APPENDIX G

ESC Plan and SWM Plan for Brunswick M&R Station

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Stormwater Pollution Prevention Plan

APPENDIX G

Erosion and Sediment Control and Stormwater Management Plan

for

Brunswick M&R Station

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
BMP	best management practices
BSRF	Belted Silt Retention Fence
DETI	Dominion Energy Transmission, Inc. (formerly with Dominion Transmission, Inc.)
DTI	Dominion Transmission, Inc. (now Dominion Energy Transmission, Inc.)
EI	Environmental Inspector
ESC	erosion and sediment control
ESC Plan	Erosion and Sediment Control Plan
FERC	Federal Energy Regulatory Commission
lb/ac/yr	pounds per acre per year
M&R	metering and regulating
M&R Station	Brunswick M&R Station
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
Power Station	Brunswick Electric Power Station
SWM	stormwater management
SWM Plan	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
USDA	U.S. Department of Agriculture
VDEQ	Virginia Department of Environmental Quality
VEP	Virginia Electric and Power Company
VESCP	Virginia Erosion and Sedimentation Control Program
VESCH	Virginia Erosion and Sediment Control Handbook
VSMP	Virginia Stormwater Management

1.0 INTRODUCTION

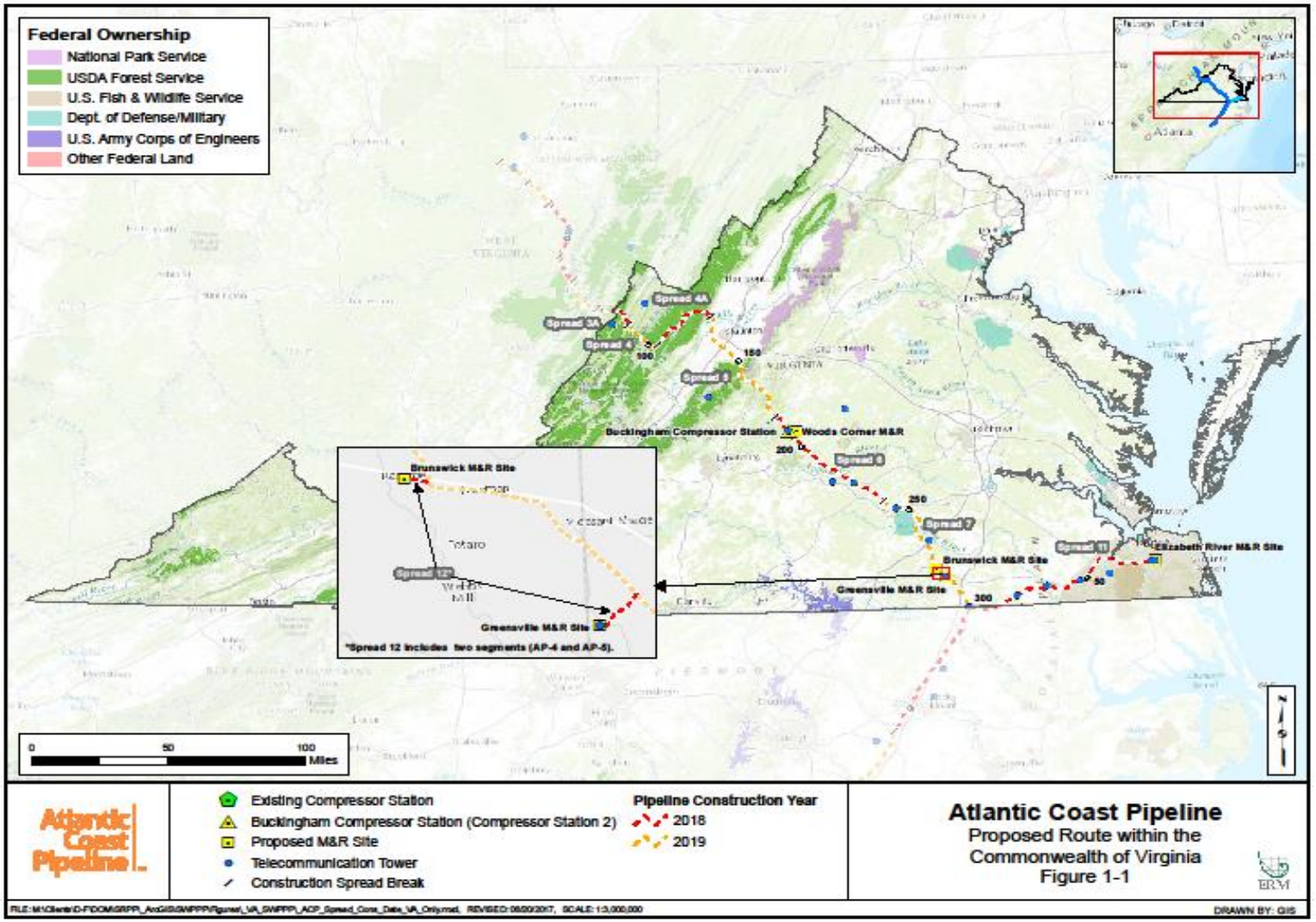
As part of the Atlantic Coast Pipeline (ACP), Dominion Energy Transmission, Inc. (DETI), formerly Dominion Transmission, Inc. (DTI) is proposing to construct an approximately 1.4-acre aboveground metering and regulating (M&R) station at 20100 Governor Harrison Parkway in Freeman, Brunswick County, Virginia. This station, referred to as the Brunswick M&R Station (M&R Station), will be co-located with the Virginia Electric and Power Company (VEP) Brunswick Electric Power Station (Power Station).[1]

The purpose of this Appendix is to specifically address existing site conditions; planned land-disturbing activities; construction sequence and procedures; erosion and sediment control (ESC) measures; and post-construction stormwater management (SWM) methods to be used at the M&R Station. This Appendix is intended to supplement the main body of the Stormwater Pollution Prevention Plan (SWPPP), which primarily addresses the linear portion of the Project. However, general provisions contained within the main body of the SWPPP, including pollution prevention practices and procedures; roles and responsibilities of personnel; inspection and maintenance; employee training; and notification, recordkeeping, and reporting will be followed during construction of the M&R Station, as applicable to the aboveground facility. Land-disturbing activities will conform, at a minimum, to the same regulations and guidelines listed in Section 1.0 of the SWPPP, as appropriate and applicable. In circumstances where multiple overlapping regulatory requirements and guidelines apply, DETI selected the more stringent or protective of the requirements and guidelines set forth by the Federal Energy Regulatory Commission (FERC) and the Virginia Department of Environmental Quality (VDEQ).

A description of the M&R Station is provided in the following sections. A Site Plan is provided in Attachment 1. Figure 1-1 below shows the location of the M&R Station in relation to the ACP.

[1] In May 2017, Dominion Transmission, Inc. (DTI) had a legal name change to Dominion Energy Transmission, Inc. (DETI).

Figure 1-1 Brunswick M&R Station Location



2.0 LOCATION AND DESCRIPTION

The M&R Station will be located at milepost 0.4 of the AP-4 lateral section of the ACP pipeline, within Brunswick County, Virginia. The M&R Station will be located within the property owned by Virginia Electric and Power Company. Specifically, the property is west of Emporia, Virginia, located south of Governor Harrison Parkway (U.S. Highway 58), about one mile west of Freemans Cross Road (County Road 634) in Freeman, Virginia. The M&R Station is co-located with the Power Station (parcel no.55-64D). The 1.4-acre M&R Station is located on developed land. The M&R Station will be located on the northern portion of the greater parcel, south of Governor Harrison Parkway (U.S. Highway 58). The stormwater drains southwest to an existing retention pond containing a shelf constructed as part of the larger existing Power Station.

2.1 EXISTING SITE CONDITIONS

The M&R Station is located on developed land, and is currently a gravel parking lot. Therefore, there will be no net increase in impervious area as a result of M&R Station construction. The water quality and water quantity requirements for the drainage area are addressed using a retention pond containing a shelf. The Site Plan included in Attachment 1 depicts the location of existing and proposed utilities.

The greater parcel is located adjacent to Reedy Creek's flood plain along the western and southern boundaries.

2.2 EXISTING AND PROPOSED TOPOGRAPHY

The topography at the M&R Station is characterized by gently to moderately sloping terrain. Elevation at the M&R Station is approximately 230 feet above mean sea level. The proposed development may require minor grading to achieve proper drainage.

Existing topography of the M&R Station can be found in the topographical map, Attachment 2. In addition, the proposed grading plan for the M&R Station is provided in Attachment 1.

2.3 PROMINENT VEGETATION

The current M&R Station site location is located on land previously developed for the larger Power Station. The M&R Station will be developed with one dekatherm building (used to house equipment such as gas chromatographs, communications equipment, etc.) as well as a regulation skid, a metering skid, a microwave tower, and a small supply building surrounded by a chain-link security fence. In addition, aboveground sections of piping, gas filter/separator, meters, tank, three gas heaters, and regulators will be present. The ground surface around the building structures and aboveground equipment will be covered with gravel. DETI will utilize an existing road to access the M&R Station from U.S. Highway 58. Vehicles will then enter the M&R Station using a new gravel access road. If existing roads are damaged during construction, DETI will restore these roads to preconstruction condition or better. The proposed Site Plan is provided in Attachment 1.

2.4 LAND-DISTURBING ACTIVITIES AND ASSOCIATED WORK AREAS

Construction of the M&R Station will affect approximately 1.4 acres of land. The 1.4 acres of land affected will be retained for operation of the new M&R Station. The Site Plan in Attachment 1 depicts the proposed land use with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, structures, roads, parking areas, SWM facilities, and easements.

2.5 CONSTRUCTION SCHEDULE

Subject to receipt of the required permits and regulatory approvals, initial construction activities are expected to commence in January 2018. DETI anticipates that the M&R Station construction will be completed in the third quarter of 2019.

2.6 ADJACENT PROPERTIES

The M&R Station is co-located with the Power Station.

2.7 OFF-SITE AREAS

This ESC and SWM Plan addresses land-disturbing activities within the M&R Station. Project plans do not include any additional off-site land-disturbing activities (such as borrow sites or disposal areas). Similar to adjacent properties, DETI will minimize any potential impact to off-site areas during the Project.

2.8 SOILS

The M&R Station will be located just west of the fall line within the Southeastern Piedmont Physiographic Province. Specifically, the site lies within a narrow mapped belt of mylonite, mylonitic gneiss, and cataclastic rocks. Natural soils within the Piedmont Province are the residual product of chemical and physical weathering of the parent rock materials. The typical residual profile consists of finer grained silts and clays near the surface which gradually transition to more silty and sandy materials with depth. In many locations, the transitional zone between soil and rock is not well defined. Locally, the transitional zone is termed partially weathered rock. For engineering purposes, partially weathered rock is considered residual material in which standard penetration test N-values exceed 100 blows per foot.

According to the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Services (NRCS), soils beneath the developed land of the M&R Station consist of Appling Mattaponi Complex and Wedowee gravelly sandy loam.

Table 2.8-1 depicts the soil units of the Brunswick M&R Station.

TABLE 2.8-1

Soil Units

Map Unit Symbol/Name	USDA Texture Depth Description (inches)	USDA Texture Depth Description (inches)	Depth to Water Table (inches)	Drainage Class
2B: Appling – Mattaponi	Appling 0–12 sandy loam 12–18 clay loam 18–37 clay 37–61 clay loam	Mattaponi 0–14 sandy loam 14–35 clay 35–60 clay loam	30–72	Well to moderately well drained
29C: Wedowee	0–6 gravelly sandy loam 6–23 sandy clay 23–61 sandy clay loam	---	>72	Well drained

The NRCS assigns soils to one of four hydrologic soil groups based on estimates of runoff potential, as follows:

- **Group A**: Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

- **Group B**: Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

- **Group C**: Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

- **Group D**: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The hydrologic soil groups assigned by NRCS for the soils mapped at the M&R Station are as follows: Appling (Group B), Mattaponi (Group C), and Wedowee (Group B).

Appendix M of the main SWPPP document lists the various soil mapping units crossed by the proposed ACP Project and provides general information about the nature and properties of each soil and/or map unit.

2.9 RECEIVING WATERS

The M&R Station will drain southwest to an existing retention pond and then to Reedy Creek. The M&R Station is located within the Reedy Creek watershed identified by the U.S.

Geological Survey as hydrologic unit code 030102040602. DETI does not intend to connect to and/or discharge into a municipal separate storm sewer system (MS4).

2.10 EXEPTIONAL AND IMPAIRED WATERS

The proposed M&R Station does not impact Tier 3 exceptional waters identified in 9 VAC 25-260-30 A.

DETI reviewed the 2014 list of 305(b)/303(d) Impaired Waters for the Commonwealth of Virginia to identify waterbodies classified as impaired or for which a Total Maximum Daily Load wasteload allocation has been established and approved for (i) sediment or a sediment-related parameter (i.e., total suspended solids or turbidity) or (ii) nutrients (i.e., nitrogen or phosphorus) (VDEQ, 2015). The M&R Station drains to Reedy Creek which has not been designated as impaired water.

2.11 CRITICAL/SENSITIVE AREAS

Preconstruction assessments and field surveys were completed by DETI to delineate the location of critical or sensitive environmental areas within the areas of land disturbance proposed by the M&R Station.

2.11.1 Wetlands and Waterbodies

M&R stations have been sited such that impacts to wetlands will be avoided and minimized to the maximum extent practicable. There are no wetlands impacted by construction of the Brunswick M&R Station.

2.11.2 Threatened and Endangered Species

DETI consulted with the U.S. Fish and Wildlife Service Ecological Services Field Office in Virginia to identify federally and Commonwealth-listed endangered, threatened, and proposed species as potentially occurring in the ACP Project area. Field surveys and consultations with the U.S. Fish and Wildlife Service regarding these species are on-going. Virginia has separate laws protecting threatened and endangered species. DETI requested and received data on known occurrences of Commonwealth-listed species in Virginia from the Virginia Department of Conservation and Recreation Natural Heritage Program. DETI additionally has consulted and continues to consult with the Virginia Department of Game and Inland Fisheries and Virginia Department of Conservation and Recreation regarding impacts on Commonwealth-listed threatened and endangered species.

There are no endangered, threatened, or proposed species that are known to occur at the proposed M&R Station.

3.0 EROSION AND SEDIMENT CONTROL

All ESC measures to be undertaken as part of this Project will be done in accordance with the VDEQ-approved DETI Standards and Specifications. These standards and specifications will be met through the implementation of the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures, Minimum Standards of the Virginia Erosion and Sedimentation Control Regulations (9VAC25-840-40), by the design, construction and maintenance of the ESCs in accordance with the Virginia Erosion and Sediment Control Handbook (VESCH) (1992, 3rd Edition), and the application of environmental site design principles.

3.1 GENERAL M&R STATION CONSTRUCTION

M&R Station construction stages and the erosion and sediment control measures to be installed for each of these stages are described below. The erosion and sediment control drawings for the M&R Station, including typical drawings of general erosion and sediment control measures, are provided in Attachment 1.

During construction, the effectiveness of temporary erosion control devices will be monitored by DETI's Environmental Inspectors (EIs). The effectiveness of permanent erosion control measures will be monitored for the life of the project by DETI operating personnel during the long-term operation and maintenance of the M&R Station.

Site Preparation

- Survey and flag the construction site and mark environmentally-sensitive areas, as needed.
- Install temporary construction entrance.
- Install safety fences prior to erosion and sediment control installation.
- Install all perimeter erosion and sediment controls prior to any bulk earth-moving activity (road grading, log skidding, grubbing, etc.) Erosion and sediment control measures will be inspected and maintained throughout construction.
- Segregate topsoil where necessary.

M&R Station Construction

- Begin site bulk grading.
- Grade entrance road, laydown areas and parking areas.
- Grade building pads and dig excavations for footings, foundations, and utilities.
- Install utilities.
- Construct buildings and pipeline M&R facilities.
- Spread topsoil on disturbed areas, as needed.
- Complete finish grading.
- Install gravel base around buildings and M&R facilities.

Restoration

- Conduct site restoration and cleanup. As soon as slopes, channels, ditches, and other disturbed areas reach final grade, they must be stabilized within seven days.
- Apply soil amendments, permanent seed, mulch and/or erosion control fabric, as necessary.
- Restore temporary access roads or any paved surfaces to original condition.
- Remove temporary sediment barriers from an area when replaced by permanent erosion control measures or when the area has been successfully restored to uniform perennial vegetation. Temporary erosion control best management practices (BMPs) will not be removed until inspection by the EI to confirm site stabilization.

3.1.1 Survey and Flagging

- The limits of the approved work areas, and the location of the underground utilities must be marked in the field prior to the start of mechanized activities.
- Orange plastic fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work will take place within critical areas and their buffers.
- Per VESCH **Std. & Spec. 3.01 (Safety Fence)**, safety fencing will be installed as needed during grading at public access points or around open unattended excavations to warn pedestrians of possible hazards. Stakes will be installed to the maximum extent of 18" as practical in the field to ensure the functionality of the safety fence. In areas where adequate embedment depth cannot be achieved, due to terrain/substrate constraints; additional measures including but not limited to sandbags, mounded earth, etc. will be utilized to secure the fence. In addition, lights, signs and other warnings are required at road entrances and road crossings (see Virginia Department of Transportation (VDOT) permits and regulations).
- Flagging or marking will be maintained throughout construction.

3.1.2 Construction Entrance

In accordance with VESCH **Std. & Spec. 3.02 (Stone Construction Entrance)**, a construction entrance will be constructed at any point where construction equipment leaves the right-of-way and enters a paved public road or other paved surface. Typically, a construction entrance is comprised of filter fabric overlain by six inches of coarse aggregate (Virginia Department of Transportation #1) extending a minimum of 70 feet from the edge of the pavement. The area of the entrance must be excavated three inches prior to laying the filter fabric underliner. The entrance must extend the full width of the vehicular ingress and egress area and have a minimum 12-foot width. Conveyance of surface water through culverts under the entrance will be provided, as necessary. If such a conveyance is impossible, the construction of a "mountable" berm with 5:1 slopes will be permitted.

The construction entrance must function to remove mud from vehicles and equipment leaving the site. As mud accumulates on the entrance, clean stone must be added or the tire mats lifted and shaken to remove mud. Any mud that is carried onto the pavement must be thoroughly removed by the end of the day by shoveling or sweeping. The mud will be returned to the site. The use of water to remove sediment tracked onto roadways is permitted only after sediment is removed as stated above.

If the majority of the mud is not removed by the vehicles traveling over the stone, then tires of the vehicles must be washed before entering the public road. A wash rack may be used to make washing more convenient and effective. Wash water must be carried away from the entrance to a settling area to remove sediment before discharge.

Maintenance of the construction entrance may require periodic top dressing with additional stone and cleanout of any structures used to trap sediment. Additionally, the construction entrance may need to be shoveled then swept, followed by washing of the entrance to remove any sediment build up. If any inadvertently sediment tracking occurs on the public roadway, the road will be cleaned thoroughly by the end of each day.

3.1.3 Wind Erosion Control

Consistent with VESCH **Std. & Spec. 3.39 (Wind Erosion Contro**l), the following temporary sediment controls will be used, as applicable, to minimize the surface and air movement of dust during land disturbing and construction activities:

- In areas with little or no construction traffic, a vegetatively stabilized surface will reduce dust emissions.
- Mulch will be used in areas without heavy traffic pathways.
- Tillage will be used only in an emergency situation before wind erosion begins. Plowing on the windward side of the site with chisel-type plows spaced approximately 12 inches apart.
- The contractors will have one or more water trucks available per spread that will load water from approved permitted sources to spray areas for dust control.
- Use of spray-on adhesives may be used on mineral soils only.
- Use crushed stone or course gravel to stabilize roads and other areas during construction.
- A board fence, wind fence, or sediment fence may be used to control air currents and blowing soil. Place barriers perpendicular to prevailing air currents at intervals of about 15 times the barrier height.
- Calcium chloride may be applied by a mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage.

3.1.4 Silt Fencing

Silt Fencing constructed of synthetic filter fabric stretched across and attached to supporting posts, and in some cases a wire support fence, will be placed across or at the toe of a slope or in a minor drainage way to intercept and detain sediment and decrease flow velocities from drainage areas of limited size. Silt fencing is applicable where sheet and rill erosion or small concentrated flows may be a problem. In accordance with VESCH **Std. & Spec. 3.05 (Silt Fence),** DETI will adhere to the following general construction and maintenance specifications if congruent with the manufacturer's recommended installation and use. In the event of conflicting specifications, DETI will always follow the manufacturer's recommendations on proper installation and use of a product.

- Silt fencing will be used where the size of the drainage area is not more than one quarter acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50 percent (2:1).
- Silt fencing can be used in minor swales or ditches where the maximum contributing drainage area is no greater than one acre and flow is no greater than one cubic feet per second. In ditches or swales where higher velocity flow is expected, rock check dams will be used in place of silt fence.
- Silt fencing will not be used in areas where rock or some other hard surface prevents the full and uniform depth anchoring of the barrier.
- If wooden stakes are utilized for silt fence construction, they must have a diameter of two inches when oak is used and four inches when pine is used. Wooden stakes must have a minimum length of five feet. Fabric will not be stapled to existing trees.
- If steel posts are utilized, they must have a minimum weight of 1.33 pounds per linear foot and have a minimum length of five feet. Posts will be placed a maximum of six feet apart.
- The height of the fence will be a minimum of 16 inches above grade and will not exceed 34 inches above ground elevation.
- Filter cloth will be spliced together only at support posts with a minimum 6-inch overlap.
- When wire support is not used, extra-strength filter fabric will be fastened to the upslope side of the posts using one inch long (minimum) heavy-duty wire staples or tie wires and eight inches of the fabric will be extended into the trench. The posts will be placed a maximum of six feet apart.
- When wire support is used, the wire mesh fence must be fastened securely to the upslope side of the posts using heavy duty wire staples at least one inch long, tire wires or hog rings. The posts will be placed a maximum of ten feet apart.

- If silt fence is to be constructed across a ditch line or swale, the measure must be of sufficient length to eliminate end flow and the configuration will resemble an arc with the ends oriented upslope. Extra-strength filter fabric must be used for ditch lines or swales with a maximum three-foot spacing of posts.

- Remove accumulated sediments when sediment reaches half the aboveground height of the fence.

- Silt fences will be removed and discarded properly after project completion. Soils will be stabilized and seeded accordingly. Permanent erosion control protective measures will be utilized if seeding alone will not stabilize the site and provide soil stability.

Belted Silt Retention Fence (BSRF)

The primary silt fence product planned for use on the ACP, including the M&R Station, is a patented Belted Silt Retention Fence (BSRF) product which is available in two designs used to address different Site conditions, as follows:

- BSRF Priority 1 (green band) is a heavy-duty silt fence constructed with a 36-inch, non-woven, spun-bond fabric with an internal scrim incorporated into the fabric for additional strength and durability. The system utilizes wood stakes spaced at 4-feet and a specific method of attachment. The system is functionally equivalent to wire back and metal steel post silt fence and is designed for the protection of high priority areas.

- BSRF Priority 2 (black band) is a medium-duty silt fence constructed with a 36-inch, non-woven, spun-bond fabric that is calendared on one side. The system utilizes wood stakes spaced at 6-feet and a specific method of attachment.

Drawings and specifications for the two BSRF products are provided in Attachment 1.

3.1.5 Site Dewatering

Dewatering may be periodically conducted to remove accumulated groundwater or precipitation from the construction area, including from within excavations. The need for erosion controls as well as the type of control used will vary depending on the type and amount of sediment within the water, and volume and rate of discharge.

3.1.5.1 Geotextile Bag/Dewatering Filter Bag

DETI utilizes geotextile bags for dewatering and velocity reduction on a majority of pipeline construction projects as well as the straw bale dewatering practice illustrated in the VESCH **Std. & Spec. 3.26 (Dewatering Structure)**. The purpose, definition, conditions of application and planning considerations are identical. Design criteria and specifications vary by dewatering bag manufacturer; a variety of geotextile dewatering bag products are available on the market. The manufacturers' guidance on the use, design, sizing, maintenance, and application of the geotextile dewatering bag will be followed.

- Conduct dewatering (on or off the construction site) in such a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody or off-site property.

- Elevate and screen the intake of each hose used to withdraw the water from the trench to minimize pumping of deposited sediments.

- A dewatering bag may not be needed if there is a well-stabilized, vegetated area on site to which water can be discharged. The area must be stabilized so that it can filter sediment and at the same time withstand the velocity of the discharged water without eroding. Per VESCH Std. & Spec. 3.26, a minimum filtering length of 75 feet must be available in order for such a method to be feasible.

- Remove dewatering structures as soon as practicable after the completion of dewatering activities or sooner if sediment build-up prevents the bag from functioning properly. If the bag becomes half full of sediment, discard and replace with a new bag.

3.1.5.2 VESCH Standard Dewatering Structure

As warranted by Site conditions, a standard dewatering structure may be used per the construction and maintenance specifications in VESCH **Std. & Spec. 3.26 (Dewatering Structure)**, including the use of a portable sediment tank, filter box, or straw bale/silt fence pit. The dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure. The filtering devices must be inspected frequently and repaired or replaced once the sediment build-up prevents the structure from functioning as designed. The accumulated sediment which is removed from a dewatering device must be spread on site and stabilized or disposed of at an approved disposal site.

In some cases, DETI could use a modified dewatering structure in combination with a filter bag. The structure is similar to the straw bale/silt fence pit described in the VESCH, but the wet storage area is not excavated 3 ft. below the perimeter measures since the structures are placed off the right-of-way in well vegetated areas. The filter bag discharges into the dewatering structure for additional filtration through the straw bales. Additional energy dissipating devices may be installed downgradient of the dewatering structure, as necessary.

Installation and removal of the referenced dewatering practice does not involve ground disturbance.

3.2 SPECIAL CONSTRUCTION PROCEDURES

Sensitive areas will be treated as separate construction entities. Sensitive areas require additional erosion and sediment control procedures. Additional controls will be shown on the detailed drawings in Attachment 1.

3.2.1 Winter Construction

DETI has developed and filed a project-specific winter construction plan with the FERC application.

The plan addresses:

- Winter construction procedures (e.g., snow handling and removal, soil handling under saturated or frozen conditions, topsoil stripping);
- Stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and
- Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator will immediately resume the regular inspection frequency.

4.0 EROSION AND SEDIMENT CONTROL MINIMUM STANDARDS

The Virginia ESC regulations specify minimum standards that must be followed for all regulated land-disturbing activities, where applicable to a specific project. Modifying or waiving any of the ESC regulations, including the 19 minimum standards, on a project-specific basis, requires a written variance request to VDEQ for review and approval. DETI will construct the M&R Station in accordance with the following criteria, techniques and methods per minimum standards set forth in 9 VAC 25-840-40, as applicable.

Minimum Standard 1 – Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Minimum Standard 2 – During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Minimum Standard 3 – A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Minimum Standard 4 – Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Minimum Standard 5 – Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.

Minimum Standard 6 – Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

6.a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than 3 acres.

6.b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to 3 acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Minimum Standard 7 – Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Minimum Standard 8 – Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Minimum Standard 9 – Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Minimum Standard 10 – All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Minimum Standard 11 – Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Minimum Standard 12 – When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

Minimum Standard 13 – When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

Minimum Standard 14 – All applicable federal, state, and local requirements pertaining to working in or crossing live watercourses shall be met.

Minimum Standard 15 – The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Minimum Standard 16 – Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

16.a. No more than 500 linear feet of trench may be opened at one time.

16.b. Excavated material shall be placed on the uphill side of trenches.

16.c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

16.d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

16.e. Restabilization shall be accomplished in accordance with this chapter.

16.f. Applicable safety requirements shall be complied with.

Minimum Standard 17 – Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Minimum Standard 18 – All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the Virginia Erosion and Sedimentation Control Program (VESCP) authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Minimum Standard 19 – Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

19.a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe, or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

19.b. Adequacy of all channels and pipes shall be verified in the following manner:

19.b.(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or

19.b.(2)(a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

19.b.(2)(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

19.b.(2)(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.

19.c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

19.c.(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or

19.c.(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

19.c.(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or

19.c.(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

19.d. The applicant shall provide evidence of permission to make the improvements.

19.e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

19.f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

19.g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

19.h. All on-site channels must be verified to be adequate.

19.i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

19.j. In applying these SWM criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

19.k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical, and biological integrity of rivers, streams and other waters of the state.

19.l. Any plan approved prior to July 1, 2014, that provides for SWM that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5-, 2-, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to §62.1-44.15:54 or 62.1-44.15:65 of the Act.

19.m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of §62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9 VAC 25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulation or are exempt pursuant to subdivision C 7 of §62.1-44.15:34 of the Act.

19.n. Compliance with the water quantity minimum standards set out in 9 VAC 25-870-66 of the VSMP Regulation shall be deemed to satisfy the requirements of this subdivision 19.

5.0 STORMWATER MANAGEMENT

As noted in Section 2.1, the M&R Station will be located on developed land in what is currently a gravel parking lot. Consequently, the pre-and post-developed land use conditions are unchanged. The requirements for stormwater quality and quantity are described in the following sections.

5.1 PRE-DEVELOPMENT AND POST-DEVELOPMENT DRAINAGE AREAS

Delineation of the drainage watersheds and proposed management practices are shown on the Site Plan, provided in Attachment 1. The Site Plan depicts the proposed land uses with the imperviousness of the entire Site, and a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, and parking lots. The Site Plan also shows the final drainage patterns and flow paths of the stormwater, in addition to the relationship of the site to upstream and downstream properties and drainage systems.

Stormwater quality and quantity calculations are discussed in Section 5.2 below.

5.2 PRE-DEVELOPMENT AND POST-DEVELOPMENT STORMWATER CALCULATIONS

5.2.1 Water Quantity

A hydrologic analysis for the existing (pre-development) and for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations are presented in this section.

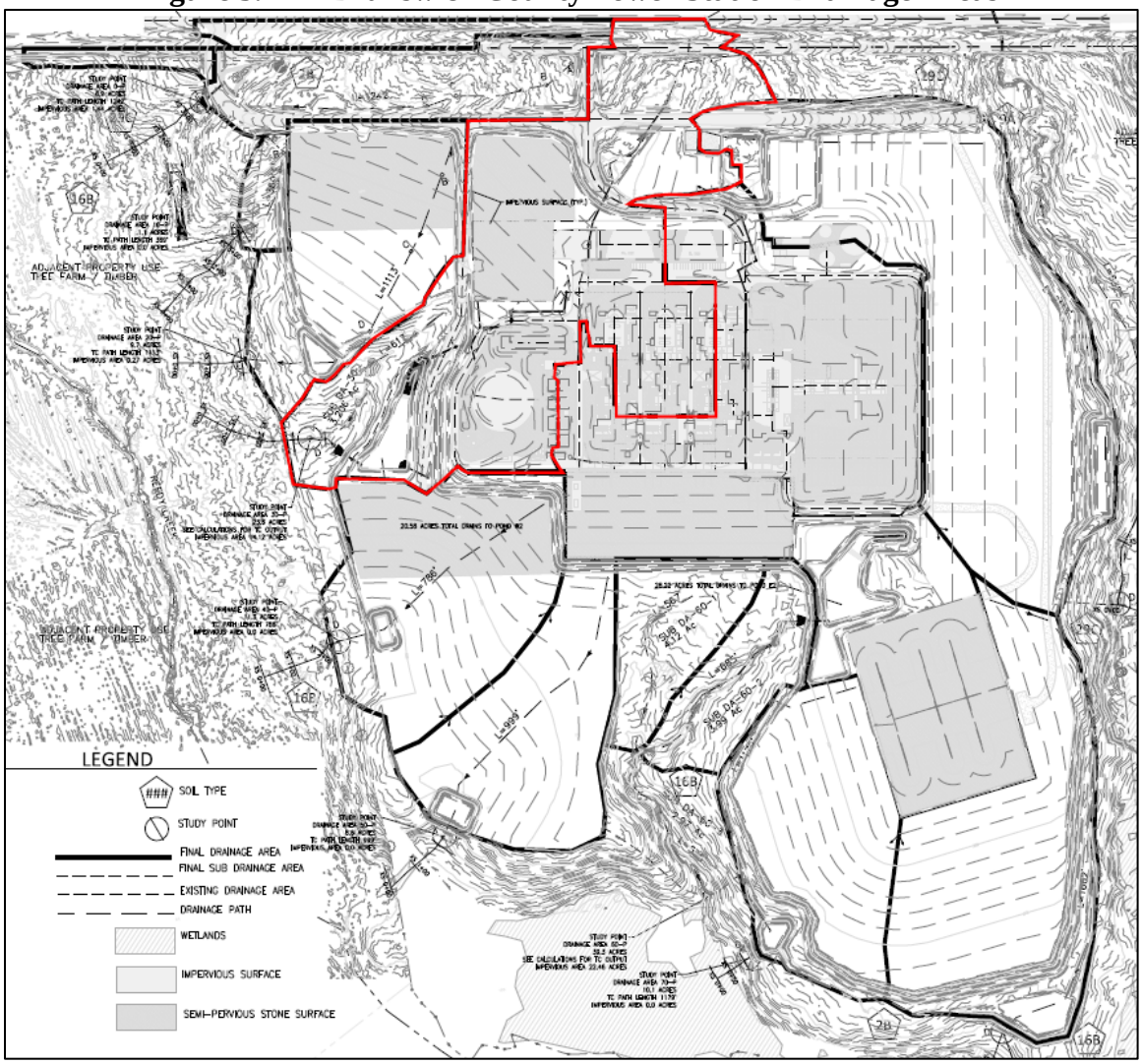
Channel protection and flood protection will be addressed in accordance with the minimum standards set forth in 9 VAC 25-870-66, which are established pursuant to the requirements of § 62.1-44.15:28 of the Code of Virginia. Compliance with the minimum standards set out in this section will be deemed to also satisfy the requirements of Minimum Standard 19 of 9 VAC 25-840-40 (Minimum standards; Virginia Erosion and Sediment Control Regulations, Section 4.0).

The Brunswick M&R Station will be located at the recently-constructed Brunswick County Power Station. A review of the SWM and ESC design documents developed for the Brunswick Power Station was completed. The objective of the review was to understand the post-construction SWM infrastructure constructed for the Power Station and assess the permitting implications and potential need for additional SWM controls for the co-located Brunswick M&R Station.

In the calculations, the overall Power Station site was divided into 10 drainage areas, the Brunswick M&R Station being included in drainage area 30 (DA-30). DA-30 is depicted in the below figure (highlighted in red) and is approximately 20.58 acres in area with 64.17 percent of that area being impervious (13.33 acres). The region of DA-30 within which the Brunswick M&R Station will be located is approximately 1.4 acres and was considered to be gravel (i.e., impervious cover), which is consistent with the land use depicted on the Overall Grading

Site Plan for the Brunswick M&R Station dated September 1, 2016. Therefore, there will be no net increase in impervious area. The water quantity requirements (channel and flood protection) for DA-30 and the M&R Station are addressed using a retention pond containing a shelf. A map of the Power Station's drainage areas is shown on Figure 5.2-1.

Figure 5.2-1 Brunswick County Power Station Drainage Areas



As noted in the SWM design for the Power Station, Win TR-55 was used to demonstrate that the existing channel for DA-30 was adequate for the two-year storm, due to a net increase in flow of only 0.09 cubic feet per second. As part of that analysis Bently Civil Storm software was used to perform routing through a drainage system and permanent retention pond, and weir sizing to show that the post-development 10-year flow did not exceed that from the existing conditions. Relevant calculations from the Power Station SWM design are provided in Attachment 1.

5.2.2 Water Quality

In order to protect the quality of Commonwealth waters and to control the discharge of stormwater pollutants from regulated activities, the following minimum design criteria and statewide standards for SWM will be applied to the site in accordance with 9 VAC25-870-63 for development on prior developed lands:

- For land-disturbing activities disturbing greater than or equal to one acre that result in no net increase in impervious cover from the predevelopment condition, the total phosphorus load will be reduced at least 20 percent below the predevelopment total phosphorus load.

The VSMP regulations suggest the use of the Virginia Runoff Reduction Method (VRRM) for compliance with the water quality criteria in accordance with 9VAC25-870-65. The VRRM for Re-Development spreadsheet was utilized to calculate the pollutant reduction requirement based on the pre- and post-development land cover characteristics.

Based on the entire M&R Station remaining gravel covered (impervious cover), the post-development phosphorus load is 3.03 pounds per acre per year (lb/ac/yr). With a requirement for the total phosphorus load to be reduced 20 percent below the predevelopment load, the required phosphorus reduction for the site is 0.61 lb/ac/yr. This reduction requirement will be satisfied with the purchase of nutrient credits.

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* →	1.40
Maximum reduction required:	***20%***
The site's net increase in impervious cover (acres) is:	***0***
Post-Development TP Load Reduction for Site (lb/yr):	***0.61***

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed					0.00
Impervious Cover (acres)			1.40		1.40
					1.40

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed					0.00
Impervious Cover (acres)			1.40		1.40
Area Check	OK.	OK.	OK.	OK.	1.40

Final Post-Development Treatment Volume (acre-ft)	0.1108
Final Post-Development Treatment Volume (cubic feet)	4,828
Final Post-Development TP Load (lb/yr)	**3.03**
Final Post-Development TP Load per acre (lb/acre/yr)	2.17

5.2.3 Nutrient Trading Program

As calculations show in Section 5.2.2, the required phosphorus reduction for the M&R Station is 0.61 lb/ac/yr. This phosphorus removal requirement will be offset with the purchase of nutrient credits in accordance with the requirements below.

For that portion of a site's compliance with stormwater nonpoint nutrient runoff water quality criteria being obtained through nutrient credits, DETI will (i) comply with a 1:1 ratio of the nutrient credits to the site's remaining post-development nonpoint nutrient runoff compliance requirement being met by credit use and will (ii) use credits certified as perpetual credits pursuant to Article 4.02 (§ 62.1-44.19:12 et seq.).

