.
Vesper Sparrow *Pooecetes gramineus*	Priority 1/S2B/S2N[b]	No Occurrences in Counties Crossed by SHP or ACP	Ground nesting bird. Found in plains, dry shrubland, savannas, weedy pastures, fields, and woodland clearings (NatureServe, 2015).	Surveys were not conducted for this species.	Suitable habitat for this species is present occur in the ACP project area. Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Due to this species preference for open herbaceous habitats, the ACP and SHP have the potential to create suitable habitat for this species through maintenance of the right-of-way outside of the nesting season.
American Woodcock *Scolopax minor*	Priority 1/S3B	N/A	Associated with young, second-growth hardwoods and other early successional habitats that are a result of periodic forest disturbance. Ideal habitat consists of young forests and abandoned farmland mixed with forested land. Generally considered an edge species (NatureServe, 2015). Per WVDNR correspondence, this species is known from Cheat Mountain and Back Allegheny Mountain.	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Ruffed Grouse. Due to this species preference for early successional, secondary growth, and edge habitat, the secondary regrowth outside of the permanent right-of-way after restoration, and maintenance of the permanent right-of-way outside of the nesting season could provide additional suitable habitat for this species.
Northern Waterthrush *Seiurus noveboracensis*	Priority 1/S2B	N/A	Prefers damp woodlands with standing water, thick cover along streams, in marshes, and by stagnant pools, but is also found on lawns and in hedgerows and thickets (NatureServe, 2015).	Surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Canada Warbler.
Golden-Winged Warbler *Vermivora chrysoptera*	Priority 1/S1B[b], PF	Pocahontas, Randolph	Requires brushy early successional habitat. Prefers to nest in areas such as powerline rights-of-way, shrubby fields, abandoned strip mines, alder	Suitable habitat identified within the Kumbrabow State Forest and adjacent to the MNF during 2016	Refer to table R-1 of appendix R for discussion of impacts on Golden-Winged Warbler on the MNF. Suitable habitat for this species occurs in the ACP project area. Potential impacts on this

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

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			swamps, beaver-created wetlands, and abandoned orchards (WVDNR, 2003). Per WVDNR correspondence, this species is known from the vicinity of Gibson Knob and Buzzard Ridge.	surveys, and one individual was observed on private land adjacent to the MNF.	species and the proposed mitigation are the same as described above for the Canada Warbler. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Because this species prefers early-successional habitats, the ACP has the potential to create suitable habitat for this species through maintenance of the right-of-way. Atlantic has committed to conducting maintenance mowing outside of the nesting season during operations.
REPTILES					
Timber rattlesnake *Crotalus horridus*	Priority 1/S3[b]	Pocahontas, Randolph	Hibernates in fissures in rock ledges or talus slopes. Uses diverse forests and open habitats when active (WVDNR, 2006b).	Surveys conducted in 2016 on the Lewis Wetzel WMA along the SHP resulted in no observations of individuals and identified five low quality potentially suitable habitat locations. There is a reported observation from May 2016 within the study corridor in the Lewis Wetzel WMA. Six timber rattlesnakes and suitable habitat were observed within the Seneca State Forest adjoining the MNF about 1.5 miles from the survey corridor for the ACP. No suitable habitat or individuals were observed within the survey corridor in the MNF.	No individuals nor suitable habitat were observed in the area of direct impact for either the SHP or ACP within the Lewis Wetzel WMA or MNF, respectively. Refer to table R-1 of appendix R for discussion of impacts on timber rattlesnake on the MNF. However, construction activities would increase noise and vibrations, which may disrupt normal activities, displace snakes, or increase stress for rattlesnakes adjacent to the construction workspace, all of which could lead to territory abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Other potential impacts include temporary to permanent loss of suitable dens for breeding and hibernation, loss of dispersal route habitat, increased habitat fragmentation, a decrease in prey species that have dispersed due to construction and maintenance activities, and direct injury or mortality of adults and young. Vehicle collisions causing injury or mortality are also possible with increased access road traffic. Finally, construction activities that take place during the winter season could disrupt hibernating snakes, leading to direct or indirect mortality. Suitable habitat for this species is likely to occur outside of the Lewis Wetzel WMA and MNF. Construction activities could expose rock outcrops that are currently shaded, potentially providing sufficient solar radiation for

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					suitable timber rattlesnake denning or gestating habitat. Atlantic would implement the *Protected Snake Conservation Plan* (see table 2.3.1-1) to provide guidance to construction crews on ways to minimize disturbance and impacts on timber rattlesnake during construction.
Northern ring-necked snake *Diadophis punctatus edwardsii*	S5	All Counties Crossed	Can be found in many habitat types, but seem to prefer wooded areas. Found in rotting logs, piles of dead leaves or under rocks (WVDNR, 2006b).	This species was incidentally observed during 2016 green salamander surveys in the MNF; surveys were not conducted for this species.	Impacts would include temporary to permanent habitat loss and fragmentation, and loss of suitable locations for hibernation. Construction activities would increase noise and vibrations, which may disrupt normal activities and displace snakes, which could lead to site abandonment, decreased fitness, decreased breeding activity, and a lower survivorship of adults due to disturbance. Because this snake is small and has limited mobility, it may experience direct mortality of adults and young during construction and maintenance activities. Other potential impacts include a decrease in prey species, loss of nests and eggs during construction and direct injury or mortality from vehicle collisions with increased access road traffic. Finally, construction activities that take place during the winter season could disrupt hibernating snakes, leading to direct or indirect mortality. Atlantic and DETI would implement the measures in the FERC *Plan* and *Procedures,* and construction and restoration plans (see table 2.3.1-1) to minimize impacts on this species.
AMPHIBIANS					
Green salamander *Aneides aeneus*	Priority 1/S3[b], PF	All Counties Crossed	Damp crevices in shaded outcrops and ledges, beneath loose bark and in cracks of standing or fallen trees, sometimes under logs on ground (NatureServe, 2015).	Surveys conducted in 2016 along the ACP survey corridor within the MNF; three areas of low quality habitat were identified and no individuals were observed. Surveys outside of the MNF were not conducted.	There is potentially suitable habitat for this species outside of the MNF. Impacts would include removal of suitable habitat, creation of canopy gaps that could make otherwise shaded habitat unsuitable, potential injury or mortality of adults, juveniles, and egg masses resulting from collisions with construction equipment, and decreases in prey availability. Noise and vibrations from construction activities could disrupt normal activities and lead to decreased fitness, decreased breeding activity, and a lower survivorship of adults. This species has limited mobility and is dependent on a rare and

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

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					restricted habitat type; therefore, it is likely that local population extirpations would result from construction activities in areas occupied by the species. Salamanders are especially susceptible to habitat degradation, including contamination of soil and water by gasoline, diesel, heavy metals, pesticides, herbicides, and any other chemicals. Habitat contamination can cause direct mortality in any stage of their lifecycle, as well as cause decreases in and contamination of their prey items, resulting in indirect mortality. Atlantic and DETI would implement the measures in the FERC *Plan* and *Procedures,* and construction and restoration plans (see table 2.3.1-1) to minimize impacts on this species.
Eastern hellbender *Cryptobranchus alleganiensis*	Priority 1/S2[b]	All Counties Crossed	Found in permanent streams under flat rocks in the riverbed. Found in all elevation streams west of the Allegheny Front.	Surveys were not conducted for this species. This species has been documented in the West Fork Greenbrier River (Pauley, 2004).	There are approximately 115 pipeline and access road perennial waterbody crossings on ACP, and 92 crossings on SHP (some waterbodies would be crossed more than once) in West Virginia. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. In addition, removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Atlantic and DETI would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats.
Seal salamander *Desmognathus monticola*	S5	All Counties Crossed	Burrows in banks or under rocks, logs, and leaves in and near small streams (Pauley, 2004).	This species was incidentally observed during 2016 green salamander surveys in the MNF; surveys were not conducted for this species.	Potential impacts on this species and the proposed mitigation are the same as described above for the Green Salamander.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

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Allegheny Mountain dusky salamander *Desmognathus ochrophaeus*	S4	Upshur, Randolph, Pocahontas	Found under leaf litter, bark, stones, in crevices of cliffs and rock outcrops. Breeding habitat occurs beneath logs or rocks along small streams or in seepages in stream banks. Found throughout the mountainous areas of West Virginia (Pauley, 2004).	This species was incidentally observed during 2016 green salamander surveys in the MNF; surveys were not conducted for this species.	The potential impacts on and mitigation for this species are the same as those described above for the Green Salamander.
Mudpuppy *Necturus maculosus*	Priority 1/S4	Wetzel, Harrison, Tyler, Doddridge, Lewis, Upshur	Streams and impoundments under rocks and debris or under bank overhangs. Found throughout the Allegheny Plateau (Pauley, 2004).	This species was incidentally observed during 2015 mussel surveys at one waterbody crossing location along the ACP.	Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity during construction, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic and DETI would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats.
Slimy salamander *Plethodon glutinosus*	S5	All Counties Crossed	Wooded slopes, ravines, floodplains, shale banks, and cave entrances typically within hardwood forests, sometimes pinelands (NatureServe, 2015).	This species was observed during 2016 green salamander surveys in the MNF.	Potential impacts on this species and the proposed mitigation are the same as described above for the Green Salamander.
Valley and ridge salamander *Plethodon hoffmani*	S4	All Counties Crossed	Mature hardwood forests with well-drained soils (NatureServe, 2015).	This species was observed during 2016 green salamander surveys in the MNF.	Potential impacts on this species and the proposed mitigation are the same as described above for the Green Salamander.
Wehrle's salamander *Plethodon wehrlei*	S4	All Counties Crossed	Upland forests and woodlands; found in rock crevices, under rocks, logs, and leaves, and in the twilight zone of caves (NatureServe, 2015).	This species was observed during 2016 green salamander surveys in the MNF.	The potential impacts on and mitigation for this species are the same as those described above for the Green Salamander.
FISH					
Redside dace *Clinostomus elongatus*	Priority 1/S1S2	All Counties Crossed	Small to medium, cool, clear, rubble and gravel-bottomed streams. Typically occurs in pools with moderate current and overhanging vegetation. Known	Surveys were not conducted for this species.	There is a potential for this species to occur within the ACP and SHP project areas. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			from the Blackwater River system (NatureServe, 2015).		and turbidity, reduced fish passage, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats.
Candy darter *Etheostoma osburni*	Priority 1/S1[b], PF	Pocahontas	Riffles and runs of small cool and warm streams and rivers. Adults are typically found in large rubble to boulder substrates in the swiftest portions of their fast-flowing habitat. Only found in the upper Kanawha River System (WVDNR, 2003). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF (Chipps et al., 1993; Burns, 2007). The candy darter has a documented distribution within the upstream reaches of the mainstem of the Greenbrier River and its tributaries. It has recently been documented in Knapp and Sitlington Creeks.	Atlantic identified suitable habitat for this species within Clover Creek, Glade Run, Thomas Creek, and Knapp Creek.	Refer to table R-1 of appendix R for discussion of impacts on candy darter on the MNF. This species is currently under review by FWS for listing under the ESA (refer to section 4.7.1.12). We have recommended in section 4.7.1.12 and appendix K that if the candy darter is proposed or listed during the life of the project, Atlantic assume presence of this species at Knapp Creek, Clover Creek, Glade Run, Thomas Creek, and the Greenbrier River, and implement the FWS' enhanced conservation measures at these waterbodies and their perennial tributaries within 1 mile of the proposed crossing to mitigate potential impacts on this species (refer to section 4.7.1).
Allegheny pearl dace *Margariscus margarita*	Priority 1/S2S3[b]	N/A	Found in pools of upland creeks and small rivers, ponds, and lakes over sand or gravel substrate (NatureServe, 2015).	Surveys were not conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Redside Dace.
New River shiner *Notropis scabriceps*	S2[b]	Pocahontas	Pools and slow runs of cool to warm creeks and small to medium rivers with rocky, gravely, or sand substrates, occasionally with moderate deposits of silt (NatureServe, 2015). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on New River shiner on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Redside Dace.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			East Fork Greenbrier River in the MNF (Chipps et al., 1993; Burns, 2007).		
Cheat minnow *Pararhinichthys bowersi*	S1S2[b]	Pocahontas, Randolph, Upshur	Runs and pools of small to medium, un-acidified mountain rivers with moderate current and gravel or cobble substrate (NatureServe, 2015). This species occurs primarily in the Monongahela River Basin, which includes the Cheat River system (Chipps et al., 1993).	Surveys were not conducted for this species. Right Fork Middle Fork River is identified within the extant cheat minnow range.	The potential impacts and mitigation measures for this species are the same as described above for the Redside Dace. In addition, Atlantic would cross the Right Fork Middle Fork River using a dry crossing technique, and because it is also a trout water, would adhere to the TOYR of September 15-March 31.
Appalachia darter *Percina gymnocephala*	S2[b]	Pocahontas	Small to medium rivers in gravel and rubble riffles and raceways; found in deeper waters in fall and winter. Known from the New River system above Kanawha Falls (NatureServe, 2015). A study has documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF (Burns, 2007).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Appalachia darter on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Redside Dace.
Kanawha minnow *Phenacobius teretulus*	S1[b]	Pocahontas	Riffles and runs of gravel, rubble, and boulder in cool to warm, small to medium rivers. Known from the New River drainage (NatureServe, 2015). Studies have documented this species in the New River drainage in the MNF, and they are known to occur in the West and East Fork Greenbrier River in the MNF, both upstream and downstream of the ACP project area (Chipps et al., 1993; Burns, 2007).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Kanawha minnow on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Redside Dace.
Brook trout *Salvelinus fontinalis*	Priority 1/S5[b]	Upshur, Pocahontas, Randolph	Clear, cool, well-oxygenated creeks, small to medium rivers, and lakes (NatureServe, 2015). Per WVDNR correspondence, this species is known from the Cheat Mountain and Back Allegheny Mountain area.	Designated brook trout waters are identified in appendix K.	Refer to table R-3 of appendix R for discussion of impacts on brook trout on the MNF. There are 134 pipeline and access road crossings of designated brook trout streams or unnamed tributaries to brook trout streams in West Virginia (some waterbodies may be crossed more than once). Atlantic has committed to adhering to the TOYR of September 15-March 31 for trout waters and adjacent tributaries. SHP does not cross any trout waters. Additional information is provided in section 4.6.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
GASTROPODS (Snails)					
Organ cavesnail *Fontigens tartarea*	S2[b]	Pocahontas, Randolph	Inhabits caves under flat rocks in streams with moderate current. Limestone rocks are preferred. This species has been documented from Simmons-Mingo Cave in Randolph County, and Dreen Cave and Piddling Pit in Pocahontas County (NatureServe, 2015), located less than one mile from the ACP construction workspace.	2016 karst surveys identified karst features that were located within, adjacent to, and would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	This species is currently under review by the FWS. Karst terrain is found within and adjacent to the ACP construction workspace in West Virginia (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
BIVALVES (Freshwater Mussels)					
Elktoe *Alasmidonta marginata*	Priority 1/S1[b]	Pocahontas	Found in small, medium and large streams with swift current and gravel, sand, or cobble substrate (NatureServe, 2015).	None identified during surveys.	Refer to table R-1 of appendix R for discussion of impacts on elktoe on the MNF. There is a potential for this species to occur downstream of the ACP Project area. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures* and its construction and restoration plans (see table 2.3.1-1). Atlantic would also implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016) upon

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					authorization from the WVDNR if mussels are present.
Threeridge *Amblema plicata*	S3	All Counties Crossed	Habitat varies from small to large rivers, and lakes with little to no current to areas of swift current. Also found in a variety of substrates including clay, mud, sand, sand-gravel, and gravel (NatureServe, 2015).	None identified during surveys.	The potential impacts and mitigation measures for this species are the same as described above for the elktoe.
Spike *Elliptio dilatata*	S3	All Counties Crossed	Medium to large rivers and streams primarily in shoal habitat of unimpounded streams and rivers; also, occasionally found in tail waters of dams or lakes (NatureServe, 2015).	This species was identified at one waterbody crossing location along the ACP.	The waterbody where this species was identified during surveys would be crossed using the cofferdam technique. The potential impacts and mitigation measures for this species are the same as described above for the elktoe. Due to the potential for other ESA-listed species at the waterbody where the spike mussel was observed, we have recommended that Atlantic implement the FWS' enhanced conservation measures, which include additional sediment and erosion control measures that would further minimize impacts on this species (refer to table 4.7.1). Atlantic would implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016) upon authorization from the WVDNR to relocate non-federally protected mussel species prior to construction.
Wabash pigtoe *Fusconaia flava*	S1	Doddridge	Medium to large rivers at depths up to 15 feet; favored substrate consists of coarse sand and gravel (NatureServe, 2015).	Species was observed during 2015 SHP mussel surveys at one waterbody crossing location.	The waterbody where this species was identified would be crossing using the dam and pump technique for the mainline pipeline, and would also be crossed with a permanent access road. Atlantic has also proposed to withdraw water where this species was found. The potential impacts and mitigation measures for this species are the same as described above for the elktoe. Due to the potential for other ESA-listed species at the waterbody where Wabash pigtoe were observed, we have recommended that Atlantic implement the FWS' enhanced conservation measures, which include additional sediment and erosion control that would further minimize impacts on this species (refer to table 4.7.1). Atlantic would implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016)

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					upon authorization from the WVDNR prior to construction.
Plain pocketbook *Lampsilis cardium*	S3	All Counties Crossed	Found in medium to large rivers and shallow water lake habitats (Nature Serve 2015).	None identified during surveys.	The potential impacts and mitigation measures for this species are the same as described above for the elktoe.
Fatmucket clam *Lampsilis siliquoidea*	NR	All Counties Crossed	Medium to large low gradient streams and rivers, and shallow water lake habitat. Found in variety of substrates, but prefers quiet or slow-moving water with mud bottom (NatureServe, 2015).	Species was observed during 2015 SHP mussel surveys at two waterbody crossing locations; and at one waterbody location along the ACP.	The waterbodies where this species was identified along the SHP and ACP would be crossed using dry crossing techniques. One waterbody would also be crossed by an existing permanent access road. Atlantic has also proposed to withdraw water from both crossing pipeline locations where found. The potential impacts and mitigation measures for this species are the same as described above for the elktoe. Due to the potential for other ESA-listed species at the ACP waterbody crossing and one of the SHP waterbody crossings where fatmucket clam were observed, we have recommended that Atlantic implement the FWS' enhanced conservation measures, which include additional sediment and erosion control measures that would further minimize impacts on this species (refer to table 4.7.1). Atlantic and DETI would also adhere to the TOYR of April 1-June 30 at these crossing locations, which could also benefit this species. Atlantic would implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016) upon authorization from the WVDNR to relocate mussel species prior to construction.
Fluted-shell *Lasmigona costata*	S3	All Counties Crossed	Canals, rivers, and lakes on gravel, sand, or mud substrates (NatureServe, 2015).	None identified during surveys.	The potential impacts and mitigation measures for this species are the same as described above for the elktoe.
Green floater *Lasmigona subviridis*	Priority 1/S2[a,b]	Pocahontas	Fast-flowing, clean water in firm rubble, gravel and sand substrates swept free from siltation. Found buried in substrate in shallow riffle and shoal areas. Known from the Greenbrier watershed (Cummings and Cordeiro, 2012).	None identified during surveys.	Refer to table R-1 of appendix R for discussion of impacts on green floater on the MNF. This species is currently under review by FWS for listing under the ESA (refer to section 4.7.1.15). The potential impacts and mitigation measures for this species are the same as described above for the elktoe.
Round hickorynut *Obovaria subrotunda*	Priority 1/S3	All Counties Crossed	Medium to large rivers and streams in sand and gravel substrates with	None identified during surveys.	The potential impacts and mitigation measures for this species are the same as described above for the elktoe.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			moderate flow and depths up to 2 meters (NatureServe, 2015).		
Creeper (squawfoot) *Strophitus undulatus*	S3	All Counties Crossed	Habitat generalist found in streams and rivers in a variety of flow conditions, and in lakes and ponds (NatureServe, 2015).	Species was observed during 2015 SHP mussel surveys at two waterbody crossing locations.	The waterbodies where this species was identified along the SHP would be crossed using dry crossing techniques. Atlantic has also proposed to withdraw water from one crossing location where found. The potential impacts and mitigation measures for this species are the same as described above for the elktoe. Atlantic would adhere to the TOYR of April 1-June 30, which could also benefit this species. Atlantic would implement the *West Virginia Mussel Survey Protocol* (Clayton et al., 2016) upon authorization from the WVDNR to relocate mussel species prior to construction.
CRUSTACEANS (Amphipods, Isopods, and Decapods)					
Cannulate cave isopod *Caecidotea cannula*	Priority 1/S1[b]	Randolph	Inhabits subterranean streams and pools under flat rocks. Known from Alpena Cave No. 1, Glady Cave, Bowden Cave, and Harper Cave in Randolph County (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County (see section 4.1.2.3).	This species is currently under review by the FWS. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Greenbrier Valley cave isopod *Caecidotea holsingeri*	S3[b]	Pocahontas, Randolph	Inhabits caves in riffle area of streams, in stream gravel, under rocks, on decaying wood in streams and occasionally drip pools. Known from 10 caves in Pocahontas County and 5 caves in Randolph County (NatureServe, 2015). This species has been documented from Dreen Cave in Pocahontas County (Nature Conservancy, 2001), located less than one mile from the ACP construction workspace.	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on Greenbrier Valley (Holsinger's) cave isopod on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
A cave obligate isopod *Caecidotea simonini*	Priority 1/S1[b]	Randolph	Found in subterranean rivers. Known from Flower Pot, Stillhouse, Aquaterra and Commander Adama Killer Bat caves in Randolph County (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way	The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				in Randolph County (see section 4.1.2.3).	
Elk River crayfish *Camburus elkensis*	G2/S1[b]	Pocahontas	Low gradient, medium-sized rivers with moderate gradient. Substrate includes sand, gravel, sandstone boulders, and cobbles. Endemic to the upper Elk River basin. Freshwater cave species occurring near entrances to very deep in cave systems (NatureServe, 2015). This species has been documented in Slaty Fork and Old Field Fork in Pocahontas County (Nature Conservancy, 2001).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Pocahontas County (see section 4.1.2.3).	The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Greenbrier Cave crayfish *Cambarus nerterius*	Priority 1/S1?[b], PF	Pocahontas	Subterranean streams, usually in the upper portions of the cave or dry stream beds. Found in one cave in the Elk River Drainage in Pocahontas County (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Pocahontas County (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on Greenbrier Cave crayfish on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Culver's Cave amphipod *Stygobromus culveri*	Priority 1/S1[b]	Randolph	Subterranean obligate species found in mud-bottom seep and drip pools in caves. Only known from one cave (Red Run) in Tucker County and two caves (Flower Pot and Stillwater Caves) in Randolph County.	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County (see section 4.1.2.3).	The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Greenbrier Cave amphipod *Stygobromus emarginatus*	Priority 1/S3[b]	Pocahontas, Randolph	Relatively wide spread obligate subterranean amphipod. Predominantly found in small, gravel bottom cave streams, or pools fed by ceiling drips or seepage water (NatureServe, 2015). This species has been documented from Dreen Cave in Pocahontas County (Nature Conservancy, 2001), located less than one mile from the ACP construction workspace.	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on Greenbrier Cave amphipod on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Pocahontas Cave amphipod *Stygobromus nanus*	Priority 1/S1[b]	Pocahontas	Only three specimens known from Piddling Pit Cave along the eastern flank of Cloverlick Mountain in Pocahontas County. Found in mud-	2016 karst surveys identified karst features that were located within, adjacent to, would receive	Refer to table R-1 of appendix R for discussion of impacts on Pocahontas Cave amphipod on the MNF. The potential impacts and mitigation