Nutrient credits will be acquired in the same tributary as the M&R Station by identifying credits generated within the same or adjacent eight-digit hydrologic unit code as defined by the U.S. Geological Survey. Nutrient credits outside the same or adjacent eight-digit hydrologic unit code may only be used if it is determined that no credits are available within the same or adjacent eight-digit hydrologic unit code. In such cases, credits available within the same tributary may be used. However, in no case will credits from another tributary be used.

Documentation of DETI's acquisition of nutrient credits will be provided to the VDEQ prior to the commencement of land-disturbing activities at the M&R Station in a certification from the credit provider documenting the number of phosphorus nutrient credits acquired at the credit-generating entity (see Attachment 3). Until the effective date of regulations establishing application fees in accordance with § 62.1-44.19:20, the credit provider will pay the VDEQ a water quality enhancement fee equal to six percent of the amount paid by DETI for the credits. Such fee will be deposited into the Virginia Stormwater Management Fund established by § 62.1-44.15:29.

5.3 POST-CONSTRUCTION/PERMANENT BEST MANAGEMENT PRACTICES

5.3.1 Retention Pond

In accordance with VDEQ Stormwater Design Specification No. 14 (**Wet Pond**), DETI will adhere to the following general construction and maintenance specifications at the M&R Station to promote a suitable environment for gravitational settling, biological uptake, and microbial activity. Runoff from each new storm enters the pond and partially displaces pool water from previous storms. The pool acts as a barrier to re-suspension of sediments and other pollutants deposited during prior storms. A retention pond is located southwest of the M&R Station, as shown on the Site Plan (Attachment 1).

In addition, the following constraints will be observed:

- The surface area of a wet pond will normally be at least 1 to 3 percent of its contributing drainage area, depending on the pond's depth.
- A contributing drainage area of 10 to 25 acres is typically recommended for wet ponds to maintain constant water elevations.
- The depth of a wet pond is usually determined by the hydraulic head available on the site. The bottom elevation is normally the invert of the existing downstream conveyance system to which the wet pond discharges. Typically, a minimum of 6 to 8 feet of head are needed for a wet pond to function.

5.3.2 Permanent Seeding and Mulching

A *Restoration and Rehabilitation Plan* was prepared for the ACP to address post-construction restoration and rehabilitation activities. Refer to the Restoration and Rehabilitation Plan (Appendix R of the Virginia ACP SWPPP) for VESCH **Std. & Spec. 3.32 (Permanent Seeding)** and VESCH **Std. & Spec. 3.35 (Mulching)**. Specifically for seedbed preparation, seed mix selection, seeding methods, lime and fertilizer application, mulching, and supplemental planting.

In accordance with Virginia Minimum Standards (MS -1), permanent or temporary soil stabilization will be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site. Temporary soil stabilization will be applied within seven (7) days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization will be applied to areas that are to be left dormant for more than one (1) year. A permanent vegetative cover will be established on denuded areas not otherwise permanently stabilized. Permanent vegetation will not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

5.4 LONG-TERM MAINTENANCE

In accordance with DETI's Standards and Specifications, long-term maintenance of structural SWM facilities must be conducted in accordance with 9VAC25-870-112. To be consistent with the provisions of 9VAC25-870-112, maintenance plans for the stormwater facilities must be submitted to DETI for formal review and approval prior to initiating the land disturbing activity, made available to VDEQ upon request, and must provide for inspections and maintenance and the submission of inspection and maintenance reports to the VDEQ. DETI transmission easements over land under which permanent SWM facilities will be placed must further assure the following:

- Be stated to run with the land;
- Provide for all necessary access to the property for purposes of maintenance and regulatory inspections; and
- Be enforceable by all appropriate governmental parties.

According to VDEQ Stormwater Design Specification No. 14 (**Wet Pond**), all wet ponds must be covered by a drainage easement to allow inspection and maintenance.

5.5 INSPECTIONS AND ONGOING MAINTENANCE

Maintenance of a wet pond is driven by annual inspections that evaluate the condition and performance of the pond, including the following:

- Measure sediment accumulation levels in the forebay.
- Inspect the condition of stormwater inlets to the pond for material damage, erosion, or undercutting.
- Inspect the banks of upstream and downstream channels for evidence of sloughing, animal burrows, boggy areas, woody growth, or gully erosion that may undermine embankment integrity.
- Inspect the pond outfall channel for erosion, undercutting, rip-rap displacement, woody growth, etc.
- Inspect the condition of the principal spillway and riser for evidence of spalling, joint failure, leakage, corrosion, etc.
- Inspect the condition of all trash racks, reverse-sloped pipes, or flashboard risers for evidence of clogging, leakage, debris accumulation, etc.
- Inspect maintenance access to ensure it is free of woody vegetation, and check to see whether valves, manholes, and locks can be opened and operated.

- Inspect internal and external side slopes of the pond for evidence of sparse vegetative cover, erosion, or slumping, and make needed repairs immediately. Based on inspection results, specific maintenance tasks will be triggered.

Maintenance is needed so stormwater ponds continue to operate as designed on a long-term basis. Wet ponds normally have fewer routine maintenance requirements than other stormwater control measures. Stormwater pond maintenance activities vary regarding the level of effort and expertise required to perform them. Routine stormwater pond maintenance, such as mowing and removing debris and trash, is needed several times each year (see Table 5.5-1). More significant maintenance (e.g., removing accumulated sediment) is needed less frequently but requires more skilled labor and special equipment. Inspection and repair of critical structural features (e.g., embankments and risers) needs to be performed by a qualified professional (e.g., a structural engineer) who has experience in the construction, inspection, and repair of these features. The maintenance plan should clearly outline how vegetation in the pond and its buffer will be managed or harvested in the future. Periodic mowing of the stormwater buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer can be managed as a meadow (mowing every other year) or forest. The maintenance plan should schedule a shoreline cleanup at least once a year to remove trash and floatables.

Table 5.5-1

Typical Wet Pond Maintenance Tasks and Frequency

Maintenance Items	Frequency
Mowing – twice a year Remove debris and blockages Repair undercut, eroded, and bare soil areas	Quarterly or after major storms (>1 inch of rainfall)
Mowing	Twice a year
Shoreline cleanup to remove trash, debris, and floatables A full maintenance inspection Open up the riser to access and test the valves Repair broken mechanical components, if needed	Annually
Pond buffer and aquatic bench reinforcement plantings	One time during the second year following construction
Forebay sediment removal	Every 5 to 7 years
Repair pipes, the riser and spillway, as needed	From 5 to 25 years

6.0 POLLUTION PREVENTION PRACTICES AND PROCEDURES

The same pollution prevention practices and procedures provided in Section 6.0 of the main body of the SWPPP will be used at the M&R Station, as applicable.

7.0 ROLES AND RESPONSIBILITIES

DETI will use the same qualified personnel and Responsible Land Disturber at the M&R Station as identified in Section 7.0 in the main body of the SWPPP.

8.0 INSPECTION AND MAINTENANCE

The same inspection and maintenance requirements provided in Section 8.0 in the main body of the SWPPP are applicable to the M&R Station, with the exception of representative inspections which only apply to the pipeline right-of-way.

9.0 EMPLOYEE TRAINING

The employee training program described in Section 9.0 in the main body of the SWPPP applies to the M&R Station.

10.0 NOTIFICATION, RECORDKEEPING, AND REPORTING

Refer to Section 10.0 of the main body of the SWPPP for notification, recordkeeping, and reporting requirements.

In addition, according to DETI's Standards and Specifications for projects requiring post-construction SWM BMPs, DETI must report the following annually each year to VDEQ:

- Number and types of SWM BMPs installed;
- Geographic coordinates of each BMP;
- Drainage area or watershed size served; and
- Receiving stream or hydrologic unit.

11.0 REFERENCES

Dominion Transmission, Inc. 2017. Standards and Specification, Erosion and Sediment Control and Stormwater Management for Construction and Maintenance of Pipeline Projects in Virginia. May 2017.

LandScope America. 2014. *Mid-Atlantic Coastal Plain.* Available online at: http://www.landcope.org/explore/natural_geographies/ecoregions/Mid-Atlantic%20Coastal%20Plain/. Accessed October 2014.

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Virginia Department of Environmental Quality. 2011. *Virginia A DEQ Stormwater Design Specification No. 2* Version 1.9. Available online at Virginia Stormwater BMP Clearinghouse at http://www.vwrrc.vt.edu/swc/. Accessed December 2016

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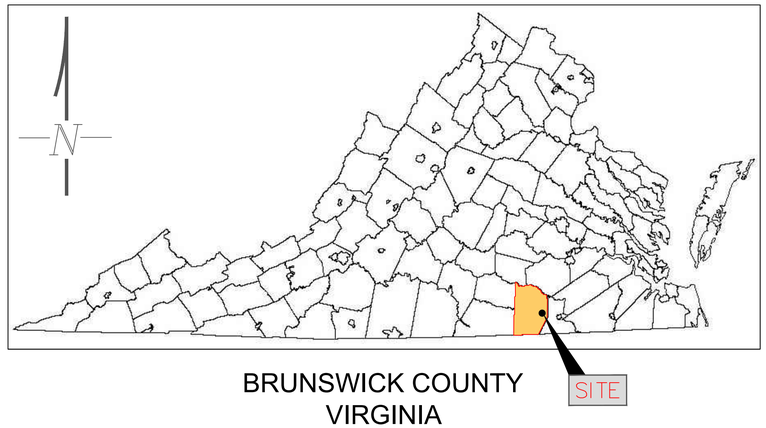
ATTACHMENT 1

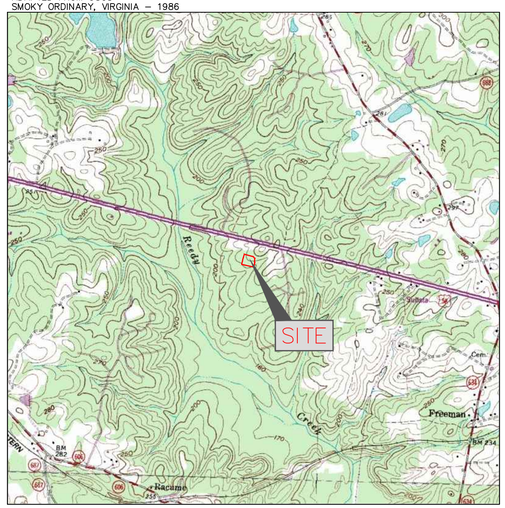
Erosion and Sediment Control and Stormwater Management Drawings and Supporting Calculations

BRUNSWICK M&R STATION
EROSION AND SEDIMENT CONTROL PLAN AND
POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN



BRUNSWICK COUNTY
VIRGINIA

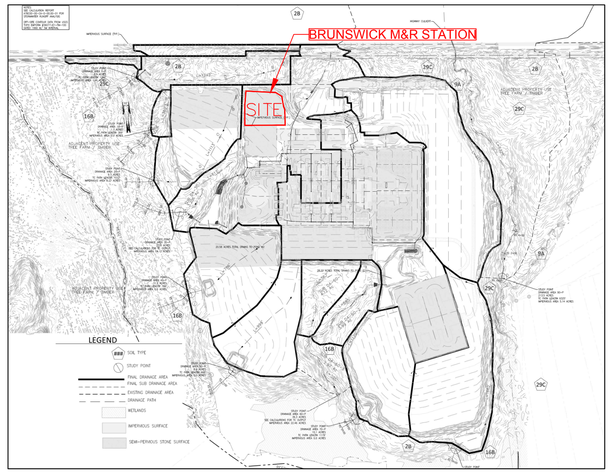
ADAPTED FROM USGS
SMOKY ORDINARY, VIRGINIA – 1986



36° 45' 58.77"N
77° 42' 51.67"W (NAD83)
BRUNSWICK COUNTY, VIRGINIA

SITE LOCATION MAP

0 2000 4000
APPROXIMATE
SCALE (IN FEET)



SITE VICINITY MAP

0 600 1200
APPROXIMATE
SCALE (IN FEET)

GENERAL NOTES

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50–30 EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE–CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF–SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
8. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
9. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF–PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

LIST OF DRAWINGS

DRAWING NO.	TITLE
PD Z9949B	EROSION AND SEDIMENT CONTROL COVER SHEET
PD Z9949C	EROSION AND SEDIMENT CONTROL SITE PLAN
PD Z9949D	EROSION AND SEDIMENT CONTROL DETAILS

PROJECT NARRATIVE

PROJECT AND SITE DESCRIPTION

AS PART OF THE ATLANTIC COAST PIPELINE (ACP) PROJECT, DTI IS PROPOSING TO CONSTRUCT AN APPROXIMATELY 1.78–ACRE ABOVEGROUND METERING AND REGULATING STATION AT 20100 GOVERNOR HARRISON PARKWAY IN FREEMAN, BRUNSWICK COUNTY, VIRGINIA. THIS STATION, REFERRED TO AS THE BRUNSWICK M&R STATION (M&R STATION), WILL BE CO–LOCATED WITH THE VEP BRUNSWICK ELECTRIC POWER STATION (POWER STATION). SPECIFICALLY, THE PROPERTY IS WEST OF EMPORIA, VIRGINIA, LOCATED SOUTH OF GOVERNOR HARRISON PARKWAY (U.S. HIGHWAY 58), ABOUT ONE MILE WEST OF FREEMANS CROSS ROAD (COUNTY ROAD 634) IN FREEMAN, VIRGINIA. THE M&R STATION IS CO–LOCATED WITH THE POWER STATION (PARCEL NO.55–64D). THE M&R STATION WILL BE LOCATED ON THE NORTHERN PORTION OF THE GREATER PARCEL, SOUTH OF GOVERNOR HARRISON PARKWAY (HW 58). THE STORMWATER DRAINS SOUTHWEST TO AN EXISTING RETENTION POND CONTAINING A SHELF CONSTRUCTED AS PART OF THE LARGER EXISTING POWER STATION.

EXISTING SITE CONDITIONS

THE M&R STATION IS LOCATED ON DEVELOPED LAND, AND IS CURRENTLY A GRAVEL PARKING LOT. THE TOPOGRAPHY AT THE M&R STATION IS CHARACTERIZED BY GENTLY TO MODERATELY SLOPING TERRAIN. ELEVATION AT THE M&R STATION IS APPROXIMATELY 230 FEET ABOVE MEAN SEA LEVEL.

FULL PROJECT NARRATIVE HAS BEEN PROVIDED IN THE STORMWATER POLLUTION PREVENTION PLAN, APPENDIX G, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN FOR THE BRUNSWICK M&R STATION.

NOTE:
SITE VICINITY MAP PROVIDED BY FLUOR. MAP ENTITLED CIVIL EROSION AND SEDIMENT CONTROL FINAL CONDITIONS DRAINAGE AREA MAP WAS PROVIDED FOR THE VIRGINIA ELECTRIC AND POWER COMPANY BRUNSWICK COUNTY POWER STATION OVERALL STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL PLANS.

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	01/13/17	TS	ISSUED FOR REVIEW	0345197.011	SL

COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management
ERM

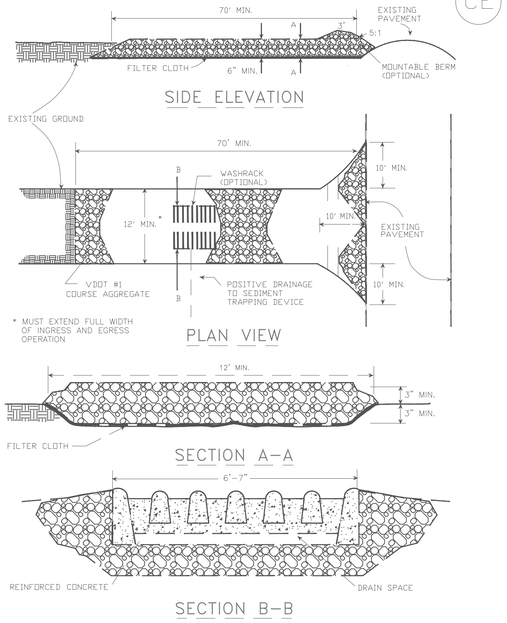
DRAWN:	YMT	01/11/17
CHECKED:	KC	01/13/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

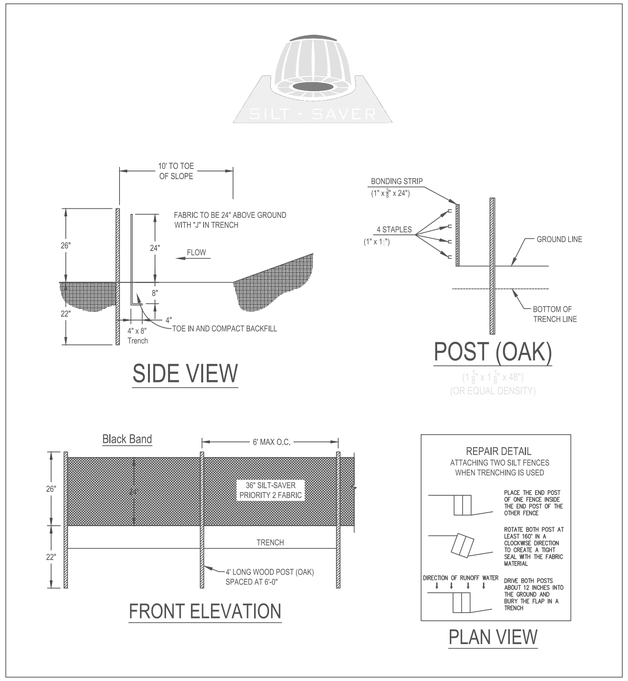
TITLE: BRUNSWICK M&R STATION
EROSION AND SEDIMENT CONTROL COVER SHEET

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
FREEMAN	BRUNSWICK	VA	PD	Z9949B	0

DIR/FILE: ACP\Virginia\M&R Stations\Brunswick\ESC



1 Z9949C **TEMPORARY STONE CONSTRUCTION ENTRANCE**
NOT TO SCALE



2 Z9949C **BELTED SILT RETENTION FENCE PRIORITY 2 (BSRF2)**
NOT TO SCALE

SEQUENCE OF CONSTRUCTION:

1. A PRE–CONSTRUCTION MEETING SHALL TAKE PLACE PRIOR TO START OF CONSTRUCTION ACTIVITIES.
2. INSTALL BELTED SILT RETENTION FENCE AS SHOWN ON PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
3. BEGIN CLEARING AND GRUBBING SITE AS NEEDED.
4. GRADE SITE ACCORDING TO THE CONTRACT DOCUMENTS. MAINTAIN EROSION CONTROL DEVICES AS NEEDED.
5. GRASS OR OTHERWISE STABILIZE ALL AREAS AS THEY ARE BROUGHT TO FINAL GRADES.
6. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES TO MINIMIZE EROSION. INSPECT AND REPAIR MEASURES AFTER EACH RAINFALL AND AS NEEDED THROUGHOUT THE PROJECT.
7. CONTRACTOR TO LEAVE ALL EROSION CONTROL DEVICES IN PLACE AT THE CONCLUSION OF THIS CONTRACT. CONTRACTOR IS TO CLEAN–OUT, REPAIR AND GRASS STABILIZE ALL DENUDED AREAS. ALL AREAS WILL BE RETURNED TO THE STATE OF EXISTING CONDITIONS PRIOR TO CONTRACT AS A MINIMUM.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTAIN SEDIMENT ONSITE. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY THE ENGINEER.
9. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENTATION CONTROL HANDBOOK (VESCH) (1992, 3RD EDITION) STANDARDS AND SPECIFICATIONS.

TEMPORARY STONE CONSTRUCTION ENTRANCE NOTES

1. VDOT #1 COARSE AGGREGATE (2– TO 3–INCH STONE) SHOULD BE USED.
2. AGGREGATE LAYER SHALL BE AT LEAST 6 INCHES THICK; A MINIMUM THREE INCHES OF AGGREGATE SHALL BE PLACED IN A CUT SECTION TO GIVE THE ENTRANCE ADDED STABILITY AND TO HELP SECURE FILTER CLOTH SEPARATOR. AGGREGATE LAYER MUST EXTEND THE FULL WIDTH OF THE VEHICULAR INGRESS AND EGRESS AREA AND HAVE A MINIMUM 12–FOOT WIDTH.
3. LENGTH OF THE ENTRANCE SHALL BE AT LEAST 70 FEET.
4. ENTRANCE SHALL BE EXCAVATED A MINIMUM OF 3 INCHES AND MUST BE CLEARED OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL BEFORE FILTER FABRIC UNDERLINER IS PLACED.
5. FILTER FABRIC UTILIZED SHALL BE A WOVEN OR NONWOVEN FABRIC CONSISTING ONLY OF CONTINUOUS CHAIN POLYMERIC FILAMENTS OR YARNS OF POLYESTER. FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS, BE MILDEW AND ROT RESISTANT, AND CONFORM TO THE PHYSICAL PROPERTIES NOTED IN TABLE 3.02–A OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) (1992, 3RD EDITION) STANDARDS AND SPECIFICATIONS.

TEMPORARY STONE CONSTRUCTION ENTRANCE MAINTENANCE NOTES

1. ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS–OF–WAY.
2. IF ANY INADVERTENT SEDIMENT TRACKING OCCURS ON THE PUBLIC ROADWAY, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY.
3. ENTRANCE MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT.
4. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
5. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.

BELTED SILT RETENTION FENCE – PRIORITY 2 NOTES

1. CONTRACTOR WILL UTILIZE THE BSRF2 MEDIUM–DUTY SILT FENCE CONSTRUCTED WITH A 36–INCH, NON–WOVEN, SPUN–BOND FABRIC THAT IS CALENDARED ON ONE SIDE.
2. BSRF2 SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS PROVIDED IN THE STORMWATER POLLUTION PREVENTION PLAN, APPENDIX F, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN FOR BRUNSWICK M&R STATION, APPENDIX A.

BELTED SILT RETENTION FENCE – PRIORITY 2 MAINTENANCE NOTES

1. BSRF2 SHALL BE INSPECTED AT THE END OF EACH WORK DAY AND IMMEDIATELY AFTER EACH RAINFALL EVENT. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS.
2. ACCUMULATED SEDIMENT SHOULD BE REMOVED AFTER EACH STORM EVENT AND WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE FENCE TO PREVENT FAILURES.
3. ANY DEPOSITS REMAINING IN PLACE AFTER THE FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

GENERAL NOTES AND COMMENTS:

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	01/13/17	TS	ISSUED FOR REVIEW	0345197.011	SL

COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management

DRAWN:	YMT	01/11/17
CHECKED:	KC	01/13/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: **BRUNSWICK M&R STATION**
EROSION AND SEDIMENT CONTROL DETAILS

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
FREEMAN	BRUNSWICK	VA	PD	Z9949D	0

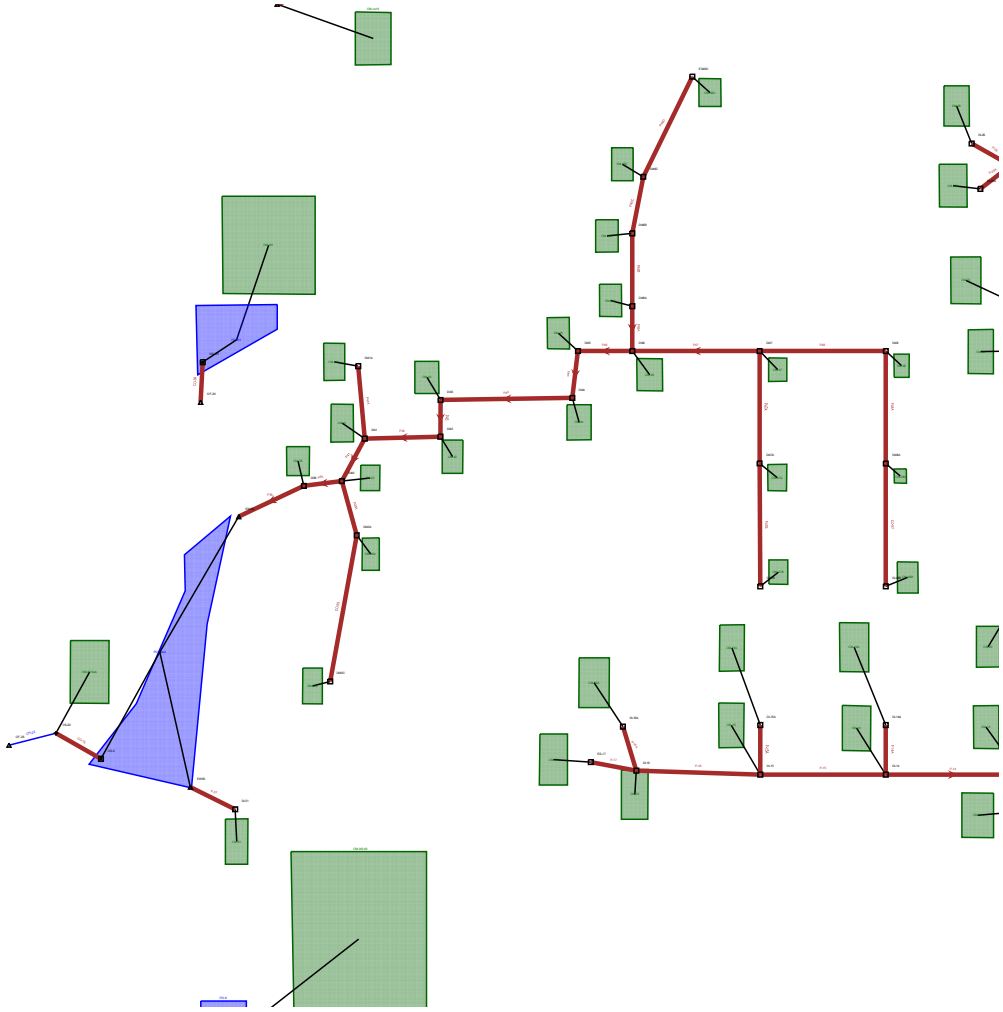
DIR/FILE: ACP\Virginia\M&R Stations\Brunswick\ESC

FLUOR®

STORM WATER SYSTEM AND EROSION CONTROL CALCULATIONS

ATTACHMENT 06: DRAINAGE AREA 30 (DA-30) CALCULATIONS

Scenario: Base



DRAINAGE AREA 30 (DA-30)

Description:

Drainage Area 30 consist of wooded/grass mix in the existing conditions. The area is being used for facilities and laydown use in the intermediate conditions.

In the final condition, the area will be permanent facilities and will be controlled with a permanent retention pond designed to meet water quality as well as quantity regulations.

Compliance:

Virginia DWQ requires the 10-year flow to not exceed existing conditions. The proposed improvements will be controlled through a permanent retention pond and will not increase the flow.

MS-19 requirements are also meet in that the existing channel was studied and found to be adequate to handle the increased flow of the 2-year storm. The net increase is only 0.09 cfs in the 2-year event.

Calculations for existing conditions flow:

The existing drainage pattern is homogeneous and will not require routing calculations. Win TR-55 output files are provided in the calculations section of the report (see TR-55 tab) and the results are summarized in the following pages of this short report.

Calculations for final conditions flow:

The proposed conditions will require routing through the drainage system, pond and to include contributing flows between the outlet and study point. Bently Civil Storm software is being used in TR-55/TR-20 mode.

The output files are provided in the calculations section of the report (see Calc Tab) and are summarized in the following pages of this short report.

Calculations for Channel Adequacy:

The existing channel from DA-30 ends at the floodplain of Reedy Creek. The final conditions results are nearly identical to the existing conditions and are adequate for channel velocity and shear.

The channel crosses a vehicle access trail about 200' from the floodplain and does not have active erosion across the bare earth crossing.

The channel has a gravel and silty-clay bottom and grassy sides with willows and undergrowth. There are a few areas of wetlands along the channel as shown on the plans.

The channel has been protected with a 50' tree buffer which is twice the regulated buffer distance of 25'.

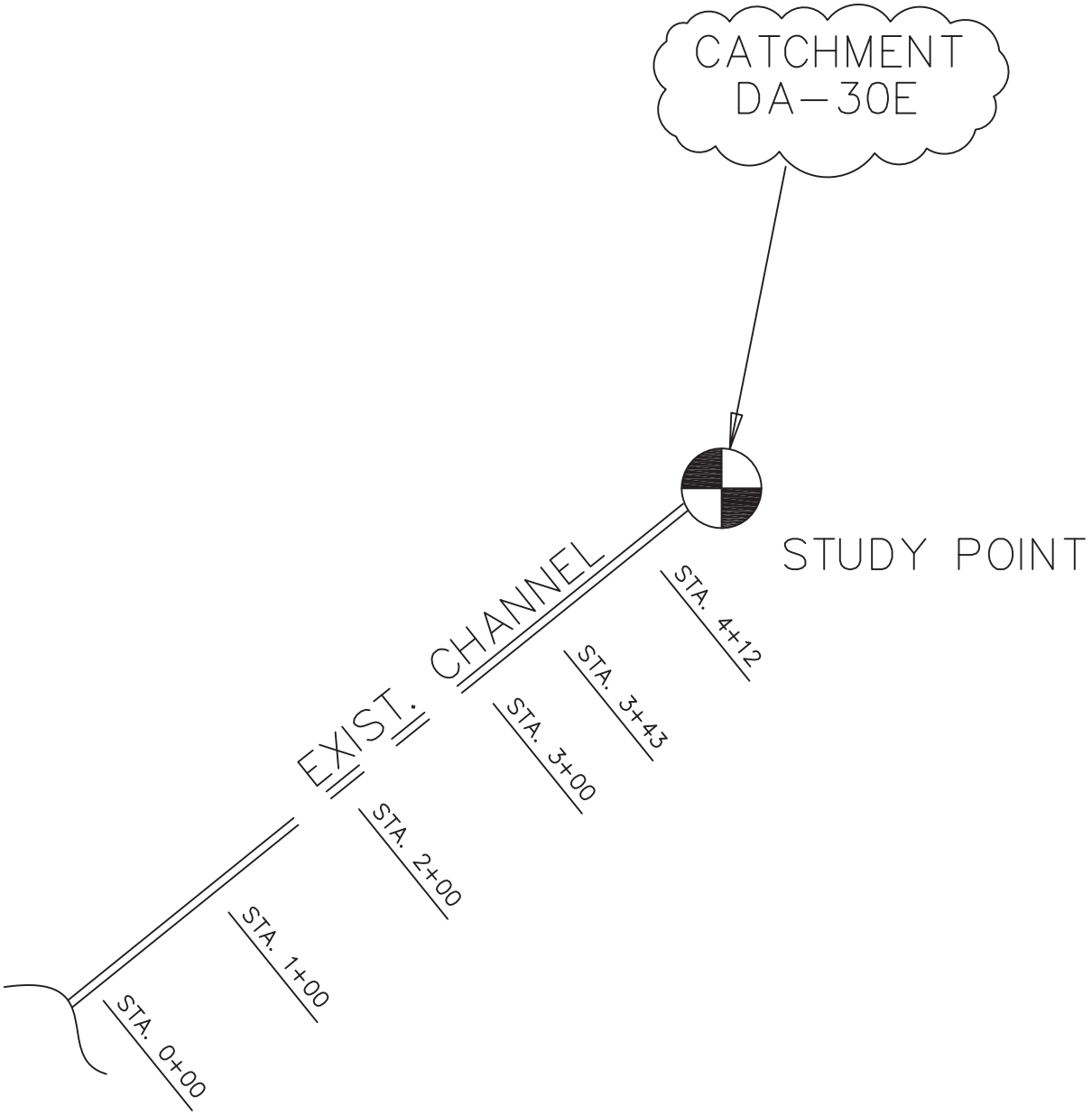
DA-30 Flow Summary			
	2-Yr	**10-Yr**	**100-Yr**
Existing Conditions Flow (cfs)	8.73	31.06	62.95
Proposed Conditions Flow (cfs)	8.82	19.03	70.33

Summary of Channel Velocity in Final Conditions			
Stattion	**Velocity (fps)**	**Flow (cfs)**	**Max. V Allowed (fps)**
0+00	1.68	8.82	2.5
1+00	1.97	8.82	2.5
2+00	2.39	8.82	2.5
3+00	1.44	8.82	2.5
3+43	1.3	8.82	2.5
4+12	1.51	8.82	2.5

Max. Permissible Velocity from Table 5-22 or the Virginia Erosion Control Handbook

WATERSHED MODEL SCHEMATIC

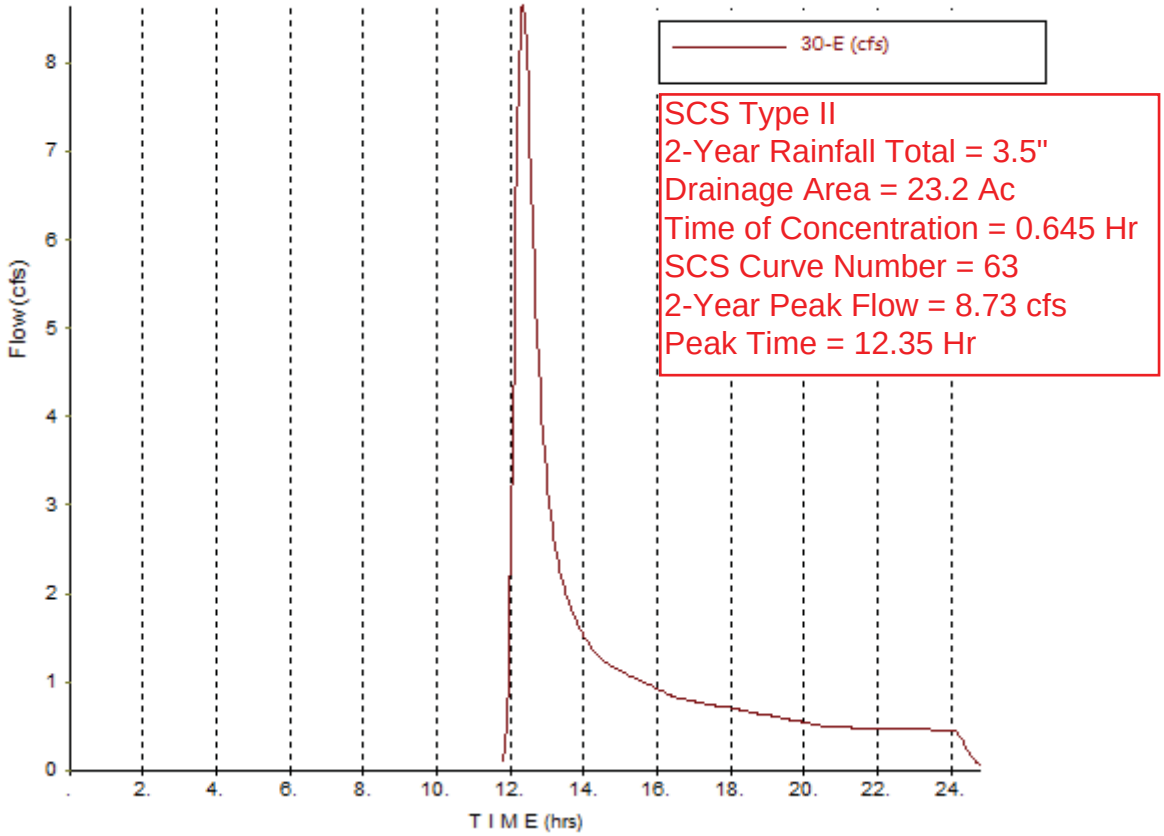
DRAINAGE AREA 30 (DA-30)
EXISTING CONDITIONS



WinTR-55 Output Hydrograph **Project: Brunswick Co Power Sta** 10/24/2013

Subarea: (30-E) Storm: 2-Yr

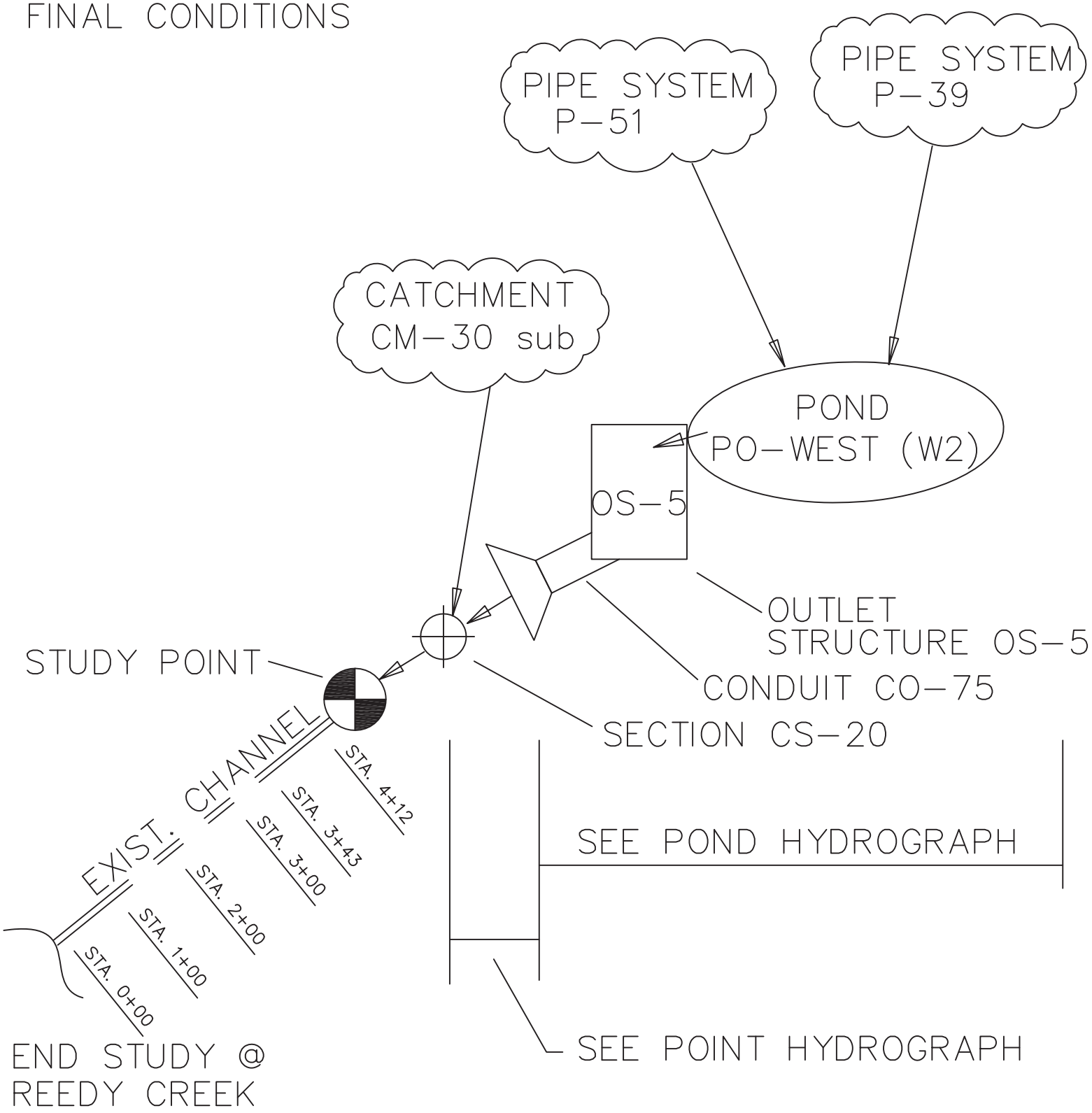
E:\Brunswick Co GAS\Brunswick ESC\Win TR55 Brunswick Existing.w55



SCS Type II
2-Year Rainfall Total = 3.5"
Drainage Area = 23.2 Ac
Time of Concentration = 0.645 Hr
SCS Curve Number = 63
2-Year Peak Flow = 8.73 cfs
Peak Time = 12.35 Hr

WATERSHED MODEL SCHEMATIC

DRAINAGE AREA 30 (DA-30)
FINAL CONDITIONS



DA-30, Pond W2 (PO-West) Spillway Rating Table

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
198.00	0.00	198.00	0	None Contributing
199.00	0.00	198.00	0	None Contributing
200.00	0.00	198.00	0	None Contributing
201.00	0.00	198.00	0	None Contributing
202.00	0.00	198.00	0	None Contributing
203.00	0.00	198.00	0	None Contributing
204.00	0.00	198.00	0	None Contributing
204.50	0.00	198.00	0	2-yr Orifice
205.00	7.66	198.00	0	2-yr Orifice
205.76	12.16	198.00	0	2-yr Orifice + 10yr Weir
206.00	15.03	198.00	0	2-yr Orifice + 10yr Weir
206.90	35.03	198.00	0	2-yr Orifice + 10yr Weir + ESPWY
207.00	39.35	198.00	0	2-yr Orifice + 10yr Weir + ESPWY
208.00	125.92	198.00	0	2-yr Orifice + 10yr Weir + ESPWY

2-Yr Max. WSE = 205.16
2-Yr Outflow = 8.61 cfs

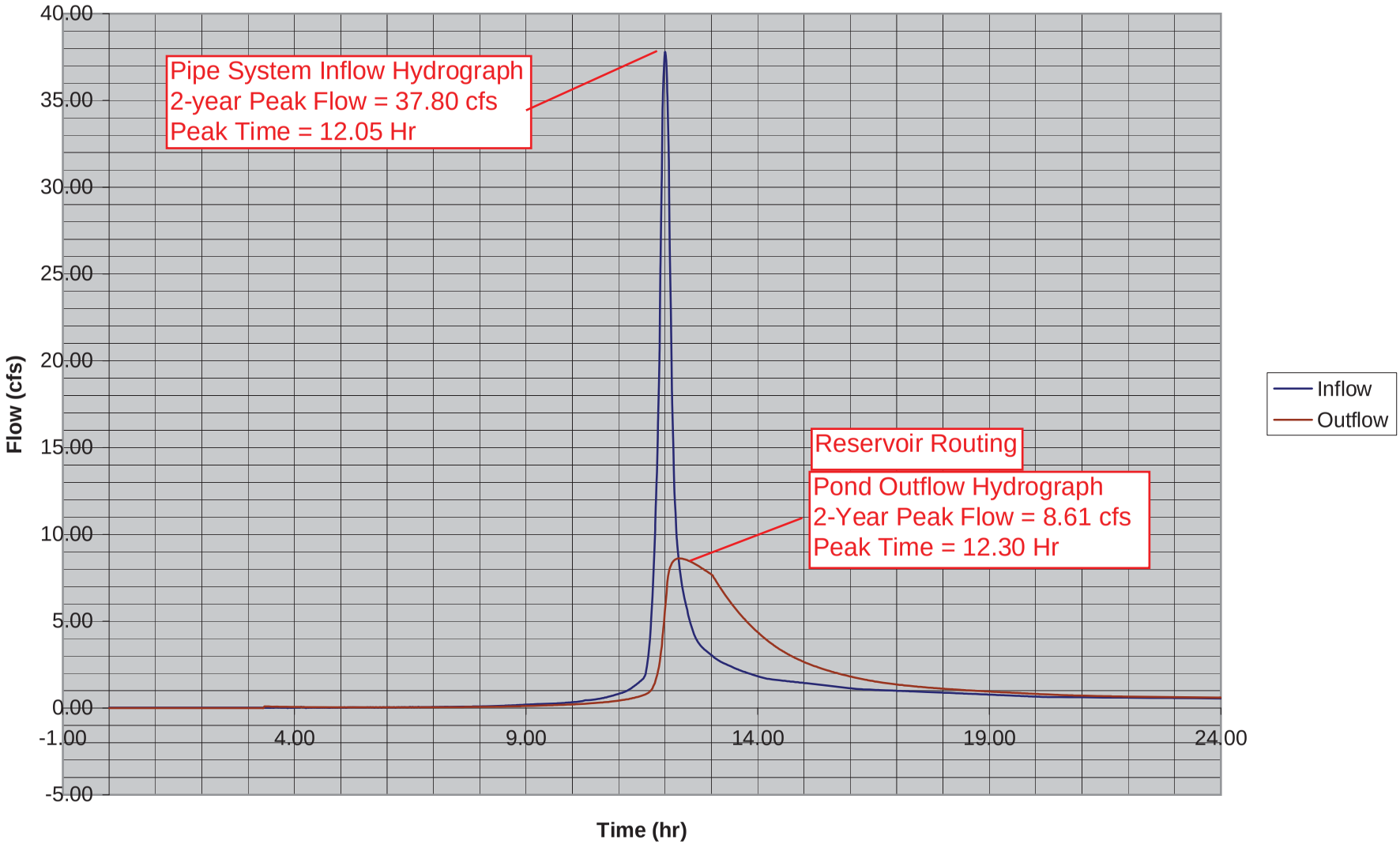
10-Yr Max. WSE = 206.14
10-Yr Outflow = 18.05 cfs

25-Yr Max. WSE = 206.45
25-Yr Outflow = 24.98 cfs

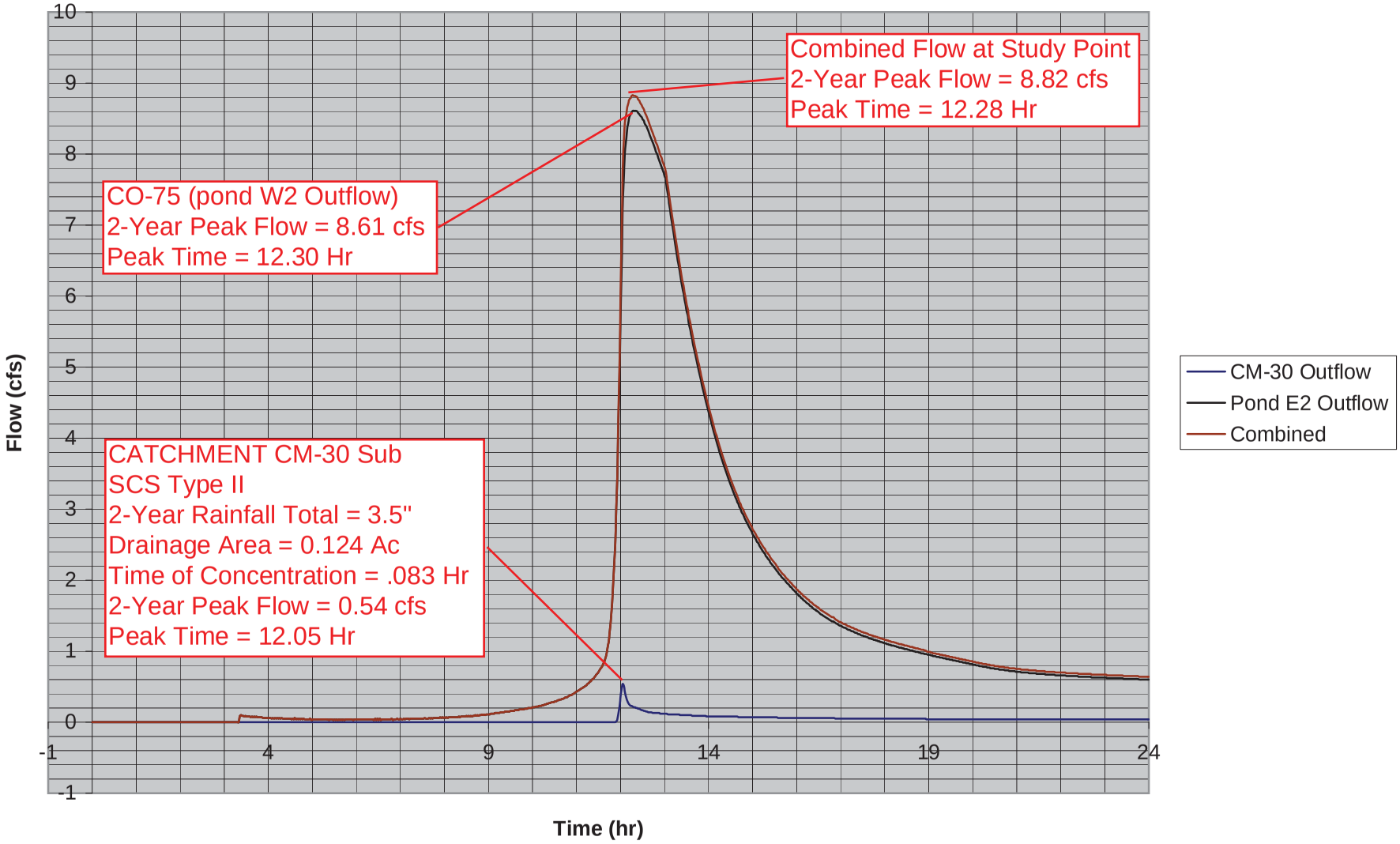
100-Yr Max. WSE = 207.20
100-Yr Outflow = 56.41 cfs

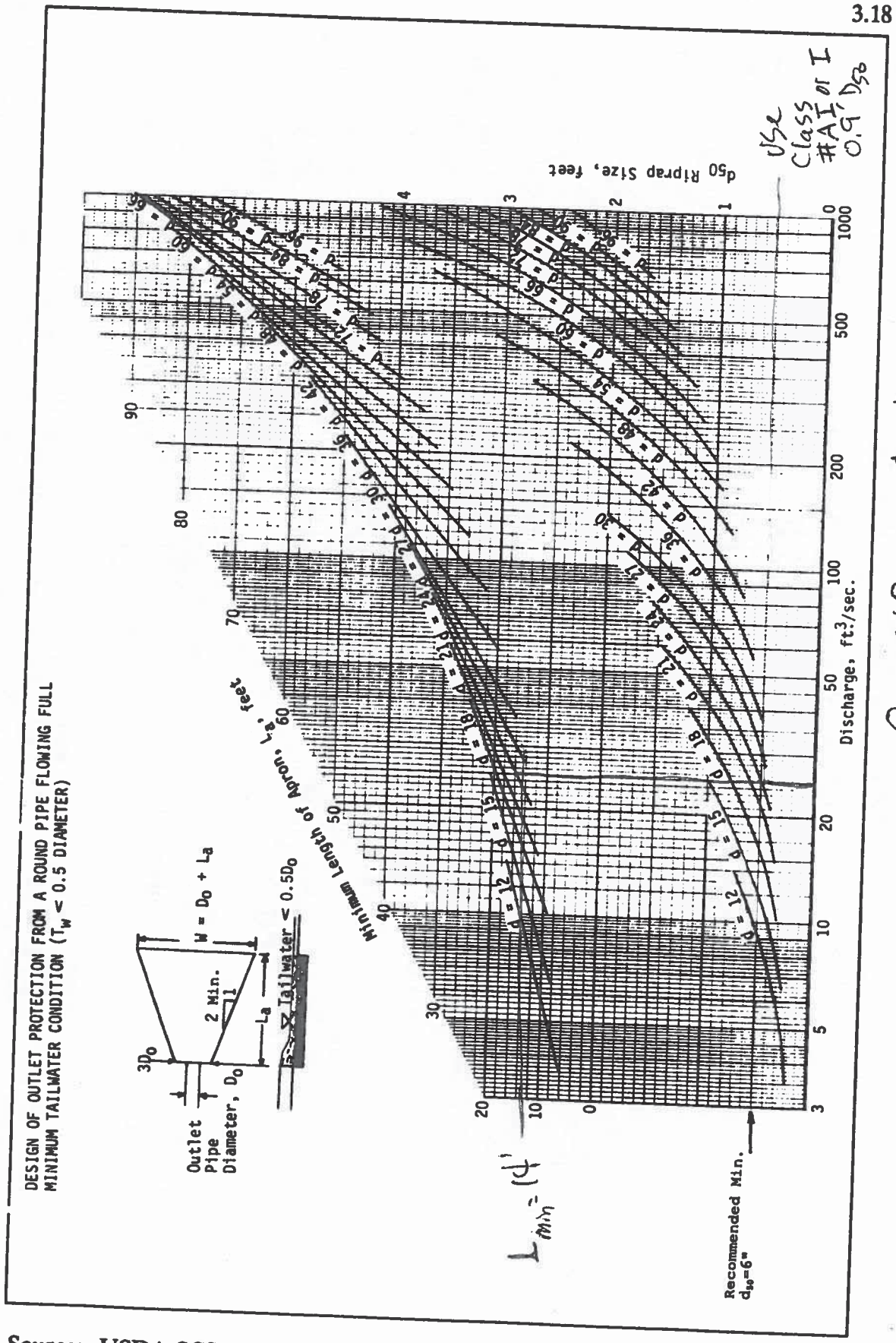
2 Year Orifice: 2.3 sf area at Elev. 204.50
10 year Weir: 5 lf at Elev. 205.76
ESPWY: 16 lf at Elev. 206.90

DA-30 Pond E2 Inflow/Outflow 2-Year Storm



DA-30 Study Point Hydrograph

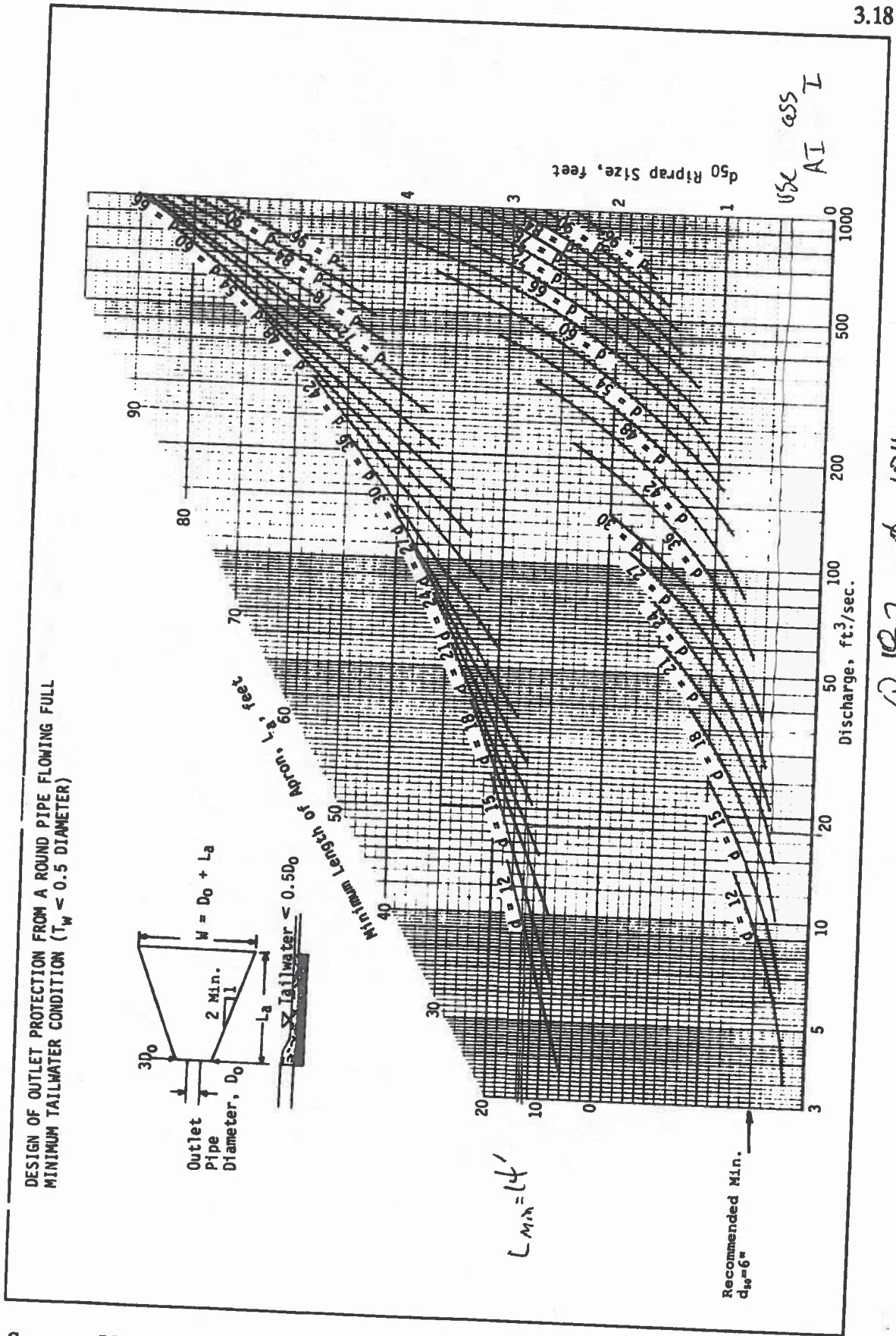




Source: USDA-SCS

Plate 3.18-3

Access Rd Pipe #2



Source: USDA-SCS

Plate 3.18-3

Brunswick County Station
30-P Sta. 0+00

Input Parameters- English Units

Manning's N Value	0.04000	
Manning Method	Horton	
Channel Slope	0.01800	ft/ft
Normal Depth	0.34	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

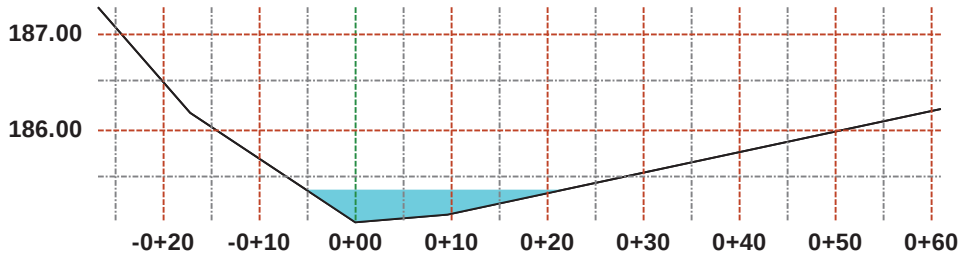
Station (ft)	Elevation (ft)	Start N-Value
-0+26.80	187.28	0.04500
-0+17.10	186.17	0.04000
0+00.00	185.03	0.04000
0+09.60	185.11	0.04000
0+61.00	186.21	0.04500

Output Parameters- English Units

Water Surface Elevation	185.37	ft
Flow Area	5.24	sq.ft.
Wetted Perimeter	26.66	ft
Top Width	26.64	ft
Hydraulic Depth	0.197	ft
Hydraulic Radius	0.196	ft
Critical Depth	0.28	ft
Critical Slope	0.04251	ft/ft
Velocity	1.68	ft/s
Velocity Head	0.04	ft
Specific Energy	0.38	ft
Froude Number	0.670	
Velocity x Depth Product	0.57	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

2yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=2 ft

Brunswick County Station
30-P Sta. 1+00

Input Parameters- English Units

Manning's N Value	0.04000	
Manning Method	Horton	
Channel Slope	0.01940	ft/ft
Normal Depth	0.46	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

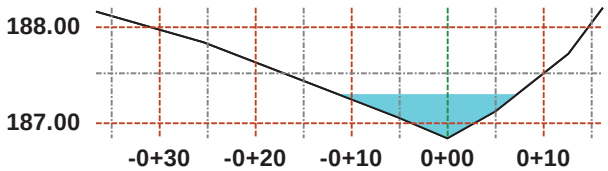
Station (ft)	Elevation (ft)	Start N-Value
-0+36.60	188.16	0.04500
-0+25.30	187.82	0.04000
-0+05.20	187.05	0.04000
0+00.00	186.83	0.04000
0+05.00	187.10	0.04000
0+12.70	187.71	0.04500
0+16.30	188.20	0.04500

Output Parameters- English Units

Water Surface Elevation	187.29	ft
Flow Area	4.47	sq.ft.
Wetted Perimeter	18.98	ft
Top Width	18.96	ft
Hydraulic Depth	0.236	ft
Hydraulic Radius	0.236	ft
Critical Depth	0.40	ft
Critical Slope	0.03958	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.52	ft
Froude Number	0.716	
Velocity x Depth Product	0.91	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

2yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=2 ft

Brunswick County Station
30P Station 2+00

Input Parameters- English Units

Manning's N Value	0.04012	
Manning Method	Horton	
Channel Slope	0.03600	ft/ft
Normal Depth	0.34	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

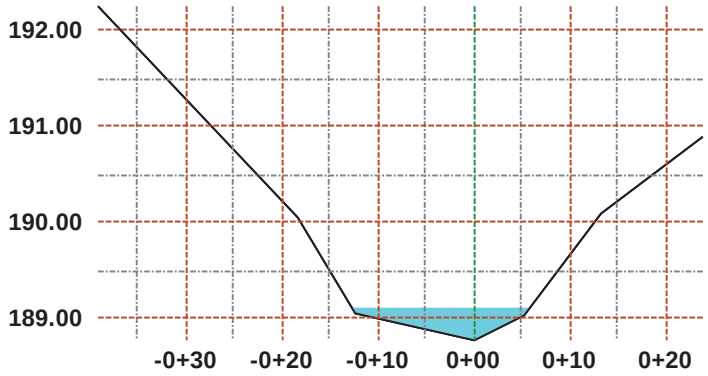
Station (ft)	Elevation (ft)	Start N-Value
-0+39.10	192.24	0.04500
-0+18.30	190.04	0.04500
-0+12.20	189.04	0.04000
0+00.00	188.77	0.04000
0+05.40	189.03	0.04000
0+13.40	190.10	0.04000
0+23.90	190.88	0.04500

Output Parameters- English Units

Water Surface Elevation	189.11	ft
Flow Area	3.69	sq.ft.
Wetted Perimeter	18.66	ft
Top Width	18.64	ft
Hydraulic Depth	0.198	ft
Hydraulic Radius	0.198	ft
Critical Depth	0.33	ft
Critical Slope	0.04072	ft/ft
Velocity	2.39	ft/s
Velocity Head	0.09	ft
Specific Energy	0.43	ft
Froude Number	0.945	
Velocity x Depth Product	0.81	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

2Yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=2 ft

Brunswick County Station
30P Station 3+00

Input Parameters- English Units

Manning's N Value	0.04000	
Manning Method	Horton	
Channel Slope	0.01100	ft/ft
Normal Depth	0.45	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

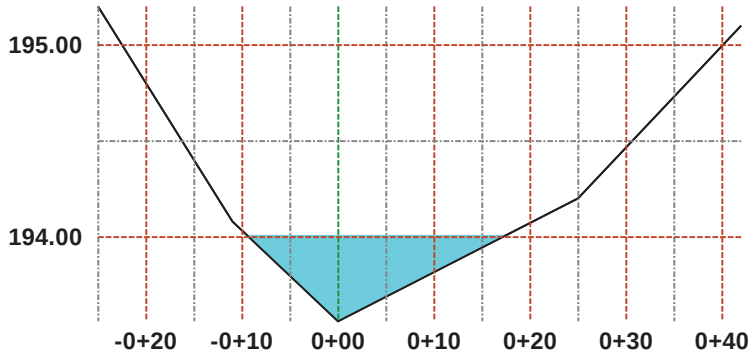
Station (ft)	Elevation (ft)	Start N-Value
-0+25.00	195.20	0.04500
-0+11.00	194.08	0.04000
0+00.00	193.56	0.04000
0+25.00	194.20	0.04000
0+42.00	195.10	0.04500

Output Parameters- English Units

Water Surface Elevation	194.01	ft
Flow Area	6.12	sq.ft.
Wetted Perimeter	27.16	ft
Top Width	27.14	ft
Hydraulic Depth	0.225	ft
Hydraulic Radius	0.225	ft
Critical Depth	0.35	ft
Critical Slope	0.04167	ft/ft
Velocity	1.44	ft/s
Velocity Head	0.03	ft
Specific Energy	0.48	ft
Froude Number	0.536	
Velocity x Depth Product	0.65	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

2-Yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=1 ft

Brunswick County Station
30P Station 3+43

Input Parameters- English Units

Manning's N Value	0.04070	
Manning Method	Horton	
Channel Slope	0.01100	ft/ft
Normal Depth	0.34	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

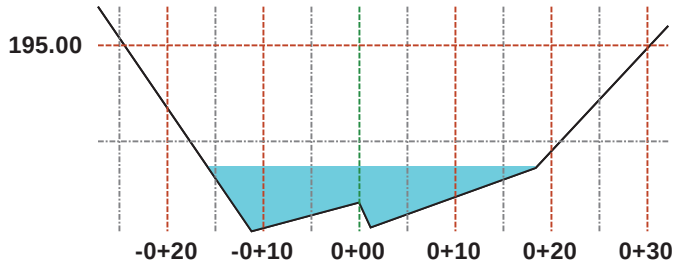
Station (ft)	Elevation (ft)	Start N-Value
-0+27.11	195.20	0.04500
-0+11.20	194.03	0.04000
0+00.00	194.18	0.04000
0+01.25	194.05	0.04000
0+18.41	194.36	0.04500
0+32.21	195.10	0.04500

Output Parameters- English Units

Water Surface Elevation	194.37	ft
Flow Area	6.79	sq.ft.
Wetted Perimeter	34.33	ft
Top Width	34.31	ft
Hydraulic Depth	0.198	ft
Hydraulic Radius	0.198	ft
Critical Depth	0.25	ft
Critical Slope	0.04599	ft/ft
Velocity	1.30	ft/s
Velocity Head	0.03	ft
Specific Energy	0.36	ft
Froude Number	0.515	
Velocity x Depth Product	0.44	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

2-Yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=1 ft

Brunswick County Station
30P Station 4+12

Input Parameters- English Units

Manning's N Value	0.04228	
Manning Method	Horton	
Channel Slope	0.01100	ft/ft
Normal Depth	0.70	ft
Channel Discharge	8.82	cfs
Solve For	Normal Depth	

Channel Section- English Units

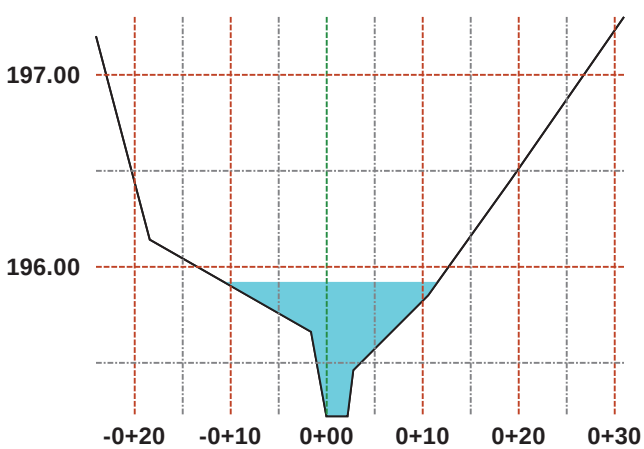
Station (ft)	Elevation (ft)	Start N-Value
-0+24.00	197.20	0.04500
-0+18.30	196.14	0.04500
-0+01.54	195.66	0.04000
0+00.00	195.22	0.04000
0+02.20	195.22	0.04000
0+02.80	195.46	0.04000
0+10.55	195.85	0.04500
0+19.20	196.45	0.04500
0+31.00	197.30	0.04500

Output Parameters- English Units

Water Surface Elevation	195.92	ft
Flow Area	5.83	sq.ft.
Wetted Perimeter	22.15	ft
Top Width	22.02	ft
Hydraulic Depth	0.265	ft
Hydraulic Radius	0.263	ft
Critical Depth	0.56	ft
Critical Slope	0.04181	ft/ft
Velocity	1.51	ft/s
Velocity Head	0.04	ft
Specific Energy	0.73	ft
Froude Number	0.519	
Velocity x Depth Product	1.05	sq.ft./s
Flow Type	Sub-Critical	
Turbulent Flow	Yes	

Channel Notes

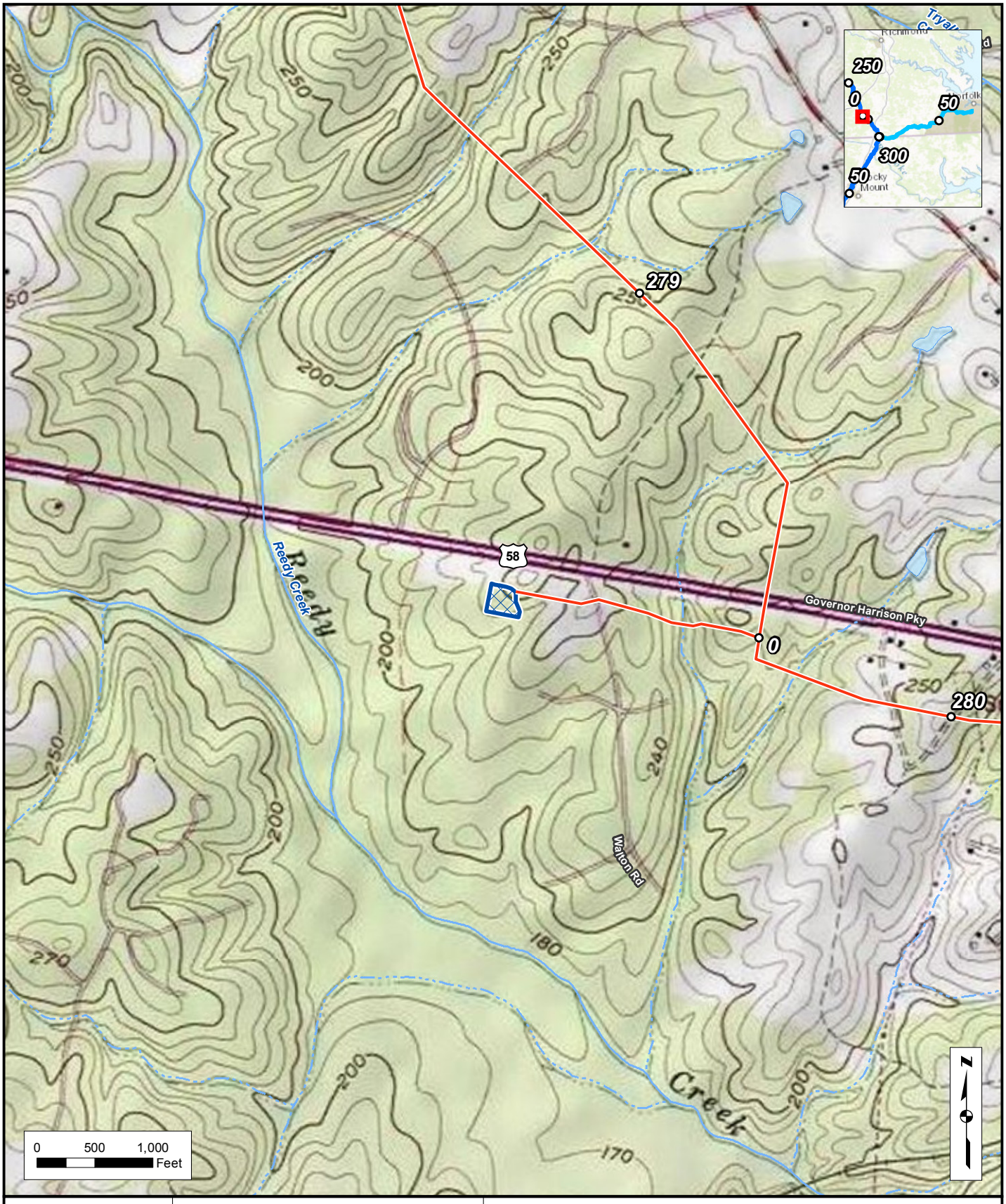
2-Yr Flow



Horizontal Scale 1"=20 ft Vertical Scale: 1"=1 ft

ATTACHMENT 2

Topo Map



Milepost
Proposed Route
M and R Site
NHD Waterbodies

Atlantic Coast Pipeline

Brunswick M and R Site
USGS Topo Overview

FILE: \\usminfs01\Data\Team\DMMV\GIS\Clients\D-F\DOM\SRPP_ArcGIS\SWPPP\Figures_ACP_MandR_Stations_Topo.mxd, REVISED: 12/22/2016, SCALE: 1:14,000 DRAWN BY: EKP

ATTACHMENT 3

Letter of Availability for Nutrient Credits

[Will Be Provided Prior to Land Disturbance]

APPENDIX H

ESC Plan and SWM Plan for Greensville M&R Station

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

Stormwater Pollution Prevention Plan

APPENDIX H

Erosion and Sediment Control and Stormwater Management Plan

for

Greensville M&R Station

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
BMP	best management practice
BSRF	Belted Silt Retention Fence
DETI	Dominion Energy Transmission, Inc. (formerly Dominion Transmission, Inc.)
DTI	Dominion Transmission, Inc. (now Dominion Energy Transmission, Inc.)
EI	Environmental Inspector
ESC	erosion and sediment control
ESC Plan	Erosion and Sediment Control Plan
FERC	Federal Energy Regulatory Commission
M&R	metering and regulating
M&R Station	Greensville M&R Station
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
Power Station	Greensville Electric Power Station
SWM	stormwater management
SWM Plan	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VEP	Virginia Electric and Power Company
VESCP	Virginia Erosion and Sedimentation Control Program
VESCH	Virginia Erosion and Sediment Control Handbook
VSMP	Virginia Stormwater Management

1.0 INTRODUCTION

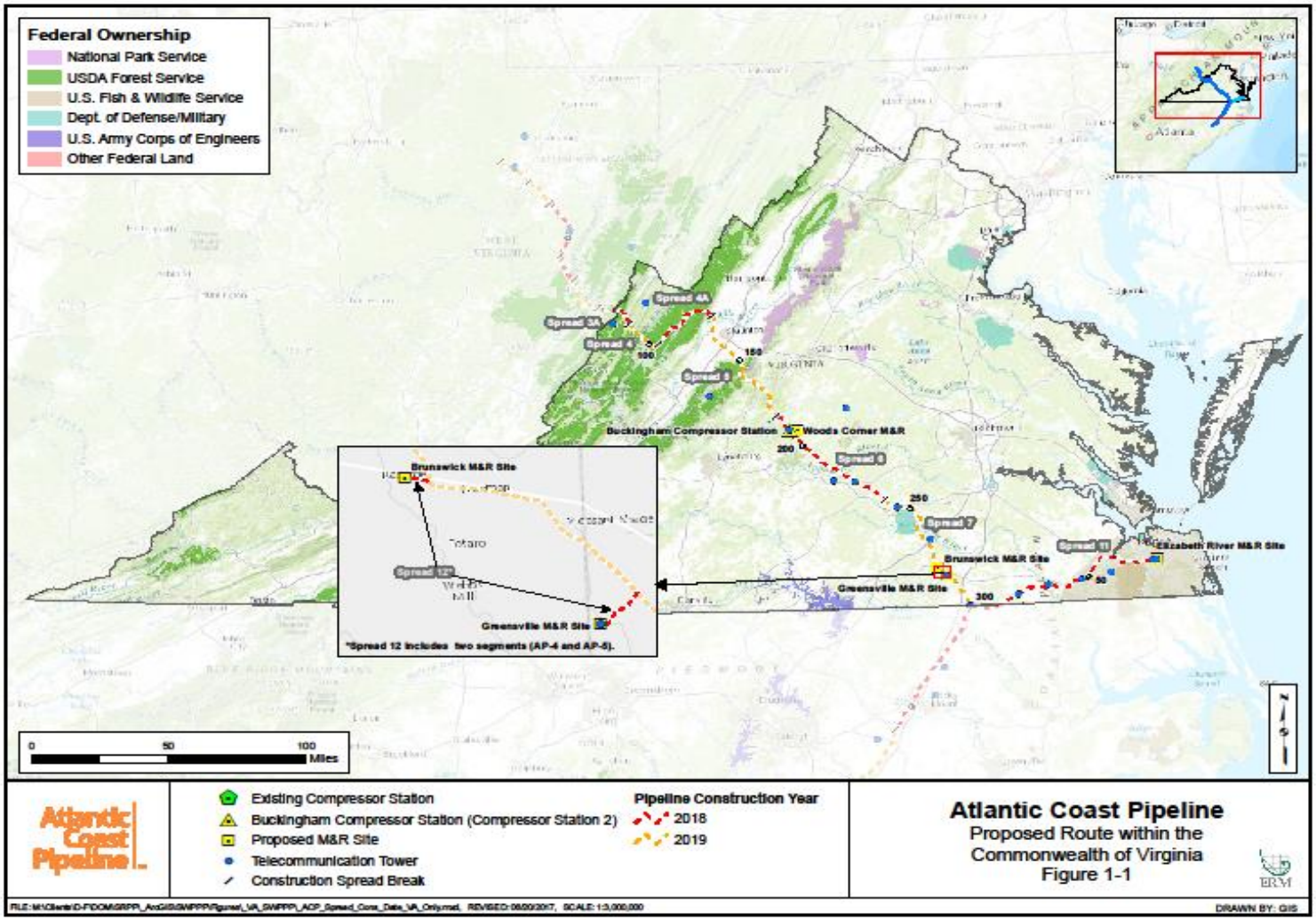
As part of the Atlantic Coast Pipeline (ACP), Dominion Energy Transmission Inc. (DETI), formerly Dominion Transmission, Inc. (DTI) is proposing to construct an approximately 1.43-acre aboveground metering and regulating (M&R) station at 2500 Rogers Road in Emporia, Virginia.[1] This Station, referred to as the Greensville M&R Station (M&R Station), will be co-located with the Virginia Electric and Power Company (VEP) Greensville Electric Power Station (Power Station).