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			bottom drip pools and associated seepage (NatureServe, 2015).	drainage from the proposed ACP right-of-way in Pocahontas County (see section 4.1.2.3).	measures for this species are the same as described above for the Organ Cave Snail.
Minute Cave amphipod *Stygobromus parvus*	Priority 1/S1[b], PF	Pocahontas, Randolph	Known from 4 cave sites in Randolph, Pocahontas, and Tucker Counties. Occupied caves are located along the eastern flank of the Allegheny and Cloverlick Mountains in the Greenbrier River drainage, west of Cheat Mountain in the upper Tygart River drainage, and southeast of Parsons, West Virginia. Found in mud-bottomed, drip, and seep pools in caves (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
MYRIAPODS (Millipedes)					
Greenbrier Valley cave millipede *Pseudotremia fulgida*	S3[b]	Pocahontas	Subterranean obligate. Reported from 10 caves in Pocahontas County (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Pocahontas County (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on Greenbrier Valley Cave millipede on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Grand Caverns blind cave millipede *Zygonopus weyeriensis*	Priority 1/S2[b]	Pocahontas, Randolph	Subterranean obligate. This species has been documented from Cass Cave and Dreen Cave in Pocahontas County (Nature Conservancy, 2011), located 3.8 miles and less than one mile from the ACP construction workspace, respectively.	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on Grand Caverns blind cave millipede on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
INSECTS					
Cave Beetles					
A cave beetle *Pseudanophthalmus fuscus*	S2[b]	Pocahontas	Subterranean obligate. Documented from the Piddling Pit Cave in Pocahontas County (Nature Conservancy, 2011).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Pocahontas County (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on *Pseudanophthalmus fuscus* on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
A cave beetle *Pseudanophthalmus hypertrichosis*	S3[b]	Pocahontas, Randolph	Subterranean obligate. Known from 14 caves in Pocahontas County and 2 caves in Randolph County (NatureServe, 2015). This species has been documented from Cass Cave and Dreen Cave in Pocahontas County, and Simmons-Mingo Cave System in Pocahontas and Randolph Counties (Nature Conservancy, 2001), located 3.8 miles, 0.7 mile, and 0.4 mile, respectively from the ACP construction workspace.	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on *Pseudanophthalmus hypertrichosis* on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Tiger Beetles					
Appalachian tiger beetle *Cicindela ancocisconensis*	Priority 1/S3[b]	Pocahontas, Randolph	Inhabits dry sandy banks and islands along major rivers east of the Allegheny Mountains; found in dry, sandy openings among sparse vegetation above the river shoreline (Allen and Acciavatti, 2002).	Surveys were not conducted for this species.	Construction activities could cause injury or mortality to individuals located in the right-of-way during construction, and would temporarily remove suitable habitat and disrupt normal activities. Based on this species preference of open habitat, right-of-way clearing and maintenance could have a beneficial effect by creating potentially suitable habitat (FS et al., 2002).
Springtails					
Gandy Creek Cove springtail *Pseudosinella certa*	Priority 1/S1[b]	Randolph	Subterranean obligate; habitat is poorly known understood, known only from a single cave in Randolph County, where it is presumably found in moist organic litter or similar nutrient rich microhabitats (NatureServe, 2015; Lewis, 2001).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County (see section 4.1.2.3).	The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
A springtail *Pseudosinella gisini gisini*	Priority 1/S3[b]	Pocahontas	Species is only known from caves; frequently found in the wetter parts of caves containing organic debris (FS, 2001).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Refer to table R-1 of appendix R for discussion of impacts on *Pseudosinella gisini gisini* on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
A springtail *Sinella agna*	Priority 1/S3[b]	Pocahontas, Randolph	Subterranean obligate (NatureServe, 2015).	2016 karst surveys identified karst features	Refer to table R-1 of appendix R for discussion of impacts on *Sinella agna* on the MNF. The

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	potential impacts and mitigation measures for this species are the same as described above for the Organ Cave Snail.
Dragonflies and Damselflies					
Rapids clubtail dragonfly *Gomphus quadricolor*	Priority 1/S3[b]	Pocahontas, Randolph	Clear streams and brooks with strong current over clean gravel, cobbles, or bedrock (NatureServe, 2015).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on rapids clubtail dragonfly on the MNF. Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove suitable riparian habitat that could provide shelter and foraging habitat. Removal of vegetation also increases water temperature and the risk of spread of noxious and invasive weeds, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Vehicle collisions could cause injury or mortality to adult dragonflies. Atlantic and DETI would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1), which includes sedimentation and erosion control measures and waterbody crossing measures to minimize impacts on this species.
Green-faced clubtail *Gomphus viridifrons*	Priority 1/S3[b]	Pocahontas, Randolph, Marshall	Clear, rocky rivers and streams; has also been found in reservoirs and other impoundments (Olcott, 2011).	Surveys were not conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Rapids Clubtail Dragonfly.
Riffle snaketail *Ophiogomphus carolus*	Priority 1/S2[b]	Pocahontas	Prefers clear, clean, rocky streams. Has been documented from the Greenbrier River (Olcott, 2011).	Surveys were not conducted for this species.	Atlantic would cross the Greenbrier River using a cofferdam, and has proposed in-stream blasting at this location. The potential impacts and mitigation measures for this species are the same as described above for the Rapids Clubtail Dragonfly.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Butterflies, Moths, & Skippers					
Early hairstreak butterfly *Erora laeta*	S2[b]	Randolph	Woodland openings and moist, but well-drained mature American beech (*Fagus grandifolia*) forests. Its main larval host plant is American beech, and beaked hazelnut (*Coylus cornuta*) is a secondary larval host plant. Adults are active from late April through May and late June through August (VDCR and VDGIF, 2013).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on early hairstreak butterfly on the MNF. Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species may benefit from the presence of woodland clearings, including rights-of-way, by creating additional suitable habitat. In addition, Atlantic would minimize use of herbicides and pesticides along the construction and permanent rights-of-way, and would allow tree species to regenerate outside the permanent right-of-way after construction is complete.
Milne's euchlaena moth *Euchlaena milnei*	Priority 1/S2[b]	Pocahontas	Hardwood and mountain oak woodlands with acidic soil. Its larval host plant is unknown, but may include deciduous trees and shrubs based on the preference of other members of the genus (NatureServe, 2015). Adults are active in from early to mid-July (VDCR and VDGIF, 2013).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Milne's euchlanea moth on the MNF. Adult moths would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. Atlantic would minimize use of herbicides and pesticides along the construction and permanent rights-of-way, and would allow tree species to regenerate outside the permanent right-of-way after construction is complete.
Starry campion moth *Hadena ectypa*	Priority 1/S1[b]	Pocahontas	Wooded areas or openings. Its larval host plants include species of the genera *Silene*, including starry campion (*Silene stellata)* and bladder campion (*Silene vulgaris)* (NatureServe, 2015).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on starry campion moth on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Early Hairstreak Butterfly.
Bronze copper butterfly *Lycaena hyllus*	Priority 1/S2[b]	Pocahontas	Low, wet areas such as bogs, marshes, wet meadows, and ponds. Its larval host plants are members of the buckwheat family, including curly dock	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on bronze copper butterfly on the MNF Adult butterflies would be able to disperse away from disturbance; however, reduced fitness

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			(*Rumex crispus*). Adults are active June-September in the northern part of their range, and May-November in southern part of their range (Lotts and Naberhaus, 2016).		and/or mortality could result if the individual is unable to find other suitable habitat. Adult moths, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. This species may benefit from the clearing of the right-of-way by encouraging the spread of its larval host plant, curly dock. Curly dock is an introduced species that adapts to disturbed areas, such as roadsides, farm fields, and other weedy habitats (Virginia Botanical Associates, 2016).
West Virginia white butterfly *Pieris virginiensis*	Priority 1/S3[b]	Pocahontas	Moist deciduous woodlands or mixed woods. Its larval host plants are toothworts (*Dentaria diphylla* and *D. laciniata*). Adults are active from April-May (Lotts and Naberhaus, 2016).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on West Virginia white butterfly on the MNF. This species is a weak flyer and will not fly across open areas including rights-of-way; therefore, construction equipment could cause injury or mortality to adults and cause a decrease in breeding behavior by increasing barriers to movement. Adults, eggs, and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host and foraging plants. Tree and shrub species would be allowed to regenerate outside the permanent right-of-way after construction is complete.
Diana fritillary butterfly *Speyeria diana*	Priority 1/S2S3[b]	Lewis, Pocahontas, Randolph, Upshur	Favor wooded areas, particularly in low-lying valleys, pine woods, and cove forests, within or near mountain ranges. Its larval host plants are violets (*Viola* spp.). Adults are active from mid-June to early September (VDCR and VDGIF, 2013).	Surveys were not conducted for this species.	Refer to table R-1 of appendix R for discussion of impacts on Diana fritillary butterfly on the MNF. The potential impacts and mitigation measures for this species are the same as described above for the Early Hairstreak Butterfly. In addition, as outlined in its *Restoration and Rehabilitation Plan* (see appendix F), Atlantic has committed to incorporate regionally-specific and native forb seeds in its traditionally all-grass seed mix to create pollination habitat, which may reduce impacts on this species. Impacts on this species are anticipated to be localized and minimal; management of the right-of-way that encourages nectar sources would be beneficial to this species.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
FLATWORMS					
Hoffmaster's Cave flatworm *Macrocotyla hoffmasteri*	Priority 1/S2[b]	Pocahontas, Randolph	Subterranean obligate (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, would receive drainage from the proposed ACP right-of-way in Randolph County and Pocahontas County) (see section 4.1.2.3).	Karst terrain is found within and adjacent to the ACP construction workspace in West Virginia; construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
VASCULAR PLANTS					
Summer sedge *Carex aestivalis*	S3	Pocahontas, Randolph	Dry to mesic forests, seepage slopes, and meadows in the mountains to 1,600 meters (Flora of North America Editorial Committee, eds., 1993+).	Identified during surveys on private land along ACP.	Construction activities would result in direct loss of individuals and degradation of suitable habitat. Construction activities could also introduce or encourage the spread of invasive and noxious plants. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1) and *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement its *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.
Brome-like sedge *Carex bromoides ssp. bromoides*	S3	Pocahontas, Randolph, Upshur	Forested floodplains, wet hardwood forests, hardwood swamps, occasionally wet meadows, marsh edges (Flora of North America Editorial Committee, eds., 1993+).	Identified during surveys in forested wetland on private land in Pocahontas County along ACP.	This population is located within the construction workspace; therefore, activities would result in direct loss of approximately 0.25 acres of the population and suitable habitat. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
Troublesome sedge	S3	Tyler	Fields, roadsides, bottomlands, open woods, on dry to wet, often heavy,	Last record collected prior to 1977 in Tyler County.	This population may be within the construction workspace; therefore, direct loss of individuals

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Carex molesta			calcareous soils from 100 to 700 meters elevation (Flora of North America Editorial Committee, eds., 1993+).	This species was observed during 2015 plant surveys along the SHP and ACP survey corridor.	and habitat may result. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
Necklace sedge *Carex projecta*	S3	Harrison, Pocahontas	Stream banks, moist depressions in mixed and deciduous forests, moist to wet grasslands, meadows, thickets, shores, ditches from 10 to 400 meters elevation (Flora of North America Editorial Committee, eds., 1993+).	This species was observed during 2015 SHP plant surveys.	This population may be within the construction workspace; therefore, direct loss of individuals and habitat may result. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
Roan Mountain sedge *Carex roanensis*	Priority 1/S2[b]	Randolph, Pocahontas	Rich soils of mid- to high-elevation mesic forests in the southern Appalachians (NatureServe, 2015).	Field surveys identified 4 populations of sedge on private land and 3 populations on the MNF.	Refer to table R-1 of appendix R for discussion of impacts on Roan Mountain sedge on the MNF. Construction activities would directly remove individuals and suitable habitat, and degrade adjacent suitable habitat (e.g., hydrology, soil compaction, light), reducing plant health and fecundity of individuals near the forest's edge. Atlantic has identified a population of invasive plant species in proximity to the Roan Mountain sedge populations, which could spread into the disturbed right-of-way. Atlantic would implement the *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement its *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.
Appalachian oak fern *Gymnocarpium appalachianum*	Priority 1/S2[b]	Pocahontas	Maple-birch-hemlock woods on mountain slopes and summits, in sandstone, talus slopes, or boulder colluvium, typically at elevations above 2,000 feet (NatureServe, 2015)	Field survey identified a population of approximately 10,000 individuals adjacent to the ACP project area in the MNF, covering 0.4 acre.	Refer to table R-1 of appendix R for discussion of impacts on Appalachian oak fern on the MNF. Construction activities would directly remove individuals and suitable habitat, and degrade adjacent suitable habitat (e.g., hydrology, soil compaction, light), reducing plant health and fecundity of individuals near the forest's edge. Atlantic has identified a population of invasive plant species in proximity to the Appalachian oak fern population, which could spread into the disturbed right-of-way. Atlantic would implement the *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement *its Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
False Indian-plantain *Hasteola suaveolens*	S3[b]	Randolph, Tyler	Rich woods, shaded, wet areas bordering streams (Flora of North America Editorial Committee, eds., 1993+).	This species was observed during 2015 SHP plant surveys.	This population may be within the construction workspace; therefore, direct loss of individuals and habitat may result. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
White alumroot *Heuchera alba*	Priority 1/S2[b]	Pocahontas, Randolph	In West Virginia, this species has been found on acid rock outcrops, sandstone, roadsides, high summits, grassy balds, edge of sinkhole, and in hardwood and dwarf pine forests. Found in elevations ranging from 2,205 to 4,200 feet associated with Aquilegia spp., wall-rue, maidenhair spleenwort, and purple-stem cliffbrake (NatureServe, 2015).	Field survey identified 1 population of 75 individuals covering 0.6 acre on the MNF, and another individual outside of the ACP project area.	Refer to table R-1 of appendix R for discussion of impacts on white alumroot on the MNF. Construction activities would directly remove individuals and suitable habitat, and degrade adjacent suitable habitat (e.g., hydrology, soil compaction, light), reducing plant health and fecundity of individuals near the forest's edge. Atlantic has identified a population of invasive plant species in proximity to the Alumroot population, which could spread into the disturbed right-of-way. Atlantic would implement the *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement its *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.
Butternut *Juglans cinerea*	S3[b]	Marshall, Wetzel, Tyler, Doddridge, Upshur, Randolph, Pocahontas	Rich mesophytic forests, lower slopes, ravines, and various types of bottomland, including banks and terraces of creeks and streams, and floodplain forests (NatureServe, 2015).	One individual of this species was observed during surveys on private land along the ACP in Pocahontas County and along the SHP survey corridor.	Refer to table R-1 of appendix R for discussion of impacts on butternut on the MNF. This individual is located outside of the ACP construction workspace; therefore, no direct impacts are anticipated; however, it may be within the SHP construction workspace, therefore, direct loss of individuals and habitat may result.
Four-flowered loosestrife *Lysimachia quadriflora*	S1	Marshall, Tyler, Doddridge, Harrison, Upshur, Randolph, Pocahontas	Moist prairies, meadows, roadsides, springs, swamps, bogs, and other wetlands up to 600 meters elevation (Flora of North America Editorial Committee, eds., 1993+).	This species was observed during 2015 SHP plant surveys and one occurrence was documented within the MNF along an existing access road.	No improvements have been proposed to the MNF access road, and the occurrence is located outside of the SHP construction workspace therefore no direct impacts are anticipated to this species. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
Bristly black currant *Ribes lacustre*	S2[b]	Pocahontas	Moist woods and streambanks to drier forest slopes at low to moderate elevations (Burke Museum of Natural History and Culture, 2016).	Last record collected prior to 1977 in Pocahontas County. Field surveys identified one population near an old access road on the MNF; however, fruits	Refer to table R-1 of appendix R for discussion of impacts on bristly black currant on the MNF. Although no individuals would be directly impacted by construction; construction activities could degrade suitable habitat adjacent to the right-of-way (e.g., hydrology, soil compaction,

TABLE S-1 (cont'd)

West Virginia Species of Greatest Concern with Potential to Occur in the Atlantic Coast Pipeline and Supply Header Project Area

Species/Scientific Name	SGCN Priority/State Status[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				were not available at the time of the field surveys, and therefore identification was not confirmed, but assumed.	light). Atlantic has identified a population of invasive plant species in proximity to the currant population, which could spread into the disturbed right-of-way. Atlantic would implement the *Restoration and Rehabilitation Plan* (see appendix F) to restore the right-of-way, and would implement its *Invasive Plant Species Management Plan* (see table 2.3.1-1) to control the spread of invasive and noxious plants.
Smooth hedge-nettle *Stachys tenuifolia*	S3	Marshall, Wetzel, Tyler, Randolph	Moist and low woodland, ravines, streambanks, pond margins, swamps, and wet meadows (Missouri Plants, 2007).	Last record collected prior to 1977 in these counties. This species was observed during surveys on private land along ACP and SHP.	No direct impacts on this species is anticipated. The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.
Bashful bulrush *Trichophorum planifolium*	Priority 1/S1	Pocahontas	Dry fields, clearings, open woods, and basic ledges. Primary habitat consists of dry, rocky woods; typically, hardwoods (NatureServe, 2015).	This species was identified during surveys on the MNF.	The potential impacts and mitigation measures for this species are the same as described above for the Summer Sedge.

[a] Species under review for federal listing under the Endangered Species Act.
[b] Species is identified as a Regional Foresters' Sensitive Species or Management Indicator Species in the Monongahela National Forest, see section 4.7.3 and appendix R.
[c] Based on the WVDNR Species by Taxa and Priority updated Tuesday, July 14, 2015 (http://www.wvdnr.gov/Revised%20Appendix%201.pdf).
[d] County Occurrence data for animals is based on sources cited in the Habitat Description column, and information from federal and state agencies. County Occurrence information for vascular plants is based on the Atlas of West Virginia Vascular Flora (Harmon et al., 2006).

State Rank: S1 = Critically Imperiled, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure, S5 = Secure, SH= Possibly Extirpated, ? = Inexact Number Rank

State Rank (Birds): S_B: breeding status; these species typically inhabit the state only during the breeding season, S_B/S_N: breeding and non-breeding status when they differ.