The purpose of this Appendix is to specifically address existing site conditions; planned land-disturbing activities; construction sequence and procedures; erosion and sediment control (ESC) measures; and post-construction stormwater management (SWM) methods to be used at the M&R Station. This Appendix is intended to supplement the main body of the Stormwater Pollution Prevention Plan (SWPPP), which primarily addresses the linear portion of the Project. However, general provisions contained within the main body of the SWPPP, including pollution prevention practices and procedures; roles and responsibilities of personnel; inspection and maintenance; employee training; and notification, recordkeeping, and reporting will be followed during construction of the M&R Station, as applicable to the aboveground facility. Land-disturbing activities will conform, at a minimum, to the same regulations and guidelines listed in Section 1.0 of the SWPPP, as appropriate and applicable. In circumstances where multiple overlapping regulatory requirements and guidelines apply, DETI selected the more stringent or protective of the requirements and guidelines set forth by the Federal Energy Regulatory Commission (FERC) and the Virginia Department of Environmental Quality (VDEQ), unless otherwise agreed to in advance.

A description of the M&R Station is provided in the following sections. A Site Plan is provided in Attachment 1. Figure 1-1 below shows the location of the M&R Station in relation to the ACP.

[1] In May 2017, Dominion Transmission, Inc. (DTI) had a legal name change to Dominion Energy Transmission, Inc. (DETI)

Figure 1-1 Greensville M&R Station Location



2.0 LOCATION AND DESCRIPTION

The M&R Station will be located at milepost 1.0 of the AP-5 lateral section of the ACP pipeline, within Greensville County, VA. The approximately 1.43-acre rectangular tract of land is located along the northern property boundary of a larger parcel to be developed into the Power Station. The larger parcel is identified in the City of Greensville records as Parcel Number 18-35 with a property address of 2500 Rogers Road. The general vicinity around the M&R Station is undeveloped/cleared property.

2.1 EXISTING SITE CONDITIONS

The M&R Station is primarily undeveloped. The M&R Station will be co-located and constructed generally concurrent with the planned Power Station.

2.2 EXISTING AND PROPOSED TOPOGRAPHY

The topography at the M&R Station is characterized by flat to gently sloping terrain with an elevation of approximately 170 feet above mean sea level. The proposed development will retain the existing topography of flat to gently sloping terrain with grading to direct stormwater toward a retention pond planned to be located north of the proposed M&R Station.

Existing topography of the M&R Station can be found in the topographical map, Attachment 2. In addition, the proposed grading plan for the M&R Station is provided in Attachment 1.

2.3 PROMINENT VEGETATION

The current M&R Station site location is undeveloped. The M&R Station will be developed with one dekatherm building (used to house equipment such as gas chromatographs, communications equipment, etc.) as well as a regulation skid, a metering skid, a microwave tower, and a small supply building surrounded by a chain-link security fence. In addition, aboveground sections of piping, gas filter/separator, meters, tank, three gas heaters, and regulators will be present. A retention pond is planned to be located north of the proposed M&R Station. DETI will utilize an existing road to access the M&R Station from Rogers Road. Vehicles will then enter the M&R Station using a new gravel access road. The proposed Site Plan is provided in Attachment 1.

2.4 LAND-DISTURBING ACTIVITIES AND ASSOCIATED WORK AREAS

Construction of the M&R Station will affect approximately 1.43 acres of land. The 1.43 acres of land affected will be retained for operation of the new M&R Station. The Site Plan in Attachment 1 depicts the proposed land use to be adapted to various uses, including but not limited to planned locations of utilities, structures, roads, parking areas, stormwater management facilities, and easements.

2.5 CONSTRUCTION SCHEDULE

Subject to receipt of the required permits and regulatory approvals, initial construction activities are expected to commence in February 2018. DETI anticipates that the M&R Station construction will be completed in the third quarter of 2019.

2.6 ADJACENT PROPERTIES

The proposed Greensville M&R Station will be constructed concurrent and co-located with the Power Station. The surrounding property of the proposed Power Station is woodlands, cultivated fields, and roads. Boundaries of the greater property are cultivated fields to the north, woodlands to the east and west, and Meherrin River to the south.

2.7 OFF-SITE AREAS

This ESC and SWM Plan addresses land-disturbing activities within the M&R Station. Project plans do not include any additional off-site land-disturbing activities (such as borrow sites or disposal areas). Similar to adjacent properties, DETI will minimize any potential impact to off-site areas during the Project.

2.8 SOILS

According to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), soils beneath the M&R Station consist of 1B Abell Loam, Goldston Series and Fluvanna Series.

Table 2.8-1 below depicts the soil units of the Greensville M&R Station.

Table 2.8-1

Soil Units

Map Unit Symbol- Name	Taxonomic Class	Typical Pedon	Drainage and Permeability
Abell	Fine-loamy, mixed, semiactive, thermic Aquic Hapludults	Abell fine sandy loam – cultivated on a 2 to 7 percent slope	Moderately well drained; slow runoff; moderate permeability
Goldston Series	Loamy-skeletal, siliceous, semiactive, thermic, shallow Typic Dystrudepts	Goldston very channery silt loam – forested	Well drained to excessively drained; runoff is rapid and internal drainage is medium to rapid; moderately rapid permeability
Fluvanna Series	Fine, mixed, active, thermic Typic Hapludults	Fluvanna fine sandy loam, in an area of Fluvanna-Mattaponi complex, 2 to 7 percent slopes	Permeability: moderately slow and well drained

The NRCS assigns soils to one of four hydrologic soil groups based on estimates of runoff potential, as follows:

- **Group A**: Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

- **Group B**: Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

- **Group C**: Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

- **Group D**: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The hydrologic soil groups assigned by the NRCS for the soils mapped at the M&R Station are as follows: Abell Loam (Group C) and Fluvanna-Goldston (Group C).

Appendix M of the main SWPPP document lists the various soil mapping units crossed by the proposed ACP Project and provides general information about the nature and properties of each soil and/or map unit.

2.9 RECEIVING WATERS

The proposed M&R Station will drain north to a detention pond to be constructed as part of the larger Power Station. Water collected within the proposed detention pond will flow to Greensville Creek, located approximately 450 feet north of the proposed M&R Station. Greensville Creek flows southeast into the Meherrin River. The M&R Station is located within the Meherrin River-Douglas Run watershed identified by the U.S. Geological Survey as hydrologic unit code 030102040603. DETI does not intend to connect to and/or discharge into a municipal separate storm sewer system (MS4).

2.10 EXEPTIONAL AND IMPAIRED WATERS

The proposed M&R Station does not impact Tier 3 exceptional waters identified in 9 Virginia Administrative Code (VAC) 25-260-30 A.

DETI reviewed the 2014 list of 305(b)/303(d) Impaired Waters for the Commonwealth of Virginia to identify waterbodies classified as impaired or for which a Total Maximum Daily Load wasteload allocation has been established and approved for (i) sediment or a sediment-related parameter (i.e., total suspended solids or turbidity) or (ii) nutrients (i.e., nitrogen or phosphorus) (VDEQ, 2015). There are no impaired waterbodies within the limit of disturbance for the proposed M&R Station, and the downgradient Greensville Creek is not a listed impaired waterbody.

2.11 CRITICAL/SENSITIVE AREAS

Preconstruction assessments and field surveys were completed by DETI to delineate the location of critical or sensitive environmental areas within the areas of land disturbance proposed by the M&R Station.

2.11.1 Wetlands and Waterbodies

M&R stations have been sited such that impacts to wetlands will be avoided and minimized to the maximum extent practicable. There are no wetlands impacted by construction of the Greensville M&R Station.

2.11.2 Threatened and Endangered Species

DETI consulted with the U.S. Fish and Wildlife Service Ecological Services Field Office in Virginia to identify federally and Commonwealth-listed endangered, threatened, and proposed species as potentially occurring in the ACP Project area. Field surveys and consultations with the U.S. Fish and Wildlife Service regarding these species are on-going. Virginia has separate laws protecting threatened and endangered species. DETI requested and received data on known occurrences of Commonwealth-listed species in Virginia from the Virginia Department of Conservation and Recreation Natural Heritage Program. DETI additionally has consulted and continues to consult with the Virginia Department of Game and Inland Fisheries and Virginia Department of Conservation and Recreation regarding impacts on Commonwealth-listed threatened and endangered species.

There are no endangered, threatened, or proposed species that are known to occur at the proposed M&R Station.

3.0 EROSION AND SEDIMENT CONTROL

All ESC measures to be undertaken as part of this Project will be done in accordance with the VDEQ-approved DETI Standards and Specifications. These standards and specifications will be met through the implementation of the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures, Minimum Standards of the Virginia Erosion and Sedimentation Control Regulations (9 VAC 25-840-40), by the design, construction and maintenance of the ESCs in accordance with the Virginia Erosion and Sediment Control Handbook (VESCH) (1992, 3rd Edition), and the application of environmental site design principles.

3.1 GENERAL M&R STATION CONSTRUCTION

M&R Station construction stages and the erosion and sediment control measures to be installed for each of these stages are described below. The erosion and sediment control drawings for the M&R Station, including typical drawings of general erosion and sediment control measures, are provided in Attachment 1.

During construction, the effectiveness of temporary erosion control devices will be monitored by DETI's Environmental Inspectors (EIs). The effectiveness of permanent erosion control measures will be monitored for the life of the project by DETI operating personnel during the long-term operation and maintenance of the M&R Station.

Site Preparation

- Survey and flag the construction site and mark environmentally-sensitive areas.
- Install temporary construction entrance.
- Install safety fences prior to erosion and sediment control installation.
- Conduct initial clearing, limited to that necessary to install temporary sediment barriers.
- Install all perimeter erosion and sediment controls prior to any bulk earth-moving activity (road grading, log skidding, grubbing, etc.). Erosion and sediment control measures will be inspected and maintained throughout construction.
- Clear and grub site.
- Segregate topsoil where necessary.

M&R Station Construction

- Begin site bulk grading.
- Grade entrance road, laydown areas, and parking areas.

- Grade building pads and dig excavations for footings, foundations, and utilities.
- Install utilities.
- Construct buildings and pipeline M&R facilities.
- Spread topsoil on disturbed areas, as needed.
- Complete finish grading.
- Install gravel base around buildings and M&R facilities.

Restoration

- Conduct site restoration and cleanup. As soon as slopes, channels, ditches, and other disturbed areas reach final grade, they must be stabilized within seven days.
- Apply soil amendments, permanent seed, mulch, and/or erosion control fabric, as necessary.
- Restore temporary access roads or any paved surfaces to original condition.
- Remove temporary sediment barriers from an area when replaced by permanent erosion control measures or when the area has been successfully restored to uniform perennial vegetation. Temporary erosion control best management practices (BMPs) will not be removed until inspection by the EI to confirm site stabilization.

3.1.1 Survey and Flagging

- The limits of the approved work areas and the location of the underground utilities must be marked in the field prior to the start of mechanized activities.
- Orange plastic fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work will take place within critical areas and their buffers.
- Per VESCH **Std. & Spec. 3.01 (Safety Fence)**, safety fencing will be installed as needed during grading at public access points or around open unattended excavations to warn pedestrians of possible hazards. Stakes will be installed to the maximum extent of 18" as practical in the field to ensure the functionality of the safety fence. In areas where adequate embedment depth cannot be achieved, due to terrain/substrate constraints; additional measures including but not limited to sandbags, mounded earth, etc. will be utilized to secure the fence. In addition, lights, signs and other warnings are required at road entrances and road crossings (see Virginia Department of Transportation (VDOT) permits and regulations).

- Flagging or marking will be maintained throughout construction.

- Trees to be protected will be flagged by the EIs and if determined necessary, protected with fencing or armoring prior to clearing.

- Per VESCH **Std. & Spec. 3.38 (Tree Preservation and Protection)**, at a minimum the limits of clearing will be located outside the drip line of any tree to be retained and, in no case, closer than 5 feet to the trunk of any tree to be retained. In addition, heavy equipment, vehicular traffic, or stockpiles will not be permitted within the drip line of any tree to be retained.

3.1.2 Construction Entrance

In accordance with VESCH **Std. & Spec. 3.02 (Stone Construction Entrance)**, a construction entrance will be constructed at any point where construction equipment leaves the right-of-way and enters a paved public road or other paved surface. Typically, a construction entrance is comprised of filter fabric overlain by six inches of coarse aggregate (Virginia Department of Transportation #1) extending a minimum of 70 feet from the edge of the pavement. The area of the entrance must be excavated three inches prior to laying the filter fabric underliner. The entrance must extend the full width of the vehicular ingress and egress area and have a minimum 12-foot width. Conveyance of surface water through culverts under the entrance will be provided, as necessary. If such as conveyance is impossible, the construction of a "mountable" berm with 5:1 slopes will be permitted.

The construction entrance must function to remove mud from vehicles and equipment leaving the site. As mud accumulates on the entrance, clean stone must be added or the tire mats lifted and shaken to remove mud. Any mud that is carried onto the pavement must be thoroughly removed by the end of the day by shoveling or sweeping. The mud will be returned to the site. The use of water to remove sediment tracked onto roadways is permitted only after sediment is removed as stated above.

If the majority of the mud is not removed by the vehicles traveling over the stone, then tires of the vehicles must be washed before entering the public road. A wash rack may be used to make washing more convenient and effective. Wash water must be carried away from the entrance to a settling area to remove sediment before discharge.

Maintenance of the construction entrance may require periodic top dressing with additional stone and cleanout of any structures used to trap sediment. Additionally, the construction entrance may need to be shoveled then swept, followed by washing of the entrance to remove any sediment build up. If any inadvertently sediment tracking occurs on the public roadway, the road will be cleaned thoroughly by the end of each day.

3.1.3 Wind Erosion Control

Consistent with VESCH **Std. & Spec. 3.39 (Wind Erosion Contro**l), the following temporary sediment controls will be used, as applicable, to minimize the surface and air movement of dust during land disturbing and construction activities:

- In areas with little or no construction traffic, a vegetatively stabilized surface will reduce dust emissions.
- Mulch will be used in areas without heavy traffic pathways.
- Tillage will be used only in an emergency situation before wind erosion begins. Plowing on the windward side of the site with chisel-type plows spaced approximately 12 inches apart.
- The contractors will have one or more water trucks available per spread that will load water from approved permitted sources to spray areas for dust control.
- Use of spray-on adhesives may be used on mineral soils only.
- Use crushed stone or course gravel to stabilize roads and other areas during construction.
- A board fence, wind fence, or sediment fence may be used to control air currents and blowing soil. Place barriers perpendicular to prevailing air currents at intervals of about 15 times the barrier height.
- Calcium chloride may be applied by a mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage.

3.1.4 Silt Fencing

Silt Fencing constructed of synthetic filter fabric stretched across and attached to supporting posts, and in some cases a wire support fence, will be placed across or at the toe of a slope or in a minor drainage way to intercept and detain sediment and decrease flow velocities from drainage areas of limited size. Silt fencing is applicable where sheet and rill erosion or small concentrated flows may be a problem. In accordance with VESCH **Std. & Spec. 3.05 (Silt Fence),** DETI will adhere to the following general construction and maintenance specifications if congruent with the manufacturer's recommended installation and use. In the event of conflicting specifications, DETI will always follow the manufacturer's recommendations on proper installation and use of a product.

- Silt fencing will be used where the size of the drainage area is not more than one quarter acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50 percent (2:1).

- Silt fencing can be used in minor swales or ditches where the maximum contributing drainage area is no greater than one acre and flow is no greater than one cubic feet per second. In ditches or swales where higher velocity flow is expected, rock check dams will be used in place of silt fence.

- Silt fencing will not be used in areas where rock or some other hard surface prevents the full and uniform depth anchoring of the barrier.

- If wooden stakes are utilized for silt fence construction, they must have a diameter of two inches when oak is used and four inches when pine is used. Wooden stakes must have a minimum length of five feet. Fabric will not be stapled to existing trees.

- If steel posts are utilized, they must have a minimum weight of 1.33 pounds per linear foot and have a minimum length of five feet. Posts will be placed a maximum of six feet apart.

- The height of the fence will be a minimum of 16 inches above grade and will not exceed 34 inches above ground elevation.

- Filter cloth will be spliced together only at support posts with a minimum 6-inch overlap.

- When wire support is not used, extra-strength filter fabric will be fastened to the upslope side of the posts using one inch long (minimum) heavy-duty wire staples or tie wires and eight inches of the fabric will be extended into the trench. The posts will be placed a maximum of six feet apart.

- When wire support is used, the wire mesh fence must be fastened securely to the upslope side of the posts using heavy duty wire staples at least one inch long, tire wires or hog rings. The posts will be placed a maximum of 10 feet apart.

- If silt fence is to be constructed across a ditch line or swale, the measure must be of sufficient length to eliminate end flow and the configuration will resemble an arc with the ends oriented upslope. Extra-strength filter fabric must be used for ditch lines or swales with a maximum 3-foot spacing of posts.

- Remove accumulated sediments when sediment reaches half the aboveground height of the fence.

Belted Silt Retention Fence (BSRF)

The primary silt fence product planned for use on the ACP, including the M&R Station, is a patented Belted Silt Retention Fence (BSRF) product which is available in two designs used to address different site conditions, as follows:

- BSRF Priority 1 (green band) is a heavy-duty silt fence constructed with a 36-inch, non-woven, spun-bond fabric with an internal scrim incorporated into the fabric for additional strength and durability. The system utilizes wood stakes spaced at 4-feet and a specific method of attachment. The system is functionally equivalent to wire back and metal steel post silt fence and is designed for the protection of high priority areas, including wetlands and waterbodies.

- BSRF Priority 2 (black band) is a medium-duty silt fence constructed with a 36-inch, non-woven, spun-bond fabric that is calendared on one side. The system utilizes wood stakes spaced at 6-feet and a specific method of attachment.

Drawings and specifications for the two BSRF products are provided in Attachment 1.

3.1.5 Site Dewatering

Dewatering may be periodically conducted to remove accumulated groundwater or precipitation from the construction area, including from within excavations. The need for erosion controls as well as the type of control used will vary depending on the type and amount of sediment within the water, and volume and rate of discharge.

3.1.5.1 Geotextile Bag/Dewatering Filter Bag

DETI utilizes geotextile bags for dewatering and velocity reduction on a majority of pipeline construction projects as well as the straw bale dewatering practice illustrated in the VESCH **Std. & Spec. 3.26 (Dewatering Structure)**. The purpose, definition, conditions of application and planning considerations are identical. Design criteria and specifications vary by dewatering bag manufacturer; a variety of geotextile dewatering bag products are available on the market. The manufacturers' guidance on the use, design, sizing, maintenance, and application of the geotextile dewatering bag will be followed.

- Conduct dewatering (on or off the construction site) in such a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody, wetland, or off-site property.

- Elevate and screen the intake of each hose used to withdraw the water from the trench to minimize pumping of deposited sediments.

- A dewatering bag may not be needed if there is a well-stabilized, vegetated area on site to which water can be discharged. The area must be stabilized so that it can filter sediment and at the same time withstand the velocity of the discharged water without eroding. Per VESCH Std. & Spec. 3.26, a minimum filtering length of 75 feet must be available in order for such a method to be feasible.

- Remove dewatering structures as soon as practicable after the completion of dewatering activities or sooner if sediment build-up prevents the bag from functioning properly. If the bag becomes half full of sediment, discard and replace with a new bag.

3.1.5.2 VESCH Standard Dewatering Structure

As warranted by site conditions, a standard dewatering structure may be used per the construction and maintenance specifications in VESCH **Std. & Spec. 3.26 (Dewatering Structure)**, including the use of a portable sediment tank, filter box, or straw bale/silt fence pit. The dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure. The filtering devices must be inspected frequently and repaired or replaced once the sediment build-up prevents the structure from functioning as designed. The accumulated sediment which is removed from a dewatering device must be spread on site and stabilized or disposed of at an approved disposal site.

In some cases, DETI could use a modified dewatering structure in combination with a filter bag. The structure is similar to the straw bale/silt fence pit described in the VESCH, but the wet storage area is not excavated 3 ft. below the perimeter measures since the structures are placed off the right-of-way in well vegetated areas. The filter bag discharges into the dewatering structure for additional filtration through the straw bales. Additional energy dissipating devices may be installed downgradient of the dewatering structure, as necessary.

Installation and removal of the referenced dewatering practice does not involve ground disturbance.

3.2 SPECIAL CONSTRUCTION PROCEDURES

Sensitive areas (e.g., wetland) will be treated as separate construction entities. Sensitive areas require additional erosion and sediment control procedures. Additional controls will be shown on the detailed drawings in Attachment 1.

3.2.1 Winter Construction

DETI has developed and filed a project-specific winter construction plan with the FERC application.

The plan addresses:

- Winter construction procedures (e.g., snow handling and removal, soil handling under saturated or frozen conditions, topsoil stripping);
- Stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and
- Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator will immediately resume the regular inspection frequency.

4.0 EROSION AND SEDIMENT CONTROL MINIMUM STANDARDS

The Virginia ESC regulations specify minimum standards that must be followed for all regulated land-disturbing activities, where applicable to a specific project. Modifying or waiving any of the ESC regulations, including the 19 minimum standards, on a project-specific basis, requires a written variance request to VDEQ for review and approval. DETI will construct the M&R Station in accordance with the following criteria, techniques and methods per minimum standards set forth in 9 VAC 25-840-40, as applicable.

Minimum Standard 1 – Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Minimum Standard 2 – During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Minimum Standard 3 – A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Minimum Standard 4 – Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Minimum Standard 5 – Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.

Minimum Standard 6 – Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

6.a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

6.b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Minimum Standard 7 – Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Minimum Standard 8 – Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

Minimum Standard 9 – Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Minimum Standard 10 – All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Minimum Standard 11 – Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Minimum Standard 12 – When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

Minimum Standard 13 – When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

Minimum Standard 14 – All applicable federal, state, and local requirements pertaining to working in or crossing live watercourses shall be met.

Minimum Standard 15 – The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Minimum Standard 16 – Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

16.a. No more than 500 linear feet of trench may be opened at one time.

16.b. Excavated material shall be placed on the uphill side of trenches.

16.c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

16.d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

16.e. Restabilization shall be accomplished in accordance with this chapter.

16.f. Applicable safety requirements shall be complied with.

Minimum Standard 17 – Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Minimum Standard 18 – All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the Virginia Erosion and Sedimentation Control Program (VESCP) authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Minimum Standard 19 – Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

19.a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe, or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

19.b. Adequacy of all channels and pipes shall be verified in the following manner:

19.b.(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or

19.b.(2)(a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

19.b.(2)(b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

19.b.(2)(c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.

19.c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

19.c.(1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or

19.c.(2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

19.c.(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or

19.c.(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

19.d. The applicant shall provide evidence of permission to make the improvements.

19.e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.

19.f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

19.g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

19.h. All on-site channels must be verified to be adequate.

19.i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

19.j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial, or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

19.k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical, and biological integrity of rivers, streams and other waters of the state.

19.l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5-, 2-, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to §62.1-44.15:54 or 62.1-44.15:65 of the Act.

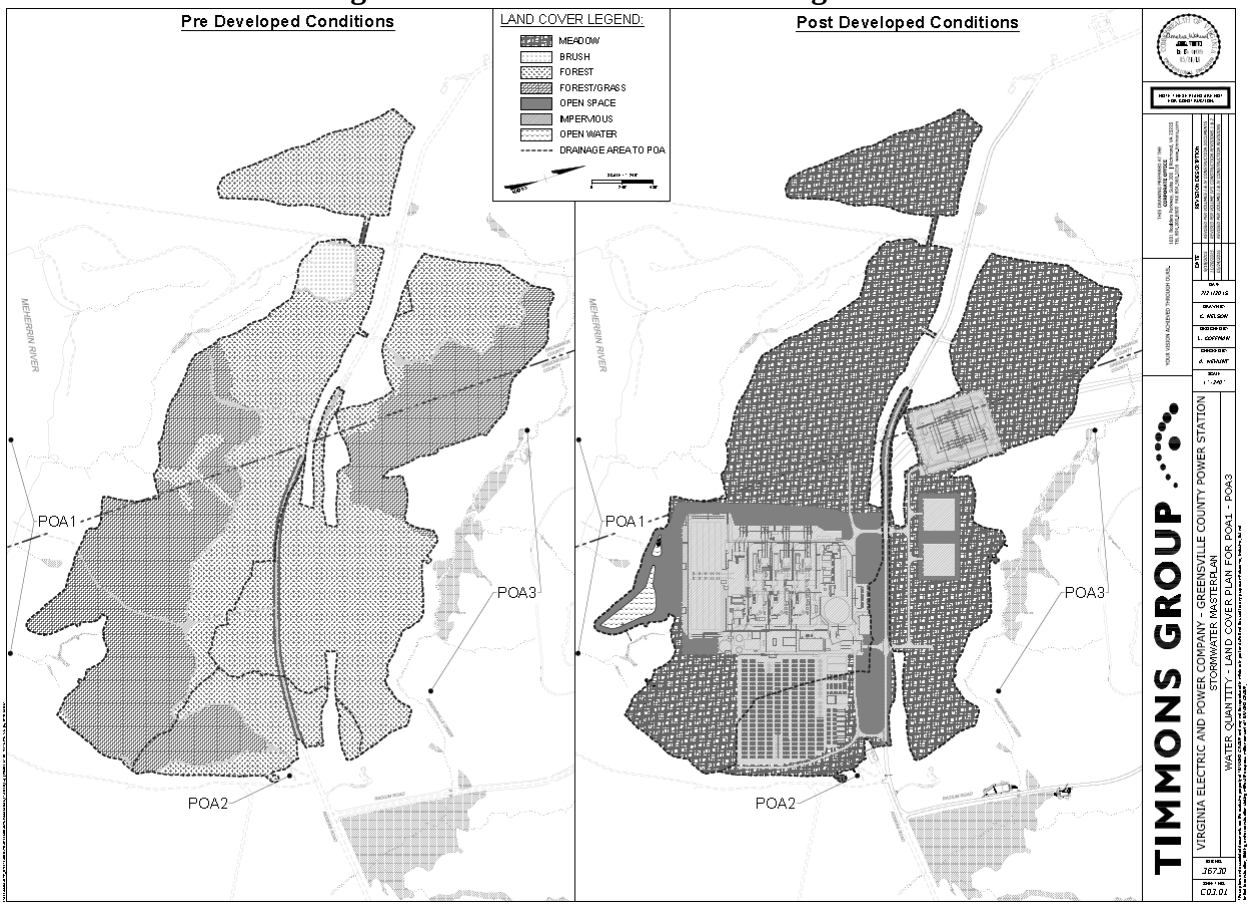
19.m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of §62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9 VAC 25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulation or are exempt pursuant to subdivision C 7 of §62.1-44.15:34 of the Act.

19.n. Compliance with the water quantity minimum standards set out in 9 VAC 25-870-66 of the VSMP Regulation shall be deemed to satisfy the requirements of this subdivision 19.

5.0 STORMWATER MANAGEMENT

As noted in Section 2.1, the M&R Station will be co-located and constructed generally concurrent with the planned Power Station. The stormwater management design for the Power Station considered the proposed land use for the M&R Station. Consequently, the post-construction stormwater requirements will be addressed by the stormwater infrastructure that will be constructed as part of the Power Station project. Specifically, stormwater quality and quantity for the M&R Station will be managed by a detention pond, referred to as Detention Pond 3 in the stormwater management design for the Power Station, located within drainage area POA 3. A map of the Power Station's drainage areas is shown on Figure 5-1.

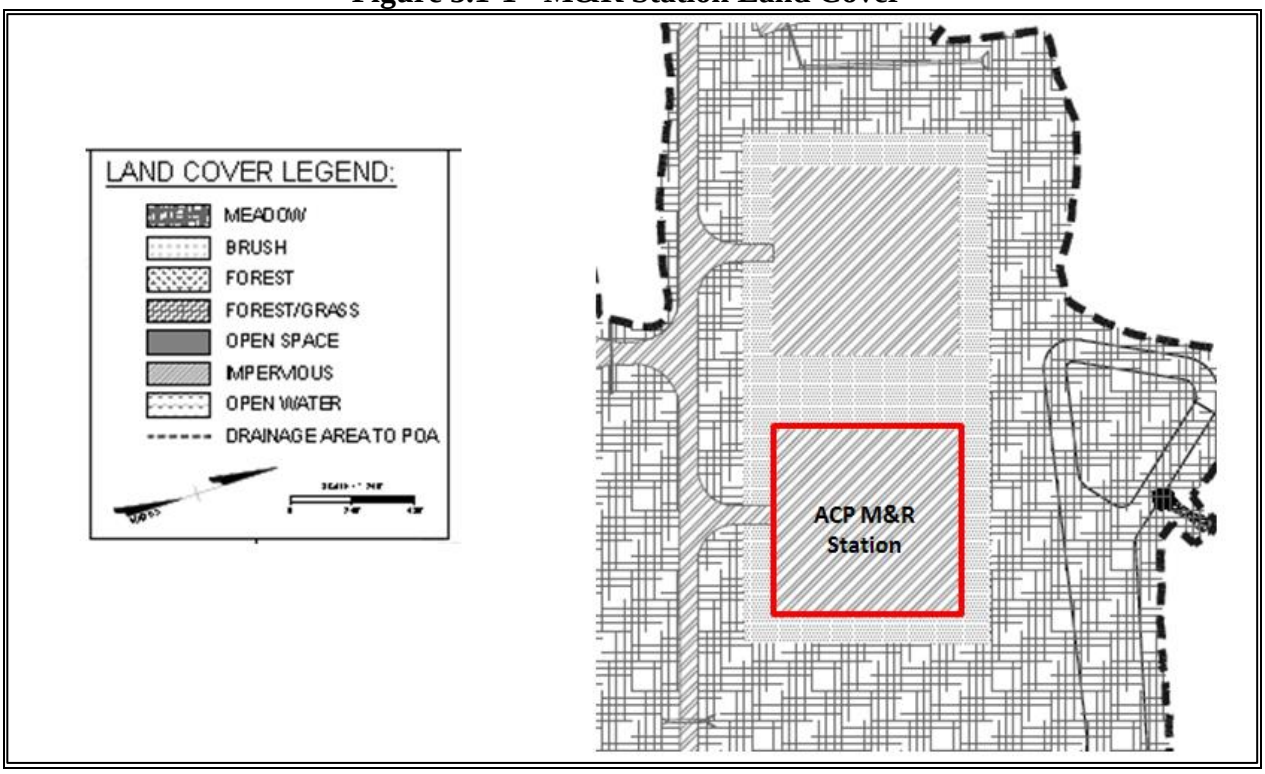
Figure 5-1 Power Station Drainage Areas



5.1 PRE-DEVELOPMENT AND POST-DEVELOPMENT DRAINAGE AREAS

The stormwater calculations performed for the Power Station accounted for the gravel cover land use of the M&R Station, therefore there are no changes to the imperviousness, runoff coefficients, or management practices that will need to be addressed during the construction of the M&R Station. Figure 5.1-1 below depicts land cover specifically at the M&R Station.

Figure 5.1-1 M&R Station Land Cover



Delineation of the drainage watersheds and proposed management practices are shown on the Site Plan in Attachment 1. The Site Plan depicts the proposed land uses with the imperviousness of the entire site to be adapted to various uses, including but not limited to planned locations of utilities, roads, and parking lots. The Site Plan also shows the final drainage patterns and flow paths of the stormwater, in addition to the relationship of the site to upstream and downstream properties and drainage systems. The M&R Station is located within a 500-year FEMA floodplain.

Stormwater quality and quantity calculations are discussed in Section 5.2 below.

5.2 PRE-DEVELOPMENT AND POST-DEVELOPMENT STORMWATER CALCULATIONS

5.2.1 Water Quantity

A hydrologic analysis for the existing (pre-development) and for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations are presented in this section.

Channel protection and flood protection will be addressed in accordance with the minimum standards set forth in 9 VAC 25-870-66, which are established pursuant to the requirements of § 62.1-44.15:28 of the Code of Virginia. Compliance with the minimum standards set out in this section will be deemed to also satisfy the requirements of Minimum

Standard 19 of 9 VAC 25-840-40 (Minimum Standards; Virginia Erosion and Sediment Control Regulations, Section 4.0).

5.2.1.1 Channel Protection

Since stormwater flow from the M&R Station will be released into a natural stormwater conveyance system, compliance with channel protection requirements is assessed based on the maximum peak flow rate from the one-year 24-hour storm following the land-disturbing activity. The supporting calculations from the Power Station stormwater management design for the drainage area in which the M&R Station is located, POA 3, are provided in Attachment 1.

5.2.1.2 Flood Protection

Concentrated stormwater flow will be released into a stormwater conveyance system and will meet the following criteria from 9 VAC 25-870-66(C)-1 and 9 VAC 25-870-66(D) as demonstrated by use of acceptable hydrologic and hydraulic methodologies:

- Concentrated stormwater flow to stormwater conveyance systems which currently do not experience localized flooding during the 10-year, 24-hour storm event:
    - The point of discharge releases stormwater into a stormwater conveyance system which following the land-disturbing activity, confines the post-development peak flow rate from the 10-year, 24-hour storm event within the stormwater conveyance system. Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the VSMP authority.

- Increased volumes of sheet flow resulting from pervious or disconnected impervious areas, or from physical spreading of concentrated flow through level spreaders, will be identified and evaluated for potential impacts on down-gradient properties or resources. Increased volumes of sheet flow that will cause or contribute to erosion, sedimentation, or flooding of down gradient properties or resources will be diverted to a stormwater management facility or a stormwater conveyance system that conveys the runoff without causing down-gradient erosion, sedimentation, or flooding. If all runoff from the site is sheet flow and the conditions of this subsection are met, no further water quantity controls are required.

The supporting calculations from the Power Station stormwater management design for the drainage area in which the M&R Station is located, POA 3, are provided in Attachment 1.

5.2.2 Water Quality

In order to protect the quality of Commonwealth waters and to control the discharge of stormwater pollutants from regulated activities, the following minimum design criteria and statewide standards for stormwater management will be applied to the site in accordance with

9 VAC 25-870-63. The total phosphorus load of new development projects will not exceed 0.41 pounds per acre per year, as calculated pursuant to 9 VAC 25-870-65.

As part of the Power Station stormwater management design, water quality analysis was performed for the entire 475-acre Power Station project, which includes the M&R Station. Water quality requirements for the M&R Station are addressed by Detention Pond 3 in drainage area POA 3. The supporting calculations, extracted from the Power Station stormwater management design, are provided in Attachment 1.

5.2.3 Nutrient Trading Program

Water quality compliance for the Power Station was achieved during design; therefore no nutrient credits will need to be purchased for the M&R Station.

5.3 POST-CONSTRUCTION/PERMANENT BEST MANAGEMENT PRACTICES

5.3.1 Retention Pond

In accordance with VDEQ Stormwater Design Specification No. 14 (**Wet Pond**), DETI will adhere to the following general construction and maintenance specifications at the M&R Station to promote a better environment for gravitational settling, biological uptake, and microbial activity. Runoff from each new storm enters the pond and partially displaces pool water from previous storms. The pool acts as a barrier to re-suspension of sediments and other pollutants deposited during prior storms. A retention pond is located southwest of the M&R Station, as shown on the Site Plan (Attachment 1).

In addition, the following constraints will be observed:

- The surface area of a wet pond will normally be at least 1 to 3 percent of its contributing drainage area, depending on the pond's depth.
- A contributing drainage area of 10 to 25 acres is typically recommended for wet ponds to maintain constant water elevations.
- The depth of a wet pond is usually determined by the hydraulic head available on the site. The bottom elevation is normally the invert of the existing downstream conveyance system to which the wet pond discharges. Typically, a minimum of 6 to 8 feet of head are needed for a wet pond to function.

5.3.1.1 Long-term Maintenance

In accordance with DETI's Standards and Specifications, long-term maintenance of structural SWM facilities must be conducted in accordance with 9 VAC 25-870-112. To be consistent with the provisions of 9 VAC 25-870-112, maintenance plans for the stormwater facilities must be submitted to DETI for formal review and approval prior to initiating the land disturbing activity, made available to VDEQ upon request, and must provide for inspections and

maintenance and the submission of inspection and maintenance reports to the VDEQ. DETI transmission easements over land under which permanent stormwater management facilities will be placed must further assure the following:

- Be stated to run with the land;
- Provide for all necessary access to the property for purposes of maintenance and regulatory inspections; and
- Be enforceable by all appropriate governmental parties.

According to VDEQ Stormwater Design Specification No. 14 (**Wet Pond**), all wet ponds must be covered by a drainage easement to allow inspection and maintenance.

5.3.1.2 Inspections and Ongoing Maintenance

Maintenance of a wet pond is driven by annual inspections that evaluate the condition and performance of the pond, including the following:

- Measure sediment accumulation levels in the forebay.
- Inspect the condition of stormwater inlets to the pond for material damage, erosion, or undercutting.
- Inspect the banks of upstream and downstream channels for evidence of sloughing, animal burrows, boggy areas, woody growth, or gully erosion that may undermine embankment integrity.
- Inspect the pond outfall channel for erosion, undercutting, rip-rap displacement, woody growth, etc.
- Inspect the condition of the principal spillway and riser for evidence of spalling, joint failure, leakage, corrosion, etc.
- Inspect the condition of all trash racks, reverse-sloped pipes, or flashboard risers for evidence of clogging, leakage, debris accumulation, etc.
- Inspect maintenance access to ensure it is free of woody vegetation, and check to see whether valves, manholes, and locks can be opened and operated.
- Inspect internal and external side slopes of the pond for evidence of sparse vegetative cover, erosion, or slumping, and make needed repairs immediately. Based on inspection results, specific maintenance tasks will be triggered.

Maintenance is needed so stormwater ponds continue to operate as designed on a long-term basis. Wet ponds normally have fewer routine maintenance requirements than other stormwater control measures. Stormwater pond maintenance activities vary regarding the level

of effort and expertise required to perform them. Routine stormwater pond maintenance, such as mowing and removing debris and trash, is needed several times each year (see Table 5.3.1-1). More significant maintenance (e.g., removing accumulated sediment) is needed less frequently but requires more skilled labor and special equipment. Inspection and repair of critical structural features (e.g., embankments and risers) needs to be performed by a qualified professional (e.g., a structural engineer) who has experience in the construction, inspection, and repair of these features. The maintenance plan should clearly outline how vegetation in the pond and its buffer will be managed or harvested in the future. Periodic mowing of the stormwater buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer can be managed as a meadow (mowing every other year) or forest. The maintenance plan should schedule a shoreline cleanup at least once a year to remove trash and floatables.

Table 5.3.1-1

Typical Wet Pond Maintenance Tasks and Frequency

Maintenance Items	Frequency
Mowing – twice a year Remove debris and blockages Repair undercut, eroded, and bare soil areas	Quarterly or after major storms (>1 inch of rainfall)
Mowing	Twice a year
Shoreline cleanup to remove trash, debris, and floatables A full maintenance inspection Open up the riser to access and test the valves Repair broken mechanical components, if needed	Annually
Pond buffer and aquatic bench reinforcement plantings	One time – during the second year following construction
Forebay sediment removal	Every 5 to 7 years
Repair pipes, the riser and spillway, as needed	From 5 to 25 years

5.3.2 Permanent Seeding and Mulching

A *Restoration and Rehabilitation Plan* was prepared for the ACP to address post-construction restoration and rehabilitation activities. Refer to the Restoration and Rehabilitation Plan (Appendix R of the Virginia ACP SWPPP) for VESCH **Std. & Spec. 3.32 (Permanent Seeding)** and VESCH **Std. & Spec. 3.35 (Mulching)**. Specifically for seedbed preparation, seed mix selection, seeding methods, lime and fertilizer application, mulching, and supplemental planting.

In accordance with Virginia Minimum Standards (MS-1), permanent or temporary soil stabilization will be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site. Temporary soil stabilization will be applied within seven (7) days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization will be applied to areas that are to be left dormant for more than one (1) year. A permanent vegetative cover will be established on denuded areas not otherwise permanently stabilized. Permanent vegetation will not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

6.0 POLLUTION PREVENTION PRACTICES AND PROCEDURES

The same pollution prevention practices and procedures provided in Section 6.0 of the main body of the SWPPP will be used at the M&R Station, as applicable.

7.0 ROLES AND RESPONSIBILITIES

DETI will use the same qualified personnel and Responsible Land Disturber at the M&R Station as identified in Section 7.0 in the main body of the SWPPP.

8.0 INSPECTION AND MAINTENANCE

The same inspection and maintenance requirements provided in Section 8.0 in the main body of the SWPPP are applicable to the M&R Station, with the exception of representative inspections which only apply to the pipeline right-of-way.

9.0 EMPLOYEE TRAINING

The employee training program described in Section 9.0 in the main body of the SWPPP applies to the M&R Station.

10.0 NOTIFICATION, RECORDKEEPING, AND REPORTING

Refer to Section 10.0 of the main body of the SWPPP for notification, recordkeeping, and reporting requirements.

In addition, according to DETI's Standards and Specifications for projects requiring post-construction SWM BMPs, DETI must report the following annually each year to VDEQ:

- number and types of SWM BMPs installed;
- geographic coordinates of each BMP;
- drainage area or watershed size served; and
- receiving stream or hydrologic unit.

11.0 REFERENCES

Dominion Energy Transmission, Inc. 2017. Standards and Specification for Erosion and Sediment Control and Stormwater Management for Construction and Maintenance of Gas Transmission Projects in Virginia. June 2017.

LandScope America. 2014. *Mid-Atlantic Coastal Plain.* Available online at http://www.landcope.org/explore/natural_geographies/ecoregions/Mid-Atlantic%20Coastal%20Plain/. Accessed October 2014.

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Virginia Department of Environmental Quality. 2011 *Virginia A DEQ Stormwater Design Specification No. 2* Version 1.9. Available online at Virginia Stormwater BMP Clearinghouse at http://www.vwrrc.vt.edu/swc/. Accessed December 2016.

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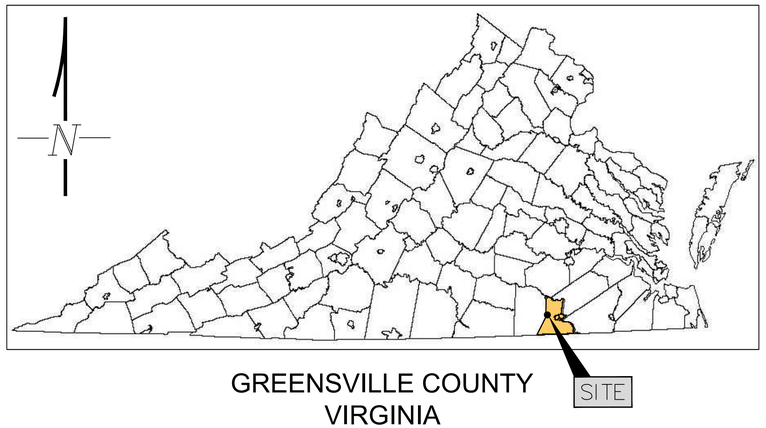
Virginia Department of Environmental Quality. 2015. Final 2014 305(b)/303(d) Water Quality Assessment Integrated Report; GIS Data. Available online at http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityAssessments/2014305(b)303(d)IntegratedReport.aspx. Accessed November 2016.

ATTACHMENT 1

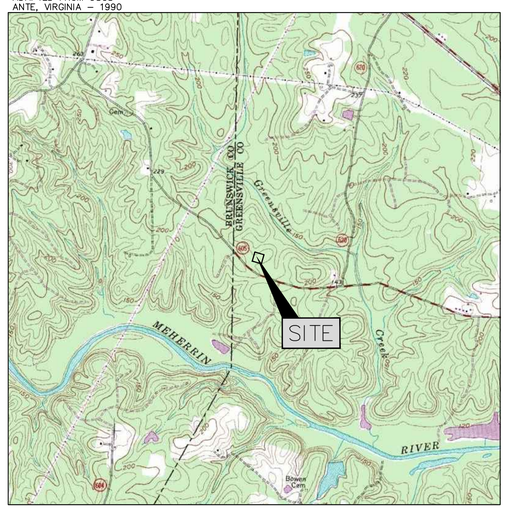
Erosion and Sediment Control and Stormwater Management Drawings and Supporting Calculations

GREENSVILLE M&R STATION
EROSION AND SEDIMENT CONTROL PLAN AND
POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN



GREENSVILLE COUNTY
VIRGINIA

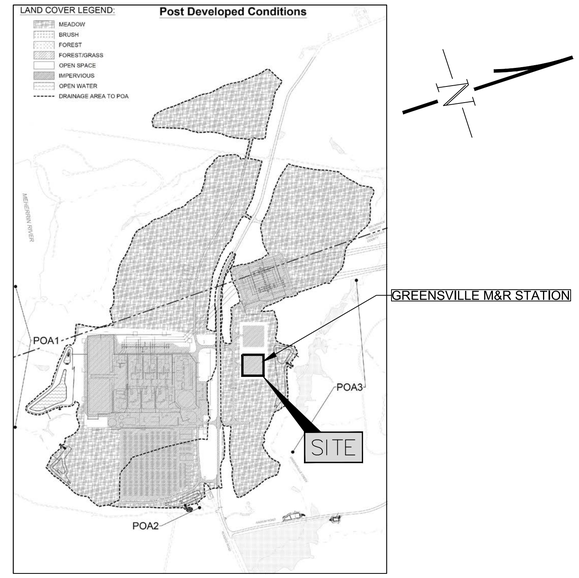
ADAPTED FROM USGS
ANTE, VIRGINIA – 1990



36° 43' 16.8"N
77° 39' 14.74"W (NAD83)
GREENSVILLE COUNTY, VIRGINIA

SITE LOCATION MAP

0 2000 4000
APPROXIMATE
SCALE (IN FEET)



SITE VICINITY MAP

0 900 1800
APPROXIMATE
SCALE (IN FEET)

GENERAL NOTES

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50–30 EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE–CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF–SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
8. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
9. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF–PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

LIST OF DRAWINGS

DRAWING NO.	TITLE
PD Z9950B	EROSION AND SEDIMENT CONTROL COVER SHEET
PD Z9950C	EROSION AND SEDIMENT CONTROL SITE PLAN
PD Z9950D	EROSION AND SEDIMENT CONTROL DETAILS

PROJECT NARRATIVE

PROJECT AND SITE DESCRIPTION

AS PART OF THE ATLANTIC COAST PIPELINE (ACP) PROJECT, DOMINION TRANSMISSION INC. (DTI) IS PROPOSING TO CONSTRUCT AN APPROXIMATELY 1.5–ACRE ABOVEGROUND METERING AND REGULATING STATION AT 2500 ROGERS ROAD IN EMPORIA, VIRGINIA. THIS STATION, REFERRED TO AS THE GREENSVILLE M&R STATION (M&R STATION), WILL BE CO–LOCATED WITH THE VIRGINIA ELECTRIC AND POWER COMPANY (VEP) GREENSVILLE ELECTRIC POWER STATION. THE M&R STATION WILL BE LOCATED AT MILEPOST 1.0 OF THE AP–5 LATERAL SECTION OF THE ACP PIPELINE, WITHIN GREENSVILLE COUNTY, VA. THE APPROXIMATELY 1.5–ACRE RECTANGULAR TRACT OF LAND IS LOCATED ALONG THE NORTHERN PROPERTY BOUNDARY OF A LARGER PARCEL TO BE DEVELOPED INTO THE GREENSVILLE ELECTRIC POWER STATION (POWER STATION). THE LARGER PARCEL IS IDENTIFIED IN THE CITY OF GREENSVILLE RECORDS AS PARCEL NUMBER 18–35 WITH A PROPERTY ADDRESS OF 2500 ROGERS ROAD. THE GENERAL VICINITY AROUND THE M&R STATION IS UNDEVELOPED/CLEARED PROPERTY.

EXISTING SITE CONDITIONS

THE TOPOGRAPHY AT THE M&R STATION IS CHARACTERIZED BY FLAT TO GENTLY SLOPING TERRAIN WITH AN ELEVATION OF APPROXIMATELY 170 FEET ABOVE MEAN SEA LEVEL. THE PROPOSED DEVELOPMENT WILL RETAIN THE EXISTING TOPOGRAPHY OF FLAT TO GENTLY SLOPING TERRAIN WITH GRADING TO DIRECT STORMWATER TOWARD A RETENTION POND PLANNED TO BE LOCATED NORTH OF THE PROPOSED M&R STATION.

THE FULL PROJECT NARRATIVE HAS BEEN PROVIDED IN THE STORMWATER POLLUTION PREVENTION PLAN, APPENDIX H, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN FOR THE GREENSVILLE M&R STATION.

NOTE:
SITE VICINITY MAP PROVIDED BY FLUOR AND TIMMONS GROUP. MAP ENTITLED WATER QUANTITY - LAND COVER FOR POA1 - POA3 WAS PROVIDED FOR THE VIRGINIA ELECTRIC AND POWER COMPANY GREENSVILLE COUNTY POWER STATION OVERALL STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL PLANS.

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	01/13/17	TS	ISSUED FOR REVIEW	0345197.011	SL

COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management

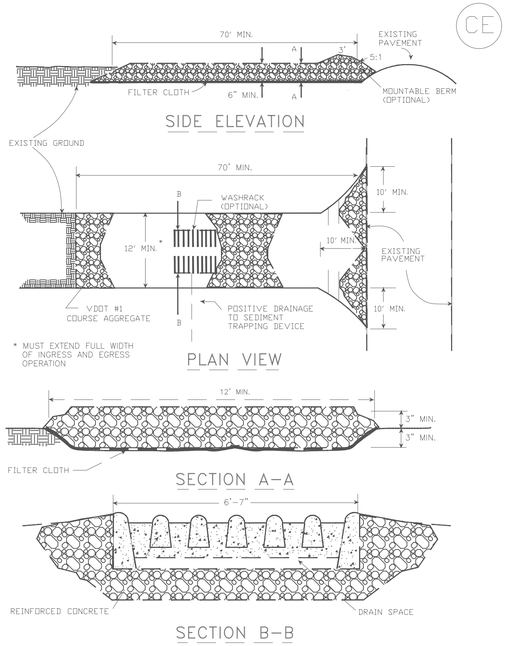
DRAWN:	YMT	01/11/17
CHECKED:	KC	01/13/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

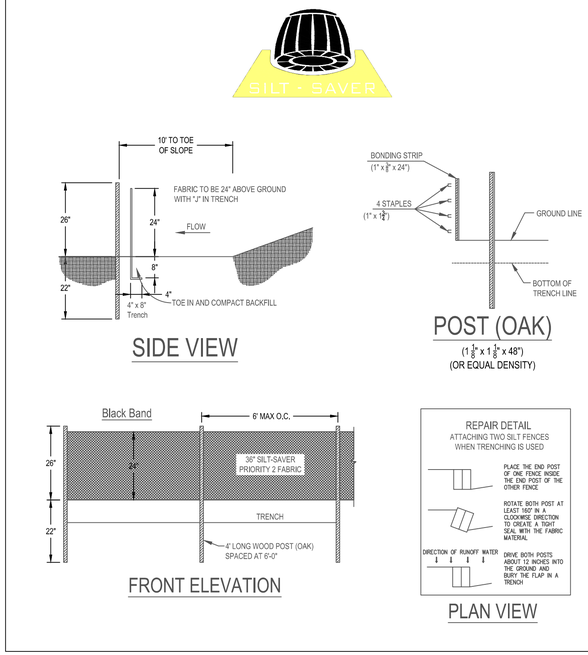
TITLE: **GREENSVILLE M&R STATION**
EROSION AND SEDIMENT CONTROL COVER SHEET

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
EMPORIA	GREENSVILLE	VA	PD	Z9950B	0

DIR/FILE: ACP\Virginia\M&R Stations\Greensville\ESC



1 / Z9950C TEMPORARY STONE CONSTRUCTION ENTRANCE
NOT TO SCALE



1 / Z9950C BELTED SILT RETENTION FENCE PRIORITY 2 (BSRF2)
NOT TO SCALE

SEQUENCE OF CONSTRUCTION:

1. A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE PRIOR TO START OF CONSTRUCTION ACTIVITIES.
2. INSTALL BELTED SILT RETENTION FENCE AS SHOWN ON PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
3. BEGIN CLEARING AND GRUBBING SITE AS NEEDED.
4. GRADE SITE ACCORDING TO THE CONTRACT DOCUMENTS. MAINTAIN EROSION CONTROL DEVICES AS NEEDED.
5. GRASS OR OTHERWISE STABILIZE ALL AREAS AS THEY ARE BROUGHT TO FINAL GRADES.
6. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES TO MINIMIZE EROSION. INSPECT AND REPAIR MEASURES AFTER EACH RAINFALL AND AS NEEDED THROUGHOUT THE PROJECT.
7. CONTRACTOR TO LEAVE ALL EROSION CONTROL DEVICES IN PLACE AT THE CONCLUSION OF THIS CONTRACT. CONTRACTOR IS TO CLEAN-OUT, REPAIR AND GRASS STABILIZE ALL DENUDED AREAS. ALL AREAS WILL BE RETURNED TO THE STATE OF EXISTING CONDITIONS PRIOR TO CONTRACT AS A MINIMUM.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTAIN SEDIMENT ONSITE. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY THE ENGINEER.
9. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENTATION CONTROL HANDBOOK (VESCH) (1992, 3RD EDITION) STANDARDS AND SPECIFICATIONS.

TEMPORARY STONE CONSTRUCTION ENTRANCE NOTES

1. VDOT #1 COARSE AGGREGATE (2- TO 3-INCH STONE) SHOULD BE USED.
2. AGGREGATE LAYER SHALL BE AT LEAST 6 INCHES THICK; A MINIMUM THREE INCHES OF AGGREGATE SHALL BE PLACED IN A CUT SECTION TO GIVE THE ENTRANCE ADDED STABILITY AND TO HELP SECURE FILTER CLOTH SEPARATOR. AGGREGATE LAYER MUST EXTEND THE FULL WIDTH OF THE VEHICULAR INGRESS AND EGRESS AREA AND HAVE A MINIMUM 12-FOOT WIDTH.
3. LENGTH OF THE ENTRANCE SHALL BE AT LEAST 70 FEET.
4. ENTRANCE SHALL BE EXCAVATED A MINIMUM OF 3 INCHES AND MUST BE CLEARED OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL BEFORE FILTER FABRIC UNDERLINER IS PLACED.
5. FILTER FABRIC UTILIZED SHALL BE A WOVEN OR NONWOVEN FABRIC CONSISTING ONLY OF CONTINUOUS CHAIN POLYMERIC FILAMENTS OR YARNS OF POLYESTER. FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS, BE MILDEW AND ROT RESISTANT, AND CONFORM TO THE PHYSICAL PROPERTIES NOTED IN TABLE 3.02-A OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) (1992, 3RD EDITION) STANDARDS AND SPECIFICATIONS.

TEMPORARY STONE CONSTRUCTION ENTRANCE MAINTENANCE NOTES

1. ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY.
2. IF ANY INADVERTENT SEDIMENT TRACKING OCCURS ON THE PUBLIC ROADWAY, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY.
3. ENTRANCE MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT.
4. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
5. THE USE OF WATER TRUCKS TO REMOVE MATERIALS DROPPED, WASHED, OR TRACKED ONTO ROADWAYS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.

BELTED SILT RETENTION FENCE - PRIORITY 2 NOTES

1. CONTRACTOR WILL UTILIZE THE BSRF2 MEDIUM-DUTY SILT FENCE CONSTRUCTED WITH A 36-INCH, NON-WOVEN, SPUN-BOND FABRIC THAT IS CALENDARED ON ONE SIDE.
2. BSRF2 SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS PROVIDED IN THE STORMWATER POLLUTION PREVENTION PLAN, APPENDIX F, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN FOR GREENSVILLE M&R STATION, APPENDIX A.

BELTED SILT RETENTION FENCE - PRIORITY 2 MAINTENANCE NOTES

1. BSRF2 SHALL BE INSPECTED AT THE END OF EACH WORK DAY AND IMMEDIATELY AFTER EACH RAINFALL EVENT. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS.
2. ACCUMULATED SEDIMENT SHOULD BE REMOVED AFTER EACH STORM EVENT AND WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE FENCE TO PREVENT FAILURES.
3. ANY DEPOSITS REMAINING IN PLACE AFTER THE FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

GENERAL NOTES AND COMMENTS:

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	01/13/17	TS	ISSUED FOR REVIEW	0345197.011	SL

COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management

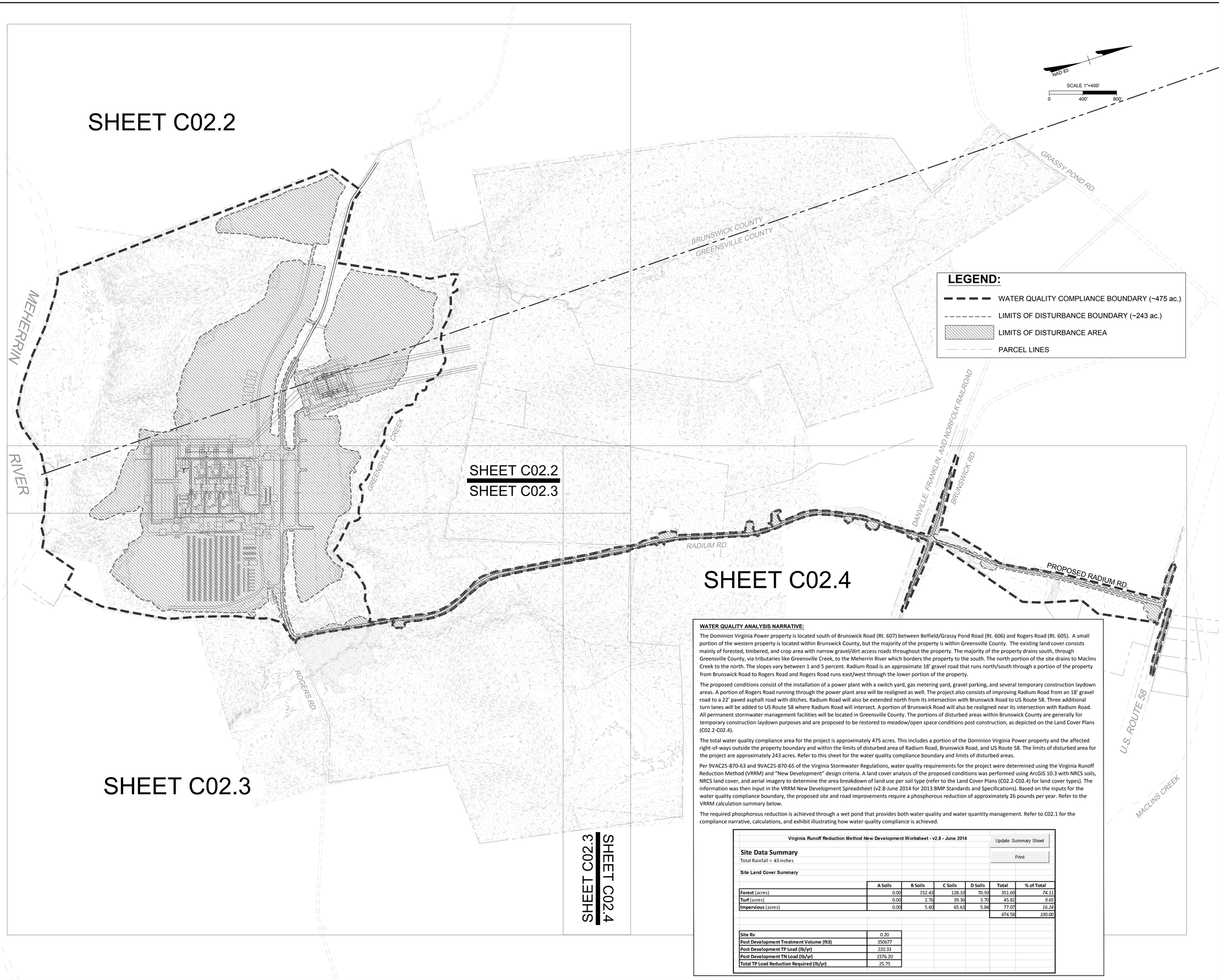
DRAWN:	YMT	01/13/17
CHECKED:	KC	01/13/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: **GREENSVILLE M&R STATION EROSION AND SEDIMENT CONTROL DETAILS**

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
EMPORIA	GREENSVILLE	VA	PD	Z9950D	0

DIR/FILE: ACP\Virginia\M&R Stations\Greensville\ESC



WATER QUALITY ANALYSIS NARRATIVE:

The Dominion Virginia Power property is located south of Brunswick Road (Rt. 607) between Belfield/Grassy Pond Road (Rt. 606) and Rogers Road (Rt. 605). A small portion of the western property is located within Brunswick County, but the majority of the property is within Greensville County. The existing land cover consists mainly of forested, timbered, and crop area with narrow gravel/dirt access roads throughout the property. The majority of the property drains south, through Greensville County, via tributaries like Greensville Creek, to the Meherrin River which borders the property to the south. The north portion of the site drains to Maclins Creek to the north. The slopes vary between 1 and 5 percent. Radium Road is an approximate 18' gravel road that runs north/south through a portion of the property from Brunswick Road to Rogers Road and Rogers Road runs east/west through the lower portion of the property.

The proposed conditions consist of the installation of a power plant with a switch yard, gas metering yard, gravel parking, and several temporary construction laydown areas. A portion of Rogers Road running through the power plant area will be realigned as well. The project also consists of improving Radium Road from an 18' gravel road to a 22' paved asphalt road with ditches. Radium Road will also be extended north from its intersection with Brunswick Road to US Route 58. Three additional turn lanes will be added to US Route 58 where Radium Road will intersect. A portion of Brunswick Road will also be realigned near its intersection with Radium Road. All permanent stormwater management facilities will be located in Greensville County. The portions of disturbed areas within Brunswick County are generally for temporary construction laydown purposes and are proposed to be restored to meadow/open space conditions post construction, as depicted on the Land Cover Plans (C02.2-C02.4).

The total water quality compliance area for the project is approximately 475 acres. This includes a portion of the Dominion Virginia Power property and the affected right-of-ways outside the property boundary and within the limits of disturbed area of Radium Road, Brunswick Road, and US Route 58. The limits of disturbed area for the project are approximately 243 acres. Refer to this sheet for the water quality compliance boundary and limits of disturbed areas.

Per 9VAC25-870-63 and 9VAC25-870-65 of the Virginia Stormwater Regulations, water quality requirements for the project were determined using the Virginia Runoff Reduction Method (VRRM) and "New Development" design criteria. A land cover analysis of the proposed conditions was performed using ArcGIS 10.3 with NRCS soils, NRCS land cover, and aerial imagery to determine the area breakdown of land use per soil type (refer to the Land Cover Plans (C02.2-C02.4) for land cover types). The information was then input in the VRRM New Development Spreadsheet (v2.8-June 2014 for 2013 BMP Standards and Specifications). Based on the inputs for the water quality compliance boundary, the proposed site and road improvements require a phosphorous reduction of approximately 26 pounds per year. Refer to the VRRM calculation summary below.

The required phosphorous reduction is achieved through a wet pond that provides both water quality and water quantity management. Refer to C02.1 for the compliance narrative, calculations, and exhibit illustrating how water quality compliance is achieved.

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

Update Summary Sheet

Print

Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	152.43	128.33	70.93	351.69	*74.11*
Turf (acres)	0.00	2.76	39.36	3.70	45.82	*9.65*
Impervious (acres)	0.00	5.60	65.63	5.84	77.07	*16.24*
					474.58	*100.00*

Site Rv	0.20
Post Development Treatment Volume (ft3)	350677
Post Development TP Load (lb/yr)	220.33
Post Development TN Load (lb/yr)	1576.20
Total TP Load Reduction Required (lb/yr)	25.75

COMMONWEALTH OF VIRGINIA
AMELIA WEHUNT
Lic. No. 049325
05/24/16
PROFESSIONAL ENGINEER

NOTE: THESE PLANS ARE NOT FOR CONSTRUCTION.

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10/08/2015	REVISED PER VOLUMES I, II, & IV CONSTRUCTION DOCUMENTS
11/20/2015	REVISED PER VOLUME IV'S CONSTRUCTION REVISIONS I & 2
12/18/2015	REVISED PER VOLUME I V.D.O.T. COMMENTS
01/22/2016	REVISED PER VOLUME II V.D.O.T. COMMENTS
05/24/2016	REVISED PER VOLUMES I & IV CONSTRUCTION REVISIONS

DATE 7/21/2015
DRAWN BY C. NELSON
DESIGNED BY L. COFFMAN
CHECKED BY A. WEHUNT
SCALE 1"=400'

TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUALITY - POST DEVELOPED VRRM LAND COVER KEY PLAN

JOB NO. 36730
SHEET NO. C02.0

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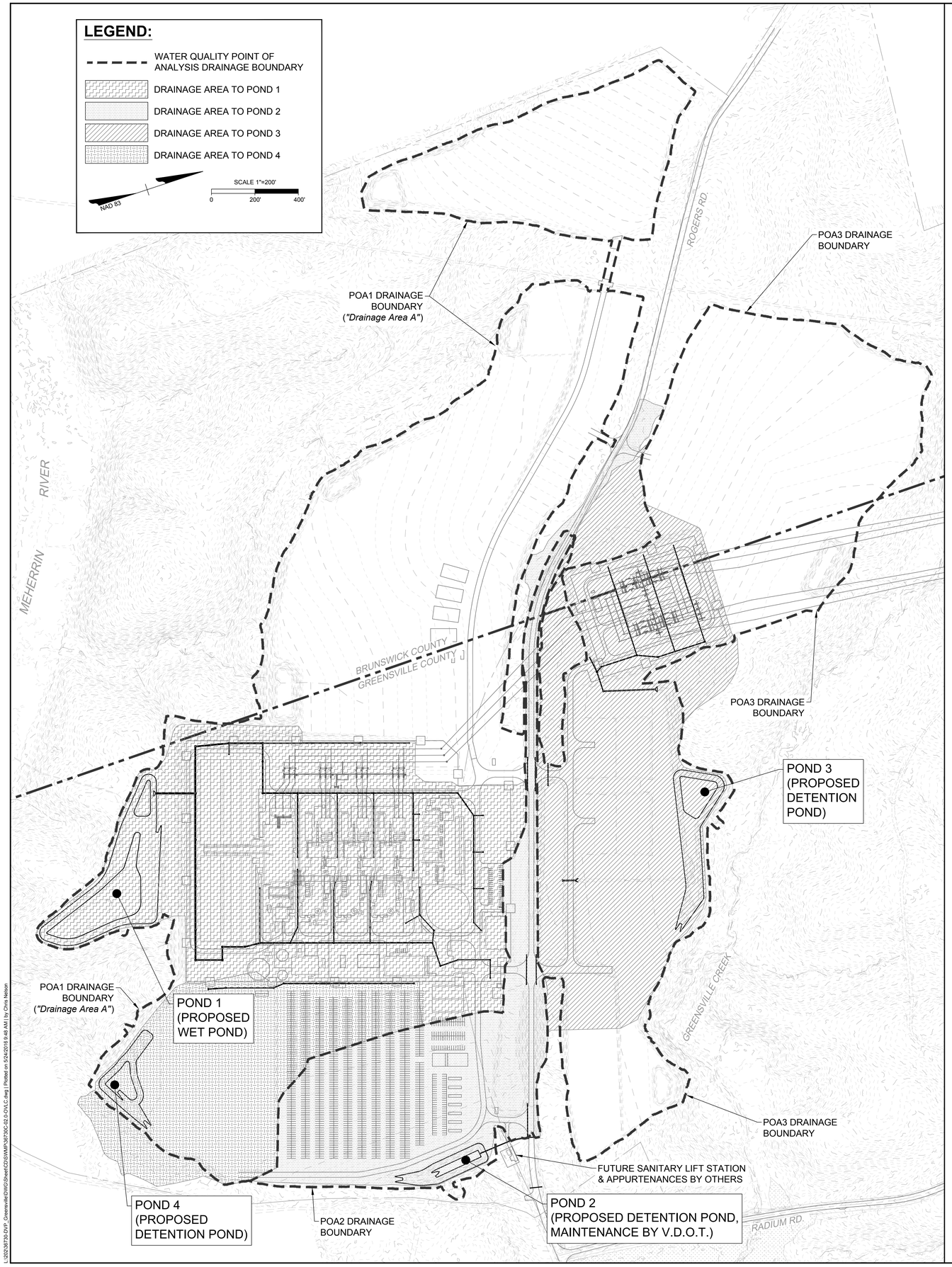

WATER QUALITY COMPLIANCE NARRATIVE:

In order to achieve the phosphorus removal requirement of approximately 26 pounds per year (as demonstrated by calculations shown on C02.0), one wet pond has been proposed within the Dominion power plant site area. The Dominion site was divided into three sub-watersheds that outfall to three points of analysis (POA1, POA2, and POA3). Within the POA1 drainage boundary one wet pond and one detention pond are proposed, within the POA 2 drainage boundary one detention pond is proposed, and within the POA3 drainage boundary one detention pond is proposed. The four permanent ponds are all within Greensville County; therefore, no permanent facilities are located in Brunswick County.

A land cover analysis within each POA drainage boundary was performed using ArcGIS 10.3 with NRCS soils, NRCS land cover, and aerial imagery to determine the area breakdown of land use per soil type (refer to the Land Cover Plans for land cover assumptions). The information was then input in the VRRM New Development Spreadsheet (v2.8-June 2014 for 2013 BMP Standards and Specifications) "drainage area" tabs for each POA. Post-developed drainage areas were then delineated to each pond. The impervious and turf land cover areas within the wet pond's drainage area were calculated and input into the Wet Pond #1 cells (Practice #14 of the VRRM New Development Spreadsheet {v2.8-June 2014 for 2013 BMP Standards and Specifications}) for POA 1. As illustrated by the calculations on this sheet, the phosphorus removed by the pond is approximately 40 pounds per year which exceeds the phosphorus removal requirement of 26 pounds per year. Water quality compliance has been achieved.

Per 9VAC25-870-65 of the Virginia Stormwater Regulations, the wet pond will be designed to meet the Virginia DEQ Wet Pond Design Specification No. 14. Supporting calculations and further design details will be provided in the construction document design submittal.