Species of Greatest Conservation Need (SGCN) Prioritization: Priority 1 – Priority for conservation work in the next decade; species that are not identified as Priority 1 species are Priority 2 species.

PF – federally petitioned species

DL – federally delisted species

NR – not ranked

TABLE S-2

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
MAMMALS					
Eastern (Rafinesque's) big-eared bat *Corynorhinus rafinesquii macrotis*	S2/E (Tier Ia)	Greensville, Southampton, Suffolk, Chesapeake	Mature hardwood floodplain forests. Roosts in hollow trees, under loose bark, houses, unoccupied buildings, and culverts (VDGIF, 2015b).	Four individuals were captured during 2016 mist-net surveys. A bridge roost was identified within the construction workspace with an emergence count of 82 bats, and 6 roost trees were identified in Southampton and Greensville Counties. This species has been documented at Meherrin River; Nottoway River and Sycamore Bend swamps; and Quaker Swamp, which are crossed by or near ACP (VDCR, 2016b).	This species is very sensitive to disturbance, which may play a role in roost abandonment. Removal of suitable habitat (mature forests) and insecticides have also played a role in decline. Atlantic would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species; however, clearing of forested vegetation reduces available foraging and roosting habitat. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Karst is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities. VDGIF has recommended coordination for any unavoidable impacts located within 0.5 mile of state-listed bat species.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Virginia northern flying squirrel *Glaucomys sabrinus fuscus*	S1/E (Tier Ia)	Highland	High-altitude, old growth forest with a significant spruce-fir component. Most common nest trees include Norway spruce (*Picea abies*), American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), and black birch (*B. lenta*) (VDGIF, 2015b).	Desktop habitat assessment completed and no suitable habitat has been identified within the ACP project area.	Suitable habitat for this species located within the GWNF has been avoided by reroutes; however, forested areas outside of the GWNF would be cleared. Clearing of this forested vegetation would remove potentially suitable habitat for the Virginia northern flying squirrel and would be a permanent impact.
Eastern red bat *Lasiurus borealis*	(Tier IVa)	All Counties Crossed	Wide range of forested and semi-forested habitats, including developed areas with large trees and intensively managed forests. Roost trees are usually large hardwood trees in foliage. Active throughout the year when conditions are suitable (NatureServe, 2015).	One individual was captured during 2015 mist-net surveys, and 96 were captured during 2016 mist-net surveys in Virginia.	Clearing of forested vegetation would reduce available roosting and foraging habitat. Atlantic would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. However, because this species is active year-round, there is still potential for injury or mortality of this species during tree clearing. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities.
Hoary bat *Lasiurus cinereus*	S3SU (Tier IVa)	All Counties Crossed	Deciduous and coniferous forests and woodlands, including areas altered by humans. Forages in open areas, including spaces over water and along riparian corridors. Roosts in foliage of large deciduous or coniferous trees, sometimes in rock crevices, rarely in caves. Have been found hibernating in tree trunks, tree cavities, and squirrel's nests. May be found in the southeastern U.S. during the winter months (NatureServe, 2015).	No hoary bats were captured during 2015 or 2016 mist-net surveys.	Clearing of forested vegetation would reduce available foraging and roosting habitat, although this species is not as common in the southeastern U.S. during the summer months (NatureServe, 2015). Atlantic would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. However, because this species uses trees to hibernate and may be found in the southeastern U.S. during the winter months, there is also potential for injury or mortality of this species during tree clearing.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Silver-haired bat *Lasionycteris noctivagans*	S4SU (Tier IVa)	All Counties Crossed	Forested habitat adjacent to water (lakes, ponds, or streams). Summer roosts and nursery sites in coniferous or deciduous tree foliage, cavities, or under loose bark, sometimes in buildings. In winter, found in mines, caves, houses, rock crevices, under loose bark, and in hollow trees. Activity occurs throughout the year in southeastern Virginia (NatureServe, 2015).	Two individuals were captured during 2016 mist-net surveys in Virginia.	Clearing of forested vegetation would reduce available roosting and foraging habitat. Atlantic would conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. However, because this species may be active year-round in portions of the ACP Project area, there is still potential for injury or mortality of this species during tree clearing. Disturbance to bats roosting adjacent to access roads or construction activities could also result from noise and/or vibrations generated by these activities. Karst is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Southern rock vole *Microtus chrotorrhinus carolinensis*	S1/E[b] (Tier IIa)	Highland, Bath	Cool, moist talus slopes and rocky areas above 915 m elevation within forested streamside riparian areas dominated by rocks greater than 0.2 m diameter and with	No suitable habitat has been identified within the ACP project area. Additional surveys will be completed in 2017.	No suitable habitat for this species has been identified at this time; therefore, no impacts are anticipated

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			abundant woody debris, herbaceous vegetation, and moss (Orrock and Pagels, 2003).		to this species. Pending 2017 survey data.
Southeastern myotis *Myotis austroriparius*	S2 (Tier IVa)	Suffolk, Chesapeake, Southampton	In the summer, roosts in caves; in the winter prefers hollow trees, mines, caves, and buildings. Roosting sites are always near permanent waterbodies (VDGIF, 2015b).	No individuals were detected during 2015 or 2016 surveys; however, suitable habitat for this species is available in the ACP project area. This species has been documented at the Meherrin River; Nottoway River and Sycamore Bend swamps; and Quaker Swamp, and Great Dismal Swamp Conservation Site, which are crossed by or near ACP (VDCR, 2016b).	Primary threats to this species appear to be the loss of roost sites and wooded wetland habitats. The potential impacts and mitigation measures for this species are the same as described above for the Eastern (Rafinesque's) Big-Eared Bat.
Eastern small-footed myotis *Myotis leibii*	S2[b] (Tier Ia)	Highland, Bath, Augusta	Generally, roost on the ground under rocks, in crevices, and occasionally in buildings and under tree bark. Hibernates in solution and fissure caves and mine tunnels near the entrance (VDGIF, 2015b).	2016 surveys detected eastern small-footed bats at one acoustic site. This species has been documented at the Big Levels-Maple Flats Conservation Site, which is in proximity of ACP (VDCR, 2016b).	Refer to table R-2 of appendix R for discussion of impacts on eastern small-footed bat on the GWNF. Atlantic intends to conduct tree clearing outside of the active season for Indiana bats (April 1-October 31) within occupied bat habitat, which may also benefit this species. Tree clearing on rocky slopes may improve summer habitat for this species by increasing solar radiation on potential summer maternity habitat, making habitat more suitable for roosting (FS et al., 2002); however, tree clearing would also reduce foraging habitat. Karst is found along the ACP construction workspace (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					reduction or degradation of connected downstream habitat. Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Little brown bat *Myotis lucifugus lucifugus*	S1S3/PE (Tier Ia)	All Counties Crossed	Roost in cave, buildings, rocks, and trees, under bridges, in mines, in tunnels, and other man-made structures (VDGIF, 2015b).	One brown bat was captured during 2016 mist-net surveys in Suffolk County and individuals were detected during acoustic surveys at Dever Cave in Highland County in 2017. This species has been documented at the Burnsville Cove Conservation Site, which is in proximity of ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Eastern (Rafinesque's) Big-Eared Bat. In addition, Atlantic would adhere to the VDGIF's Best Management Practices for Conservation of Little Brown Bats and Tri-Colored Bats (VDGIF, 2016t). Dever Cave is located approximately 0.7 mile from the ACP workspace, which is outside of the 0.25 mile hibernacula buffer recommended by the VDGIF (2016t). Atlantic has not identified any roost trees within the ACP Project area containing more than 50 individuals.
Allegheny woodrat *Neotoma magister*	S3[b] (Tier IVa)	Highland, Bath, Augusta, Nelson	Blue Ridge to the west in wooded bottomlands, banks, caves, and cliffs (VDGIF, 2016l).	Field surveys documented four rock outcrops that are potentially suitable for woodrat; and Allegheny woodrat presence has been confirmed at two sites within the ACP construction workspace.	Refer to table R-4 of appendix R for discussion of impacts on Allegheny woodrat on the GWNF. One of the two occupied rock outcrops would be avoided by an HDD. Construction activities would result in direct loss of habitat and habitat fragmentation. Fragmentation isolates populations and eliminates access to food sources. Loss of foraging plants (American chestnut [*Quercus prinus*]). Sedimentation during construction could fill underground crevices used as habitat. Atlantic would implement erosion control

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					devices outlined in the FERC *Plan* and *Procedures* to reduce runoff velocity and minimize impacts on the adjacent population. VDGIF has recommended avoidance of sites with confirmed presence.
Tri-colored bat (eastern pipistrelle) *Perimyotis subflavus*	S1S3/PE/PF (Tier Ia)	All Counties Crossed	Roost in caves, rock crevices, trees/foliage, and sometimes buildings in both wooded and cleared areas (VDGIF, 2016n).	Two tri-colored bats were captured during 2016 mist-net surveys in Nelson and Southampton counties. This species has been documented at Jewel Box Cave; and the Burnsville Cove Conservation Site, which are in proximity to ACP (VDCR 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Eastern (Rafinesque's) Big-Eared Bat. In addition, Atlantic would adhere to the VDGIF's Best Management Practices for Conservation of Little Brown Bats and Tri-Colored Bats (VDGIF, 2016t). Atlantic has not identified tri-colored bat hibernacula within 0.25 mile of the ACP workspace, or any roost trees within the ACP Project area containing more than 50 individuals.
Southern water shrew *Sorex palustris punctulatus*	S1S2/E[b] (Tier IIa)	Bath, Highland	Undercut banks of high gradient and high elevation (above 900 m) first and second order streams with abundance cover from overhanging rocks, roots, logs, and crevices (NatureServe, 2015).	Four streams crossed by the pipeline near the Virginia-West Virginia state line on the GWNF were identified as suitable habitat for water shrew.	Refer to table R-2 of appendix R for discussion of impacts on Allegheny woodrat on the GWNF. In-stream construction activities could displace shrews, cause stress, and disrupt normal activities. Construction equipment could cause injury or mortality to individuals. Increased sedimentation and turbidity from construction activities and use of access roads into suitable stream habitat could temporarily degrade habitat, and impact forage species. Atlantic would implement the sediment and erosion control measures identified in the FERC *Plan* and *Procedures* (table 2.3.1-1). VDGIF has recommended avoidance of sites with assumed presence.
American water shrew *Sorex palustris*	E[b] (Tier IIa)	Bath, Highland	Small, cold streams with thick overhanging riparian vegetation; also around lakes, ponds,	Four streams crossed by the pipeline near the Virginia-West Virginia state line on the GWNF	The potential impacts and mitigation measures for this species are the

TABLE S-2 (cont'd)					
Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area					
Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			marshes, bogs, and other lentic habitats (VDGIF, 2016o).	were identified as suitable habitat for water shrew.	same as described above for the Southern Water Shrew.
BIRDS					
Northern Saw-Whet Owl *Aegolius acadicus*	S1B/S2N[b] (Tier Ic)	Bath, Highland, Augusta, Cumberland, Nottoway	Blue Ridge and mountains west of Shenandoah River. High elevation, mature, coniferous forests, sometimes mixed or deciduous forest, with open understory, and riverside habitat nearby. Wooded habitat includes coniferous swamps, disturbed deciduous woods, savannas, riverside forest, and shrub-steppe habitat (CLO, 2016b).	Call surveys conducted on GWNF; no northern saw-whet owls were audibly or visually detected; surveys were not required for this species outside of the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on Northern Saw-Whet Owl on the GWNF. Potentially suitable habitat for this species occurs within the ACP Project area (see appendix Q). Construction would remove suitable nesting and foraging habitat, and potentially cause disturbance to foraging owls. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1).
Henslow's Sparrow *Ammodramus henslowii*	S1B/T (Tier Ia)	N/A	Dry to wet fields with dense vegetation and no woody plants (e.g., early successional fields), and high marsh, such as black needlerush (*Juncus roemerianus*)-saltmeadow hay (*Spartina patens*)-salt grass (*Distichlis spicata*) communities (VDGIF, 2015b).	No NHI occurrences within the Project area.	Due to the rarity of this species, no direct impacts are anticipated; however, suitable habitat for this species is likely to occur in the ACP project area. Construction activities would cause temporary loss of suitable habitat, and could disrupt normal activities of birds near the project area. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Because of this species preference for herbaceous communities without woody plants, clearing of the ROW during construction could provide suitable habitat for this species. Atlantic would mow the ROW outside of the nesting season.
Seaside Sparrow *Ammodramus maritimus*	NR (Tier IVa)	Suffolk	Breeds in short grass tidal marshes and meadows with shrubs and mixed vegetation.	No surveys were conducted for this species.	ACP would permanently impact approximately 3.2 acres of salt or brackish marshes in Virginia (see appendix Q) where this species has

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			Strictly found in salt or brackish marshes (VDGIF, 2016b).		the potential to occur. Construction activities would cause temporary loss of suitable habitat, and could disrupt normal activities of birds near the project area. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species.
Grasshopper Sparrow *Ammodramus savannarum pratensis*	NR (Tier IVa)	All Counties Crossed	Breeds in hayfields, weedy fallow fields, prairies. Favors grass fields for breeding; during winter broomsedge fields are preferred. Also uses grasses, weed fields, and herbs under open pinewoods (VDGIF, 2016b).	No surveys were conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Henslow's Sparrow.
Great Blue Heron *Ardea herodias*	S3B/S5N	All Counties Crossed	Nests in colonies in swamps or edges of bodies of waters in the tops of the tallest trees, usually in remote areas. Mature oak-gum-cypress forests are optimal breeding habitat (VDGIF, 2016b).	An active great blue heron rookery was documented within the ACP survey corridor in Suffolk (ROOK-ACT-02) during 2016 bald and golden eagle surveys. In addition, three rookeries previously documented by NHI and the Center for Conservation Biology (CCB) in Southampton County are located within 0.5-buffer of the workspace; however, no activity in any of these rookeries was observed during 2016 surveys.	VDGIF recommends a TOYR from February 15-July 31 for activities within 0.5-mile of a rookery; maintain undisturbed naturally vegetated buffer of at least 500 feet around the rookery. ROOK-ACT-02 is located 1,974 feet (0.37 miles) from the ACP workspace. The NHI and CCB rookeries are located between 860 (0.16 miles) and 1,050 feet (0.20 miles) from the ACP workspace. Atlantic is currently coordinating with FWS and VDGIF to identify appropriate conservation measures to work within the recommended buffer for ROOK-ACT-02, and to confirm that no additional conservation measures are necessary at the NHI and CCB rookeries (see section 4.5.3).
Black-Billed Cuckoo *Coccyzus erythropthalmus*	NR (Tier IIb)	Highland, Bath, Augusta, Nelson, Buckingham, Dinwiddie, Nottoway, Suffolk, Chesapeake	Breeds in brushy pastures, shrubby hedgerows at edges of fields, dry, open upland woods, and groves. Found primarily in mature and usually extensive	No surveys were conducted for this species.	Potentially suitable habitat for this species occurs in the ACP project area (see appendix Q). Construction activities would cause temporary to long term loss of suitable habitat, and

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			deciduous forests where tangles are present; mainly in mountain country (VDGIF, 2016b).		could disrupt normal activities of birds near the project area. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species. Based on this species preference for edge and open habitats, the permanent right-of-way could provide additional suitable habitat for this species, once restored.
Peregrine Falcon *Falco peregrinus*	S1B/S2N/T[b] (Tier Ia)	Highland, Augusta, Nelson, Suffolk, Chesapeake	In western Virginia, peregrine falcons nest in natural, open, rocky cliffs in mountainous areas or river gorges, usually associated with water. In eastern Virginia, falcons use man-made structures such as unfinished bridge piers, bridges, or skyscrapers (VDGIF, 2015b).	Suitable habitat potentially present within the survey corridor; however aerial surveys within a 2-mile wide area for eagles did not observe any peregrine falcons.	VDGIF recommends maintaining a 0.5-mile buffer around peregrine falcon choice habitat during nesting season (February 15-July 15); Atlantic would consult with VDGIF if suitable habitat would be impacted by blasting prior to initiation of blasting activities.
Least Bittern *Ixobrychus exilis exilis*	S3B/S3N (Tier IIIa)	Augusta, Dinwiddie, Suffolk, Chesapeake	Prefers marshes with fresh or brackish waters with tall vegetation. Often in cattails or areas where vegetation is at least three feet tall (VDGIF, 2016b).	No surveys were conducted for this species.	ACP would permanently impact approximately 53.9 acres of emergent freshwater or brackish marshes in Virginia (see appendix Q) where this species has the potential to occur. The potential impacts and mitigation measures for this species are the same as described above for the Seaside Sparrow.
Loggerhead Shrike *Lanius ludovicianus*	S1B/S2N/T[b] (Tier Ia)	All Counties Crossed	Open areas, grasslands (often grazed or occasionally mowed) and agricultural landscapes interspersed with forbs, scattered shrubs, and/or small trees. Usually nests in eastern redcedar or hawthorne (VDGIF, 2015b).	Surveys were conducted on a portion of the ACP survey corridor; one loggerhead shrike individual was observed.	Refer to table R-2 of appendix R for discussion of impacts on Loggerhead Shrike on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Henslow's Sparrow. As described in the *Migratory Bird Plan* (see table 2.3.1-1), Atlantic would clear vegetation outside of the loggerhead shrike nesting season (April 1-July 31) in Bath, Highland, and Augusta

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					Counties, and the Rockfish Valley of Nelson County.
Swainson's Warbler *Limnothlypis swainsonii*	S2B (Tier IIc)	Augusta, Suffolk, Chesapeake, Southampton	In Appalachian Mountain areas found in rhododendron and mountain laurel communities (VDGIF, 2016b).	No surveys were conducted for this species. This species has been documented in the Great Dismal Swamp: Northwest Section Conservation Site, and Tarrara/SR 35 Conservation Site, which are crossed by or in proximity to ACP (VDCR, 2016b).	Potentially suitable habitat for this species occurs in the ACP project area (see appendix Q). Construction activities would cause long term to permanent loss of suitable forested habitat, and could disrupt normal activities of birds near the project area. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species.
Black-and-White Warbler *Mniotilta varia*	NR (Tier IVa)	All Counties Crossed	Breeds in mature or second-growth deciduous or mixed woodlands from sea level to mountain peaks. They prefer sapling stage (age 20) of central hardwood forest clearcuts with high stem densities and closed canopies. Nest in the roots of fallen trees (VDGIF, 2016b).	No surveys were conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Swainson's Warbler.
Bachman's Sparrow *Peucaea aestivalis*	S1B/T (Tier Ia)	Dinwiddie, Nottoway, Southampton, Greensville	Dry, open-canopy pine woods with little woody understory, and dense grass/forb layer such as pine savanna. Also uses old fields and pine clearcuts. Associated with broomsedge (*Andropogon virginicus*). This species has been confirmed within the Fort Pickett Military Reservation (VDGIF, 2015b).	NHI Occurrences within 2-miles of Project area in mid- to late-1990s. This species has been documented at the Rt. 63 Uplands Conservation Site and Fort Pickett Impact Area Conservation Site, which is are in proximity to ACP (VDCR, 2016b).	Based on VDGIF assessment, there is not a high level of concern along the pipeline route for this species. The potential impacts and mitigation measures for this species are the same as described above for the Henslow's Sparrow. Thinning of forests and frequent burns to suppress underbrush and encourage grasses promote suitable habitat for this species (VDGIF, 2015b); therefore, clearing of the ROW during construction could provide suitable habitat for this species. Atlantic would mow the ROW outside of the nesting season.
Clapper Rail *Rallus crepitans*	NR (Tier IVa)	Suffolk, Chesapeake	Prefers non-timbered wetland with shallow and deep marshes; rarely	No surveys were conducted for this species.	ACP would permanently impact approximately 53.9 acres of

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			reported far from salt water marshes (VDGIF, 2016b).		emergent freshwater or brackish marshes in Virginia (see appendix Q) where this species has the potential to occur. The potential impacts and mitigation measures for this species are the same as described above for the Seaside Sparrow.
King Rail *Rallus elegans*	S2B/S3N (Tier IIb)	Nelson, Buckingham, Cumberland, Prince Edward, Nottoway, Dinwiddie, Brunswick, Greensville, Southampton, Suffolk, Chesapeake	Occurs in freshwater or brackish marshes in emergent vegetation or extensive marshes along streams, ponds, and rivers. Occasionally use rice fields and wet meadows (VDGIF, 2016b).	No surveys were conducted for this species.	ACP would permanently impact approximately 53.9 acres of emergent freshwater or brackish marshes in Virginia (see appendix Q) where this species has the potential to occur. The potential impacts and mitigation measures for this species are the same as described above for the Seaside Sparrow.
Virginia Rail *Rallus limicola*	S2B/S3N (Tier IVa)	Chesapeake	Prefers dense marsh areas with cattails as dominant cover type. Found in fresh or brackish marshes, and sometimes salt marshes, year-round (VDGIF, 2016b).	No surveys were conducted for this species.	ACP would permanently impact approximately 53.9 acres of emergent freshwater or brackish marshes in Virginia (see appendix Q) where this species has the potential to occur. The potential impacts and mitigation measures for this species are the same as described above for the Seaside Sparrow.
Golden-Crowned Kinglet *Regulus satrapa*	S2B/S5N	All Counties Crossed	Breeds mainly in dense northern coniferous forests of spruce, but also nests in pine, fir, hemlock woods and cedar bogs. Winter in coniferous mixed or deciduous forests, thickets, and low tangles of weedy growth (VDGIF, 2016b).	No surveys were conducted for this species.	Potentially suitable habitat for this species occurs in the ACP project area (see appendix Q). Atlantic would construct outside of the nesting season, and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1).
American Woodcock Scolopax minor	NR (Tier IIa)	All Counties Crossed	In the summer, this species uses permanent wet areas with alder, dogwood, crab apple, and hawthorne. Nesting occurs in areas of mixed hardwood growth of birch, aspen, conifer, and alder. They forage in fields for insects (VDGIF, 2016b)	No surveys were conducted for this species.	Potentially suitable habitat for this species occurs in the ACP project area (see appendix Q). Atlantic would clear outside of the nesting season, and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1).

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Cerulean Warbler *Setophaga cerulea*	S3S4B (Tier IIa)	All Counties Crossed	Breeds in swamps and bottomlands (coastal plain); favors open stands of tall trees along riverbanks or dense deciduous forests with little undergrowth (mountains). Always found in mature hardwoods (VDGIF, 2016b).	No surveys were conducted for this species.	Refer to table R-4 of appendix R for discussion of impacts on Cerulean Warbler on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Swainson's Warbler. As described in the *Migratory Bird Plan* (see table 2.3.1-1), Atlantic would clear vegetation outside of the March 15-August 31 migratory bird season to minimize direct impacts on this species.
Magnolia Warbler *Setophaga magnolia*	S2B	All Counties Crossed	Nests in low conifers, hemlock, larch, spruce, and fir; avoids pure hardwood forests (VDGIF, 2015b).	No surveys were conducted for this species.	Refer to table R-4 of appendix R for discussion of impacts on Magnolia Warbler on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Swainson's Warbler.
Black-Throated Green Warbler (Wayne's Warbler) *Setophaga virens waynei*	S1B? (Tier Ic)	Chesapeake, Suffolk	Coastal cypress and white-cedar swamps of southeastern Virginia. Also inhabits swamps containing high percentage of red maple. Locally common summer resident in the Great Dismal Swamp National Wildlife Refuge, which is crossed by ACP (VDGIF, 2015b).	No surveys were conducted for this species.	A limited about of potentially suitable habitat for this species occurs in the ACP project area in an area where this species has been known to occur. Conservation of the Atlantic white cedar (*Chamaecyparis thyoides*) is important to conserve this species (VDGIF, 2015b). Atlantic would permanently remove approximately 2.0 acres of forested vegetation communities that may contain Atlantic white cedar (see appendix Q). The potential impacts and mitigation measures for this species are the same as described above for the Swainson's Warbler.
Northern Rough-Winged Swallow *Stelgidopteryx serripennis*	NR (Tier IVc)	All Counties Crossed	Open areas with adequate nest sites and a water supply, usually a stream. Nests are built in burrows in sandy banks, often along a stream, irrigation ditch, and less commonly in rock ledges, crevices in bridges and buildings, or	No surveys were conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Henslow's Sparrow.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			drainage pipes under bridges (VDGIF, 2016b).		
Eastern Meadowlark *Sturnella magna*	NR (Tier IVa)	All Counties Crossed	Breeds in open farmlands, especially pastures, hayfields, and grassy meadows. May use areas with scattered shrubs and may favor moist lowlands; although dense grasslands with low density of shrubs are preferred. Larger (over five hectares) of contiguous fields are also preferred (VDGIF, 2016b).	No surveys were conducted for this species.	The potential impacts and mitigation measures for this species are the same as described above for the Henslow's Sparrow.
Appalachian Bewick's Wren *Thryomanes bewickii altus*	SHB[b]/E	Highland, Bath, Augusta	High elevations in farmyards or overgrown fields with tree cavities or abandoned buildings (VDGIF, 2015b).	This species is very rare and may be extirpated. No suitable habitat was identified within the GWNF during surveys.	Based VDGIF correspondence, due to its rarity, this species is unlikely to occur in the ACP project area. Surveys found a lack of suitable habitat in the GWNF. Therefore, impacts are unlikely and therefore have not been assessed further.
Winter Wren *Trogoldytes hiemalis*	S2B/S4N	All Counties Crossed	Breed in spruce-fir forests with tangles, uprooted trees, and other cover, or dark ravines, under hemlocks or beneath hardwoods. Winter in tangles, fallen logs, uprooted trees, or stream banks that provide cover (VDGIF, 2016b).	No surveys were conducted for this species.	Refer to table R-4 of appendix R for discussion of impacts on Winter Wren on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Swainson's Warbler.
Golden-Winged Warbler *Vermivora chrysoptera*	S3B/SW[a] (Tier Ia)	Bath, Highland, Augusta, Nelson	Prefer shrubby areas with scattered trees, generally near forest edge. Breed in a variety of early-successional or disturbed habitats including shrubby fields, abandoned farmlands, shrubby swamps, successional forest, utility ROWs, clearings within forests, brushy clearcuts, or shelterwood cuts in deciduous woods. Once a disturbed area becomes too old, this species disappears (VDGIF, 2016b).	No surveys were conducted for this species.	Refer to table R-4 of appendix R for discussion of impacts on Golden-Winged Warbler on the GWNF. Potentially suitable habitat for this species occurs in the ACP project area (see appendix Q). Construction activities would cause long term to permanent loss of suitable forested habitat, and could disrupt normal activities of birds near the project area. Atlantic would clear outside of the nesting season from March 15-August 31 and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					1) to minimize impact to this species. Because this species prefers early-successional habitats (VDGIF, 2015b), the permanent right-of-way and secondary growth outside of the permanent right-of-way have the potential to create additional suitable habitat for this species once restored.
REPTILES					
Canebrake rattlesnake (Coastal Plain population) *Crotalus horridus*	S1/E (Tier II)	Suffolk, Chesapeake	Mature hardwood and mixed pine-hardwood forests, forested cane thickets, and ridges adjacent to swampy areas (VDGIF, 2011b).	There are numerous observations of this species in Chesapeake and Suffolk. This species has been documented in the Great Dismal Swamp Conservation Site; and Great Dismal Swamp: Northwest Section Conservation Site, which are crossed by ACP (VDCR, 2016b).	Construction would remove foraging habitat, and vehicles could cause injury or mortality. Construction activities would increase noise and vibrations, which may disrupt normal activities, displace snakes, or increase stress. Atlantic would implement the *Protected Snake Conservation Plan* (see table 2.3.1-1) to provide guidance to construction crews on ways to minimize disturbance and impacts on snakes during construction.
Timber rattlesnake *Crotalus horridus*	S4[b] (Tier IV)	Highland, Bath, Augusta, Nelson, Buckingham	Hibernates in fissures in rock ledges or talus slopes. Utilizes diverse forests and open habitats when active (VDGIF, 2015b).	GWNF has reported an occurrence of the timber rattlesnake within the ACP project area.	Refer to table R-4 of appendix R for discussion of impacts on Timber Rattlesnake on the GWNF. Construction activities would increase noise and vibrations, which may disrupt normal activities, displace snakes, or increase stress. Construction would remove foraging habitat, and vehicles could cause injury or mortality. Construction activities could expose rock outcrops that are currently shaded, potentially providing sufficient solar radiation for suitable timber rattlesnake denning or gestating habitat. Atlantic would implement the *Protected Snake Conservation Plan* (see table 2.3.1-1) to provide guidance to construction crews on ways to minimize

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					disturbance and impacts on timber rattlesnake during construction.
Scarlet kingsnake *Lampropeltis elapsoides*	S2S4 (Tier IIIc)	Nelson	Prefer pine forests or mixed pine-hardwood forests; hide beneath loose bark of dead pine trees (Roble et al., 2007).	One occurrence noted near Project area.	The potential impacts and mitigation measures for this species are the same as described above for the Canebrake Rattlesnake. Although not included in the *Protected Snake Conservation Plan* (table 2.3.1-1), Atlantic has committed to implement an educational program for construction crews to assist with identification of this species, and to inform crews on how to minimize disturbance with suitable habitat. In addition, Atlantic would notify VDGIF of any reported occurrences of this species.
AMPHIBIANS					
Barking treefrog *Hyla gratiosa*	S2/T (Tier IIa)	Greensville, Southampton	Breeds in graminoid-dominated cypress ponds and bays, and in pine barren ponds. Generally, pine savanna or low wet woods and swamps surrounding breeding ponds (VDGIF, 2016p).	VDCR-DNH has documented occurrences in Greensville and Southampton Counties. This species has the potential to occur within the survey corridor between U.S. Route 58 and County Route 644 (VDCR, 2016b).	Potentially suitable habitat for this species occurs in the ACP project area. ACP would impact approximately 307 acres of freshwater wetland in Virginia during construction, of which approximately 84 acres would be maintained in an herbaceous state within the permanent right-of-way (see section 4.3.3). The loss of suitable wetland habitat is the greatest threat to this species. VA SWAP recommended conservation actions include maintaining or restoring forested buffers surrounding occupied wetlands (VDGIF, 2015b). Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1) to construct across wetland features, and its *Restoration and Rehabilitation Plan* (see appendix F) to minimize impacts on this species.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Mabee's salamander *Ambystoma mabeei*	S1S2/T (Tier IIa)	Suffolk, Chesapeake	Fish-free vernal ponds or ephemeral coastal plain sinkholes up to 1.5 meters deep, with surrounding forests generally composed of hardwoods mixed with pine. Also found in low areas adjacent to coastal rivers and pine savannas, and in bogs, ponds, low wet woods, and swamps (VDGIF, 2016q).	2016 surveys completed at 118 wetland features; two sites were identified as moderate habitat and none as high; no individuals were observed.	Atlantic has avoided suitable habitat for this species via reroutes; therefore, no impacts are anticipated.
Eastern tiger salamander *Ambystoma tigrinum*	E (Tier IIa)	Augusta, Nelson	Breeding habitat includes limestone sinkhole ponds associated with wetlands. Terrestrial habitat includes mature forests (VDGIF, 2016m).	2016 surveys identified larval tiger salamander at one site; Atlantic has shifted the alignment to avoid this site. Additional surveys are pending to be completed in 2017. Associated with the Big Levels-Maple Flats Conservation Site and at isolated wetlands in Sherando Quad, which are in proximity to ACP (VDCR, 2016b).	Refer to table R-4 of appendix R for discussion of impacts on eastern tiger salamander on the GWNF. The greatest threat to this species is the loss of breeding ponds and adjacent woodlands. VDGIF has recommended avoidance of occupied wetlands with 300-meter buffer.
Dwarf waterdog *Necturus punctatus*	S2S3 (Tier IIIa)	Dinwiddie, Greensville, Southampton, Brunswick	Slow-moving areas of low gradient streams with mud or sand substrates (VDGIF, 2016r).	No surveys for this species were conducted. This species has been documented at the Nottoway River-Fort Pickett SCU; and has the potential to occur at the Meherrin River and swamp forest near the Virginia-North Carolina border; and Fontaine Creek, which are crossed by ACP (VDCR, 2016b).	Potentially suitable habitat occurs in waterbodies that are crossed by ACP. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					hazardous chemicals, and to restore riparian habitats, including implementation of the VDEQ Virginia Erosion and Sediment Control Handbook.
Cow Knob salamander *Plethodon punctatus*	S2[a,b] (Tier Ic)	Augusta, Bath	Lives under rocks, logs, and other surface debris where it is moist and cool. Occurs in mixed hardwood stands, hardwood mixed with eastern hemlock (*Tsuga canadensis*) and hemlock stands. Found at elevations greater than 2,400 feet (VDGIF, 2016k).	2016 surveys completed in Bath County within the GWNF. Potentially suitable habitat was identified at two locations; however, no individuals were observed.	Refer to table R-2 of appendix R for discussion of impacts on Cow Knob salamander on the GWNF. Impacts on this species would include long term to permanent habitat loss. If present during construction, noise and vibrations generated from construction activities could disrupt normal activities, and could cause injury or mortality from collisions with construction equipment or vehicles. Atlantic would implement the measures in the FERC *Plan* and *Procedures,* and construction and restoration plans (see table 2.3.1-1) to minimize impacts on this species.
FISH					
Roughhead shiner *Notropis semperasper*	S2S3[b] (Tier Ib)	Highland, Bath, Augusta	Endemic to the headwaters of the James River. Cool to warm streams of moderate gradient, gravel to boulder substrate, slight siltation, slow to moderate currents or in or just below the head of a pool, or in moderately calm water adjacent to runs (VDGIF, 2016b).	Surveys for this species were conducted on the GWNF only (refer to table R-2 in appendix R). This species has been found in upper James River drainage above Buchanan (FS, 2014). Based on correspondence from the GWNF, this species is known specifically from the Back Creek, Jackson River, Cowpasture River (FS, 2016c). Atlantic has assumed presence at these waterbody crossing locations.	Refer to table R-2 of appendix R for discussion of impacts on roughhead shiner on the GWNF. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity, reduced fish passage, potential mortality during fish relocation efforts, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the *Virginia Fish*

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					Relocation Plan (see table 2.3.1-1) to remove all fish species trapped within areas proposed for dewatering or in-stream work prior to initiating construction. Atlantic would also implement the measures in its construction and restoration plans (see table 2.3.1-1). Atlantic committed to adhering to the VDGIF TOYR (March 15 to June 30) (VDGIF, 2016a) at the waterbody crossing locations where this species is assumed present (see appendix K).
Slimy sculpin *Cottus cognatus*	S2 (Tier IV)	Highland, Augusta	Small rocky brooks, silted vegetated spring runs to large rivers and shallow to deep portions of oligotrophic lakes (VDGIF, 2016b).	No surveys for this species were conducted. This species has the potential to occur in the Middle River, which would be crossed by ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Roughhead Shiner. The Middle River would be crossed by a dry crossing technique (see appendix K); therefore, Atlantic would implement the *Virginia Fish Relocation Plan* (see table 2.3.1-1) at this location. There is no VDGIF TOYR for this species.
Orangefin madtom *Noturus gilberti*	S2[b]/T (Tier IIb)	Bath	Found beneath shelter or larger gravel, rubble, or boulders in medium to large, cool to warm streams of moderate gradient and with swifter sections with little to no silt (VDGIF, 2016b).	Surveys were conducted in 2016 on the GWNF; no orangefin madtom were observed at crossing locations. This species has been found in the Mill Creek and Cowpasture River (FS, 2014; FS, 2016c).	Refer to table R-2 of appendix R for discussion of impacts on orangefin madtom on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Roughhead Shiner. Because only the introduced population of orange madtom may be affected by ACP, the VDGIF TOYR (March 15-May 31) would not apply.
GASTROPODS (Snails)					
Virginia springsnail *Fontigens morrisoni*	S2/E (Tier Ia)	Bath, Highland	Endemic only to the Upper James River basin. Confirmed at two springs and two caves in Bath and Highland counties (VDGIF, 2015b).	2016 karst surveys identified karst features that were located within, adjacent to, and would receive drainage from the proposed ACP right-of-way in	Karst terrain is found within and adjacent to the ACP construction workspace in Virginia (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				Highland County; and Bath County (see section 4.1.2.3).	allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Round supercoil *Paravitrea reesei*	SU[b] (Tier IIc)	N/A	Moist environments including damp areas under rocks, leaf litter, river bluffs and other slopes near water (Hotopp et al., 2013).	Surveys for this species on the GWNF did not document any occurrences; No surveys for this species were conducted outside the GWNF.	Construction activities could cause mortality to individuals if present in the workspace. This species is known to inhabit leaf litter in forests, a habitat that is common across the ACP Project area. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Because suitable habitat is very common across the ACP Project area, the loss of habitat would be localized and minimal.
BIVALVES (Freshwater Mussels)					
Brook floater *Alasmidonta varicosa*	S1[b]/E (Tier Ib)	Augusta, Buckingham, Nottoway	Fast-flowing, clean water in substrates that contain relatively firm rubble, gravel, and substrates swept free from siltation. Buried in	None identified during surveys. This species has been documented in Christians Creek and Back Creek.	Refer to table R-2 of appendix R for discussion of impacts on brook floater on the GWNF. No direct impacts anticipated to this species is

TABLE S-2 (cont'd)					
Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area					
Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			the substrate in shallow riffle and shoal areas (VDGIF, 2016b).		anticipated in waterbodies crossed by ACP; Atlantic would implement the *Freshwater Mussel Guidelines for Virginia* (FWS and VDGIF, 2008) where mussels are documented. However, suitable habitat for this species could occur in waterbodies crossed by ACP. Waterbody crossings and access road construction and use would temporarily degrade water quality through increased sedimentation and turbidity, and potentially introduce contaminants (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in its construction and restoration plans (see table 2.3.1-1).
Atlantic pigtoe *Fusconaia masoni*	S2/T[a,b] (Tier II)	Bath, Prince Edward, Nottoway, Dinwiddie, Buckingham, Greensville, Nelson, Brunswick, Greensville	Clean, swift-moving waters often found in gravel of gravel-sand substrate (VDGIF, 2016b).	This species was observed at two waterbody crossings during surveys. This species has been documented is assumed present in the Nottoway River, Appomattox River, Mill Creek, Sturgeon Creek, and Meherrin River based on FWS and VDGIF correspondence (VDGIF, 2016d). This species has been previously documented at Nottoway River-Ft. Pickett SCU and Nottoway River-Sturgeon Creek-Hardwood Creek SCU, and has the potential to occur at Appomattox River crossing south of Stoddert, Nottoway River and Sycamore Bend	Refer to table R-2 of appendix R for discussion of impacts on Atlantic pigtoe on the GWNF. This species is currently under review by FWS for listing under the ESA (refer to section 4.7.1.15). The two waterbodies where this species was observed would be crossed by the dry crossing technique; however, we have recommended in section 4.7 that Atlantic perform a hydrofracture potential analysis at one of these crossings, and the HDD technique be utilized if the hydrofracture potential is low. In addition, in section 4.7.4 we recommend that Atlantic adhere to the Atlantic pigtoe TOYR for waterbodies where this species has been assumed present. The potential impacts and mitigation

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				swamps, and at the Wingina crossing (VDCR, 2016b).	measures for this species are the same as described above for the Brook Floater.
Yellow lampmussel *Lampsilis cariosa*	S2 (Tier IIa)	Dinwiddie, Southampton, Brunswick, Greensville	Large streams and rivers with low gradient and sand and gravel substrates (VDGIF, 2015b).	This species was observed at one waterbody crossing location. Per VDCR correspondence, this species has been documented in the Nottoway River-Fort Pickett SCU, Nottoway River-Monroe Bridge SCU, and Nottoway River-Sturgeon Creek-Hardwood Creek SCU; and has the potential to occur in the Meherrin River and swamp forest at the Virginia-North Carolina border; and Nottoway River and Sycamore Bend swamps, which are crossed or in proximity to ACP (VDCR, 2016b). However, this species is considered uncommon in the Nottoway and Meherrin rivers.	This species was detected at one waterbody that would be crossed utilizing the cofferdam technique, and is likely to occur in the Nottoway River and Sturgeon Creek. The Nottoway River (MP 32.6) would be crossed utilizing an HDD. Atlantic would implement the *Freshwater Mussel Guidelines for Virginia* (FWS and VDGIF, 2008) where mussels are documented. The potential impacts and mitigation measures for this species are the same as described above for the Brook Floater.
Eastern lampmussel *Lampsilis radiata*	S2 (Tier IVa)	Nottoway, Dinwiddie, Southampton, Brunswick	Small streams, large rivers, ponds, and lakes in a wide variety of substrates, but prefers sand or gravel (VDGIF, 2015b).	This species was observed at one waterbody crossing location. This species has been documented at the Nottoway River-Monroe Bridge SCU; Nottoway River-Sturgeon Creek-Hardwood Creek SCU (VDCR, 2016b). Large populations are known to exist in the main stem of the Nottoway and Meherrin rivers, and may be present in the James and Roanoke rivers (VDGIF, 2015b).	This species was detected at one waterbody that would be crossed utilizing the cofferdam technique, and is likely to occur in the Nottoway River and Sturgeon Creek. The Nottoway River (MP 32.6) would be crossed utilizing an HDD. Atlantic would implement the *Freshwater Mussel Guidelines for Virginia* (FWS and VDGIF, 2008) where mussels are documented. The potential impacts and mitigation measures for this species are the same as described above for the Brook Floater.
Green floater *Lasmigona subviridis*	S2/T[a,b] (Tier IIa)	Nelson, Buckingham, Greensville, Southampton, Prince	Fast-flowing, clean water in firm rubble, gravel and sand substrates swept free from siltation. Found buried in substrate	None identified during surveys.	Refer to table R-2 of appendix R for discussion of impacts on green floater on the GWNF. This species is currently under review by FWS for