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	76.49	0.00	0.00	0.00	0.00	*76.49*
Turf (acres)	13.70	0.00	0.00	0.00	0.00	*13.70*
Impervious (acres)	40.02	0.00	0.00	0.00	0.00	*40.02*
						130.21

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	40.04	0.00	0.00	0.00	0.00	*40.04*
TN Load Red. (lb/yr)	171.84	0.00	0.00	0.00	0.00	*171.84*

Phosphorus Reduction Summary

Total Runoff Volume Reduction (ft³)	0	
Total TP Load Reduction Achieved (lb/yr)	40	* Achieved through 1 Wet Pond
Total TN Load Reduction Achieved (lb/yr)	171.84	(See supporting calcs below)
Adjusted Post Development TP Load (lb/yr)	180.29	
Remaining Phosphorus Load Reduction (Lb/yr) Required	0.00	

Drainage Area A Summary (POA1)

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	43.57	24.41	8.51	76.49	*58.74*
Turf (acres)	0.00	0.11	13.59	0.00	13.70	*10.52*
Impervious (acres)	0.00	0.08	39.94	0.00	40.02	*30.73*
					130.21	

BMP Selections

BMP - Wet Pond (Pond 1)	**Credit Area = 45.52 acres**	**Downstream Practice - N/A**

Total Impervious Cover Treated (acres)	34.47
Total Turf Area Treated (acres)	10.92
Total TP Load Reduction Achieved in D.A. A (lb/yr)	40.04
Total TN Load Reduction Achieved in D.A. A (lb/yr)	171.84

COMMONWEALTH OF VIRGINIA
AMELIA WEHUNT
Lic. No. 049325
05/24/16
PROFESSIONAL ENGINEER

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05/24/2016	REVISED PER VOLUMES I & IV CONSTRUCTION REVISIONS

DATE
7/21/2015

DRAWN BY
C. NELSON

DESIGNED BY
L. COFFMAN

CHECKED BY
A. WEHUNT

SCALE
1"=200'

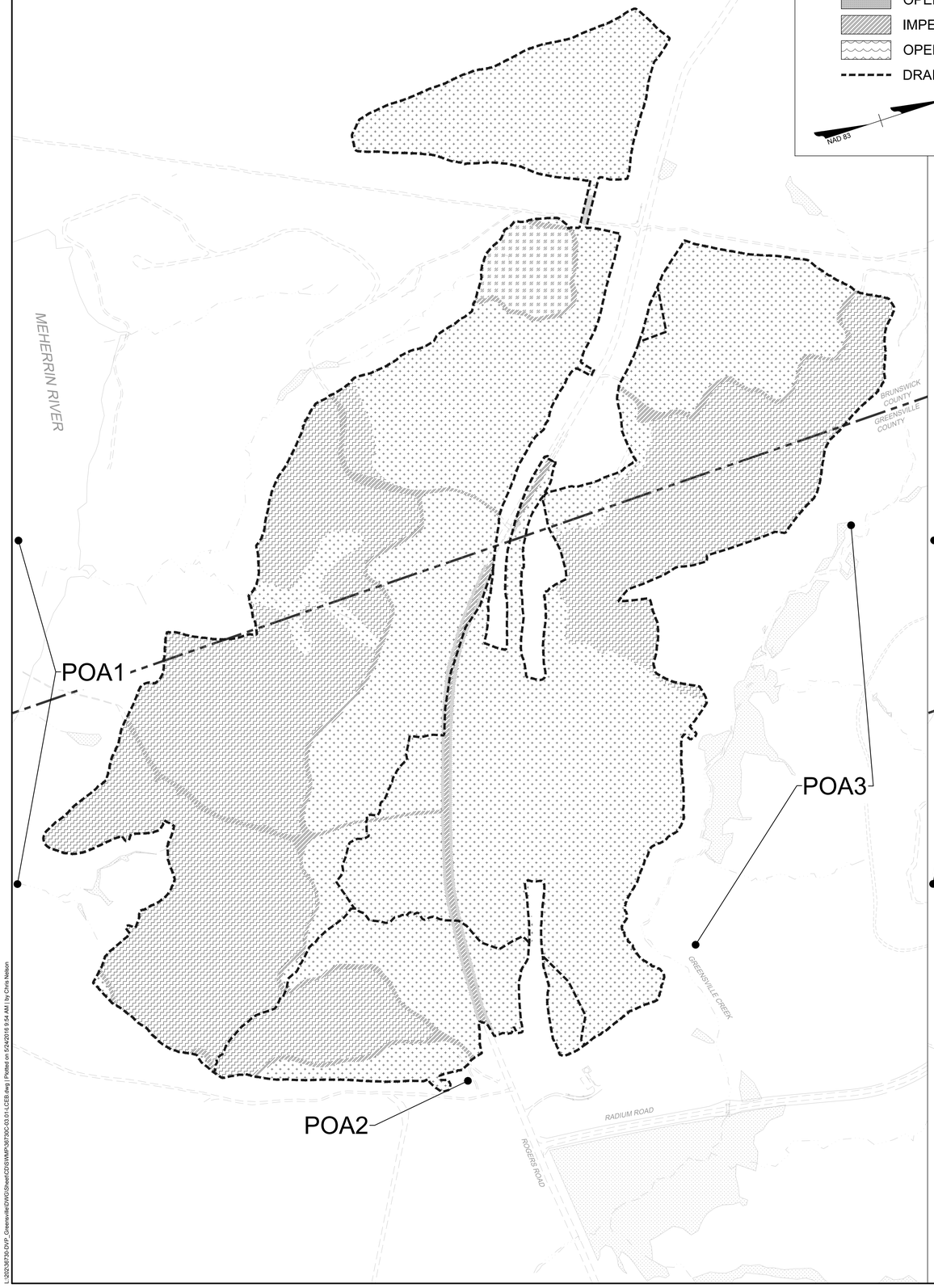
TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUALITY - VRRM COMPLIANCE CALCULATIONS

JOB NO.
36730

SHEET NO.
C02.1

Pre Developed Conditions



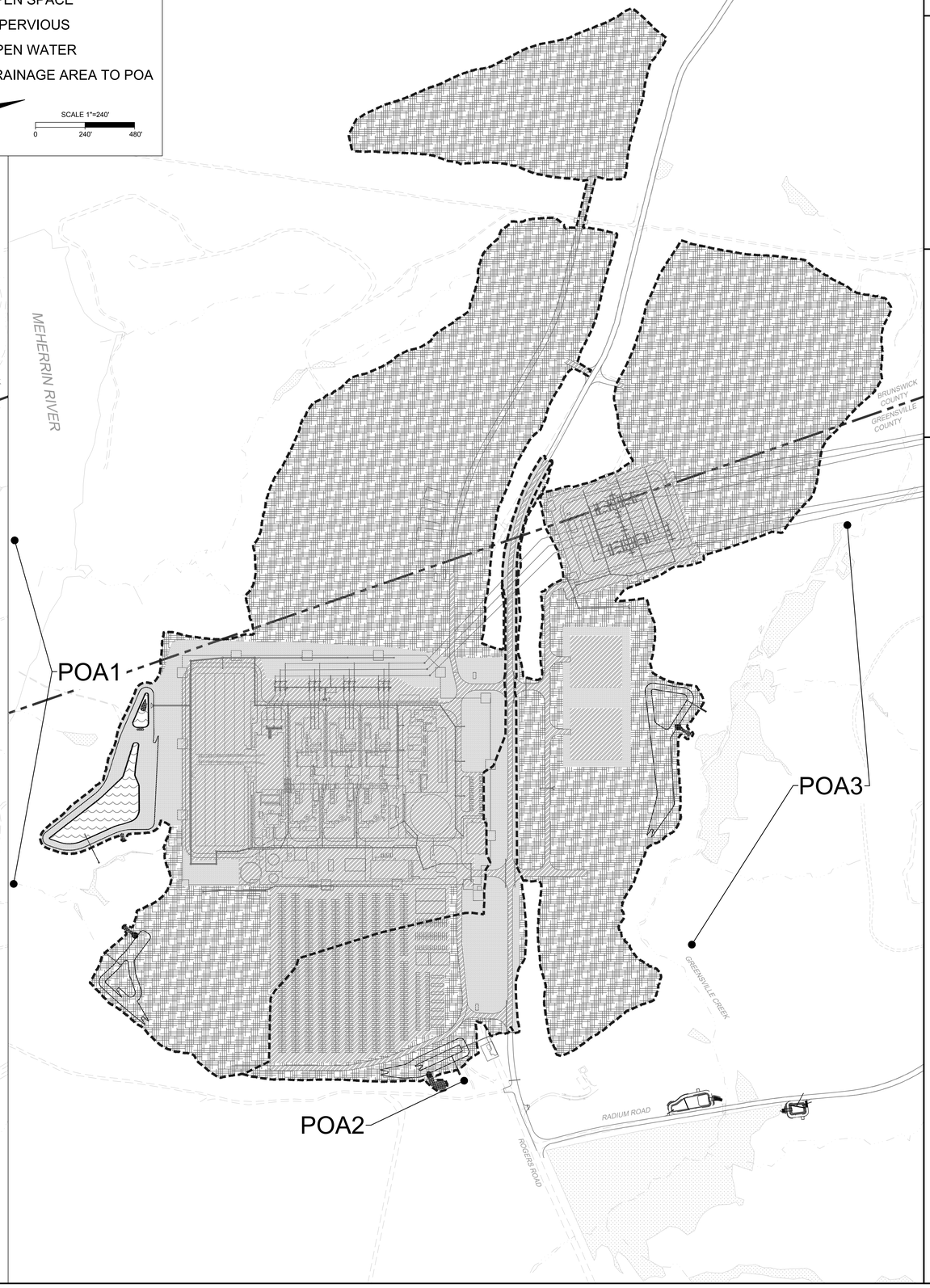
LAND COVER LEGEND:

- MEADOW
- BRUSH
- FOREST
- FOREST/GRASS
- OPEN SPACE
- IMPERVIOUS
- OPEN WATER
- DRAINAGE AREA TO POA

NAD 83

SCALE 1"=240'
0 240' 480'

Post Developed Conditions



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DATE: 7/21/2015
DRAWN BY: C. NELSON
DESIGNED BY: L. COFFMAN
CHECKED BY: A. WEHUNT
SCALE: 1"=240'

TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUANTITY - LAND COVER PLAN FOR POA1 - POA3

JOB NO. 36730
SHEET NO. C03.01

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POA 3 Pre Developed Conditions

SCALE 1"=150'
0 150' 300'
NAD 83

Water Quantity Site Boundary - Existing Conditions	
A=	88.33 ac
CN=	67.2
Tc=	48.84 min
$Q_{PRE\ (Site)}$	18.33 cfs

*Flows calculated in Pondpack V8i

ROGERS RD
BRUNSWICK COUNTY
GREENSVILLE COUNTY
GREENSVILLE CREEK
EXISTING Tc (TYP)
POA3
RADIUM RD

POA 3 Post Developed Conditions

SCALE 1"=150'
0 150' 300'
NAD 83

Energy Balance Equation

$Q_{DEV} </= IF*(Q_{PRE}*RV_{PRE})/RV_{DEV}$

IF=	0.8
Q_{PRE}	18.33 cfs
RV_{PRE}	0.47 in.
RV_{DEV}	0.63 in.
Q_{DEV}	**10.93 cfs (Based on Site Area to POA3)**

Water Quantity Site Boundary - Proposed Conditions	
A=	69.17 ac
CN=	71.3
Tc=	50.76 min
$Q_{POST\ (Site)}$	21.20 cfs

*Flows calculated in Pondpack V8i

ROGERS RD
BRUNSWICK COUNTY
GREENSVILLE COUNTY
GREENSVILLE CREEK
POND 3
POA3
PROPOSED Tc (TYP)
RADIUM RD

LEGEND:

- WATER QUANTITY COMPLIANCE SITE BOUNDARY
- RIGHT OF WAY
- FEMA FLOODPLAIN (ZONE A)
- EXISTING WETLANDS
- EXISTING CREEK
- TIME OF CONCENTRATION (TYP)

COMMONWEALTH OF VIRGINIA
AMELIA WEHUNT
Lic. No. 049325
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PROFESSIONAL ENGINEER

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DESIGNED BY L. COFFMAN
CHECKED BY A. WEHUNT
SCALE 1"=150'

TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUANTITY - ENERGY BALANCE ANALYSIS FOR POA3

JOB NO. 36730
SHEET NO. C03.31

Determine Storage Requirement for Energy Balance Using Sub-Drainage Area to Pond

SubArea Pond 3 - Proposed Conditions

DA to Pond 3 =	40.22	ac
CN	77.7	
Tc=	50.22	min
$Q_{POST\ (To\ Pond\ 3)}$	20.89	cfs

*Flows calculated in Pondpack V8i

SubArea 3A Unmanaged - Proposed Conditions

$DA\ 3A_{(Unmanaged)}$	29.83	ac
CN	61.0	
Tc=	47.88	min
$Q_{unmanaged}$	2.59	cfs

*Flows calculated in Pondpack V8i

SubArea 3C Unmanaged - Proposed Conditions

$DA\ 3C_{(Unmanaged)}$	5.74	ac
CN	71.0	
Tc=	50.76	min
$Q_{unmanaged}$	1.71	cfs

*Flows calculated in Pondpack V8i

SubArea 3B Unmanaged - Proposed Conditions

$DA\ 3B_{(Unmanaged)}$	0.61	ac
CN	75.0	
Tc=	5.00	min
$Q_{unmanaged}$	0.71	cfs

*Flows calculated in Pondpack V8i

$Q_{Allowable} = Q_{DEV} - \sum Q_{Unmanaged}$		
Q_{DEV} =	10.93	cfs
$\sum Q_{Unmanaged}$ =	5.01	cfs
$Q_{Allowable}$	5.92	cfs

$Q_{POST\ Managed\ (Site)}$ =	20.89	cfs
$Q_{Allowable}$	5.92	cfs (Energy Balance)
$Q_{Detention\ Required}$	14.97	cfs

Storage Required for 14.97 cfs = 39,841 cf

*Required Volume met in Pond 3

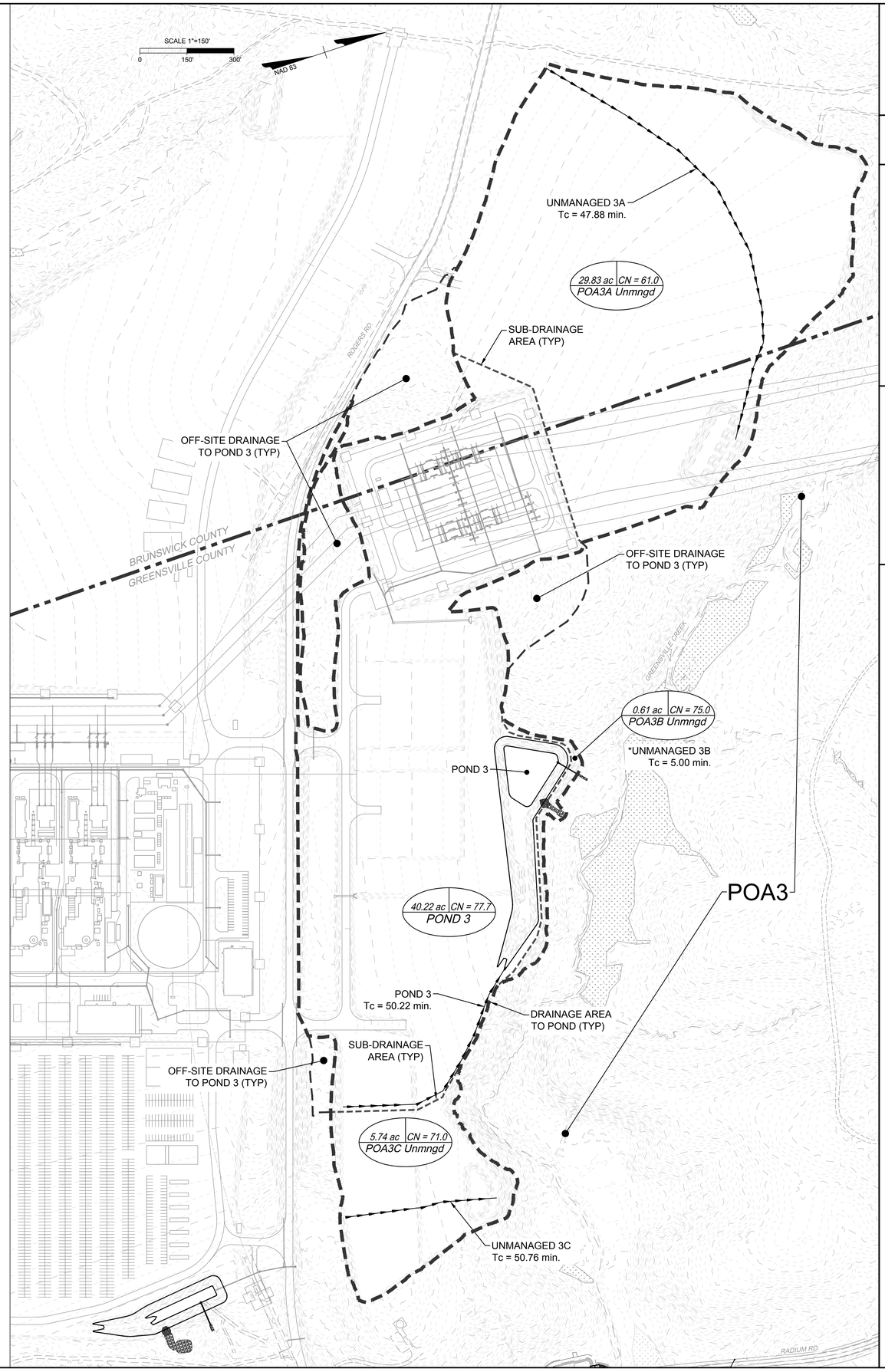
Therefore, provide storage for 14.97 cfs with sub-drainage areas in 1-yr, 24-hr storm to achieve required peak flow attentuation

$Q_{Pond\ Outflow\ (Pond\ 3)}$ =	2.94	cfs	*Flow calculated from routed pond in Pondpack V8i			
$\sum Q_{Unmanaged}$ =	5.01	cfs				
$Q_{Resultant\ for\ Site}$	7.95	cfs	<	Q_{DEV}	10.93	cfs Outfall Compliance Achieved for Energy Balance

Storage Configuration for Site Stormwater Management (SWM) Ponds

Storage Required for 14.97 cfs =	39,841	cf
Pond 3		
Storage Provided =	601,249	cf

*Volume found per Pondpack V8i



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REVISED PER VOLUMES I & IV CONSTRUCTION REVISIONS	05/24/2016

DATE
7/21/2015

DRAWN BY
C. NELSON

DESIGNED BY
L. COFFMAN

CHECKED BY
A. WEHUNT

SCALE
1"=150'

TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUANTITY - ENERGY BALANCE COMPLIANCE FOR POA3

JOB NO.
36730

SHEET NO.
C03.32

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:	X	Existing	**Project:**	36730 - DVP Greensville
		Proposed	**Subarea Number:**	Pre DA for POA 3
Off-Site Land Use:	X	Existing	**By:**	C. Nelson
		Proposed	**Date:**	5/24/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
B	Urban	Impervious Area - Paved; curbs and s	1.15	98	112.7
C	Urban	Impervious Area - Paved; curbs and s	0.72	98	70.6
B	Other Agricultural	Woods/Grass - Good	9.17	58	531.9
C	Other Agricultural	Woods/Grass - Good	15.17	72	1092.2
D	Other Agricultural	Woods/Grass - Good	0.08	79	6.3
C	Urban	Open Space - Good	0.85	74	62.9
B	Other Agricultural	Woods - Good	15.42	55	848.1
C	Other Agricultural	Woods - Good	44.79	70	3135.3
D	Other Agricultural	Woods - Good	0.96	77	73.9
B	Urban	Open Space - Good	0.02	61	1.2

Total Area			Weighted RCN =	
88.33 AC	0.138016 SQ MI			67.2
35.75 Hectares				

TIME OF CONCENTRATION

ID	Type of Flow	n	Length (ft)	Slope (ft/ft)	Area (sf)	Wet P (ft)	Velocity (fps)	Tc (hrs)
Sheet Flow (P_2= 3.30 in.)								
A	Woods	0.4	180.0	0.02		$T_t = \frac{0.007\ (nL)^{0.8}}{(P_2)^{0.5}\ S^{0.4}}$		0.564
Shallow Concentrated Flow							Fig. 3.1, TR-55	T_t=L/(3600V)
B	Paved		1820.3	0.02			2.28	0.222
Channel Flow								T_t=L/(3600V)
C		0.035	488.2	0.02	5	7	4.81	0.028
							Total T_c =	0.814
							T_L =	0.488

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:		Existing	**Project:**	36730 - DVP Greensville
	X	Proposed	**Subarea Number:**	POA3A Post Developed Sheet Flow (Unmanaged)
Off-Site Land Use:		Existing	**By:**	C. Nelson
	X	Proposed	**Date:**	5/9/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
B	Other Agricultural	Meadow	23.18	58	1344.4
C	Other Agricultural	Meadow	6.22	71	441.6
D	Other Agricultural	Meadow	0.41	78	32.0
B	Urban	Impervious Area - Paved; curbs and s	0.02	98	2.0

Total Area			Weighted RCN =	
29.83 AC	0.05 SQ MI			61.0
12.07 Hectares				

TIME OF CONCENTRATION

ID	Type of Flow	n	Length (ft)	Slope (ft/ft)	Area (sf)	Wet P (ft)	Velocity (fps)	Tc (hrs)
Sheet Flow (P_2= 3.30 in.)								
A	Meadow	0.24	300.0	0.02		$T_t = \frac{0.007\ (nL)^{0.8}}{(P_2)^{0.5}\ S^{0.4}}$		0.584
Shallow Concentrated Flow							Fig. 3.1, TR-55	T_t=L/(3600V)
B	Unpaved		1212.7	0.01			1.57	0.214
							Total T_c =	0.798
							T_L =	0.479

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:		Existing	**Project:**	36730 - DVP Greensville
	X	Proposed	**Subarea Number:**	Post DA for POA 3
Off-Site Land Use:	X	Existing	**By:**	C. Nelson
		Proposed	**Date:**	5/24/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
B	Urban	Impervious Area - Paved; curbs and s	1.52	98	149.0
C	Urban	Impervious Area - Paved; curbs and s	10.23	98	1002.5
C	Urban	Open Space - Good	2.72	74	201.3
B	Other Agricultural	Meadow	23.98	58	1390.8
C	Other Agricultural	Meadow	29.59	71	2100.9
D	Other Agricultural	Meadow	1.04	78	81.1
B	Urban	Open Space - Good	0.09	61	5.5

Total Area			Weighted RCN =	
69.17 AC	0.1081 SQ MI			71.3
27.99 Hectares				

TIME OF CONCENTRATION

ID	Type of Flow	n	Length (ft)	Slope (ft/ft)	Area (sf)	Wet P (ft)	Velocity (fps)	Tc (hrs)
Sheet Flow (P_2= 3.30 in.)								
A	Meadow	0.24	225.6	0.00		$T_t = \frac{0.007\ (nL)^{0.8}}{(P_2)^{0.5}\ S^{0.4}}$		0.820
Shallow Concentrated Flow							Fig. 3.1, TR-55	T_t=L/(3600V)
B	Unpaved		258.5	0.031			2.84	0.025
							Total T_c =	0.846
							T_L =	0.507

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:		Existing	**Project:**	36730 - DVP Greensville
	X	Proposed	**Subarea Number:**	POA3B Post Developed Sheet Flow (Unmanaged)
Off-Site Land Use:	X	Existing	**By:**	C. Nelson
		Proposed	**Date:**	5/24/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
C	Other Agricultural	Meadow	0.26	71	18.5
D	Other Agricultural	Meadow	0.35	78	27.3

Total Area			Weighted RCN =	
0.61 AC	0 SQ MI			75.0

***NOTE:** TIME OF CONCENTRATION FOR POA3 - UNMANAGED AREA "B" IS ASSUMED TO BE EQUAL OR LESS THEN 5 MINUTES.

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:		Existing	**Project:**	36730 - DVP Greensville
	X	Proposed	**Subarea Number:**	Post Developed DA to Pond 3
Off-Site Land Use:		Existing	**By:**	C. Nelson
	X	Proposed	**Date:**	5/24/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
B	Other Agricultural	Woods - Good	2.69	55	148.0
C	Other Agricultural	Woods - Good	3.91	70	273.7
B	Other Agricultural	Meadow	0.76	58	44.1
C	Other Agricultural	Meadow	17.79	71	1263.1
D	Other Agricultural	Meadow	0.27	78	21.1
B	Urban	Impervious Area - Paved; curbs and s	1.51	98	148.0
C	Urban	Impervious Area - Paved; curbs and s	10.23	98	1002.5
B	Urban	Open Space - Good	0.28	61	17.1
C	Urban	Open Space - Good	2.78	74	205.7

Total Area			Weighted RCN =	
40.22 AC	0.06 SQ MI			77.7
16.28 Hectares				

TIME OF CONCENTRATION

ID	Type of Flow	n	Length (ft)	Slope (ft/ft)	Area (sf)	Wet P (ft)	Velocity (fps)	Tc (hrs)
Sheet Flow (P_2= 3.30 in.)								
A	Meadow	0.24	218.7	0.005		$T_t = \frac{0.007\ (nL)^{0.8}}{(P_2)^{0.5}\ S^{0.4}}$		0.790
Shallow Concentrated Flow							Fig. 3.1, TR-55	T_t=L/(3600V)
B	Unpaved		109.9	0.064			4.07	0.007
Channel Flow								T_t=L/(3600V)
Channel Flow		0.035	443.6	0.014	2.5	5	3.12	0.040
							Total T_c =	0.837
							T_L =	0.502

WORKSHEET FOR SCS HYDROLOGIC PARAMETERS

Land Use:		Existing	**Project:**	36730 - DVP Greensville
	X	Proposed	**Subarea Number:**	POA3C Post Developed Sheet Flow (Unmanaged)
Off-Site Land Use:		Existing	**By:**	C. Nelson
	X	Proposed	**Date:**	5/24/2016

RUNOFF CURVE NUMBER

Soil Group	Land Use or Zoning Area	Cover Type	Area (acres)	RCN	RCN x Area
C	Other Agricultural	Meadow	5.74	71	407.5

Total Area			Weighted RCN =	
5.74 AC	0.01 SQ MI			71.0
2.32 Hectares				

TIME OF CONCENTRATION

ID	Type of Flow	n	Length (ft)	Slope (ft/ft)	Area (sf)	Wet P (ft)	Velocity (fps)	Tc (hrs)
Sheet Flow (P_2= 3.30 in.)								
A	Meadow	0.24	225.6	0.004		$T_t = \frac{0.007\ (nL)^{0.8}}{(P_2)^{0.5}\ S^{0.4}}$		0.820
Shallow Concentrated Flow							Fig. 3.1, TR-55	T_t=L/(3600V)
B	Unpaved		258.5	0.03			2.84	0.025
							Total T_c =	0.846
							T_L =	0.507

COMMONWEALTH OF VIRGINIA
AMELIA WEHUNT
Lic. No. 049325
05/24/16
PROFESSIONAL ENGINEER

NOTE: THESE PLANS ARE NOT FOR CONSTRUCTION.

THIS DRAWING PREPARED AT THE
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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

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DATE	REVISION DESCRIPTION
9/18/2015	REVISED PER VOLUMES I & IV CONSTRUCTION DOCUMENTS
11/20/2015	REVISED PER VOLUME IV'S CONSTRUCTION REVISIONS I & 2
05/24/2016	REVISED PER VOLUMES I & IV CONSTRUCTION REVISIONS

DATE
7/21/2015

DRAWN BY
C. NELSON

DESIGNED BY
L. COFFMAN

CHECKED BY
A. WEHUNT

SCALE
N.T.S.

TIMMONS GROUP

VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUANTITY - ENERGY BALANCE COMPLIANCE CALCS FOR POA3

JOB NO.
36730

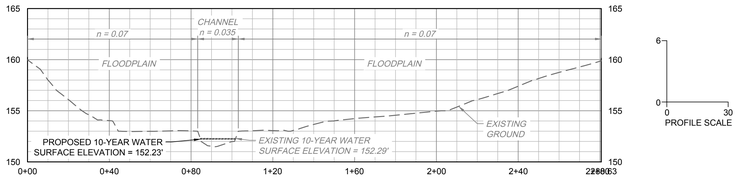
SHEET NO.
C03.33

Channel ID:	POA3 - XSEC 7	X	Pre Development
			Post Development

AREA TO CHANNEL CROSS-SECTION			CHANNEL CALCULATIONS/INPUTS		
DA =	29.46	ac.	s =	0.00991	ft/ft
CN =	61.1		$n_{COMPOSITE}$ =	0.035	
Tc =	0.612	hrs	$Vel_{2\ YEAR}$ =	1.81	ft/s
$Q_{2\ YEAR}$ =	7.12	cfs	$WSE_{10\ YEAR}$ =	152.29	ft
$Q_{10\ YEAR}$ =	27.28	cfs	$D_{10\ YEAR}$ =	0.81	ft
*Flows obtained from Bentley Pondpack V8i			*Velocity and normal depth from Bentley FlowMaster V8i		

Channel ID:	POA3 - XSEC 7		Pre Development
		X	Post Development

AREA TO CHANNEL CROSS-SECTION			CHANNEL CALCULATIONS/INPUTS		
DA =	29.83	ac.	s =	0.00991	ft/ft
CN =	61.0		$n_{COMPOSITE}$ =	0.035	
Tc =	0.798	hrs	$Vel_{2\ YEAR}$ =	1.72	ft/s
$Q_{2\ YEAR}$ =	5.96	cfs	$WSE_{10\ YEAR}$ =	152.23	ft
$Q_{10\ YEAR}$ =	22.87	cfs	$D_{10\ YEAR}$ =	0.75	ft
*Flows obtained from Bentley Pondpack V8i			*Velocity and normal depth from Bentley FlowMaster V8i		

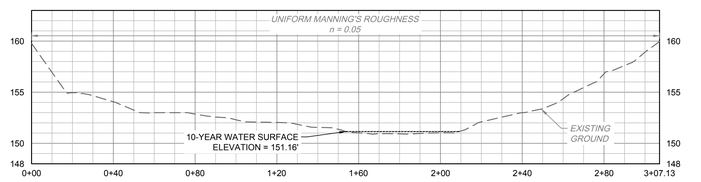


POA3 - XSEC 7

Channel ID:	POA3 - XSEC 8		Pre Development
		X	Post Development

AREA TO CHANNEL CROSS-SECTION			CHANNEL CALCULATIONS/INPUTS		
DA =	40.22	ac.	s =	0.0325	ft/ft
CN =	77.7		$n_{COMPOSITE}$ =	0.05	
Tc =	0.837	hrs	$Vel_{2\ YEAR}$ =	1.38	ft/s
$Q_{2\ YEAR\ IN}$ =	30.87	cfs	$WSE_{10\ YEAR}$ =	151.16	ft
$Q_{2\ YEAR\ OUT}$ =	9.75	cfs	$D_{10\ YEAR}$ =	0.26	ft
$Q_{10\ YEAR\ IN}$ =	65.90	cfs	*Velocity and normal depth from Bentley FlowMaster V8i		
$Q_{10\ YEAR\ OUT}$ =	18.30	cfs			
*Flows obtained from Bentley Pondpack V8i					

***NOTE**: ALL OFF-SITE DRAINAGE TO CROSS-SECTION 8 IS ATTENUATED IN POND 3.



POA3 - XSEC 8

FLOOD PROTECTION ANALYSIS AND COMPLIANCE SUMMARY:

FLOOD PROTECTION FOR POA3 IS ADDRESSED PER 9VAC25-870-66(C)-1 BY PROVIDING 10-YEAR 24-HOUR STORM CONFINEMENT WITHIN THE DOWNSTREAM CHANNELS. POA3 ALSO HAS AREAS OF INCREASED SHEET FLOW THAT WAS EVALUATED PER 9VAC25-870-66(D) TO ENSURE MINIMAL IMPACTS ON DOWNSTREAM CHANNELS.

NRCS TR-55 HYDROLOGY AND BENTLEY'S PONDPACK V8i WERE USED TO CALCULATE POST DEVELOPED FLOWS TO CROSS SECTION 8 SHOWN ON THIS SHEET. BENTLEY'S FLOWMASTER V8i WAS THEN UTILIZED TO OBTAIN THE 2-YEAR VELOCITY AND 10-YEAR DEPTH FOR CROSS SECTION 8. AS SHOWN BY THE CALCULATIONS AND CHANNEL SECTION PROVIDED, THE CHANNEL CONTAINS THE 10-YEAR STORM AND HAS NON-EROSIVE VELOCITIES; FLOOD PROTECTION HAS BEEN ACHIEVED FOR THE CHANNEL AT CROSS SECTION 8.

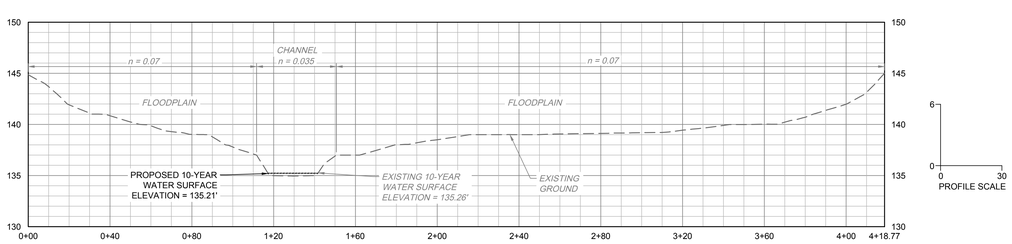
CROSS SECTION 7 AND 9 RECEIVE INCREASED SHEET FLOW FROM THE PROPOSED LAY DOWN AREAS. NRCS TR-55 HYDROLOGY AND BENTLEY'S PONDPACK V8i WERE USED TO CALCULATE PRE AND POST DEVELOPED FLOWS TO CROSS SECTIONS 7 AND 9. BENTLEY'S FLOWMASTER V8i WAS THEN UTILIZED TO OBTAIN THE PRE AND POST DEVELOPED 2-YEAR VELOCITIES AND 10-YEAR DEPTHS AT EACH CROSS SECTION. AS SHOWN BY THE CALCULATIONS AND CHANNEL SECTIONS PROVIDED, THE POST DEVELOPED FLOWS HAVE BEEN SLIGHTLY DECREASED RESULTING IN NO ADDITIONAL IMPACTS ON THE DOWNSTREAM CHANNELS. THE CHANNELS CONTAIN THE 10-YEAR STORM AND HAVE NON-EROSIVE VELOCITIES AS WELL; FLOOD PROTECTION HAS BEEN ACHIEVED FOR THE CHANNELS AT CROSS SECTIONS 7 & 9.

Channel ID:	POA3 - XSEC 9	X	Pre Development
			Post Development

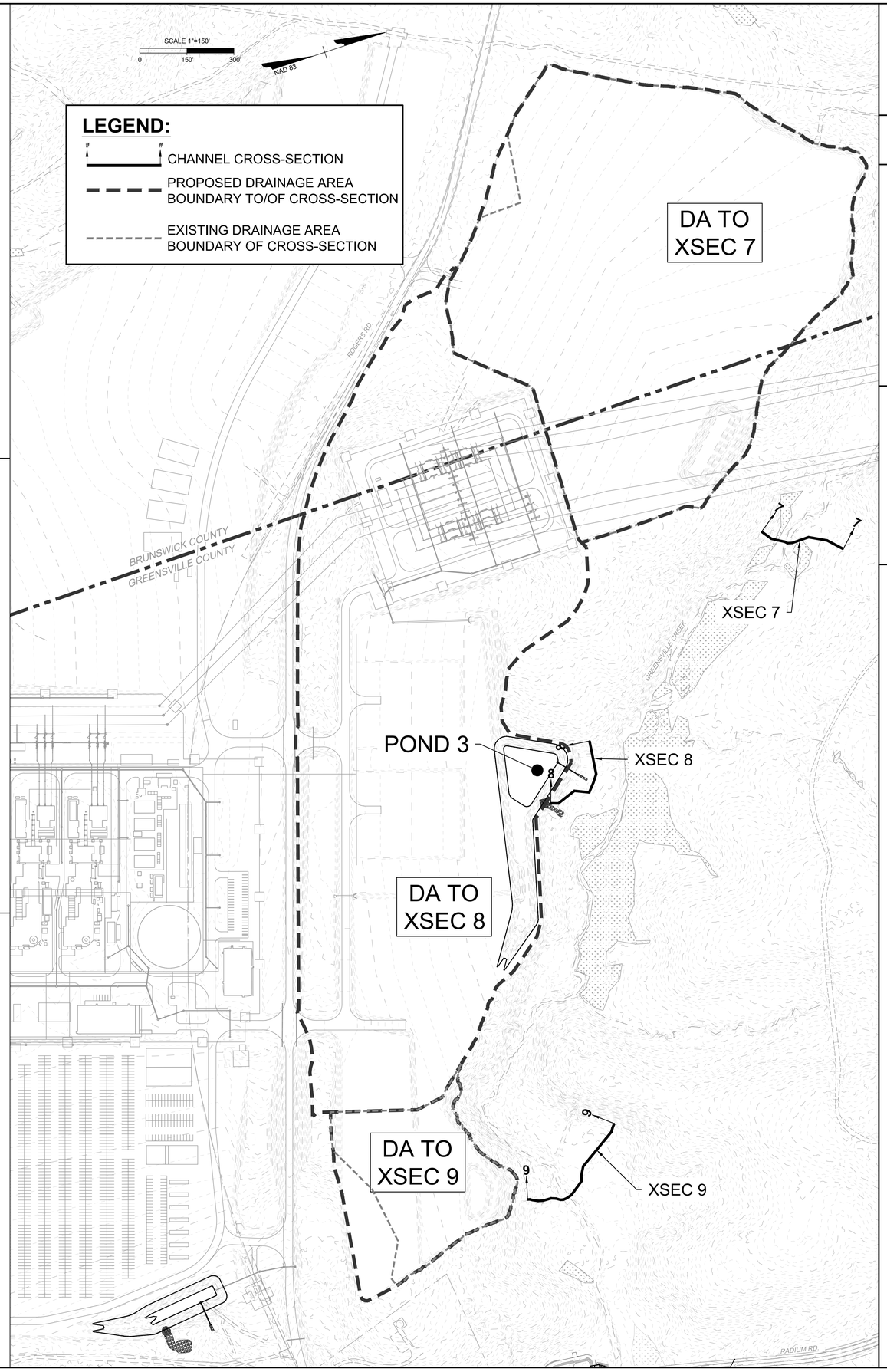
AREA TO CHANNEL CROSS-SECTION			CHANNEL CALCULATIONS/INPUTS		
DA =	4.45	ac.	s =	0.00877	ft/ft
CN =	70.0		$n_{COMPOSITE}$ =	0.035	
Tc =	0.316	hrs	$Vel_{2\ YEAR}$ =	1.11	ft/s
$Q_{2\ YEAR}$ =	3.95	cfs	$WSE_{10\ YEAR}$ =	135.26	ft
$Q_{10\ YEAR}$ =	9.91	cfs	$D_{10\ YEAR}$ =	0.26	ft
*Flows obtained from Bentley Pondpack V8i			*Velocity and normal depth from Bentley FlowMaster V8i		

Channel ID:	POA3 - XSEC 9		Pre Development
		X	Post Development

AREA TO CHANNEL CROSS-SECTION			CHANNEL CALCULATIONS/INPUTS		
DA =	5.57	ac.	s =	0.00877	ft/ft
CN =	71.0		$n_{COMPOSITE}$ =	0.035	
Tc =	0.846	hrs	$Vel_{2\ YEAR}$ =	0.96	ft/s
$Q_{2\ YEAR}$ =	2.74	cfs	$WSE_{10\ YEAR}$ =	135.21	ft
$Q_{10\ YEAR}$ =	6.94	cfs	$D_{10\ YEAR}$ =	0.21	ft
*Flows obtained from Bentley Pondpack V8i			*Velocity and normal depth from Bentley FlowMaster V8i		



POA3 - XSEC 9



COMMONWEALTH OF VIRGINIA
AMELIA WEHUNT
Lic. No. 049325
05/24/16
PROFESSIONAL ENGINEER

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YOUR VISION ACHIEVED THROUGH OURS.

DATE 7/21/2015
DRAWN BY C. NELSON
DESIGNED BY L. COFFMAN
CHECKED BY A. WEHUNT
SCALE 1"=150'

TIMMONS GROUP

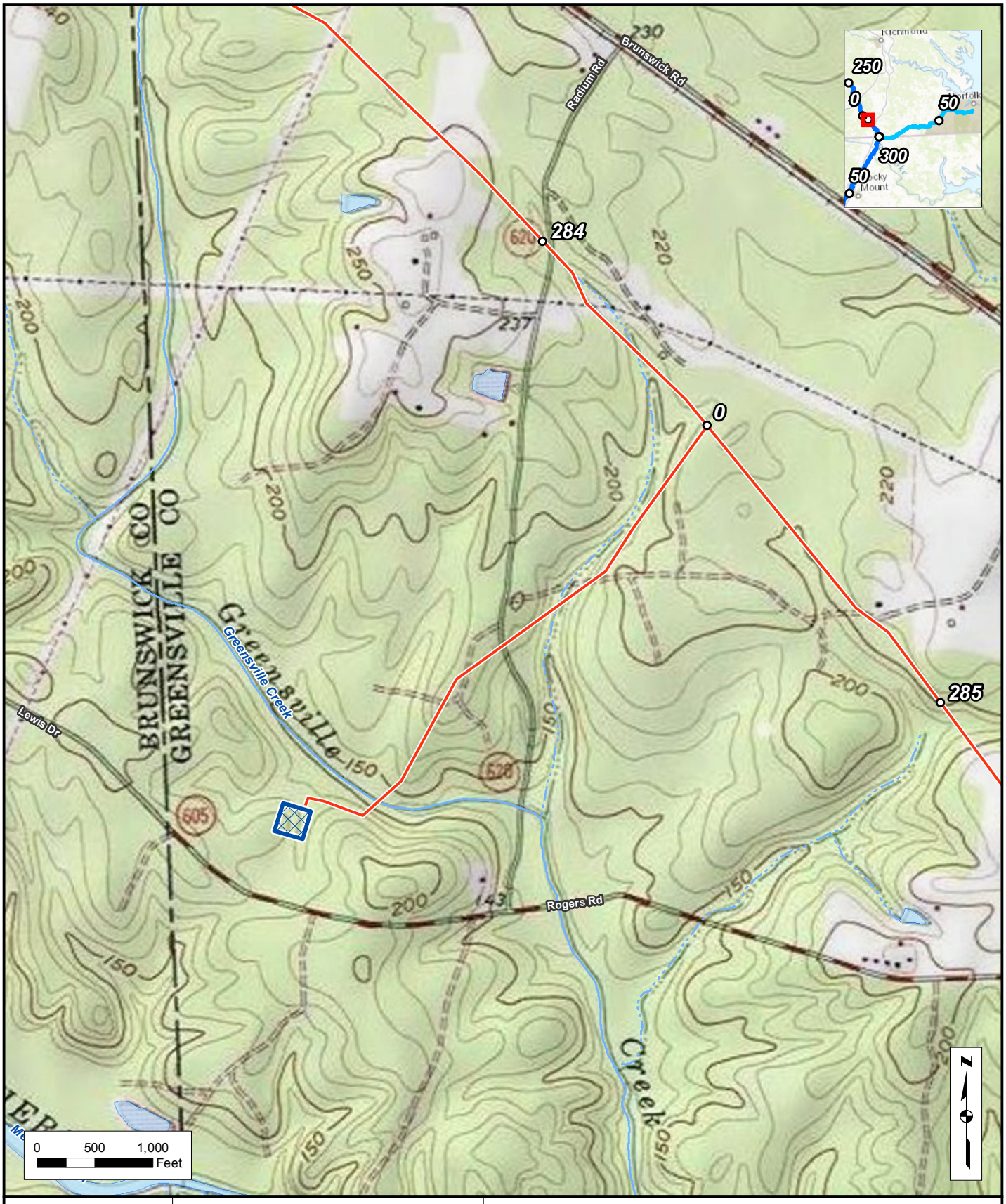
VIRGINIA ELECTRIC AND POWER COMPANY - GREENSVILLE COUNTY POWER STATION
STORMWATER MASTERPLAN
WATER QUANTITY - FLOOD PROTECTION ANALYSIS FOR POA3

JOB NO. 36730
SHEET NO. C03.34

L:\2015\87\30.01\P_Greensville\ENGR\Sheet\C03\SWM\87I30C-03-1.EBST.dwg | Plotted on 5/24/2016 10:02 AM | by Chris Nelson

ATTACHMENT 2

Topo Map



Milepost
Proposed Route
M and R Site
NHD Waterbodies

Atlantic Coast Pipeline

Greenville M and R Site
USGS Topo Overview

FILE: \\usminfs01\Data\Team\DMMV\GIS\Clients\D-F\DOM\SRPP_ArcGIS\SWPPP\Figures_ACP_MandR_Stations_Topo.mxd, REVISED: 12/22/2016, SCALE: 1:14,000 DRAWN BY: EKP

APPENDIX I

ESC Plans for Pipe Storage and Contractor Yards

ATLANTIC COAST PIPELINE PROJECT
CONTRACTOR YARDS

HIGHLAND, AUGUSTA, ROCKBRIDGE, BUCKINGHAM, AND BRUNSWICK COUNTIES, VIRGINIA

EROSION & SEDIMENT CONTROL PLAN

PROJECT CONTACTS

OWNER/APPLICANT

DOMINION TRANSMISSION, INC.
5000 DOMINION BOULEVARD
GLEN ALLEN, VA 23060
PHONE: 804-335-4923

CONSULTANT

ENVIRONMENTAL RESOURCES MANAGEMENT
1000 IDS CENTER
80 SOUTH EIGHTH STREET
MINNEAPOLIS, MN 55402
WAYNE SICORA, PE, CPESC
612-347-7128
wayne.sicora@erm.com

EXISTING INFORMATION SOURCES

CONTOURS AND BASE MAP PROVIDED BY I3 CONSULTING, LLC WITH ADDITIONAL CONTOURS OBTAINED FROM THE USGS NATIONAL ELEVATION DATASET.

PLAN REPRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON 24"X36" SHEETS FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING, AND SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

WARNING INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING.

GENERAL NOTE

ERM HAS DEPICTED EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS) ON THESE PLAN SHEETS PREPARED BY OTHERS FOR USE BY CONTRACTOR TO CONTROL EROSION AND SEDIMENTATION DURING CONSTRUCTION OF THIS PROJECT. ERM IS RESPONSIBLE FOR THE NATURE AND LOCATION OF THE DEPICTED BMPS AS OF THE DATE SIGNED AND SEALED BASED ON THE SOURCE DATA PROVIDED. ERM RETAINS NO RESPONSIBILITY OR LIABILITY FOR INFORMATION DEVELOPED, PREPARED OR OTHERWISE PROVIDED BY OTHERS, OR FOR INACCURACIES OF SOURCE DATA PROVIDED BY OTHERS. ERM ASSUMES NO RESPONSIBILITY OR LIABILITY FOR DESIGNS OR WORK PRODUCTS OF ANY TYPE TO THE EXTENT THAT THEY ARE BASED UPON OR DERIVED FROM SUCH INCORRECT INFORMATION OR DATA.

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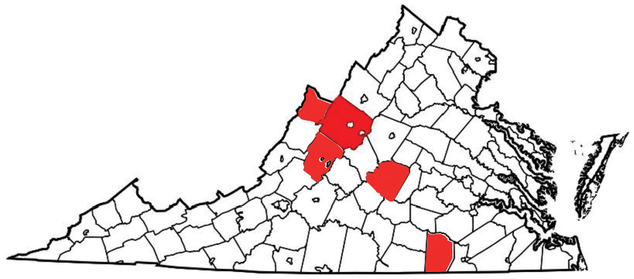


VIRGINIA

COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

SHEET INDEX

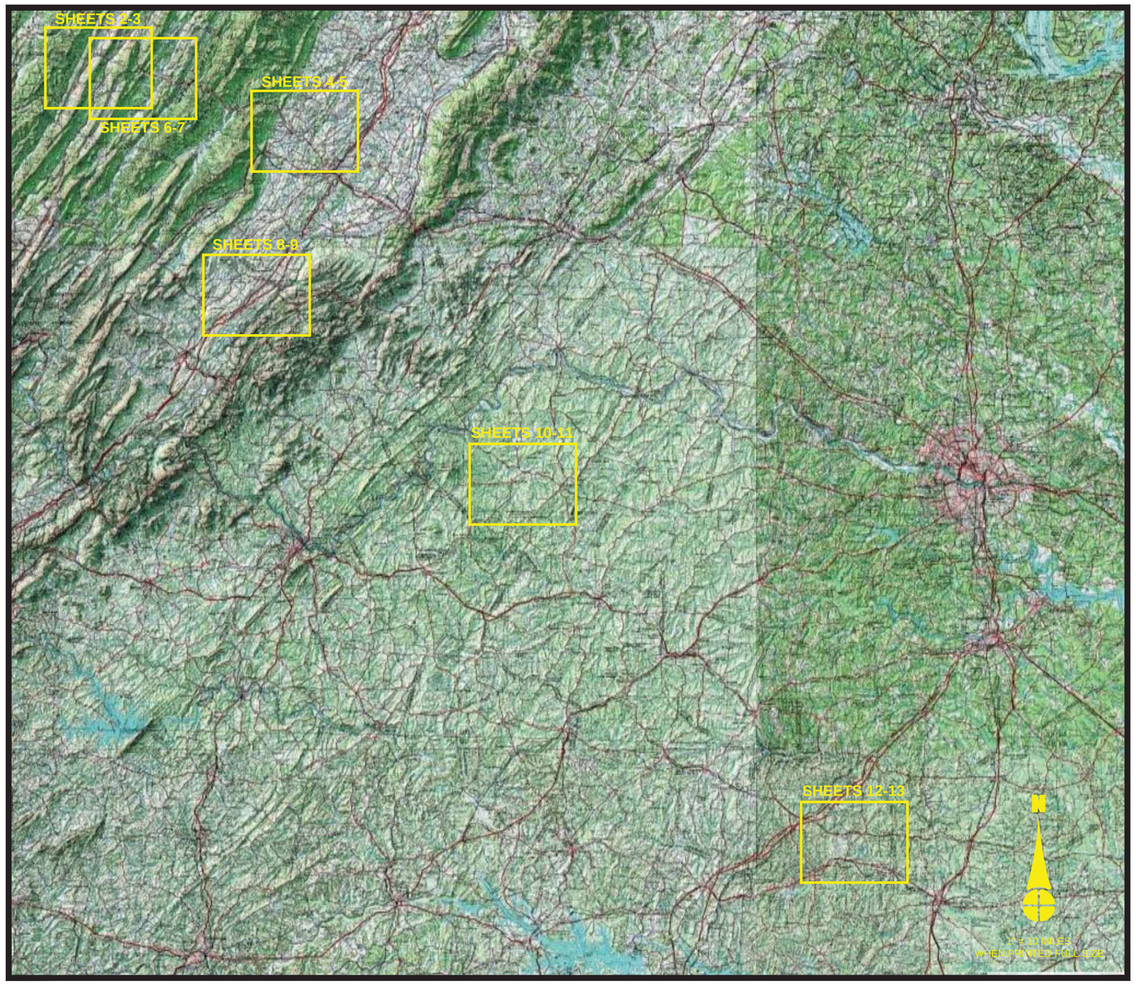
●		06/19/2017	SHEET 1 - COVER SHEET
●		06/19/2017	SHEET 2 - MONTEREY (CY SPR 03-A) AERIAL OVERVIEW
●		06/19/2017	SHEET 3 - MONTEREY (CY SPR 03-A) ESCP
●		06/19/2017	SHEET 4 - DEERFIELD (SP4A_CY GWNF-6 SPR04-A) AERIAL OVERVIEW
●		06/19/2017	SHEET 5 - DEERFIELD (SP4A_CY GWNF-6 SPR04-A) ESCP
●		06/19/2017	SHEET 6 - MCDOWELL (CY SPR 04-A) AERIAL OVERVIEW
●		06/19/2017	SHEET 7 - MCDOWELL (CY SPR 04-A) ESCP
●		06/19/2017	SHEET 8 - STEELES TAVERN (SP5_CY SPR05-C) AERIAL OVERVIEW
●		06/19/2017	SHEET 9 - STEELES TAVERN (SP5_CY SPR05-C) ESCP
●		06/19/2017	SHEET 10 - BUCKINGHAM (CY SPR 06-C) AERIAL OVERVIEW
●		06/19/2017	SHEET 11 - BUCKINGHAM (CY SPR 06-C) ESCP
●		06/19/2017	SHEET 12 - EMPORIA (SP7_CY SPR07-B) AERIAL OVERVIEW
●		06/19/2017	SHEET 13 - EMPORIA (SP7_CY SPR07-B) ESCP
●		06/19/2017	SHEET 14 - ESCP NOTES
●		06/19/2017	SHEET 15 - ESCP DETAILS
●		06/19/2017	SHEET 16 - ESCP DETAILS
●		06/19/2017	SHEET 17 - ESCP DETAILS

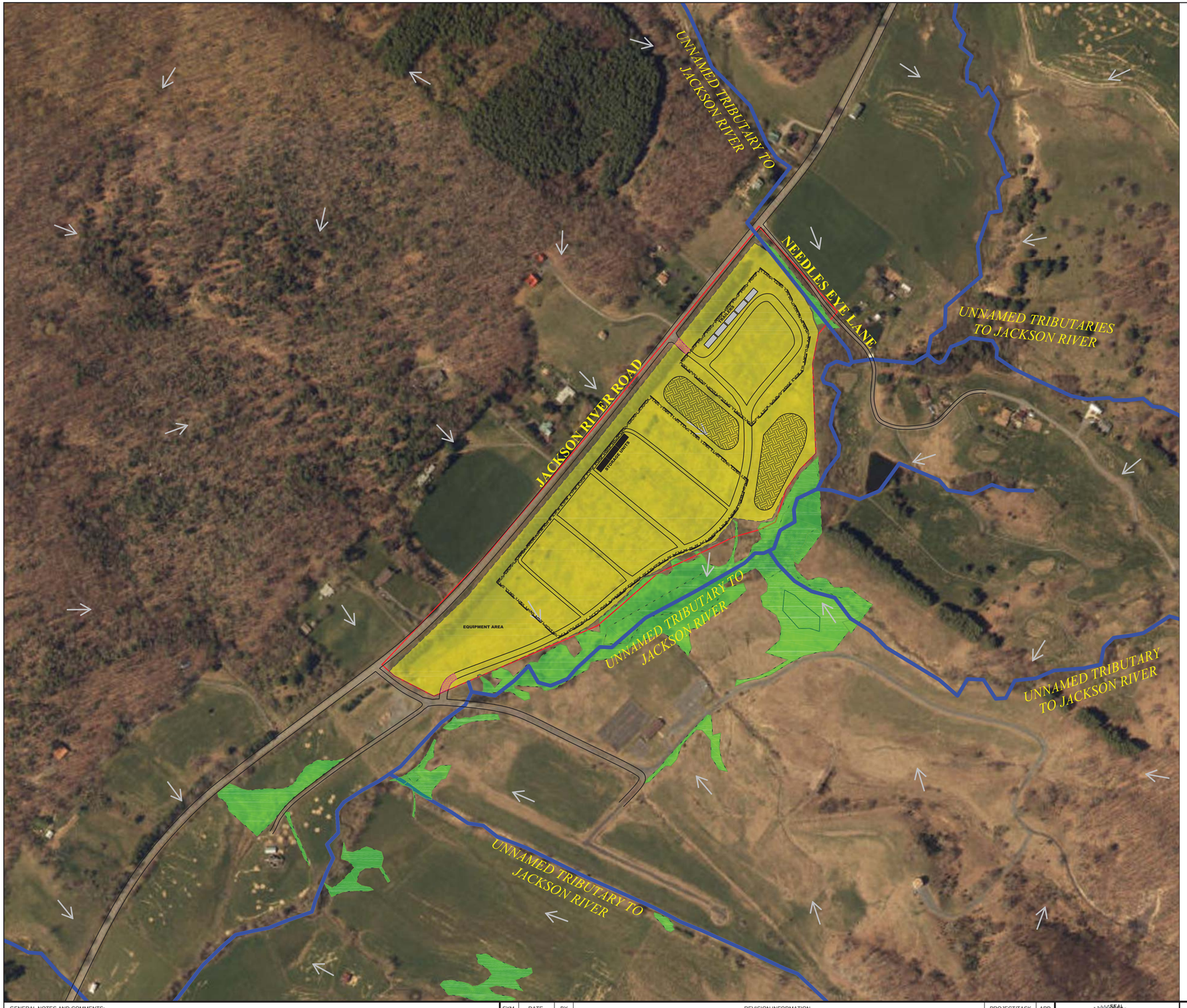
DRAWING INDEX LEGEND

- FILLED CIRCLE INDICATES DRAWING INCLUDED WITHIN THIS ISSUE
- MOST RECENT REVISION NUMBER
- MOST RECENT ISSUE OR REVISION DATE

●	-	X/XX/201X	SHEET X - SHEET TITLE

LOCATION MAP





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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- WETLAND
- FLOW ARROW

GENERAL NOTES AND COMMENTS:

1. CONTOURS AND BASE MAP PROVIDED BY I3 ENGINEERING AND CONSULTING, LLC WITH ADDITIONAL CONTOURS OBTAINED FROM THE USGS NATIONAL ELEVATION DATASET. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ITS ACCURACY.
2. DISCREPANCIES FOUND IN THE PROJECT EXISTING CONDITIONS MUST BE REPORTED TO THE PROJECT ENGINEER/OWNER.
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4. DOMINION RESERVES THE RIGHT TO USE EITHER, OR BOTH, 12" COMPOST FILTER SOCK OR STANDARD SILT FENCE, FOR ANY APPLICATION IN WHICH EITHER OF THESE TWO CONTROL MEASURES ARE SPECIFIED.

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	06/08/17	WTS	ISSUED FOR REVIEW	-	-

SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

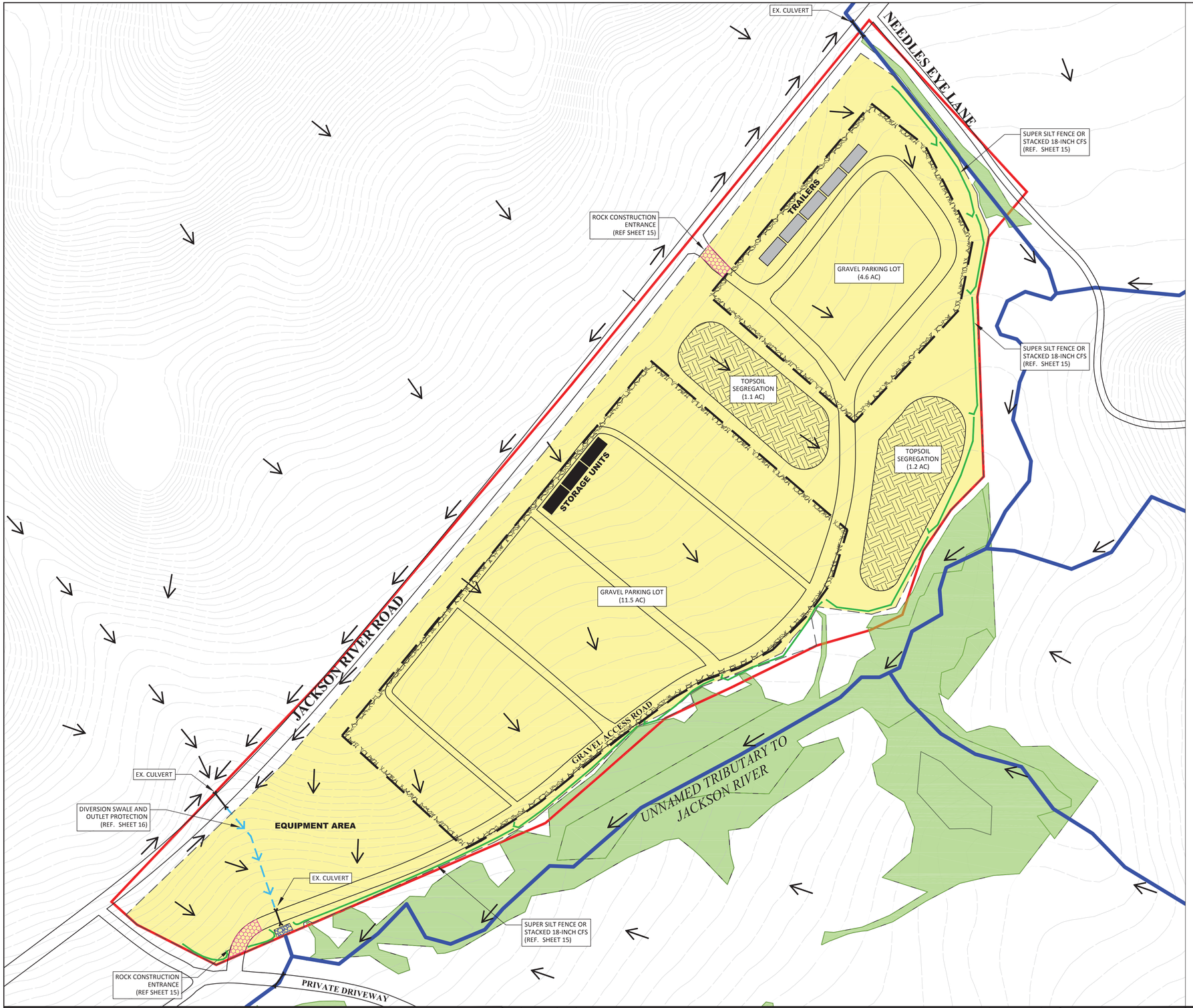
DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
MONTEREY CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	HIGHLAND	STATE:	VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\					-	2 OF 17	0



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LEGEND

- LIMITS OF CONSTRUCTION (31.9 ACRES)
- LIMITS OF DISTURBANCE (28.2 ACRES)
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- FLOW ARROW
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.) (RCE)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE
- WETLAND

GENERAL NOTES AND COMMENTS:

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0	06/08/17	WTS	ISSUED FOR REVIEW	-	-

SEAL
COMMONWEALTH OF VIRGINIA
DANIEL B. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

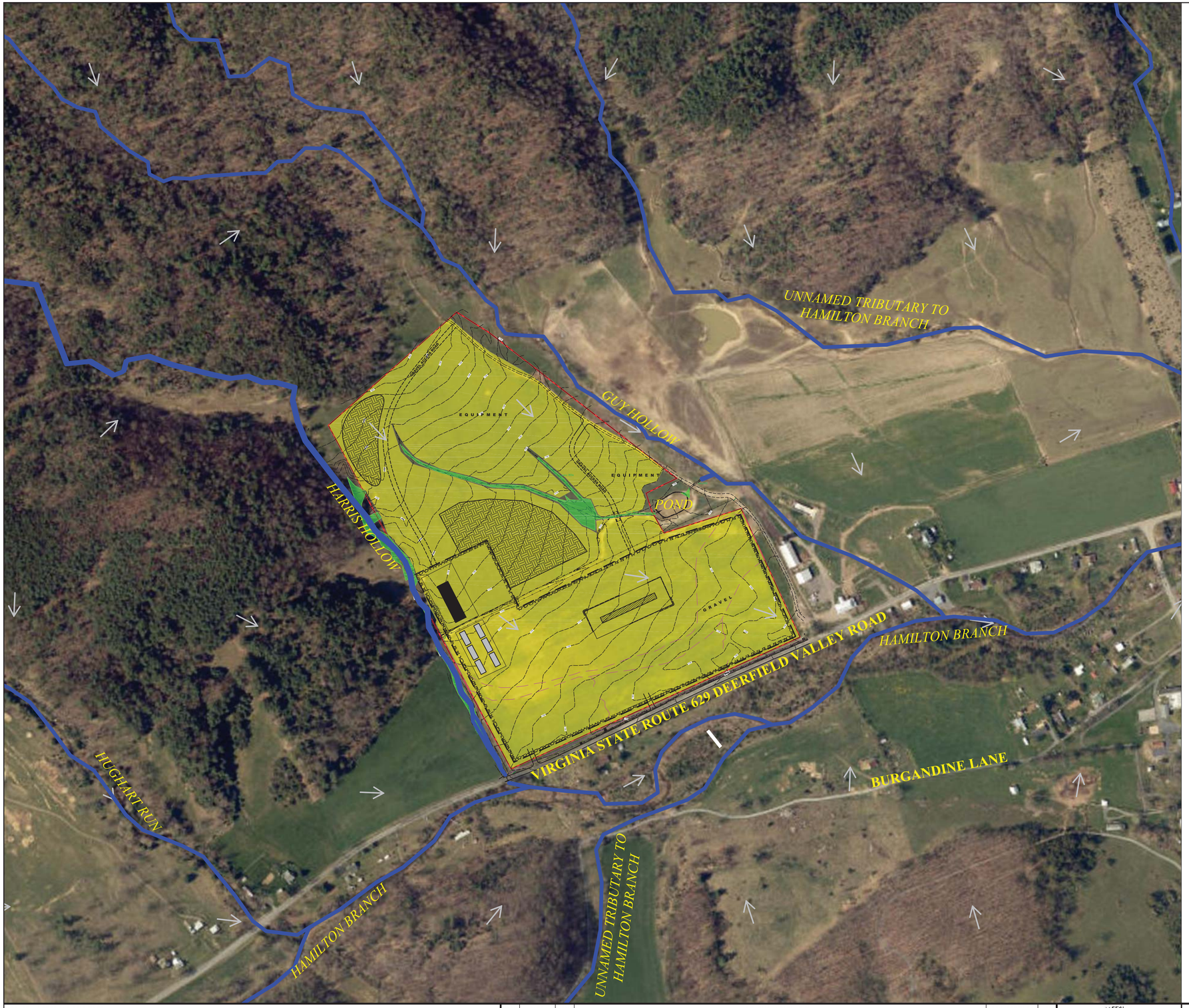
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE:
ATLANTIC COAST PIPELINE
MONTEREY CONTRACTOR YARD ESCP

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	HIGHLAND	VA	-	3 OF 17	0

DIR/FILE: ACP\Virginia\



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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- TBM TEMPORARY BENCH MARK
- CULVERT
- TELEPHONE BOX
- M MAIL BOX
- WETLAND
- FLOW ARROW

GENERAL NOTES AND COMMENTS:

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SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	06/08/17	WTS	ISSUED FOR REVIEW	-	-

SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management
ERM

DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
DEERFIELD CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	AUGUSTA	VA	-	4 OF 17	0

DIR/FILE: ACP\Virginia\

STATION NORTH TRUE NORTH

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LEGEND

- LIMITS OF CONSTRUCTION (45.5 ACRES)
- LIMITS OF DISTURBANCE (42.2 ACRES)
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- TBM TEMPORARY BENCH MARK
- CULVERT
- TELEPHONE BOX
- M MAIL BOX
- sauy 002 WETLAND
- FLOW ARROW
- RCE ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE
- 500 YEAR FLOODPLAIN
- BRIDGE

GENERAL NOTES AND COMMENTS:

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COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

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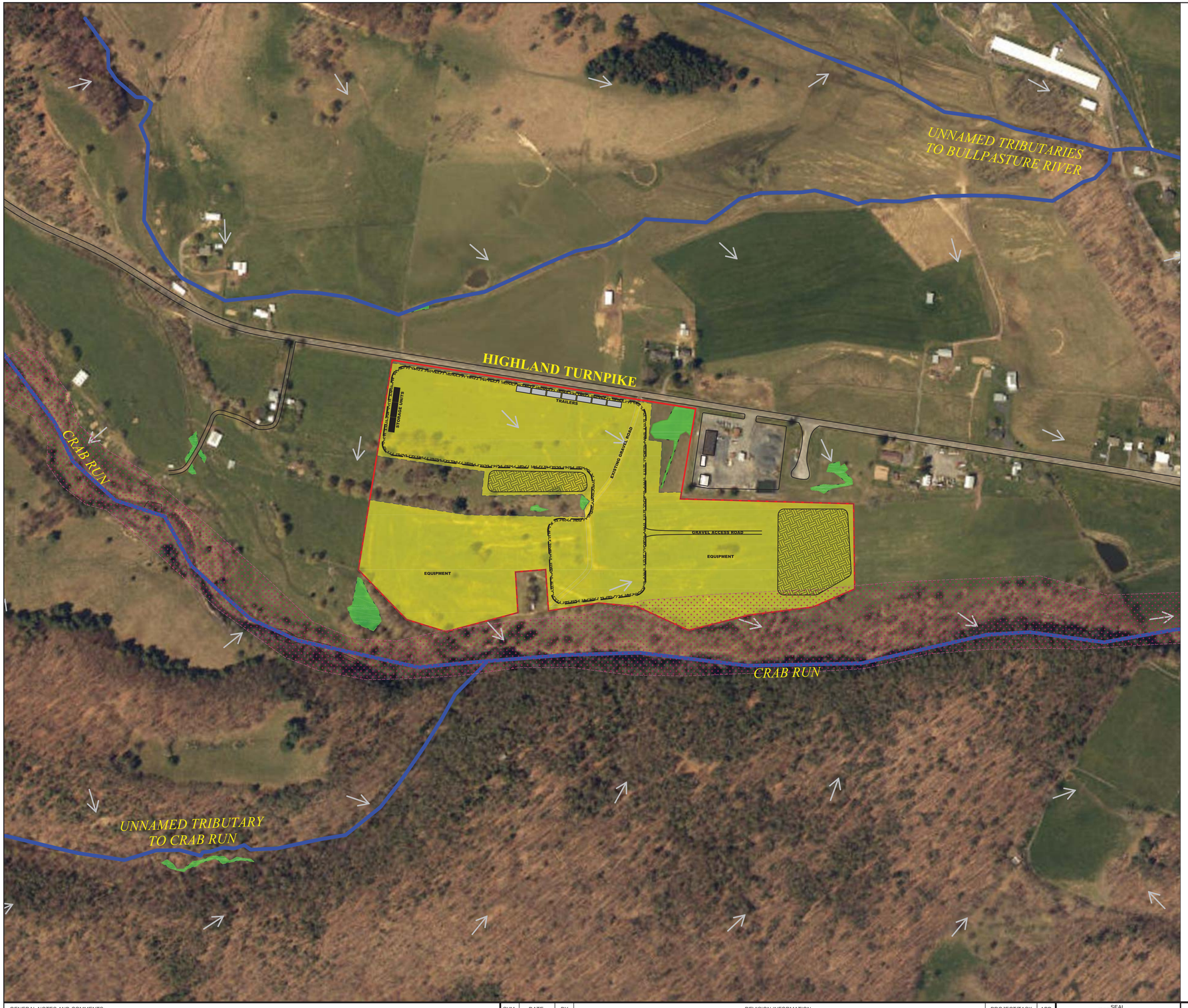
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
DEERFIELD CONTRACTOR YARD ESCP

DISTRICT:	-	COUNTY:	AUGUSTA	STATE:	VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\					-	5 OF 17	0



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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- WETLAND
- FLOW ARROW
- 100 YEAR FLOODPLAIN

GENERAL NOTES AND COMMENTS:

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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
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ERM Environmental Resources Management

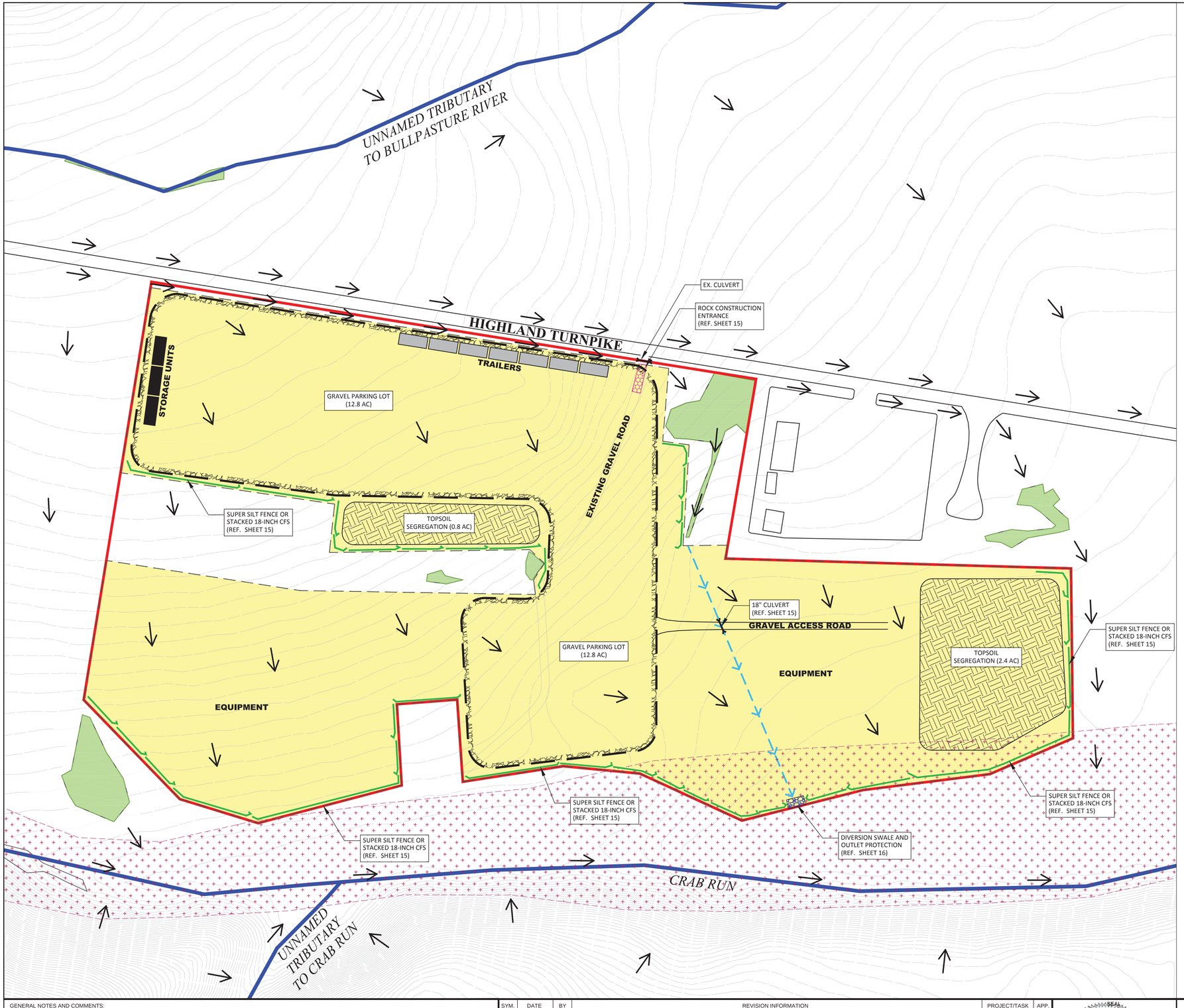
DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
MCDOWELL CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	HIGHLAND	STATE:	VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\					-	6 OF 17	0



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LEGEND

- LIMITS OF CONSTRUCTION (36.4 ACRES)
- LIMITS OF DISTURBANCE (32.1 ACRES)
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- FLOW ARROW
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE
- 100 YEAR FLOODPLAIN
- WETLAND

GENERAL NOTES AND COMMENTS:

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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
MCDOWELL CONTRACTOR YARD ESCP

DISTRICT:	-	COUNTY:	HIGHLAND	STATE:	VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\					-	7 OF 17	0

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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- SPOIL AREAS
- FENCE
- DITCH
- STREAM
- CONTOUR (1800)
- VDOT — VIRGINIA DEPARTMENT OF TRANSPORTATION MARKER
- FH — FIRE HYDRANT
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- GRAVEL AREA
- FLOW ARROW

GENERAL NOTES AND COMMENTS:

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SEAL — COMMONWEALTH OF VIRGINIA — DANIEL R. GOLDSTEIN Lic. No. 047436 — PROFESSIONAL ENGINEER

ERM Environmental Resources Management

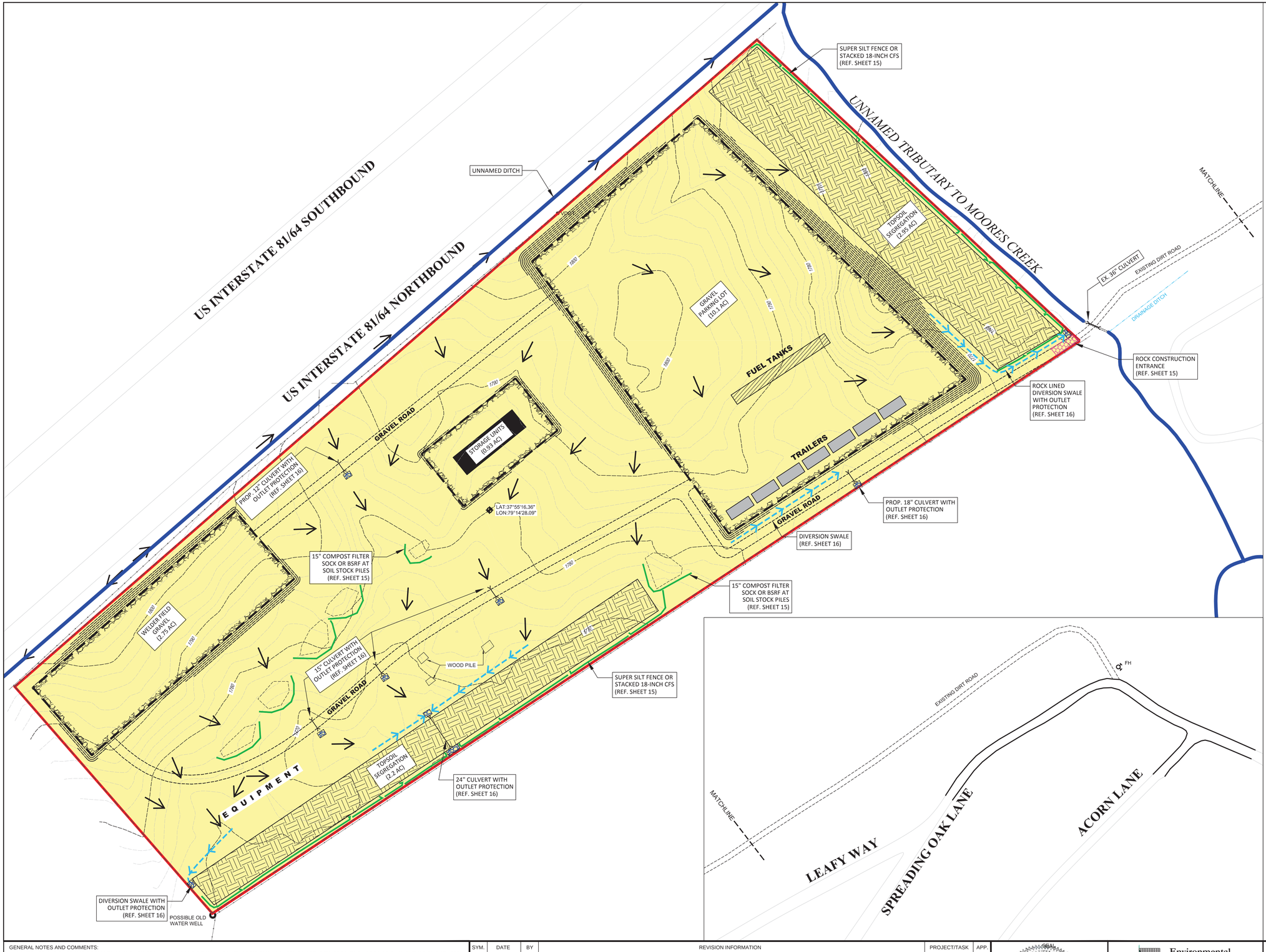
DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
STEELES TAVERN CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY: ROCKBRIDGE	STATE: VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\			-	8 OF 17	0