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
		Edward, Greensville, Brunswick	in shallow riffle and shoal areas (VDGIF, 2016b). This species has been documented in the Nottoway River-Fort Pickett SCU (VDCR, 2016b), James River, (VDCR, 2016b; VDGIF, 2016d), and Meherrin River (VDGIF, 2016d). It has the potential to occur at the Appomattox River crossing south of Stoddert; downstream of County Pond; and swamp forest at the Virginia-North Carolina border, which are crossed or in proximity to ACP (VDCR, 2016b).		listing under the ESA (refer to section 4.7.1.15). Although not detected during surveys, this species is assumed present in the James, and Meherrin rivers, Mayo Creek, two unnamed tributaries to the James River. The James River and Mayo Creek would be crossed utilizing an HDD. The potential impacts and mitigation measures for this species are the same as described above for the Brook Floater. We have also recommended in section 4.7.4 that Atlantic adhere to the VDGIF TOYR for green floater in all waterbodies where this species is assumed present.
Paper pondshell *Utterbackia imbecillis*	S2S3	Nelson, Nottoway, Dinwiddie, Greensville, Southampton	Occurs in mud and mud sand substrates of slackwater areas of ponds, creeks, or near the banks of large rivers, and reservoirs (NatureServe, 2015).	This species was observed at one waterbody crossing location.	The waterbody where this species was documented would be crossed utilizing the cofferdam technique. Atlantic would implement the *Freshwater Mussel Guidelines for Virginia* (FWS and VDGIF, 2008) where mussels are documented. The potential impacts and mitigation measures for this species are the same as described above for the Brook Floater.
CRUSTACEANS (Amphipods, Isopods, and Decapods)					
Racovitza's terrestrial cave isopod *Miktoniscus racovitzai*	S2[b] (Tier IIIc)	Bath	Subaquatic, subterranean obligate species. Full extent of subterranean habitat is unknown. Documented in the Upper James watershed in Bath County, and in the South Fork Shenandoah watershed. It has been potentially extirpated from the South Fork Shenandoah watershed (NatureServe, 2015).	2016 karst surveys identified karst features that were located within, adjacent to, and would receive drainage from the proposed ACP right-of-way in Highland County, Bath County, and Augusta County (see section 4.1.2.3).	Refer to table R-2 of appendix R for discussion of impacts on Racovitza's Terrestrial Cave Isopod on the GWNF. Karst terrain is found within and adjacent to the ACP construction workspace in Virginia (see section 4.1.2.3); construction activities such as blasting could cause the formation of surficial karst features that could allow unfiltered and unimpeded flow of surface drainage into the subterranean environment. This could alter water flow patterns or

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					increase sediment and contaminant loads, which could lead to a reduction or degradation of available habitat. Cave obligate species habitat is susceptible to contamination due to the porosity of the substrate. Blasting, trenching, and digging can cause shifts in surface and subsurface formations and hydrology, and may crush cave obligate species or alter travel corridors (FWS, 2011i). Atlantic would implement the *Karst Mitigation Plan* (appendix I) to mitigate the potential for formation of surficial karst features, and to mitigate increased erosion and sedimentation into these features if they are identified or form during construction activities.
Chowanoke crayfish *Orconectes virginiensis*	S2S3[a] (Tier IIIa)	Dinwiddie, Greensville, Nottoway, Brunswick	Sluggish streams and swamps with abundance of dead wood on the bottom (VDGIF, 2015b).	No surveys were conducted for this species in Virginia. This species has been documented in the Nottoway River-Fort Pickett SCU; and has the potential to occur in Waqua Creek, which are crossed or in proximity to ACP (VDCR, 2016b).	This species is currently under review by FWS for listing under the ESA (refer to section 4.7.1.14). The Nottoway River (MP 260.7) and Waqua Creek would be crossed utilizing dry crossing techniques. Atlantic would implement the *Virginia Fish Relocation Plan* (see table 2.3.1-1) at both locations prior to construction. Atlantic is also proposing in-stream blasting at both locations; however, this would be conducted in the dry following removal of aquatic species. In section 4.7.10, we recommend that Atlantic conduct a hydrofracture potential analysis for Nottoway River (MP 260.7) and utilize the HDD method if the hydrofracture potential is low. The FWS' enhanced conservation measures for ESA-sensitive waterbodies described in section 4.7.1 would also apply at

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					these waterbody crossings (see appendix K).
Montgomery County cave amphipod *Stygobromus fergusoni*	S1 (Tier IIc)	Not Documented in Counties Crossed by ACP	Subaquatic, subterranean obligate species. Full extent of subterranean habitat is unknown. Documented in the Upper James watershed (NatureServe, 2015).	2016 karst surveys identified karst features within the study area in Highland County and Bath County (see section 4.1.2.3).	ACP would cross the Upper James watershed in Bath and Highland Counties. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Shenandoah Valley cave amphipod *Stygobromus gracilipes*	S3	Not Documented in Counties Crossed by ACP	Subaquatic, subterranean obligate species. Specimens have been collected from 11 caves in the Potomac River drainage in small streams and pools. Full extent of subterranean habitat is unknown. Documented in the South Fork Shenandoah watershed (NatureServe, 2015).	2016 karst surveys identified karst features within the study area in Augusta County (see section 4.1.2.3).	ACP would cross the South Fork Shenandoah watershed in Augusta County. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Allegheny County cave amphipod *Stygobromus hoffmani*	S2 (Tier IIc)	Not Documented in Counties Crossed by ACP	Subaquatic, subterranean obligate species. Full extent of subterranean habitat is unknown. Documented in the Upper James watershed (NatureServe, 2015).	2016 karst surveys identified karst features within the study area in Highland County and Bath County (see section 4.1.2.3).	ACP would cross the Upper James watershed in Bath and Highland Counties. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Bath County cave amphipod *Stygobromus mundus*	S1S2[b] (Tier IIc)	Bath	Subaquatic, subterranean obligate species. Has been documented from both cave and surface stream collections. Full extent of subterranean habitat is unknown. Documented in the Upper James River watershed in Bath County (NatureServe, 2015).	2016 karst surveys identified karst features within the study area in Highland County and Bath County (see section 4.1.2.3).	Refer to table R-2 of appendix R for discussion of impacts on Bath County Cave Amphipod on the GWNF. ACP would cross the Upper James watershed in Bath and Highland Counties. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Madison cave amphipod *Stygobromus stegerorum*	S1/T (Tier Ib)	Augusta	Known and endemic to two cave lakes in Augusta County. Caves with clean abundant water flowing through the system (VDGIF, 2015b).	2016 karst surveys identified karst features within the study area in Augusta County (see section 4.1.2.3). This species has been documented in the Barterbrook Blue Conservation Site, and has the potential to	The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				occur at Churchville Cave, Spring Cave #3, and Shortwave Cave, which are crossed or in proximity to ACP (VDCR, 2016b).	
MYRIAPODS (Centipedes and Millipedes)					
Hoffman's Cleidognid millipede *Cleidogona hoffmani*	S2S3[b] (Tier IIc)	Not Documented in Counties Crossed by ACP	Leaf litter in deciduous forest. Mountaintop species documented from Mt. Rogers, Whitetop Mountain, Elk Garden, and Helton Creek.	This species was documented at nine sites during surveys on the GWNF (see table R-2 in appendix R).	Refer to table R-2 of appendix R for discussion of impacts on Hoffman's Cleidognid Millipede on the GWNF. Based on survey results, this species is within the ACP project area; therefore, there is the potential for mortality of individuals during tree clearing and other construction activities. This species is known to inhabit leaf litter in deciduous forests, a habitat that is common across the ACP project area. Construction and maintenance of the right-of-way would result in conversion to less desirable habitat in some areas. Because suitable habitat is very common across the ACP project area, the loss of habitat would be localized and minimal (FS et al., 2002).
Montane centipede *Escaryus cryptorobius*	S2[b] (Tier IIc)	Nelson	Endemic to the Blue Ridge Mountains of Virginia. Found in the upper soil horizons in mixed hardwood forests in the summer months (May through July); burrows deep into the soil matrix during winter (Pereira and Hoffman, 1993).	This species was not documented during surveys on the GWNF; surveys for this species were not required outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Montane Centipede on the GWNF. This species is known to inhabit leaf litter in mixed forests, a habitat that is common across the ACP Project area. The potential impacts and mitigation measures for this species are the same as described above for the Hoffman's Cleidognid Millipede.
A cave centipede *Nampabius turbator*	S1[b] (Tier IIIc)	Not Documented in Counties Crossed by ACP	Subterrestrial, subterranean obligate species. Documented within the Upper James watershed (NatureServe, 2015)	2016 karst surveys identified karst features within the study area in Highland County and Bath County (see section 4.1.2.3).	Refer to table R-2 of appendix R for discussion of impacts on *Nampabius turbator* on the GWNF. ACP would cross the Upper James watershed in Bath and Highland Counties. The potential impacts and mitigation

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Shenandoah Mountain Xystodesmid millipede *Nannaria shenandoah*	S1[b] (Tier IIc)	Augusta	Found in leaf litter in mixed forests between 760 to 1,000 meters elevation (Hoffman, 1949).	Surveys on the GWNF did not document this species; however, the survey documented six sites with unidentifiable *Nannaria* specimens, which may represent suitable habitat for this species. Surveys outside the GWNF were not required for this species.	Refer to table R-2 of appendix R for discussion of impacts on Shenandoah Mountain Xystodesmid Millipede on the GWNF. Four of the sites where *Nannaria* specimens were identified would be located within the ACP construction workspace. The potential impacts and mitigation measures for this species are the same as described above for the Hoffman's Cleidognid Millipede.
Mays Mountain Cave Millipede *Pseudotremia alecto*	NR[b] (Tier IIc)	Bath	Found in leaf litter and detritus in deciduous forests at 330 meters elevation; has also been found in caves. Documented in Allegheny and Bath counties (Shear, 2011).	This species was not documented during surveys on the GWNF; surveys outside the GWNF were not required for this species.	Refer to table R-2 of appendix R for discussion of impacts on Mays Mountain Cave Millipede on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Hoffman's Cleidognid Millipede.
Pleasing Xystodesmid Millipede *Semionellus placidus*	S3[b] (Tier IIIc)	Augusta	Leaf litter of deciduous forests and cove habitats, usually near water (BugGuide, 2016).	This species was not documented during surveys on the GWNF; surveys outside the GWNF were not required for this species.	Refer to table R-2 of appendix R for discussion of impacts on Pleasing Xystodesmid Millipede on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Hoffman's Cleidognid Millipede.
INSECTS					
Springtails					
A cave springtail *Pygmarrhopalites carolynae*	S3[b]	Bath	Subterrestrial, subterranean obligate species (NatureServe, 2015).	2016 karst surveys identified 40 karst features in Bath County.	Refer to table R-2 of appendix R for discussion of impacts on *Pygmarrhopalites carolynae* on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
A cave springtail	S2[b]	Bath	Subterrestrial, subterranean obligate species. Found in caves;	2016 karst surveys identified 40 karst features in Bath County.	Refer to table R-2 of appendix R for discussion of impacts on

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Pygmarrhopalites sacer			known from two caves in Bath County, Virginia (NatureServe, 2015).		*Pygmarrhopalites sacer* on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Beetles					
Appalachian tiger beetle *Cicindela ancocisconensis*	S2[b] (Tier IIIc)	Augusta, Bath, Highland	Prefers open sand or a matrix of sand and cobble along permanent streams or medium-sized rivers; usually found along rocky mountain streams and small rivers in partially shaded areas, such as sand banks and sand bars. Occasionally reported along roads. This species is active April through June and late-July to September, but not always active in fall (NatureServe, 2015).	This species was not documented during surveys on the GWNF; however suitable habitat was observed. Surveys outside the GWNF were not required for this species.	Refer to table R-2 of appendix R for discussion of impacts on Appalachian Tiger Beetle on the GWNF. There is the potential for mortality of individuals during clearing and other construction activities. Construction and maintenance of the right-of-way would temporarily remove suitable habitat; however, based on this species preference of open habitat, right-of-way clearing and maintenance could have a beneficial effect by creating potentially suitable habitat (FS et al., 2002).
Northern Barrens tiger beetle *Cicindela partruela*	S2[b] (Tier IIIc)	Augusta	Specialized to sandy/coarse gravel or eroding sandstone in pine barrens, open mixed, or deciduous woodlands where open ground exists. This species is active late April to June and mid-August into September, but not always active in fall (NatureServe, 2015).	This species was not documented during surveys on the GWNF; however suitable habitat was observed. Surveys outside the GWNF were not required for this species.	Refer to table R-2 of appendix R for discussion of impacts on Northern Barrens Tiger Beetle on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Appalachian Tiger Beetle.
Maureen's Hydraenan Minute moss beetle *Hydraena maureenae*	S2?[b] (Tier IIc)	Bath	Along the edges of smaller, lower gradient streams in clean, fine shale gravels, typically gravel bars. This species is potentially active year-round (NatureServe, 2015).	Surveys conducted on the GWNF identified suitable habitat for this species at eight stream locations, and documented eight individuals at six of those stream locations. No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Maureen's Hydraenan Minute Moss Beetle on the GWNF. This species has been documented within the ACP Project area along existing FS roads that have been proposed for use as access roads; therefore, construction activities could cause mortality to individuals if present in the workspace. Filing of the interstitial

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					spaces between gravels with sediment, which would occur during construction activities, makes habitat no longer suitable for this species. Atlantic would implement the erosion control and sedimentation measures described in the FERC *Plan* and *Procedures* (table 2.3.1-1), and would minimize disturbance to gravel bars along streams.
Burnsville Cove Cave beetle *Pseudanophthalmus* sp. 8	S1	Bath, Highland	Cave species known only from Bath County, Virginia (NatureServe, 2015).	2016 karst surveys identified two cave entrances and 28 additional karst features within the study area in Highland County; and 40 karst features in Bath County.	The potential impacts and mitigation measures for this species are the same as described above for the Racovitza's Terrestrial Cave Isopod.
Dragonflies					
Comet darner dragonfly *Anax longipes*	S3	Augusta, GWNF correspondence indicates this species has been documented in sinkhole ponds in Augusta County.	Shallow, fishless ponds with emergent vegetation, or semi-permanent flooded woodlands. Adults are active May to early June (NatureServe, 2015).	No surveys for this species were conducted.	Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove emergent vegetation that could provide shelter and foraging habitat. Removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Vehicle collisions could cause injury or mortality to adult dragonflies. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1), which includes implementation of the VDEQ Virginia

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					Erosion and Sediment Control Handbook.
Martha's pennant dragonfly *Celithemis martha*	S2 (Tier IVc)	GWNF correspondence indicates this species has been documented in sinkhole ponds in Augusta County.	Vegetated ponds and lakes with sand bottoms and unmowed shoreline vegetation and emergent aquatic vegetation; obligate pond breeder. Adults are active late May through September (VDCR and VDGIF, 2013).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Regal darner dragonfly *Coryphaeschna ingens*	S1 (Tier IVc)	Southampton	Found in ponds, lakes, and ditches with aquatic vegetation. Adults are active from June 11-July 26 (VDCR and VDGIF, 2013).	The last observation of this species was in 1975. No surveys for this species were conducted. This species has the potential to occur at the Meherrin River and swamp forest near Virginia-North Carolina border; and Nottoway River and Sycamore Bend swamps, which are crossed by or in proximity to ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Robust baskettail dragonfly *Epitheca spinosa*	S3 (Tier IVc)	Southampton, Suffolk	Found in lakes and ponds. Adults are active from March 30-May 1 (VDCR and VDGIF, 2013).	Observations of this species have occurred in both counties after 1990. No surveys for this species were conducted. This species has the potential to occur within the survey corridor at the Nottoway River and Sycamore Bend swamps; Quaker Swamp; Chuckatuck, Lake Drummond NW, Bowers Hill, and Suffolk Quads, which are crossed by or in proximity to ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Mustached clubtail dragonfly *Gomphus adelphus*	S1 (Tier IVc)	Bath, Augusta	Occurs in and around clean, fast-flowing rivers. Adults are active from May 30-June 28 (VDCR and VDGIF, 2013).	Observations of this species occurred in both counties between 1950 and 1990. No surveys for this species were conducted. This species has the potential to occur at Calfpasture	Atlantic would conduct four dry crossings of the Calfpasture River. Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				River, which is crossed by ACP (VDCR, 2016b).	habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove riparian vegetation that could provide shelter and foraging habitat. Removal of vegetation increases risk of spread of noxious and invasive weeds, which could further degrade habitat. Regular vegetation maintenance of the permanent right-of-way during operations could also disturb individuals approximately every 3 years. Vehicle collisions could cause injury or mortality to adult dragonflies. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1), which includes implementation of the VDEQ Virginia Erosion and Sediment Control Handbook.
Banner clubtail dragonfly *Gomphus apomyius*	SH (Tier IVc)	Brunswick, Greensville	Clean, slow-flowing sandy rivers in Piedmont and Coastal Plains. Adults are active late-March to late-May (VDCR and VDGIF, 2013).	Observations of this species have not occurred since prior to 1950 and it is possible that it is extirpated. No surveys for this species were conducted. This species has the potential to occur at Meherrin River, which would be crossed in two locations by ACP (VDCR, 2016b).	The Meherrin River would be crossed at two locations using the dry crossing technique. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Piedmont clubtail dragonfly *Gomphus parvidens*	S1 (Tier IVc)	N/A	Small sandy streams of moderate gradient. Adults are active May 23-June 10 (VDCR and VDGIF, 2013).	No observations of this species in counties crossed by the Project; observations within Virginia occurred between 1950 and 1990. No surveys for this species were conducted. This species has the potential to occur at the Appomattox River crossing south of Stoddert,	The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				which is near ACP (VDCR, 2016b).	
Chalk-fronted corporal skimmer dragonfly *Ladona julia*	S2S3 (Tier IVc)	Highland, Augusta	Mud-bottomed lakes and ponds. Adults are active June 4-August 8 (VDCR and VDGIF, 2013).	This species has been observed in both counties more recently than 1990. No surveys for this species were conducted. This species has been documented at the Braley Pond Conservation Site, which is near ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Northern pygmy clubtail dragonfly *Lanthus parvulus*	S2[b] (Tier IVc)	Highland	Running waters with strong currents over clean gravel that contains sand and silt deposits. Adults are active May through July (VDCR and VDGIF, 2013).	This species has been observed more recently than 1990. No surveys for this species were conducted.	Refer to table R-4 of appendix R for discussion of impacts on Northern Pygmy Clubtail Dragonfly on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Southern sprite dragonfly *Nahalennia intergricollis*	S3 (Tier IVc)	Augusta, Dinwiddie, Greensville, Brunswick, GWNF correspondence indicates this species has been documented in sinkhole ponds in Augusta County	Occur near grassy lakes and boggy ponds, usually within dense vegetation. Adults are active June through September (VDCR and VDGIF, 2013).	No recent records from Virginia. No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Cinnamon shadowdragon dragonfly *Neurocordulia virginiensis*	S2 (Tier IVc)	Buckingham	Medium to large rivers. Adults are active April 28-June 21 (VDCR and VDGIF, 2013).	This species has not been observed since before 1950. No surveys for this species were conducted. This species has been historically documented at James River at Wingina, which is in proximity to ACP (VDCR, 2016b).	James River would be crossed using an HDD; therefore, impacts on nymphs would also not be anticipated at this location. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Riffle snaketail dragonfly *Ophiogomphus carolus*	S1 (Tier IVc)	Highland, Augusta	Fast-flowing streams and small rivers. Adults are active June 4-June 23 (VDCR and VDGIF, 2013).	This species has been observed in both counties between 1950 and 1990. No surveys for this species were conducted. This species has the potential to occur at Calfpasture River, which is crossed by ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Appalachian (Allegheny) snaketail dragonfly *Ophiogomphus incurvatus alleghaniensis*	S1[b] (Tier IIc)	Augusta	Breeds in riffle areas of spring-fed Piedmont streams. Prefer areas where gravel overlies soft mud in shallow water. Adults are active April through June (VDCR and VDGIF, 2013).	This species has been observed between 1950 and 1990. No surveys for this species were conducted. This species has the potential to occur in streams within Sulphur Springs Hollow and Dowell's Draft, which are crossed or in proximity to ACP (VDCR, 2016b).	Refer to table R-2 of appendix R for discussion of impacts on Allegheny Snaketail Dragonfly on the GWNF. Dowell's Draft, one unnamed tributary to Dowell's Draft, and an unnamed tributary to East Branch Dowell's Draft would be crossed using a dry crossing technique. Atlantic also proposes to use existing roads that cross Dowell's Draft, East Branch of Dowell's Draft, and two unnamed tributaries to Dowell's Draft as permanent access roads. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
St. Croix snaketail dragonfly *Ophiogomphus susbehcha*	S1S2	Nelson, Buckingham, Cumberland	Restricted to large, relatively clean to pristine swift rivers with gravel and mud substrates. Adults are active March to May (VDCR and VDGIF, 2013).	This species has been observed in all three counties since 1990. No surveys for this species were conducted. This species has been documented at James River at Wingina (VDCR, 2016b).	James River would be crossed using an HDD; therefore, impacts on nymphs would also not be anticipated at that crossing. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Spatterdock darner dragonfly *Rhionaeshna mutata*	S2 (Tier IIIc)	Highland, Augusta, GWNF correspondence indicates this species has been documented in sinkhole ponds in Augusta County.	Marshes and shallow lakes or ponds with waterlilies and spatterdock near wooded areas. Adults are active late May to early July (VDCR and VDGIF, 2013).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.
Fine-lined emerald dragonfly *Somatochlora filosa*	S2 (Tier IVc)	Southampton, Suffolk	Small, sandy forest streams and seeps or boggy forest trickles or sheet flows. Adults are active June into September (VDCR and VDGIF, 2013).	This species has been observed in both counties since 1990. No surveys for this species were conducted. This species has the potential to occur at Meherrin River and swamp along Virginia-North Carolina border; Nottoway River and Sycamore Bend swamps; and Quaker Swamp,	Both Meherrin River and one crossing of the Nottoway River would be crossed using a dry crossing technique; the other crossing of the Nottoway River would be crossed by HDD. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				which are crossed or in proximity to ACP (VDCR, 2016b).	
Coppery emerald dragonfly *Somatochlora georgiana*	SH (Tier IIIc)	N/A	Small, sandy streams and slow-moving creeks, often with acidic waters, in forested area. Adults are active from June to August (VDCR and VDGIF, 2013).	No observations of this species in counties crossed by the Project and it is possible that this species is extirpated. No surveys for this species were conducted. This species has the potential to occur at Winningham Creek and adjacent swamp; and Watson Creek, which are crossed by ACP (VDCR, 2016b).	Both Winningham Creek and Watson Creek would be crossed using a dry crossing technique. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Riverine clubtail dragonfly *Stylurus amnicola*	S1 (Tier IVc)	Nelson	Medium to large rivers with varying flow and substrate, in and out of forested areas. Adults are active May through September (VDCR and VDGIF, 2013).	This species has not been observed in this county since before 1950. No surveys for this species were conducted. This species has been documented at James River at Wingina, which is in proximity to ACP (VDCR, 2016b).	James River would be crossed using an HDD; therefore, impacts on nymphs would also not be anticipated at this crossing. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Laura's clubtail dragonfly *Stylurus laurae*	S2 (Tier IVc)	Nelson, Nottoway, Dinwiddie	Clear, shallow streams with rocky riffles and a sand or mud bottom (VDCR and VDGIF, 2013).	This species has been observed in Nottoway County more recently than 1990; however, it has not been observed in Nelson County since before 1950. No surveys for this species were conducted. This species has been documented at Nottoway River-Fort Pickett SCU, which is crossed by ACP (VDCR, 2016b).	The Nottoway River at the Nottoway River-Fort Pickett SCU would be crossed using an HDD; therefore, impacts on nymphs would also not be anticipated at this crossing. The potential impacts and mitigation measures for this species are the same as described above for the Mustached Clubtail Dragonfly.
Red saddlebags *Tramea onusta*	S1	Augusta, GWNF correspondence indicates this species has been documented in sinkhole ponds in Augusta County.	Ponds and quiet and still waters. Adults are active mid-May through early October (NatureServe, 2015).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Comet Darner Dragonfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Butterflies					
Silver-bordered fritillary butterfly *Boloria selene*	S2[b]	Bath, Highland, Nelson	Lives in wet meadows and marshes, often at sites with taller vegetation. Larval hosts on various violet species (*Viola* spp.) found in wetlands. Adults are active from June through September (VDCR and VDGIF, 2013).	This species has not been observed in Bath or Nelson counties since before 1950; but has been observed in Highland County more recently than 1990. Potential host plants for this species were observed within the GWNF; however, no individuals were documented (see table R-4 of appendix R). No surveys for this species were conducted outside the GWNF. This species been historically documented at the junction of Route 84 and Route 600; and has the potential to occur within wet meadows along Back Creek (VDCR, 2016b).	Refer to table R-4 of appendix R for discussion of impacts on Silver-Bordered Fritillary Butterfly on the GWNF. Adult butterflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. Adult butterflies and larvae could be crushed by construction equipment, and construction activities could remove suitable larval host plants and foraging plants. As outlined in its' *Restoration and Rehabilitation Plan* (see appendix F), Atlantic has committed to incorporate regionally-specific and endemic forb seeds in its traditionally all-grass seed mix to create pollination habitat, which may reduce impacts on this species.
Frosted elfin butterfly *Callophrys irus*	S2?[b] (Tier IVc)	Highland, Augusta, Nelson, Suffolk	Most often found in dry areas, especially oak woods, shale barrens, pine forests, sandhills, and coastal shrub. Larval host plants are wild lupine (*Lupinus perennis*) and wild indigo (*Baptisia tinctoria*). Adults active from May to June (VDCR and VDGIF, 2013).	This species has been observed more recently than 1990. Surveys on the GWNF did not identify suitable habitat or individuals of this species. No surveys for this species were conducted.	Refer to table R-2 of appendix R for discussion of impacts on Frosted Elfin Butterfly on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Lupine species would be incorporated into some seed mixes.
Hoary elfin butterfly *Callophrys polios*	S1S3 (Tier IVc)	Highland, Augusta	Bogs, dunes, pine barrens, ridges, rocky slopes, and woodland edges. Its larval host plants are bearberry (*Arctostaphylos uva-ursi*) and trailing arbutus (*Epigaea repens*). Adults are active mid-May through June (VDCR and VDGIF, 2013).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Pink-edged sulphur butterfly	S1S2 (Tier IVc)	Highland	Clearings, woodlands, areas that have been managed with fire	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Colias interior			clearing, bogs, pine barrens, managed ROWs, and alpine forests, often in high elevations. Its larval host plants include blueberry and billberry (*Vaccinium* spp.) and members of the heath family (*Ericacea*). Adults are active mid-June to early September (VDCR and VDGIF, 2013).		same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Early hairstreak butterfly *Erora laeta*	S2 (Tier IVc)	Augusta, Bath, Highland	Woodland openings and moist, but well-drained mature American beech (*Fagus grandifolia*) forests. Its main larval host plant is American beech, and beaked hazelnut (*Coylus cornuta*) is a secondary larval host plant. Adults are active from late April through May and late June through August (VDCR and VDGIF, 2013).	Field habitat assessments identified one host plant for this species within the GWNF; however, no individuals were observed (see table R-4 of appendix R). No surveys for this species were conducted outside the GWNF.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Tree species would be allowed to regenerate outside the permanent ROW after construction is complete.
Olympia marble butterfly *Euchloe olympia*	S2	Augusta, Highland	Shale and limestone barrens. Its larval host plant is rock cress (*Cardamine* spp.). Adults are active from April to May (VDCR and VDGIF, 2013).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Northern crescent butterfly *Phycoides cocyta*	S1S3[b]	Augusta, Bath	Prefers barren habitats, but also associated with streams; more woodland-based than similar species. Its larval host plants are in the genus *Aster*. Adults are active from June through July (VDCR and VDGIF, 2013).	Field habitat assessments identified larval host plants for this species within the GWNF; however, no individuals were observed. No surveys for this species were conducted outside the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on Northern Crescent Butterfly on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. *Aster* species would be incorporated into some seed mixes.
Helicta Satyr *Neonympha helicta*	S2	Dinwiddie, Greensville, Nottoway, Southampton, Suffolk	Usually found in grassy wetlands, especially bogs and savannas, but also in grassy pine forests. Likely hosts on various sedges (VDCR	In all counties except Suffolk, this species has not been observed since prior to 1950. This species has been observed	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
			and VDGIF, 2013). This species has the potential to occur along the powerline ROW east of Route 674 (VDCR, 2016b).	more recently than 1990 in Suffolk.	*Carex* species would be incorporated into some seed mixes.
Atlantic fritillary butterfly *Speyeria atlantis*	S2	Augusta, Highland	Open habitats including open meadows, bogs, roadside woods, and woodland openings. Its larval host plant are violets (*Viola* spp.). Adults are active mid-June through mid-September (VDCR and VDGIF, 2013).	Field habitat assessments identified host plants for this species within the GWNF; however, no individuals were observed. No surveys for this species were conducted outside the GWNF.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly.
Diana fritillary butterfly *Speyeria diana*	S3[b] (Tier IVc)	Augusta, Bath, Highland, Suffolk	Favor wooded areas, particularly in low-lying valleys, pine woods, and cove forests, within or near mountain ranges. Its larval host plants are violets (*Viola* spp.), and nectar plants include butterfly bush, milkweeds, and other purple flowers. Adults are active from mid-June to early September (VDCR and VDGIF, 2013).	Field habitat assessments identified host plants for this species within the GWNF; however, no individuals were observed. No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Diana Fritillary Butterfly on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. This species is known to benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat (FS et al., 2002). Management of the right-of-way that encourages nectar sources would be beneficial to this species.
Regal fritillary butterfly *Speyeria idalia*	S1[b], PF (Tier Ia)	Augusta, Highland, Nelson	Uses violets (*Viola* spp.), especially birdfoot violet (*V. pedata*) as its larval host plants. Prefers tallgrass areas, such as prairies, fields, grasslands, and bogs; may have close ties with undisturbed native grasslands. Adults feed on nectar from thistle (Cirsium spp.), milkweeds (*Aesclepias* spp.) and red clover (*Trifolium* spp.). Adults are active mid-June through mid-August (VDCR and VDGIF, 2013).	Field habitat assessments identified host plants for this species within the GWNF; however, no individuals were observed. No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Regal Fritillary Butterfly on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. This species is known to benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat (FS et al., 2002). Management of the right-of-way that encourages nectar sources would be beneficial to this species.
Skippers					
Mottled duskywing skipper	S1S3 (Tier IIIc)	Bath, Augusta, Highland, Prince	Favors open woods, barrens, sandhills, and brushy fields. Its	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Erynnis martialis		Edward, Greensville, Chesapeake	larval host plant is New Jersey tea (*Ceanothus americana*). Adults are active from April through September (VDCR and VDGIF, 2013).		same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Persius duskywing skipper *Erynnis persiuspersius*	S1 (Tier IIc)	Bath, Highland	Found in dry pine-oak forests. Larval host plants include a wide range of legumes, primarily wild lupine (*Lupinus perennis*) or wild indigo (*Baptisia tinctoria*). Adults are active from April to June (VDCR and VDGIF, 2013).	Surveys on the GWNF did not identify suitable habitat or individuals of this species. No surveys for this species were conducted outside the GWNF.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Lupine species would be incorporated into some seed mixes.
Two-spotted skipper *Euphyes bimacula*	S2 (Tier IVc)	Augusta, Highland, Suffolk	Prefers open bogs, marshes, swamps, and other damp areas. Its larval host plants are sedges, primarily tussock sedge (*Carex stricta*) and hairy fruit sedge (*Carex trichocarpa*). Adults are active from June to July in the south and from April to August in the south (VDCR and VDGIF, 2013).	No surveys for this species were conducted.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. *Carex* species would be incorporated into some seed mixes.
Dukes' skipper *Euphyes dukesi*	S2 (Tier IIIc)	Chesapeake, Suffolk	Wet, marshy areas such as swamps, open marshes, and wet roadside ditches. Prefer expansive estuarine or coastal marshes. Prefer broad-leaved sedges such as shoreline sedge (*Carex hyalinolepis*).	This species has been observed more recently than 1990. No surveys for this species were conducted. This species has been documented at the Great Dismal Swamp Conservation Site, which is crossed by ACP (VDCR and VDGIF, 2013).	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Appalachian grizzled skipper *Pyrgus centaureae wyandot*	S1[b] (Tier Ia)	Augusta, Bath, Highland	Dry, open areas with shaley soils such as shale barrens, and artificially opened habitats such as clearcuts and utility ROWs. Its larval host is dwarf cinquefoil (*Potentilla canadensis*). Adults are active from mid-April to early May (VDCR and VDGIF, 2013).	Field habitat assessments identified one host plant for this species within the GWNF; however, no caterpillars were observed. Adults could not be sampled as it was outside of their activity period; therefore, presence is assumed in suitable habitat on the GWNF. No	Refer to table R-2 of appendix R for discussion of impacts on Appalachian Grizzled Skipper on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. This species is known to benefit from the presence of woodland clearings, including rights-of-way. Herbaceous

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				surveys for this species were conducted outside the GWNF.	and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete. Management of the right-of-way that creates suitable habitat would be beneficial to this species.
Moths					
Cane-boring moth *Acrapex relicta*	S2S3	Chesapeake, Suffolk	Only found in patches of cane, or occasionally exotic bamboo stands. This species has been documented at the Great Dismal Swamp Conservation Site, which is crossed by ACP (VDCR and VDGIF, 2013).	This species has been observed more recently than 1990. No surveys for this species were conducted.	Based on state vegetation data (see section 4.4), ACP would not cross vegetation communities consisting of cane in Virginia; therefore, no impacts on this species are anticipated.
Herodias underwing moth *Catocala herodias gerhardi*	S2S3[b] (Tier IIIc)	Augusta, Bath, Highland	Prefer pitch pine (*Pinus rigida*)-bear oak (*Quercus ilicifolia*) barrens, or sparse woodlands. Food plants are bear oak, and blackjack oak (*Quercus marilandica*); larvae feed mostly on bear oak and are reared mostly on blackjack oak. Adults are active from July to August (VDCR and VDGIF, 2013).	Potential host plants for this species were observed within the GWNF; however, individual surveys were not conducted. Because individual surveys were not conducted, presence is assumed within suitable habitat on the GWNF (see table R-2 in appendix R). No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Herodias Underwing Moth on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. This species is known to benefit from the presence of woodland clearings, including rights-of-way, by creating additional nectaring habitat (FS et al., 2002). Management of the right-of-way that encourages nectar sources would be beneficial to this species.
Precious underwing moth *Catocala pretiosa pretiosa*	SH (Tier IIc)	N/A	Restricted to mature swamp forests, forest edges, bog edges, and other habitats with thickets or very large bushes of food plants exceeding 1.5 meters in height. Its larval host plants include serviceberry (*Amelanchier* spp.), and crabapple (*Malus angustifolia*) (VDCR and VDGIF, 2013).	Presumed to extirpated in Virginia. A limited number of potential host plants for this species was observed within the GWNF (see table R-4 of appendix R). No surveys for this species were conducted outside the GWNF.	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Tree species would be allowed to regenerate outside the permanent ROW after construction is complete.
Unexpected Cycnia moth *Cycnia inopinatus*	S1S3	Dinwiddie, Nottoway	Coastal sand scrub, barrens, and savanna. Feed on milkweed and overwinter in the duff of fallen milkweed leaves (FS, 2005).	Surveys for this species were not required. This species has been documented at the Fort Pickett Impact Area	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				Conservation Site, which is near ACP (VDCR, 2016b).	Milkweed species would be incorporated into some seed mixes.
Milne's Euchlaena moth *Euchlaena milnei*	S2[b] (Tier IVc)	Augusta, Bath	Hardwood and mountain oak woodlands with acidic soil. Its larval host plant is unknown. Adults are active in from early to mid-July (VDCR and VDGIF, 2013).	Individual surveys were not conducted for this species. Because individual surveys were not conducted, presence is assumed within suitable habitat on the GWNF (see table R-2 In appendix R). No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Milne's Euchlaena Moth on the GWNF. The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly.
A bird dropping (noctuid) moth *Protodeltote* sp. 1	S1S2	Chesapeake	N/A	No surveys for this species were conducted. This species has been documented at the Great Dismal Swamp Conservation Site, which is crossed by ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly.
Hebard's noctuid moth *Psectrotarsia hebardi*	SH[b] (Tier IIIc)	Bath	Prefers rich, deciduous forests with abundant larval food plants, such as stoneroot (*Collinsonia canadensis*). Larvae are active into September (VDCR and VDGIF, 2013).	This species has not been recently documented in Virginia (prior to 1950). Individual surveys were not conducted for this species. Because individual surveys were not conducted, presence is assumed within suitable habitat on the GWNF (see table R-2 In appendix R). No surveys for this species were conducted outside the GWNF.	Refer to table R-2 of appendix R for discussion of impacts on Hebard's Noctuid Moth on the GWNF. Because there are no recent occurrences of this species in Virginia, it is unlikely that ACP would impact this species.
Aureolaria seed borer moth *Pyrrhia aurantiago*	S1S3	Bath, Nottoway	Associated with false foxglove species (*Aureolaria* spp.) (VDCR and VDGIF, 2013).	No surveys for this species were conducted. This species has been documented at Fort Pickett Impact Area Conservation Site, which is near ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Silver-bordered Fritillary Butterfly. Herbaceous and low shrub species would be allowed to regenerate within the construction and permanent ROW after construction is complete.
Chestnut clearwing moth *Synanthedon castaneae*	SH[b] (Tier IVc)	N/A	Its host plant is the American chestnut (*Castanea dentata*) and possibly the chinquapin (*Castanea pumila*) (VDCR and VDGIF, 2013).	This species has not been recently documented in Virginia; the only record is from Falls Church. Potential host plants for this species were observed	Refer to table R-4 of appendix R for discussion of impacts on Chestnut Clearwing Moth on the GWNF. The potential impacts and mitigation measures for this species are the

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				within the GWNF; however, individual surveys were not conducted. Because individual surveys were not conducted, presence is assumed in suitable habitat. No surveys for this species were conducted outside the GWNF.	same as described above for the Silver-bordered Fritillary Butterfly. Tree species would be allowed to regenerate outside the permanent ROW after construction is complete.
VASCULAR PLANTS					
Red milkweed *Asclepias rubra*	S2	Dinwiddie, Greensville, Southampton, Suffolk	Bogs, wetlands, or marshy areas, or in moist woodland soil (Virginia Botanical Associates, 2016).	Surveys identified 26 individuals of this species at the Handsom-Gum Powerline Bog Conservation Site. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Bog Conservation Site (see section 4.4.2.2).	Construction activities would directly remove individuals located within the construction workspace, remove or degrade suitable habitat for this species within and adjacent to the construction right-of-way, and disturb the seed bed. Construction activities may also encourage the spread of invasive and noxious plants. Regular maintenance of the construction right-of-way would also cause regular disturbance and potential mortality of individuals. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1), which includes measures to control erosion and sedimentation. Atlantic would control the spread of invasive and noxious weeds through the implementation of its *Invasive Plant Species Management Plan*, and would implement dust control as described in its *Fugitive Dust Control and Mitigation Plan* (see table 2.3.1-1). Restoration of the right-of-way would proceed according to the *Restoration and Rehabilitation Plan* (see appendix F). .
Valley doll's-daisy *Boltonia montana*	S1/E	Augusta	Sinkhole pond habitats and associated river and stream sides (NatureServe, 2015).	Potential habitat for this species identified within the survey corridor. Surveys completed in 2015 identified thousands of individuals of this species at the	Atlantic has adopted a reroute to avoid the population of this species at the Lyndhurst Conservation Site; however, it is located adjacent to and within 80 m of the construction

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				Lyndhurst Conservation Site in Augusta County. This species has been documented at the Campbell's and Grove Farm Ponds Conservation Site, which is crossed by ACP (VDCR, 2016b).	workspace. This species was not detected within the survey corridor in Campbell's and Grove Farm Ponds Conservation Site.
Pine barren sandreed *Calamovilfa brevipilis*	S1	Dinwiddie, Greensville, Suffolk	Bogs (Virginia Botanical Associates, 2016).	Surveys identified 14 individuals of this species in the Emporia Powerline Bog Conservation Site.	Atlantic has adjusted the ACP route to avoid direct impacts on individuals; however, there may be indirect impacts on individuals and habitat adjacent to the ACP workspace. The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Emporia Bog Powerline Conservation Site (see section 4.4.2.2).
Large spreading pogonia *Cleistesiopsis divaricata*	S1	Greensville, Southampton, Suffolk, Chesapeake	Sphagnous bogs and pocosin openings (Virginia Botanical Associates, 2016).	Surveys completed in 2015 identified this species at the Handsom-Gum Powerline Bog Conservation Site. This species has also been documented at the Great Dismal Swamp Conservation Site, which is crossed by ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).
American willow-herb *Epilobium ciliatum ssp. ciliatum*	S1[b]	Highland, Bath, Augusta	Bogs, seeps, wet meadows, and wet clearings; usually at higher elevations (Virginia Botanical Associates, 2016).	Surveys completed in 2015 identified this species within the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on American willow-herb on the GWNF.
Ten-angled pipewort *Eriocaulon decangulare* var. *decangulare*	S2	Dinwiddie, Southampton, Chesapeake	Bogs, boggy sphagnous clearings, sea-level fens, and mafic fens and seeps (Virginia Botanical Associates, 2016).	Surveys identified 100-500 individuals of this species at the Handsom-Gum Powerline Bog Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Branched hedge-hyssop *Gratiola ramosa*	S1	Greensville	Ruts and pools in powerline ROW; inner edge of Coastal Plain. Only known from Greensville County (Virginia Botanical Associates, 2016).	Surveys identified this species at the Emporia Powerline Bog Conservation Site.	Atlantic has adjusted the ACP route to avoid direct impacts on individuals; however, there may be indirect impacts on individuals and habitat adjacent to the ACP workspace. The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Emporia Bog Powerline Conservation Site (see section 4.4.2.2).
Fraser's Marsh St. John's-wort *Hypericum fraseri*	S2	Bath, Highland	Bog, mafic fens, seeps, seepage swamps, depression ponds, and swamps, usually in peaty, nutrient-poor soils (Virginia Botanical Associates, 2016).	Surveys identified a population of 1,500+ individuals of this species in Bath County, and an additional 3,800+ individuals 1,000 feet downslope from a proposed access roads associated with Brown's Pond Conservation Site on the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on Fraser's Marsh St. John's-wort on the GWNF. Atlantic has committed to adjusting the access road footprints, where feasible, to avoid direct impacts on individuals. The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Hairy St. John's-wort *Hypericum setosum*	S1S2	Dinwiddie, Greensville, Southampton, Suffolk	Wet flatwoods, power-line swales, boggy clearings, and ditches (Virginia Botanical Associates, 2016).	Surveys identified 93 individuals of this species at the Handsom-Gum Powerline Bog Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).
Big gallberry *Ilex coriacea*	S1	Suffolk, Chesapeake	Peaty swamps, flatwoods, and pocosins; usually associated with Atlantic white cedar (*Chamaecyparis thyoides)* or pond pine (*Pinus serotina)*. Rare in southeast Coastal Plain, but found frequently within the Great Dismal Swamp (Virginia Botanical Associates, 2016).	Species observed within the construction workspace in Suffolk. This species has been documented at the Izaak Walton League Preserve Conservation Site, which is near ACP (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Rafinesque's seedbox *Ludwigia hirtella*	S2	Nottoway, Dinwiddie, Brunswick, Greensville, Suffolk	Bogs, boggy clearings, power-line swales, and sphagnous ditches (Virginia Botanical Associates, 2016).	Surveys identified 10 individuals of this species in the Emporia Powerline Bog Conservation Site.	Atlantic has adjusted the ACP route to avoid direct impacts on individuals; however, there may be indirect impacts on individuals and habitat adjacent to the ACP workspace. The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Emporia Bog Powerline Conservation Site (see section 4.4.2.2).
Hairy seedbox *Ludwigia pilosa*	S1	Suffolk	Ditches, and boggy clearings (Virginia Botanical Associates, 2016).	Surveys identified 5,735 individuals of this species at the Great Dismal Swamp (Northwest Section) Conservation Site. This species has also been previously documented in the Great Dismal Swamp Conservation Site (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Raven's seedbox *Ludwigia ravenii*	S1	Suffolk	Boggy clearings and ditches in wet flatwoods (Virginia Botanical Associates, 2016).	Species was identified along proposed access roads in the City of Suffolk. This species has been documented at the Lummis Flatwoods Conservation Site (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Slender rattlesnake-root *Nabalus autumnalis*	S1	Dinwiddie, Greensville, Southampton, Suffolk	Boggy powerline clearcuts, and roadside clearings (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Emporia Powerline Bog Conservation Site, which is crossed by ACP (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Emporia Bog Powerline Conservation (see section 4.4.2.2).
American ginseng *Panax quinquefolius*	S3S4/T	Highland, Bath, Augusta, Nelson, Buckingham, Cumberland, Prince Edward	Cove forests, and mesic to dry slope forests in base-rich soils (Virginia Botanical Associates, 2016).	20 populations identified within the GWNF at the NFS Road Conservation Site (see table R-4 in appendix R); and 1 population in Augusta County.	Refer to table R-4 of appendix R for discussion of impacts on American ginseng on the GWNF. Construction activities would directly remove individuals located within the construction workspace, remove or

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
					degrade suitable habitat within and adjacent to the construction workspace, disturb the seed bed, and encourage the spread of invasive and noxious weeds. Regular maintenance of the permanent right-of-way could also further disturb this species and may cause mortality. Atlantic would implement a Ginseng Relocation Plan, to be approved by the GWNF prior to construction.
Walter's paspalum *Paspalum dissectum*	S2	Augusta, Greensville, Southampton Suffolk, Chesapeake	Seasonally exposed sandy or gravelly river shores and bars, interdune swales and ponds, impoundment edges, depressions and ruts in bottomland or upland clearings (Virginia Botanical Associates, 2016).	Surveys identified 15,000+ individuals of this species in the Great Dismal Swamp Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Small white fringed orchid *Platanthera blephariglottis*	S2	Dinwiddie, Greensville, Suffolk	Bogs and sphagnous seeps (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Emporia Powerline Bog Conservation Site, which is crossed by ACP (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Emporia Bog Powerline Conservation Site (see section 4.4.2.2).
Purple fringeless orchid *Platanthera peramoena*	S1	Highland, Bath, Augusta, Greensville	Fens, wet meadows, clearings, and ditches, usually in base-rich soils (Virginia Botanical Associates, 2016).	Species observed 0.5 mile outside of the environmental survey corridor.	Because the individual observed is more than 0.5 mile outside of the environmental survey corridor, no impacts are anticipated.
Water-plantain crowfoot *Ranunculus ambigens*	S1	Bath, Augusta	Freshwater and tidal marshes, beaver ponds, sluggish streams, and montane depression ponds. Known from fewer than 20 sites (Virginia Botanical Associates, 2016).	Surveys identified 200 individual plants near the South River in a Piedmont/Mountain Swamp Forest community.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Fringed meadow beauty *Rhexia petiolata*	S1	Southampton, Greensville, Suffolk	Bogs, wet flatwoods, and boggy powerline clearings (Virginia Botanical Associates, 2016).	Surveys identified 150 individuals of this species at the Handsom-Gum Powerline Bog Conservation Site. This species has also been documented at the Emporia Powerline Bog	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of Handsom-Gum and

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
				Conservation Site (VDCR, 2016b).	Emporia Bog Powerline Conservation Sites (see section 4.4.2.2).
Small bunched beaksedge *Rhynchospora cephalantha* var. *attenuata*	S1	Southampton, Greensville	Bogs, sphagnous seeps, and boggy clearings (Virginia Botanical Associates, 2016).	Surveys identified 2,000+ individuals of this species at the Handsom-Gum Powerline Bog Conservation Site. This species has also been documented at the Emporia Powerline Bog Conservation Site (VDCR, 2016b).	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of Handsom-Gum and Emporia Bog Powerline Conservation Sites (see section 4.4.2.2).
Coastal bog beaksedge *Rhynchospora stenophylla*	S1	Southampton	Seeping, sphagnous slopes in powerline ROW (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Handsom-Gum Powerline Conservation Site, which is crossed by ACP (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).
Lance-leaved rose-gentian *Sabatia difformis*	S1	Southampton	Powerline clearings in wet flatwoods (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Handsom-Gum Powerline Conservation Site, which is crossed by ACP (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).
Northern pitcher plant *Sarracenia purpurea*	S2	Dinwiddie, Greensville, Southampton, Suffolk	Open acidic seepage swamps, streamhead pocosins, boggy depressions in pine flatwoods, sphagnous powerline seeps and other boggy clearings (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Handsom-Gum Powerline Conservation Site (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).
Slender nutrush *Scleria minor*	S2	Dinwiddie, Greensville, Suffolk, Southampton	Bogs and boggy clearings, usually sphagnous, and saturated powerline ROW swales (Virginia Botanical Associates, 2016).	Species not observed during 2015 or 2016 surveys. This species has been documented at the Emporia Powerline Bog Conservation Site, and Handsom-Gum Powerline Conservation Site (VDCR, 2016b).	Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum and Emporia Bog Powerline Conservation Sites (see section 4.4.2.2).

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
Southern bog goldenrod *Solidago stricta*	S1	Southampton	Wet pinelands and deciduous flatwoods, swampy woods, and clearing (Virginia Botanical Associates, 2016).	Surveys completed in 2015 identified 24 individuals of this species at the Branchville Powerline Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Yellow nodding ladies'-tresses *Spiranthes ochroleuca*	S2	Highland, Bath	Open forests, clearings, and meadows often at higher elevations (Virginia Botanical Associates, 2016).	Surveys identified 1 individual of this species along a proposed access road in the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on yellow nodding ladies'-tresses on the GWNF.
Gaping panic grass *Steinchisma hians*	S1	Greensville, Southampton, Suffolk	Floodplain forests, alluvial swamps, and wet clearings and fields (Virginia Botanical Associates, 2016).	Surveys completed in 2015 identified this 1,000+ individuals of this species at the Branchville Powerline Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Dense-flowered camas *Stenanthium densum*	S1	Southampton, Greensville	Sphagnous bogs and bog clearings (Virginia Botanical Associates, 2016).	Surveys identified 25-50 individuals of this species at the Emporia Powerline Bog Conservation Site and 600-700 individuals at the Handsom-Gum Powerline Bog Conservation Site. This species also has the potential to occur at the Branchville Powerline Conservation Site (VDCR, 2016b).	Atlantic has adjusted the ACP route to avoid direct impacts on individuals; however, there may be indirect impacts on individuals and habitat adjacent to the ACP workspace. The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum and Emporia Bog Powerline Conservation Sites (see section 4.4.2.2).
Three birds orchid *Triphora trianthophora* ssp. *trianthophora*	S1	Bath, Augusta	Mesic slope forests, montane alluvial forests, and large-river floodplain forest. Most often found under hemlocks or in moist soils and moss of old logging roads (Virginia Botanical Associates, 2016).	Surveys identified 26 individuals of this species 1,000 feet downslope of a proposed access road associated with Brown's Pond Conservation Site on the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on three birds orchid on the GWNF.
Southern bladderwort *Utricularia juncea*	S1	Dinwiddie, Southampton, Suffolk	Bog, sea-level fens, pond shores, and wet, disturbed sands (Virginia Botanical Associates, 2016).	Surveys identified 350 individuals of this species at the Handsom-Gum Powerline Bog Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).

TABLE S-2 (cont'd)

Virginia Listed and Rare Species, and Species of Greatest Conservation Need with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Rank / Status[c] (SGCN Tier Rank)[c]	Counties with Documented Occurrences[d]	Habitat Description	Survey / Agency Data	Potential Project Impacts and Mitigation
American vetch *Vicia americana ssp. americana*	S1[b]	Nelson	Dry, shaley or rocky woodlands, forest edges and clearings, riverside prairies and outcrops (Virginia Botanical Associates, 2016).	Surveys identified this species within the GWNF.	Refer to table R-4 of appendix R for discussion of impacts on American vetch on the GWNF.
Fringed yellow-eyed grass *Xyris fimbriata*	S1	Southampton, Suffolk, Chesapeake	Boggy and peaty clearings in wet flatwoods, pocosins, and Atlantic white cedar swamps. All records are from the Great Dismal Swamp (Virginia Botanical Associates, 2016).	Surveys identified 1 individual of this species in the Great Dismal Swamp Conservation Site, and 13 individuals at the Great Dismal Swamp (Northwest Section) Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed.
Tall yellow-eyed grass *Xyris platylepis*	S2	Greensville, Suffolk	Bogs, powerline swales, sphagnous ditches, and sandhill seeps (Virginia Botanical Associates, 2016).	Surveys identified 14 individuals of this species at the Great Dismal Swamp Conservation Site, and individuals at the Handsom-Gum Powerline Bog Conservation Site.	The potential impacts and mitigation measures for this species are the same as described above for the Red Milkweed. Atlantic is currently working with VDCR on potential reroute of the Handsom-Gum Powerline Conservation Site (see section 4.4.2.2).

[a] Species under review for federal listing under the Endangered Species Act.
[b] Species is identified as Regional Foresters' Sensitive Species, Management Indicator Species, or Locally Rare Species in the George Washington National Forest, see Section 4.7.3 and appendix R.
[c] State Rank and Status is based on Roble, 2016 and Townsend, 2016.
[d] County Occurrence information is based on the sources cited in the Habitat Descriptions column, and information provided by federal and state agencies.

State Rank: S1 = Critically Imperiled, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure, S5 = Secure, SH= Possibly Extirpated, SU = Possibly rare, but status uncertain and more data needed, ? = Inexact Numeric Rank.
State Rank (Birds): S_B: breeding status; these species typically inhabit Virginia only during the breeding season, S_B/S_N: breeding and non-breeding status in Virginia when they differ
State Status: E – Endangered, P – Proposed, T – Threatened
Species of Greatest Conservation Need (SGCN) Tier Rank: Tier I – Critical Conservation Need; Tier II – Very High Conservation Need; Tier III – High Conservation Need; Tier IV – Moderate Conservation Need
Conservation Opportunity Ranking (included with SGCN Tier Rank, e.g. Tier Ia, Tier IIIc): a – VDGIF has identified species or habitat management strategies, some of which will be implemented; b – VDGIF has identified species or habitat management strategies; but cannot implement; c – VDGIF has not identified species or habitat management strategies for this species
PF – federally petitioned species
NR – not ranked

TABLE S-3

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
MAMMALS					
Rafinesque's big-eared bat (Coastal Plain subspecies) *Corynorhinus rafinesquii macrotis*	SC	Northampton, Johnston, Sampson, Robeson	Roosts in hollow trees, old buildings, and beneath bridges usually near water (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (Pre-2006); A total of 16 individuals were captured during mist-net surveys in Halifax and Northampton Counties. In addition, telemetry surveys identified three roost trees, and two building roosts. Bat surveys are pending on 2.9 miles in North Carolina, which are anticipated to be completed in August 2017.	One of the roost trees and the two building roosts are located greater than 0.25 mile from the construction workspace; however, the distance of the other roost tree was unable to be determined due to denied land access. The third roost tree is located along a proposed existing access road; therefore, use of the road could cause disturb roosting bats. Atlantic would avoid and implement a 0.25-mile buffer around positively identified roost trees and only clear suitable habitat during the non-active season (November 16-March 31). NCWRC has recommended that Atlantic avoid work along the access road in proximity to the identified roost tree during the active season and until bats have left the area for their winter hibernacula.
Southeastern myotis *Myotis austroriparius*	SC	Halifax, Johnston, Robeson	Roosts in buildings, hollow trees; forages near water mainly in the Coastal Plain (NCDEQ, 2014d).	A total of 15 individuals were captured during mist-net surveys in Halifax, Nash, Wilson, and Northampton counties. In addition, telemetry surveys identified three roost trees, and one bridge roost. Bat surveys are pending on 2.9 miles in North Carolina, which are anticipated to be completed in August 2017.	One of the roost trees and bridge roost are located greater than 0.25 mile from the construction workspace; however, the other two roost trees are located 0.1 mile from the construction workspace. Atlantic would avoid and implement a 0.25-mile buffer around positively identified roost trees and only clear suitable habitat during the non-active season (November 16-March 31). Project would remove suitable habitat. NCWRC has recommended that Atlantic avoid work along the access road in proximity to the identified roost tree during the active season and until bats have left the area for their winter hibernacula.
BIRDS					
Bachman's sparrow *Peucaea aestivalis*	SC	Halifax, Cumberland, Sampson, Robeson	Open longleaf pine forests, old fields (NCDEQ, 2014d).	NHI Observation within Project Area (1983). Based on a desktop assessment, Atlantic identified potentially suitable habitat for this species in Halifax, Sampson, and Cumberland counties.	Based on desktop analysis, potentially suitable habitat for this species occurs with the ACP Project area. Construction activities would cause temporary to long term loss of suitable habitat, and could disrupt normal activities. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
Cerulean warbler *Setophaga cerulea*	SC	Northampton, Halifax, Johnston	Mature hardwood forests; steep slopes and coves in mountains, natural levees in Coastal Plain (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (2007). Based on a desktop assessment, Atlantic identified potentially suitable habitat for this species in Northampton and Halifax counties.	Construction activities would cause long term to permanent loss of suitable habitat, and could disrupt normal activities. Atlantic would clear outside of the nesting season and implement the mitigation measures outlined in the *Migratory Bird Plan* (see table 2.3.1-1) to minimize impact to this species.
Little blue heron *Egretta caerulea*	SC	Cumberland, Robeson	Forests or thickets on maritime islands, rarely in swamps or at ponds (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (2000). One active rookery (WBC-14) with little blue heron was documented during surveys conducted in 2015 surveys in Robeson County.	Atlantic has committed to maintaining a disturbance buffer distance of 0.5-mile around of rookeries from February 15-July 31, and maintaining an undisturbed, naturally vegetated buffer of at least 500 feet around rookeries at all times. The rookery is located 6,460 feet (1.2 miles) from the ACP construction workspace; therefore, impacts are not anticipated.
Snowy egret *Egretta thula*	SC	Robeson	Forests or thickets on maritime islands, rarely in swamps or at ponds (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (2000). One active rookery with snowy egret was documented during surveys conducted in 2015 surveys in Robeson County.	Atlantic has committed to maintaining a disturbance buffer distance of 0.5-mile around of rookeries from February 15-July 31, and maintaining an undisturbed, naturally vegetated buffer of at least 500 feet around rookeries at all times. The rookery is located 6,460 feet (1.2 miles) from the ACP construction workspace; therefore, impacts are not anticipated.
REPTILES					
American alligator *Alligator mississippiensis*	T	Cumberland, Sampson, Robeson	Fresh to slightly brackish lakes, ponds, rivers, and marshes (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (1990)	This species is unlikely to occur in the Project area (last NHI observance in 1990). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
Eastern diamondback rattlesnake *Crotalus adamanteus*	E	Cumberland, Sampson, Robeson	Pine flatwoods, savannas, pine-oak sandhills (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (1934)	This species is unlikely to occur in the Project area (last NHI observance in 1934). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
Southern hognose snake *Heterodon simus*	SC	Cumberland, Sampson, Robeson	Sandy woods, particularly pine-oak sandhills (NCDEQ, 2014d).	NHI Observations within One-Mile of Project Area (1988)	This species is unlikely to occur in the Project area (last NHI observance in 1988). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
Coachwhip *Masticophis flagellum*	SR	Cumberland, Sampson	Dry and sandy woods, mainly in pine/oak sandhills (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (pre-1877)	This species is unlikely to occur in the Project area (last NHI observance prior to 1877). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
AMPHIBIANS					
Dwarf salamander *Eurycea quadridigitata*	SC	Robeson	Pocosins, Carolina bays, pine flatwoods, savannas, and other wetland habitats (NCDEQ, 2014d).	Not available.	Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
Pine barrens treefrog *Hyla andersonii*	SR	Johnston, Cumberland, Sampson	Pocosins, bay forests, boggy areas (NCDEQ, 2014d).	NHI Observations within One-Mile of Project Area (1974)	This species is unlikely to occur in the Project area (last NHI observance prior to 1974). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
River frog *Lithobates heckscheri*	SC	Cumberland, Sampson, Robeson	River floodplains, such as pools or borrow pit ponds (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (1958)	This species is unlikely to occur in the Project area (last NHI observance prior to 1958). Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.
Neuse river waterdog *Necturus lewisi*	SC*	Halifax, Nash, Johnston, Wilson	Neuse and Tar-Pamlico basins. Clean, moderate to swift-flowing streams, common in streams greater than 15 m wide and 1 m deep. Require relatively high oxygen levels and water quality (NCDEQ, 2014d).	NHI Observations within Project Area (2015). 2016 surveys documented 42 adults at four waterbodies crossed by ACP. Surveys are at one waterbody and are anticipated to be completed in February 2017.	This species is currently under review by USFWS for listing under the ESA (refer to section 4.7.1.7). Waterbodies where Neuse river waterdogs were documented during 2016 surveys would be crossed using the HDD technique to minimize impacts on this species. Waterdogs occurring in waterbodies crossed by HDD may be affected if there is an inadvertent release of drilling fluid in or near the waterbody. Atlantic would implement the measures outlined in its *HDD Plan* (see appendix H), and would maintain riparian vegetation at HDD crossings to minimize off road vehicle use and additional sedimentation.
Southern chorus frog *Pseudacris nigrita*	SR	Johnston, Sampson, Cumberland, Robeson	Ditches, Carolina bays, and other temporary shallow ponds (NCDEQ, 2014d).	NHI Observations within One-Mile of Project Area (2014)	Based on consultation with NCWRC, there is no suitable habitat for this species within the Project area.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
FISH					
Roanoke bass *Ambloplites cavifrons*	SR	Halifax, Johnston, Nash, Wilson	Found primarily in the Tar and Neuse river drainages, but also found in Chowan, Roanoke, and Cape Fear river drainages (introduced to Cape Fear). Rocky and sandy pools of creeks and small to medium rivers. Most common in clearer, firmer bottomed streams (NatureServe, 2015).	NHI Observations within Project Area & within One-Mile of Project Area (1997)	Where located in waterbodies crossed by wet or dry crossing technique, individuals would be relocated to suitable habitat per the *North Carolina Revised Fish and Other Aquatic Taxa Collection and Relocation Protocol for Instream Construction Activities* (see table 2.3.1-1); mortality could occur during relocation efforts. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity during construction, reduced fish passage, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats.
Quillback *Carpiodes cyprinus*	SR	Northampton, Halifax	Roanoke river drainages. Pools, backwaters and main channels of creeks and small to large rivers. Also occurs in lakes (NatureServe, 2015).	NHI Observation within One-Mile of Project Area (2007)	This species is unlikely to occur in the Project area (last NHI observance in 2007). The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
Thinlip chub *Cyprinella* sp. 1	SC	Cumberland, Sampson, Robeson	Lumber and Cape Fear rivers and their tributaries. Sandy and rocky runs and flowing pools of creeks and small rivers with clear to turbid warm waters (NatureServe, 2015).	NHI Observation within One-Mile of Project Area (1962)	This species is unlikely to occur in the Project area (last NHI observance in 1962). The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
Blackbanded sunfish *Enneacanthus chaetodon*	SR	Johnston, Nash, Sampson, Cumberland, Robeson	Many river drainages, especially the Lumber drainage. Vegetated lakes, ponds, sand and mud-bottomed pools and backwaters	NHI Observations within Project Area (1961) & within One-Mile of Project Area (2012). Presence of this species is assumed present at Toisnot Swamp, Beaverdam Swamp, Starlins Swamp,	The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
			of creeks, and small to medium rivers (NatureServe, 2015).	Mingo Swamp, Black River-South River, Big Marsh Swamp, and Saddletree Swamp crossed by ACP	
Banded sunfish *Enneacanthus obesus*	SR	Northampton, Johnston, Sampson, Cumberland, Robeson	Found in most Atlantic drainages. Small ponds and backwaters of creeks to small and large rivers and boggy brooks over sand or mud in sluggish, acidic, heavily vegetated waters (NatureServe, 2015).	NHI Observations within Project Area (2006) & within One-Mile of Project Area (2012); this species was incidentally observed during aquatic species surveys at the Tar River and Little Buffalo Creek. Presence of this species is assumed present at Jack Swamp, Cypress Creek, Little Buffalo Creek, and Cedar Creek crossed by ACP; banded sunfish were also incidentally observed during crayfish surveys at 11 waterbody crossings.	The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
Ironcolor shiner *Notropis chalybaeus*	SR	All Counties Crossed	Found in pools and slow runs of low gradient, small acidic creeks and small rivers with sandy substrate in clear well-vegetated waters (NatureServe, 2015).	Presence of this species is assumed present at Little Sapony Creek, Sapony Creek, Toisnot Swamp, Little Buffalo Creek, Hannah Creek, Whiteoak Branch, Stone Creek, Johnson Swamp, Black River-South River, Saddletree Swamp, Richland Swamp, and Burnt Swamp crossed by ACP.	The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
Mimic shiner *Notropis volucellus*	SR	Halifax, Nash, Johnston	Tar and Neuse river drainages. Clear streams from medium-sized creeks to small rivers. Also found in moderately weedy lakes (NatureServe, 2015).	NHI Observation within One-Mile of Project Area (1966). This species is assumed present at Pig Basket Creek, Stony Creek, Little Sapony, Creek, and Sapony Creek crossed by ACP.	The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
Carolina madtom *Noturus furiosus*	T*	Halifax, Nash, Johnston, Wilson	Endemic to the Neuse and Tar river drainages. Free-flowing streams with clean sand or gravel bottoms (NatureServe, 2015).	NHI Observations within Project Area (2014); this species was identified at three waterbody crossing locations. Based on historic data, this species is known from the Tar River, Fishing Creek, Neuse River, and Contentnea Creek (FWS, 2015a). ACP documented Carolina madtom at two waterbodies crossed by ACP; surveys are pending and are anticipated to be completed in 2017.	This species is currently under review by USFWS for listing under the ESA (refer to section 4.7.1.11). The potential impacts on and mitigation for this species are the same as those described above for the Neuse River Waterdog. Atlantic would use HDD at five of the six waterbodies where Carolina madtom presence has been assumed or documented. Water withdrawal has been proposed at 2 of these locations; however, Atlantic has committed to implementing the measures described in section 4.7.1.11, including limiting withdrawal to not exceed 10 percent of instantaneous flow. The remaining waterbody would be crossed using the cofferdam technique. Additional

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					surveys for this species are pending. Atlantic would implement the *North Carolina Revised Fish and Other Aquatic Taxa Collection and Relocation Protocol for Instream Construction Activities* (see table 2.3.1-1) at the cofferdam crossing location. We recommend in section 4.7.1.11 that Atlantic should assume presence of Carolina madtom where FWS reviewed surveys indicate suitable habitat and implement relocation surveys, as well as the FWS' enhanced conservation measures as defined in section 4.7.1.
Broadtail madtom *Noturus sp. 2*	SC	Cumberland, Robeson, Sampson	Inhabits swift moving areas of medium-sized rivers, often over gravel and coarse sand and often in submerged vegetation (NatureServe, 2015).	This species is assumed present in Black River-South River crossed by ACP.	The potential impacts on and mitigation for this species are the same as those described above for the Roanoke Bass.
MOLLUSKS: FRESHWATER BIVALVES					
Triangle floater *Alasmidonta undulata*	T	Northampton, Halifax, Nash, Johnston, Wilson	Roanoke, Chowan, Tar, Neuse, and Cape Fear river drainages. Habitat generalist; has been found in silt/sand in slower moving waters, gravel/sand in riffles and runs, and from crevices in bedrock (NCWRC, 2016a).	NHI Observations within Project Area (2011); this species was observed at two waterbody crossing locations**.**	One of the streams where this species has been identified would be crossed using the HDD technique. Atlantic would implement its *HDD Plan* (appendix H) in the event of an inadvertent return. The other stream would be crossed utilizing the cofferdam method; however, in section 4.7 we recommended that Atlantic conduct a hydrofracture potential analysis of this waterbody, and if hydrofracture potential is low, implement the HDD method to avoid impacts on sensitive species. Should an HDD not be feasible, Atlantic would remove and relocate all mussel species (regardless of status) to suitable habitat, pending approval from NCWRC according to the *Freshwater Mussel Relocation Plan for ACP in North Carolina* 6 months prior to in-stream activities. Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity during construction, disturbance, changes in hydrology, and disturbance and injury or

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats.
Alewife floater *Anodonta implicata*	T	Halifax, Northampton, Sampson	Chowan, Roanoke, and Cape Fear drainages. Clean sand/gravel substrates in relatively fast flowing water (NCWRC, 2016a).	NHI Observations within Project Area (2004); this species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Pod lance *Elliptio folliculata*	SC	Sampson, Cumberland	Cape Fear and Lumber drainages. Sand and clay substrates in small creeks to large rivers, including canals (NCWRC, 2016a).	NHI Observation within One-Mile of Project Area (1998); this species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Cape Fear spike *Elliptio marsupiobesa*	SC	Johnston, Sampson, Cumberland, Robeson	Cape Fear and Neuse drainages (endemic to North Carolina). Has been found in both muddy / loose sandy, and firm sandy substrates (NCWRC, 2016a).	This species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Roanoke slabshell *Elliptio roanokensis*	T	Cumberland, Johnston, Nash, Halifax, Northampton	Roanoke, Tar, Neuse, Cape Fear, and Lumber drainages. Deeper channels near shore in relatively fast flowing water. Coarse to medium sized sands and small gravel (NCWRC, 2016a).	NHI Observations within Project Area (2009); this species was observed at two waterbody crossing locations.	One of the streams where this species has been identified would be crossed using the HDD technique. The other stream would be crossed utilizing the cofferdam method; however, in section 4.7 we recommended that Atlantic conduct a hydrofracture potential analysis of this waterbody, and if hydrofracture potential is low, implement the HDD method to avoid impacts on sensitive species. Should an HDD not be

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					feasible, the potential impacts on and mitigation for this species would be the same as those described above for the Triangle Floater.
Atlantic pigtoe *Fusconaia masoni*	E*	Northampton, Halifax, Nash, Wilson, Johnston, Sampson, Cumberland	Roanoke, Tar, Neuse, and Cape Fear river drainages. Medium to large streams; clean, swift waters with stable gravel, or sand and gravel substrate. Downstream edge of riffle areas (NCWRC, 2016a).	Species presence assumed at Roanoke River, Little River, and Cape Fear River based on FWS correspondence; this species was observed at four waterbody crossing locations.	This species is currently under review by USFWS for listing under the ESA (refer to section 4.7.1.15). All four waterbodies where this species was documented during surveys would be crossed utilizing the HDD technique. Water withdrawal has been proposed at two of these waterbodies. Atlantic would implement the FWS' enhanced conservation measures for water withdrawal described in section 4.7.1, including not exceeding 10 percent of instantaneous flow. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Yellow lampmussel *Lampsilis cariosa*	E	Northampton, Halifax, Nash, Johnston, Sampson, Cumberland	Chowan, Roanoke, Tar, Neuse, and Cape Fear river drainages. Habitat generalist; appears to prefer shifting sands downstream from large boulders in relatively fast flowing, medium sized rivers / creeks to large creeks (NCWRC, 2016a).	NHI Observations within Project Area (2012); this species was observed at two waterbody crossing locations.	Both waterbodies where this species has been documented during surveys would be crossed utilizing the HDD technique. Water withdrawal has been proposed at one of these waterbodies. Atlantic would implement the FWS' enhanced conservation measures for water withdrawal described in section 4.7.1, including not exceeding 10 percent of instantaneous flow. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Carolina fatmucket *Lampsilis radiata conspicua*	T	Johnston	Neuse River basin. Prefers gravel, cobble, or boulder substrates, as well as impounded habitats (NCWRC, 2016a)	This species was observed at one waterbody crossing location.	The waterbody where this species was identified would be crossed utilizing the cofferdam method; however, in section 4.7 we recommended that Atlantic conduct a hydrofracture potential analysis of this waterbody, and if hydrofracture potential is low, implement the HDD method to avoid impacts on sensitive species. Should an HDD not be feasible, the potential impacts on and mitigation for this species would be the same as those described above for the Triangle Floater.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
Eastern lampmussel *Lampsilis radiataradiata*	T	Northampton, Halifax, Johnston, Nash, Sampson	Tar River, Swift, and Fishing creek subbasins. Medium to coarse sand substrates (NCWRC, 2016a).	NHI Observations within Project Area (2012); this species was observed at two waterbody crossing locations.	One of the streams where this species has been identified would be crossed using the HDD technique. The other stream would be crossed utilizing the cofferdam method; however, in section 4.7 we recommended that Atlantic conduct a hydrofracture potential analysis of this waterbody, and if hydrofracture potential is low, implement the HDD method to avoid impacts on sensitive species. Should an HDD not be feasible, the potential impacts on and mitigation for this species would be the same as those described above for the Triangle Floater. Water withdrawal has been proposed at one of these waterbodies. Atlantic would implement the FWS' enhanced conservation measures for water withdrawal described in section 4.7.1, including not exceeding 10 percent of instantaneous flow.
Green floater *Lasmigona subviridis*	E*	Northampton, Halifax, Nash, Johnston	Roanoke, Tar, and Neuse river drainages. Small to medium sized streams in quite pools and eddies with gravel and sand substrate. Generally associated with good to excellent water quality (NCWRC, 2016a).	NHI Observations within Project Area (2010); this species was not observed during surveys; however, per FWS correspondence this species has been documented in Swift Creek, Tar River, and Little River (FWS, 2015a).	This species is currently under review by USFWS for listing under the ESA (refer to section 4.7.1.15). This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Tidewater mucket *Leptodea ochracea*	T	Northampton, Halifax	Chowan, Roanoke, and Tar River drainages. Habitat generalist; most often found in sand/silt substrates (NCWRC, 2016a).	This species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Eastern pondmussel *Ligumia nasuta*	T	Northampton, Halifax, Nash	Chowan, Roanoke, Neuse, Tar, and Cape Fear river drainages. Silt and sandy substrates with limited currents (NCWRC, 2016a).	This species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					species are the same as those described above for the Triangle Floater.
Creeper / Squawfoot *Strophitus undulatus*	T	Halifax, Nash, Johnston, Wilson	Roanoke, Tar, Neuse, and Cape Fear river drainages. Habitat generalist; found in variety of substrates and waterbodies (NCWRC, 2016a).	NHI Observations within Project Area (2011); this species was observed at two waterbody crossing locations.	One of the streams where this species has been identified would be crossed using the HDD technique. The other stream would be crossed utilizing the cofferdam method; however, in section 4.7 we recommended that Atlantic conduct a hydrofracture potential analysis of this waterbody, and if hydrofracture potential is low, implement the HDD method to avoid impacts on sensitive species. Should an HDD not be feasible, the potential impacts on and mitigation for this species would be the same as those described above for the Triangle Floater. Water withdrawal has been proposed at one of these waterbodies. Atlantic would implement the FWS' enhanced conservation measures for water withdrawal described in section 4.7.1, including not exceeding 10 percent of instantaneous flow.
Notched rainbow *Villosa constricta*	SC	Halifax, Nash, Johnston, Wilson	Roanoke, Tar, and Neuse river drainages. Sand/gravel substrates; often in stable banks among tree root mats (NCWRC, 2016a).	NHI Observations within Project Area (2012); this species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
Eastern creekshell *Villosa delumbis*	SR	Cumberland, Sampson	Cape Fear and Lumber drainages. Mud or soft sand substrates in small rivers and creeks rich in vegetable detritus (NCWRC, 2016a).	NHI Observation within One-Mile of Project Area (1990); this species was not observed during surveys.	This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the same as those described above for the Triangle Floater.
CRUSTACEANS					
North Carolina spiny crayfish *Orconectes carolinensis*	SC	Halifax, Nash, Wilson, Johnston	Chowan, Roanoke, Neuse and Tar river drainages. Small to large streams with rock substrates (NCWRC, 2016a).	NHI Observations within Project Area (2010); this species was observed at six waterbody crossing locations.	Five of the six waterbodies where this species has been documented during surveys would be crossed utilizing the HDD technique; the remaining waterbody would be crossed using the wet open-cut method. Additional surveys are pending for this

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					species. Atlantic would implement its *HDD Plan* (appendix H) in the event of an inadvertent return. In the non-HDD waterbody, Atlantic would remove and relocate all aquatic species to suitable habitat according to Atlantic's *North Carolina Revised Fish and Other Aquatic Taxa Collection and Relocation Protocol for Instream Construction Activities* (see table 2.3.1-1). Waterbody crossings and access road construction/use would temporarily degrade water quality through increased sedimentation and turbidity during construction, disturbance, changes in hydrology, and disturbance and injury or mortality from blasting (see section 4.6 for additional discussion). Removal of riparian habitat may also contribute to increased erosion and sedimentation, and by decreasing shade increase localized water temperatures. Atlantic would implement the measures in the FERC *Plan* and *Procedures*, and construction and restoration plans (see table 2.3.1-1) to control sedimentation and the introduction of hazardous chemicals, and to restore riparian habitats. Water withdrawal has been proposed at two of these waterbodies. Atlantic would implement the FWS' enhanced conservation measures for water withdrawal described in section 4.7.1, including not exceeding 10 percent of instantaneous flow.
Chowanoke crayfish *Orconectes (Crockerinus) virginiensis*	SC*	Halifax, Northampton	Chowan and Roanoke river drainages. Slow flowing streams or swamps within woodland habitats with sand or gravel substrates (NCWRC, 2016a).	No observations of this species were recorded during surveys. Per FWS correspondence this species is known from the Roanoke River (FWS, 2015a).	This species is currently under review by USFWS for listing under the ESA (refer to section 4.7.1.14). The Roanoke River would be crossed using the HDD method. This species was not observed at any waterbody crossing locations, therefore direct impacts are not anticipated. However, downstream impacts are possible. The potential impacts on and mitigation for this species are the

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
					same as those described above for the North Carolina spiny crayfish.
Santee crayfish *Procambarus blandingii*	W3	Cumberland, Robeson	A generalist primary burrower found in ditches, impoundments, lakes and swamps (NatureServe, 2015).	This species is assumed present at Big Marsh Swamp, Tenmile Swamp, Raft Swamp, Richland Swamp, and Burnt Swamp crossed by ACP.	The potential impacts on and mitigation for this species are the same as those described above for the North Carolina spiny crayfish.
INSECTS					
Mayflies					
Mayfly *Baetisca becki*	SR	Halifax, Nash	Swift Creek and Fishing Creek. Swift, clear, sand-bottomed streams and adjacent mesophytic forests (NatureServe, 2015).	NHI Observation within One-Mile of Project Area (1996)	Impacts on this species would not be anticipated because both Swift and Fishing creeks would be crossed using the HDD technique, which would minimize impacts on the waterbody and stream banks where this species could be encountered.
Mayfly *Macdunnoa brunnea*	SR	Nash	Swift Creek. Swift, deep areas of streams and adjacent mesic forests (NatureServe, 2015).	NHI Observation within One-Mile of Project Area (1990)	Impacts on this species would not be anticipated because Swift Creek would be crossed using the HDD technique, which would minimize impacts on the waterbody and stream banks where this species could be encountered.
Dragonflies and Damselflies					
Septima's clubtail dragonfly *Gomphus septima*	SR	Cumberland	Small to medium rivers with rapid current and gravel bottom (NatureServe, 2015).	NHI Observations within Project Area & within One-Mile of Project Area (2012)	Adult dragonflies would be able to disperse away from disturbance; however, reduced fitness and/or mortality could result if the individual is unable to find other suitable habitat. There is the potential that construction activities could impact nymphs through direct mortality or temporary reduction in water quality. Atlantic would also remove suitable riparian habitat that could provide shelter and foraging habitat. Vehicle collisions could cause injury or mortality to adult dragonflies. Atlantic would implement the FERC *Plan* and *Procedures* (see table 2.3.1-1), which includes sedimentation and erosion control measures and waterbody crossing measures to minimize impacts on this species.
Carolina spreadwing damselfly	SR	Sampson	Temporary or permanent ponds and pools with emergent grasses (BugGuide, 2016).	NHI Observation within One-Mile of Project Area (pre-2004)	This species is unlikely to occur in the Project area (last NHI observance prior to 2004). All recorded occurrences in

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
Lestes vidua					Sampson County for this species are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident if this species is still present. No impacts anticipated.
Coppery emerald dragonfly *Somatochlora georgiana*	SR	Northampton, Halifax, Nash, Johnston, Sampson, Cumberland, Robeson	Creeks and other slow-moving acidic streams in forested areas (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (pre-2004)	This species is unlikely to occur in the ACP project area (last NHI observance prior to 2004). All recorded occurrences in Northampton, Halifax, Johnston, Sampson, Cumberland, and Robeson counties for this species are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident if this species is still present. No impacts anticipated in these counties. For Nash County, the potential impacts on and mitigation for this species are the same as those described above for the Septima's Clubtail Dragonfly.
Shining clubtail dragonfly *Stylurus ivae*	SR	Cumberland, Sampson, Robeson	Sandy creeks or small rivers, where waters are clean (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (pre-2004)	This species is unlikely to occur in the ACP project area (last NHI observance prior to 2004). All recorded occurrences in Sampson and Cumberland counties for this species are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident if this species is still present. No impacts anticipated in these counties. For Robeson County, the potential impacts on and mitigation for this species are the same as those described above for the Septima's Clubtail Dragonfly.
Phantom darner dragonfly *Triacanthagyna trifida*	SR	Robeson	Slow-flowing streams (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (pre-2004)	This species is unlikely to occur in the ACP project area (last NHI observance prior to 2004). All recorded occurrences in Robeson County for this species are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident if this species is still present. No impacts anticipated.

TABLE S-3 (cont'd)

North Carolina Listed and Special Concern Species with Potential to Occur in the Atlantic Coast Pipeline Project Area

Species/Scientific Name	State Status	Counties with Documented Occurrences [a]	Habitat Description	Survey Data / Agency Data	Potential Project Impacts and Mitigation
Grasshoppers					
Weldon short-wing grasshopper *Melanoplus mirus*	SR	Halifax	Open woodlands (endemic to North Carolina) (NCDEQ, 2014d).	NHI Observation within One-Mile of Project Area (1913)	This species is unlikely to occur in the ACP project area (last NHI observance in 1913). All recorded occurrences in Halifax County for this species are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident if this species is still present. No impacts anticipated.
PLANTS					
Running oak *Quercus elliottii*	SR-P	Robeson	Mesic pine flatwoods and dry, silty sites (NCDEQ, 2014e).	NHI Observation within Project Area (2008); One occurrence documented during 2015 field surveys.	Atlantic is currently discussing rerouting and/or minimization options with NCDNCR.

[a] County Occurrence data is based on sources cited in the Habitat Description column, and information from federal and state agencies.

North Carolina Status: E – Endangered, T – Threatened, SC – special concern, SC-V – special concern-vulnerable, SR – significantly rare, SR-O – significantly rare other, SR-P – significantly rare peripheral, SR-T – significantly rare throughout, W3 – watch category 3 (animals that are poorly known, but not necessarily considered to be declining or otherwise in trouble.

Federal Status: *species under review for federal listing under the Endangered Species Act, PF – federally petitioned species

NHI = Natural Heritage Information