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- LIMITS OF CONSTRUCTION (42.7 ACRES)
- LIMITS OF DISTURBANCE (42.7 ACRES)
- SPOIL AREAS
- FENCE
- DITCH
- STREAM
- 1800 CONTOUR
- VDOT VIRGINIA DEPARTMENT OF TRANSPORTATION MARKER
- FH FIRE HYDRANT
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- GRAVEL AREA
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- FLOW ARROW
- RCE ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE

GENERAL NOTES AND COMMENTS:

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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
STEELES TAVERN CONTRACTOR YARD ESCP

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	ROCKBRIDGE	VA	-	9 OF 17	0

DIR/FILE: ACP\Virginia\

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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- WETLAND
- FLOW ARROW
- 100 YEAR FLOODPLAIN

GENERAL NOTES AND COMMENTS:

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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

ERM Environmental Resources Management

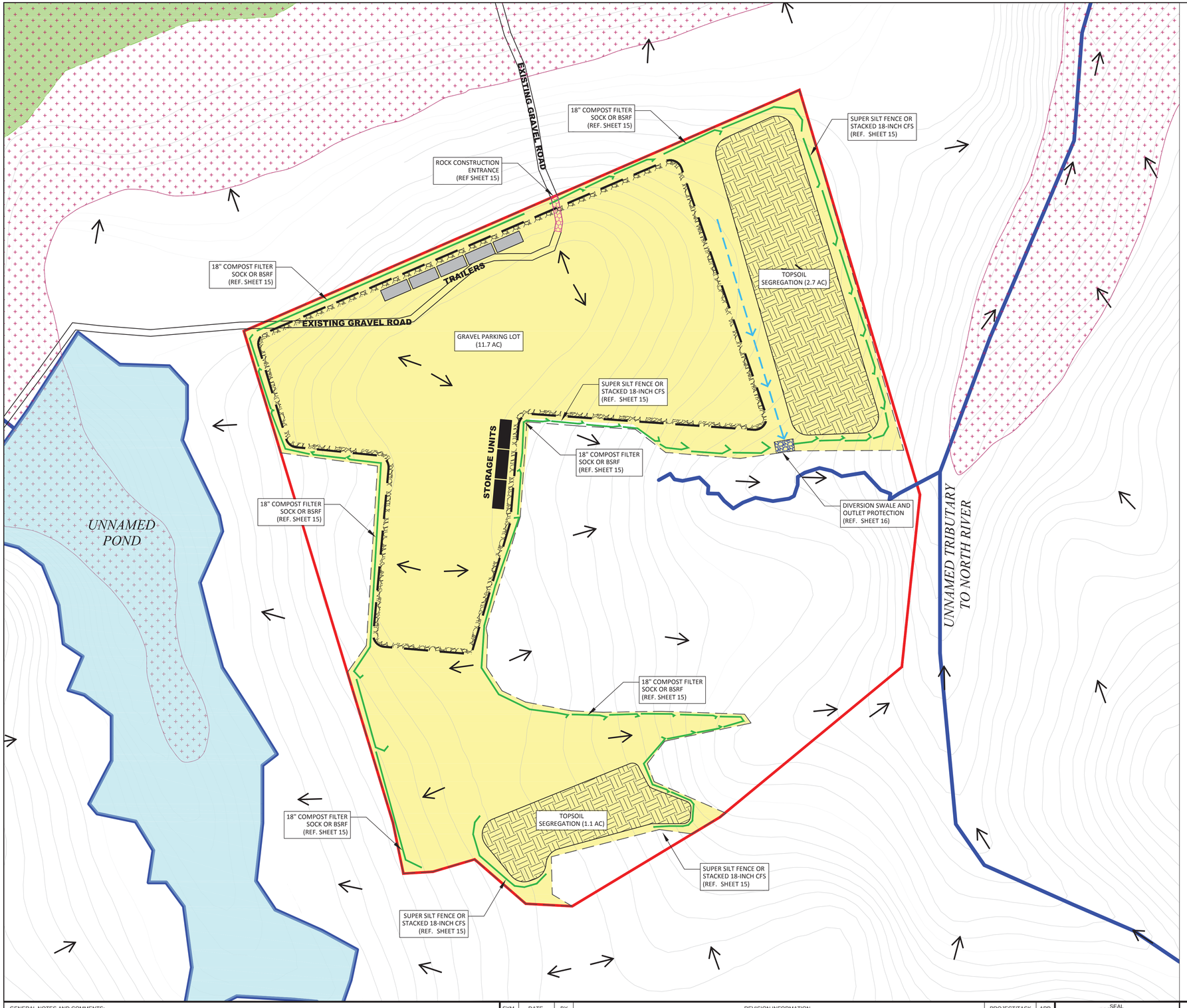
DRAWN:	NJB	06/08/17
CHECKED:	WT	06/08/17
APP. FOR BID:		
APP. FOR CONST.:		
SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE:
ATLANTIC COAST PIPELINE
BUCKINGHAM CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY: BUCKINGHAM	STATE: VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\			-	10 OF 17	0



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LEGEND

- LIMITS OF CONSTRUCTION (37.0 ACRES)
- LIMITS OF DISTURBANCE (23.4 ACRES)
- FENCE
- UNDERGROUND UTILITY CONDUIT
- DITCH
- STREAM
- CONTOUR
- FLOOD PLAIN
- GRAVEL AREA
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- TOP SOIL SEGREGATION AREA
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- FLOW ARROW
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE
- 100 YEAR FLOODPLAIN
- WETLAND

GENERAL NOTES AND COMMENTS:

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4. DOMINION RESERVES THE RIGHT TO USE EITHER, OR BOTH, 12" COMPOST FILTER SOCK OR STANDARD SILT FENCE, FOR ANY APPLICATION IN WHICH EITHER OF THESE TWO CONTROL MEASURES ARE SPECIFIED.

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
0	06/08/17	WTS	ISSUED FOR REVIEW	-	-

SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management
ERM

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Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE:
ATLANTIC COAST PIPELINE
BUCKINGHAM CONTRACTOR YARD ESCP

DISTRICT:	-	COUNTY:	BUCKINGHAM	STATE:	VA	GROUP	DWG. NO.	REV.
						-	11 OF 17	0

DIR/FILE: ACP\Virginia\

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LEGEND

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- OVERHEAD ELECTRIC LINE
- FENCE
- EDGE OF WOODS/TREE LINE
- DITCH
- STREAM
- CONTOUR
- WETLAND
- GRAVEL AREA
- TOP SOIL SEGREGATION AREA
- UTILITY POLE
- TEMPORARY BENCH MARK
- TREE LOCATION
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- FLOW ARROW

GENERAL NOTES AND COMMENTS:

1. CONTOURS AND BASE MAP PROVIDED BY I3 ENGINEERING AND CONSULTING, LLC WITH ADDITIONAL CONTOURS OBTAINED FROM THE USGS NATIONAL ELEVATION DATASET. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ITS ACCURACY.
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DANIEL R. GOLDSTEIN
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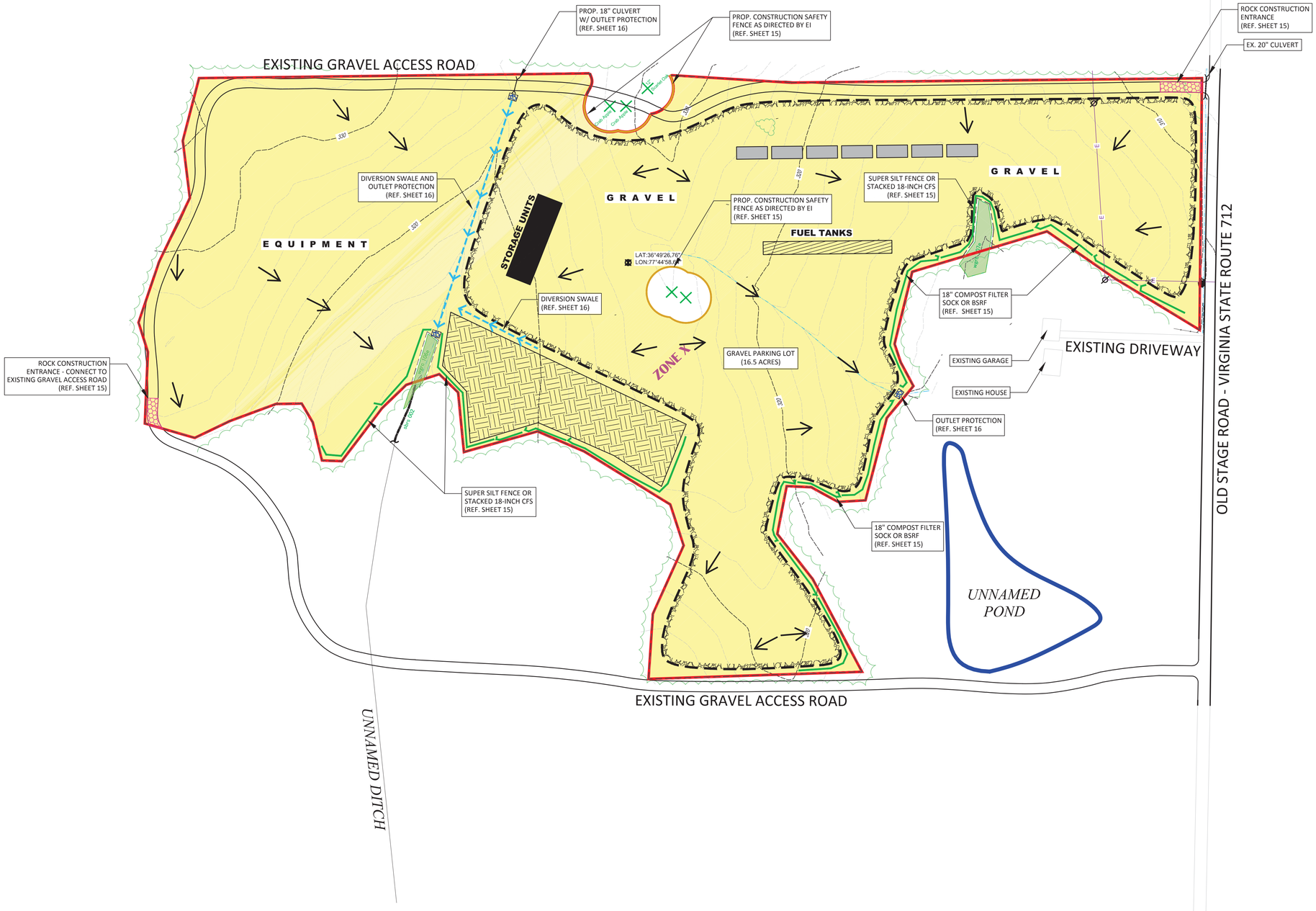
Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
EMPORIA CONTRACTOR YARD AERIAL OVERVIEW

DISTRICT:	-	COUNTY:	BRUNSWICK	STATE:	VA	GROUP	DWG. NO.	REV.
						-	12 OF 17	0

DIR/FILE: ACP\Virginia\



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LEGEND

- LIMITS OF CONSTRUCTION (30.6 ACRES)
- LIMITS OF DISTURBANCE (30.2 ACRES)
- OVERHEAD ELECTRIC LINE
- FENCE
- EDGE OF WOODS/TREE LINE
- DITCH
- STREAM
- CONTOUR
- WETLAND (wgrc 107e)
- GRAVEL AREA
- TOP SOIL SEGREGATION AREA
- TEMPORARY BENCH MARK (TBM)
- TREE LOCATION (12" Scarlet Oak)
- FUEL TANK AREA (25' x 250')
- TRAILER (24' x 60')
- STORAGE UNITS
- PROPOSED COMPOST FILTER SOCK OR SILT FENCE
- CONSTRUCTION SAFETY FENCE
- FLOW ARROW
- ROCK CONSTRUCTION ENTRANCE (OR APPROVED ALT.)
- OUTLET PROTECTION
- PROPOSED CULVERT
- PROPOSED DIVERSION SWALE

GENERAL NOTES AND COMMENTS:

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COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

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Atlantic Coast Pipeline, LLC

925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
EMPORIA CONTRACTOR YARD ESCP

DISTRICT:	-	COUNTY:	BRUNSWICK	STATE:	VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\					-	13 OF 17	0

GENERAL EROSION AND SEDIMENT CONTROL PLAN NOTES

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 9VAC25-840: EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
8. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
9. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE

THE EROSION AND SEDIMENT (E&S) CONTROL MEASURES FOR THE CONTRACTOR YARD ACTIVITIES CONSIST OF, BUT ARE NOT LIMITED TO, SAFETY FENCE, COMPOST FILTER SOCK, BELTED SILT RETENTION FENCE, WATERBARS, TRENCH PLUGS, ROCK CONSTRUCTION ENTRANCES, DIVERSION SWALES, CULVERTS, OUTLET PROTECTION, AND TEMPORARY AND PERMANENT SEEDING AND MULCHING. BEST MANAGEMENT PRACTICES (BMP) SPECIFICATIONS FOR THE E&S CONTROL PLAN (E&SCP) ARE TO BE UTILIZED BY THE CONSTRUCTION CONTRACTOR ACCORDING TO THE PROVIDED PLAN.

GENERAL CONSTRUCTION NOTES:

1. DISCHARGING SEDIMENT LADEN WATER WHICH WILL CAUSE OR CONTRIBUTE TO THE DEGRADATION OF A BENEFICIAL USE OF A WATER OF THE STATE FROM THE CONSTRUCTION SITE, A DEWATERING SITE, INTO ANY WATERBODY OR STORM DRAIN WITHOUT FILTRATION OR EQUIVALENT TREATMENT IS PROHIBITED.
2. THE DISCHARGER SHALL AMEND THE EROSION & SEDIMENT CONTROL PLAN WHENEVER THERE IS A CHANGE IN THE CONSTRUCTION OR OPERATIONS, WHICH MAY EFFECT THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS, GROUNDWATER, OR A MUNICIPAL STORM DRAIN SYSTEM.
3. DISCHARGES ORIGINATING FROM OFF-SITE SOURCES, WHICH FLOW THROUGH OR ACROSS THE AREAS DISTURBED BY CONSTRUCTION, SHALL BE DIVERTED AROUND THE ACTIVE CONSTRUCTION AREA WHENEVER POSSIBLE.
4. SOIL STABILIZATION (TEMPORARY SEED AND MULCHING) PROCEDURES WILL TAKE PLACE WITHIN 7 DAYS IF AREA IS TO BE LEFT IDLE FOR 21 DAYS AND/OR PRIOR TO PERIODS OF CESSATION IN CONSTRUCTION ACTIVITIES. PERMANENT STABILIZATION MUST ULTIMATELY BE COMPLETED IN ALL DISTURBED AREAS.
5. DUE TO VARYING SITE CONDITIONS, ADDITIONAL SEDIMENT CONTROL BMPS MAY BE NECESSARY BEYOND THE MEASURES SHOWN ON THE E&S CONTROL PLAN.
6. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES, LOCATED WITHIN THE IMMEDIATE AREA AND ABLE TO GET TO THE SITE WITHIN A REASONABLE TIMEFRAME. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON-SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY BMP DEVICES WHEN RAIN OR SNOW MELT EVENTS ARE IMMINENT.
7. DUE TO VARYING SITE CONDITIONS, SOIL STOCKPILE LOCATIONS/EXTENT AND LOCATION OF EROSION CONTROL MEASURES ASSOCIATED WITH THESE STOCKPILES SHALL BE PREVIEWED/APPROVED BY PROJECT EI.
8. STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED OUTSIDE 100-YR FLOOD ZONES. HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM SURFACE WATER BODIES.
9. BMPs ARE TO BE INSPECTED IN ACCORDANCE WITH THE FREQUNECIES STIPULATED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). A WRITTEN REPORT MUST ALSO BE COMPLETED, DOCUMENTING EACH INSPECTION AND, IF NECESSARY, ANY REPAIR, REPLACEMENT OR MAINTENANCE ACTIVITY.
10. THE LOCATION AND EXISTENCE OF EXISTING UNDERGROUND FACILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM A SEARCH OF AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN ON THE DRAWINGS, AND ANY OTHER WHICH IS NOT ON RECORD OR NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL POTHOLE EXISTING UTILITIES AT THE POINTS OF CONNECTION AND ALL UTILITY CROSSINGS TO DETERMINE EXACT LOCATIONS PRIOR TO THE START OF WORK. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER OF RECORD IMMEDIATELY.
11. ALL REQUIRED PERMITS MUST BE OBTAINED PRIOR TO STARTING WORK.
12. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, STABILIZATION AND MAINTENANCE OF ALL EXISTING AND PROPOSED SITE EROSION & SEDIMENTATION CONTROL DEVICES AND FACILITIES.
13. THE CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING EROSION & SEDIMENTATION DEVICES AND SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD THE ENGINEER OF RECORD HARMLESS OF ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF ENGINEER OF RECORD.
14. AS SITE SPECIFIC CONDITIONS MAY WARRANT, THE E&SC PLAN MAY REQUIRE MINOR MODIFICATIONS TO ENSURE PROPER PROTECTION OF RECEIVING WATERS. THE RESPECTIVE PROJECT ENVIRONMENTAL INSPECTOR (EI) WILL IDENTIFY SITE SPECIFIC AREAS WHERE A CERTAIN BMP MODIFICATION(S) IS NECESSARY TO EITHER OMIT OR ENHANCE BMPS IN SUCH AREAS. THIS PROCESS ENTAILS THE EI TO IDENTIFY LOCATIONS WHERE BMPS WILL NEED TO BE ALTERED, SUBSTITUTED OR OMITTED AND CONTACT THE DOMINION COMPLIANCE SPECIALIST TO REVIEW PROPOSED CHANGES. UPON REVIEW AND APPROVAL BY THE DOMINION COMPLIANCE SPECIALIST, THE EI WILL REDLINE, DATE, AND SIGN THE E&SCP DRAWING(S) DEPICTING THE REDLINE CHANGE(S). ONCE THIS PROCESS IS COMPLETED BY THE EI WILL NOTIFY THE VADEQ OF SUCH MINOR MODIFICATION REDLINE AMENDMENTS AS REQUIRED BY THE GENERAL PERMIT.
15. FOR THE PURPOSES OF THIS DOCUMENT, THE FOLLOWING DEFINITIONS APPLY:
    a. LIMITS OF DISTURBANCE (LOD) - THE BOUNDARY WITHIN WHICH GROUND DISTURBANCE OCCURS (OR MAY OCCUR) AS A RESULT OF CONSTRUCTION RELATED ACTIVITIES.
    b. LIMITS OF CONSTRUCTION (LOC) - THE BOUNDARY WITHIN WHICH GROUND DISTURBANCE OCCURS AS A RESULT OF THE CONSTRUCTION RELATED ACTIVITIES, IDENTIFIED AS LIMITS OF DISTURBANCE (LOD) ON THE E&SC PLANS, AS WELL AS WORK AREAS INCLUDING VEHICLE PARKING AND EQUIPMENT AND MATERIAL STAGING.

BMP INSTALLATION AND REMOVAL SEQUENCE

CONSTRUCTION MUST BE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED.

THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH COMPANY STANDARDS, THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY REGULATIONS AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.

THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN INCLUDING THE SOIL EROSION CONTROL DRAWINGS AND NARRATIVE SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING EARTH DISTURBANCE.

1. STAKE/FLAG ALL LIMITS OF DISTURBANCE FOR CONSTRUCTION ACTIVITIES, CLEARLY IDENTIFYING WETLAND AND STREAM EDGES. INSTALL SIGNS TO DESIGNATE THE AREA TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS WETLAND/STREAM BOUNDS, EXCLUSION AREAS ETC.
2. INSTALL ROCK CONSTRUCTION ENTRANCE IMMEDIATELY BEFORE INITIAL DISTURBANCES. THE ROCK CONSTRUCTION ENTRANCE TO BE UNDERLAIN BY FILTER FABRIC. ALL CONSTRUCTION TRAFFIC SHOULD USE ONLY ROCK CONSTRUCTION ENTRANCE FOR INGRESS AND EGRESS. ALL MUD OR SEDIMENT TRACKED ONTO THE EXISTING ROADWAY SHALL BE REMOVED BY THE CONTRACTOR AS NECESSARY.
3. INSTALL EROSION CONTROL MEASURES (I.E., COMPOST FILTER SOCK AND/OR SILT FENCE) AS NECESSARY WITH THE ACCESS ROADS TO PREVENT SEDIMENT LADEN RUNOFF FROM ENTERING DOWNSTREAM WATER BODIES. MAINTAIN THE ACCESS ROAD AS REQUIRED, ASSOCIATED DITCHES, AND NECESSARY OUTLET PROTECTION.
4. PRIOR TO GRADING AND EXCAVATION, INSTALL REMAINING EROSION CONTROL DEVICES (ECDs) SHOWN ON THE PLANS.
5. COMMENCE GRADING AND ASSOCIATED CUT AND FILL SLOPES. THE EARTH MOVING ACTIVITY SHALL BEGIN IN AREA OF CUT SO THAT THE CUTS CAN BE PLACED IN AREAS OF FILL.
6. FINALIZE CONTRACTOR YARD INSTALLATION AND ROADWAY GRADES AND PLACE TOPSOIL ON THE CUT AND FILL AREAS. IMMEDIATELY INSTALL EROSION CONTROL BLANKETS OR EQUIVALENT ON CUT AND FILL SLOPES, AFTER PLACEMENT OF STOCKPILES TOPSOIL ON EXCAVATED SLOPES, AND AS DIRECTED.
7. RE-DISTRIBUTION OF WET SEDIMENT FROM DEVICES AND FACILITIES SHALL ONLY BE PERMITTED UPHILL OF AN EFFECTIVE SEDIMENT CONTROL DEVICE OR FACILITY. SEDIMENT LADEN RUNOFF SHALL NOT BE ALLOWED TO FLOW DIRECTLY INTO, ONTO OR THROUGH UNPROTECTED INLETS, STORM DRAINS, AND WATER BODIES.
8. ANY EXPOSED TOPSOIL PILES SHOULD BE STABILIZED & SEEDED PER THE PERMIT REGULATIONS, AND BY TABLES SHOWN ON THE APPROVED EROSION CONTROL PLANS AND MULCHED WITH STRAW AS SPECIFIED BY THE PROJECT OWNER.
9. UPON MINIMUM 70% UNIFORM PERENNIAL VEGETATIVE GROWTH, REMOVE TEMPORARY SEDIMENT CONTROLS. REMOVE ACCUMULATED SEDIMENTS WITHIN DEVICES, RE-GRADE TO FINAL CONTOURS. STABILIZE SITE PER THE PLANS.

SEQUENCE OF CONSTRUCTION

1. LIMITS OF CONSTRUCTION MUST BE FIELD MARKED PRIOR TO CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
2. DETAILED SEQUENCE OF CONSTRUCTION:
    a. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
    b. CLEAR AND GRADE AS NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES.
    c. INSTALL SEDIMENT CONTROL DEVICES.
    d. PREPARE "TEMPORARY" PARKING AND STORAGE AREA(S).
    e. CLEAR AND GRUB THE SITE, AS REQUIRED.
    f. START CONSTRUCTION OF THE SITE IMPROVEMENTS.
    g. BEGIN GRADING THE SITE.
    h. INSTALL CONTRACTOR YARD IMPROVEMENTS.
    i. COMPLETE GRADING, INSTALL GRAVEL AND PERMANENT SEEDING AND PLANTING.
    j. AT THE CONCLUSION OF THE CONSTRUCTION ACTIVITIES, TEMPORARY SOIL STOCKPILES, ROCK STAGING AREAS AND EQUIPMENT AREAS SHALL BE REMOVED, REGRADED, AND STABILIZED TO PRE-EXISTING CONDITIONS.
    k. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED).

MAINTENANCE SCHEDULE

AFTER CONSTRUCTION IS COMPLETED AND REVEGETATION HAS BEEN ACHIEVED, ALL BMPS WILL BE REMOVED AND ANY LAND DISTURBED BY REMOVAL WILL BE PERMANENTLY STABILIZED. UNLESS OTHERWISE SPECIFIED, ALL MAINTENANCE MUST BE COMPLETED IMMEDIATELY AFTER AN INSPECTION IDENTIFIES THAT A BMP IS NOT FUNCTIONING AS REQUIRED.

- E&S CONTROLS WILL BE INSPECTED DAILY AT THE ACTIVE CONSTRUCTION SITE, AT LEAST ONCE EVERY SEVEN CALENDAR DAYS FOR ACTIVELY DISTURBED AREAS, EVERY 14 CALENDAR DAYS FOR RESTORED AREAS, AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD DURING THE ENTIRE PROJECT.
- SEDIMENT MUST BE REMOVED WHERE ACCUMULATION REACHES ONE-HALF THE ABOVE GROUND HEIGHT OF THE CONTROL MEASURE.
- EROSION CONTROL MEASURES, WHICH HAVE BEEN UNDERMINED OR TOPPED, MUST IMMEDIATELY BE REPAIRED.
- OTHER REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.
- TEMPORARY AND PERMANENT E&S CONTROL BMPS SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION.

MATERIAL WASTE HANDLING AND RECYCLING

1. SOLID WASTE DISPOSAL SHALL BE HANDLED THROUGH ONE OF THE LOCAL LICENSED WASTE MANAGEMENT PROVIDERS AND PERMITTED DISPOSAL FACILITIES. THE CONTRACTOR WILL PROVIDE MOBILE AND COVERED WASTE RECEPTACLES AS NEEDED ALONG THE PROJECT LIMITS. CONTRACTOR SHALL ALSO PROVIDE A COVERED DUMPSTER FOR CONSOLIDATION OF WASTE FOR PICK UP AND DISPOSAL FOR THE DURATION OF THE PROJECT. ALL SOLID WASTE SHALL BE DISPOSED OF AT A LICENSED PERMITTED MUNICIPAL LANDFILL
2. THE CONTRACTOR WILL DISPOSE OF ALL SCRAP MATERIAL. THE SCRAP MATERIAL MUST BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED AT A PROPERLY LICENSED/PERMITTED FACILITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY PERMITS AND/OR DISPOSAL FEES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ASSURE THAT ALL MATERIALS AREA HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, RULES, AND REGULATIONS, INCLUDING BUT NO LIMITED TO THOSE ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY, VADEQ, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
3. CONTRACTOR SHALL PRACTICE GOOD HOUSEKEEPING FOR THE DURATION OF THE PROJECT INCLUDING THE ROUTINE REMOVAL AND DISPOSAL OF SOLID WASTE.
4. CONTRACTOR SHALL KEEP RECORDS OF PROPER SOLID WASTE DISPOSAL AND PROVIDE COPIES TO THE EI.

SEEDING AND MULCHING

SEE SEED MIXES, SOIL AMENDMENTS, AND MULCH SPECIFICATIONS SPECIFIED IN THE ACP RESTORATION AND REHABILITATION PLAN.

1. SEEDBED PREPARATION: AREAS TO BE SEEDED SHALL BE FREE OF ROCKS AND STONES, DISKED TO A DEPTH OF 4-IN TO 6-IN, AND SMOOTHLY GRADED.
2. TOPSOIL SHALL BE REDISTRIBUTED ON ALL DISTURBED AREAS TO BE STABILIZED PRIOR TO SEEDING.
3. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 21 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
4. WHERE THE INITIATION OF STABILIZATION MEASURES WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.
5. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS), THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
6. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

POLLUTANT CONTROLS

- SPILLS OCCURRING DURING CONSTRUCTION, OPERATION AND MAINTENANCE ARE TO BE REPORTED IMMEDIATELY TO THE MONITORING CENTER AT 1-800-835-7191. DOMINION'S ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT WILL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE AGENCIES, EXCEPT AS PROVIDED FOR BELOW.
- IF THE CALL TO THE MONITORING CENTER IS NOT RETURNED WITHIN 30 MINUTES AND THE SPILL HAS IMPACTED WATER, THE PERSON DISCOVERING THE SPILL OR RELEASE WILL CONTACT THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 AND REPORT THE RELEASE. THAT PERSON WILL CONTINUE CALLING THE MONITORING CENTER UNTIL A REPRESENTATIVE IS REACHED.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

THE CONTRACTOR SHALL BE READILY FAMILIAR WITH AND MAINTAIN ON SITE FOR IMMEDIATE REFERENCE THE PROJECT SWPPP. THE REQUIREMENTS OF THE SWPPP PROVIDE ADDITIONAL DETAIL AND INFORMATION BEYOND THE PROJECT NOTES AND DETAILS. THE PERFORMANCE REQUIREMENTS OF THE SWPPP ARE INCORPORATED AND MADE PART OF THESE PLANS.

GENERAL NOTES AND COMMENTS:

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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management
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Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

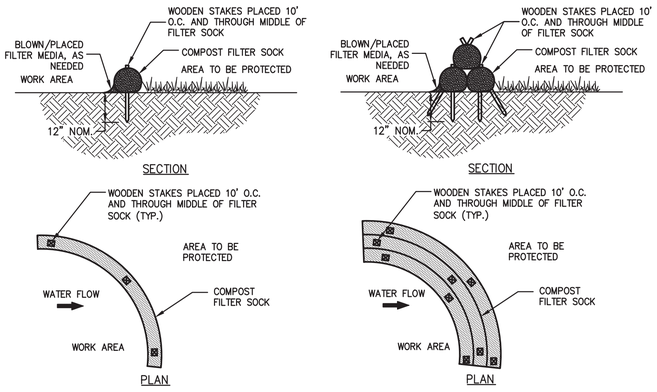
TITLE: ATLANTIC COAST PIPELINE
EROSION AND SEDIMENT CONTROL PLAN NOTES

DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	-	VA	-	14 OF 17	0

DIR/FILE: ACP\Virginia\

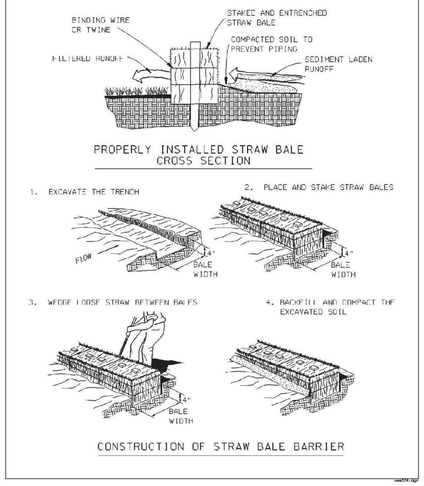
COMPOST FILTER SOCK

NOT TO SCALE



NOTES:
1. FILTER SOCK TO BE FILTREXX SEDIMENT CONTROL SILTSOXX OR APPROVED EQUAL. FILTER MEDIA INSIDE AND, AS NECESSARY UP-SLOPE OF FILTER SOCK, TO BE FILTREXX FILTERMEDIA OR APPROVED EQUAL.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FILTER SOCK.

STRAW BALE BARRIER - 3.04



SAFETY FENCE

NOT TO SCALE

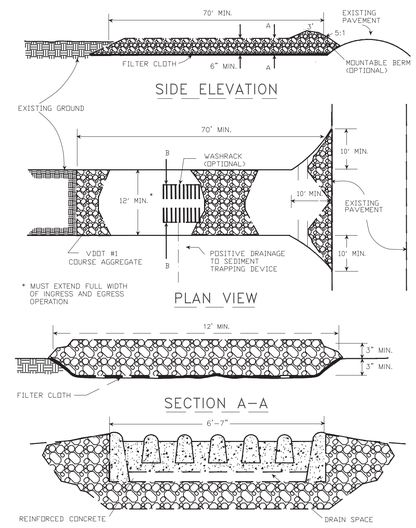
SOURCE: CONWED PLASTICS
VDOT ROAD AND BRIDGE STANDARDS
VA. DSWC

PLATE. 3.1-1

NOTES

1. STAKES WILL BE INSTALLED TO THE MINIMUM EMBEDMENT DEPTH OF 18 INCHES TO THE EXTENT POSSIBLE TO ENSURE THE FUNCTIONALITY OF THE SAFETY FENCE. WHERE ADEQUATE EMBEDMENT DEPTH CANNOT BE ACHIEVED ADDITIONAL MEASURES, INCLUDING BUT NOT LIMITED TO SANDBAGS, MOUNDED EARTH, ETC. WILL BE UTILIZED TO SECURE THE FENCE.

STONE CONSTRUCTION ENTRANCE

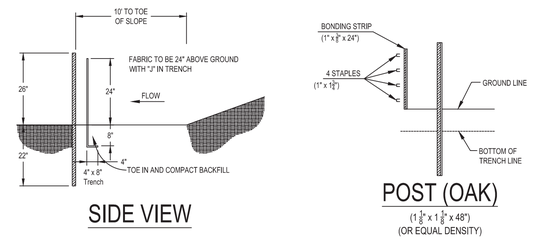


NOTES

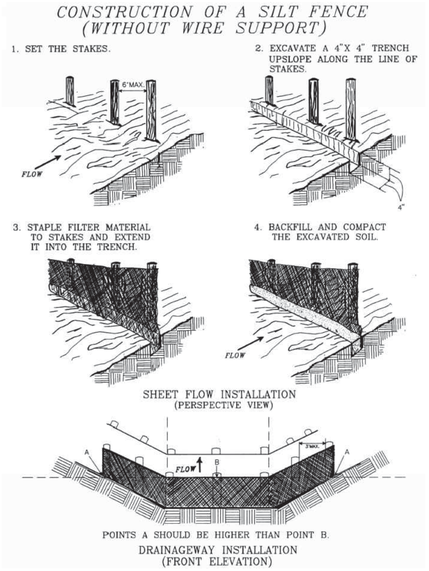
1. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROAD SURFACE BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

BELTED SILT RETENTION FENCE - (BSRF)

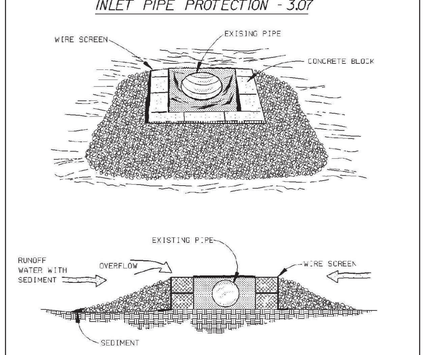
SILT - SAVER.



CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

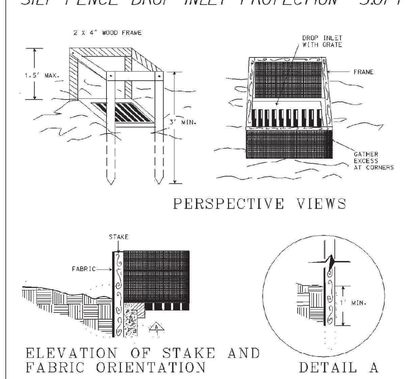


INLET PIPE PROTECTION - 3.07



THIS METHOD OF INLET PROTECITON IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED, AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

SILT FENCE DROP INLET PROTECTION - 3.07-1



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5.0 WHERE THE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

GENERAL NOTES AND COMMENTS:

SYM.	DATE	BY	REVISION INFORMATION	PROJECT/TASK	APP.
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SEAL
COMMONWEALTH OF VIRGINIA
DANIEL R. GOLDSTEIN
Lic. No. 047436
PROFESSIONAL ENGINEER

Environmental Resources Management

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Atlantic Coast Pipeline, LLC

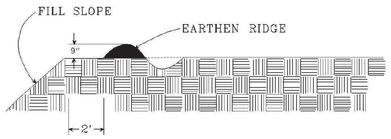
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE: ATLANTIC COAST PIPELINE
EROSION AND SEDIMENT CONTROL PLAN DETAILS

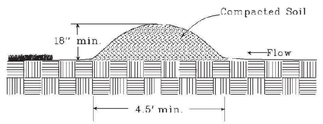
DISTRICT:	COUNTY:	STATE:	GROUP	DWG. NO.	REV.
-	-	VA	-	15 OF 17	0

DIR/FILE: ACP\Virginia\

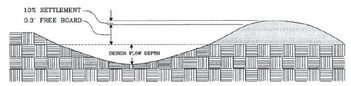
TEMPORARY FILL DIVERSION - 3.10



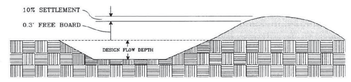
TEMPORARY DIVERSION DIKE - 3.09



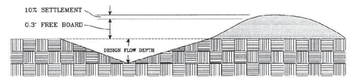
DIVERSIONS



TYPICAL PARABOLIC DIVERSION

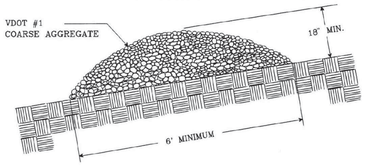


TYPICAL TRAPEZOIDAL DIVERSION

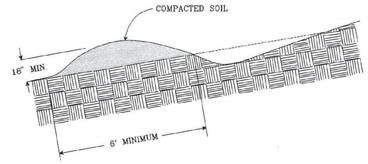


TYPICAL VEE-SHAPED DIVERSION

TEMPORARY RIGHT-OF-WAY DIVERSIONS



TYPICAL GRAVEL STRUCTURE



TYPICAL EARTHEN STRUCTURE

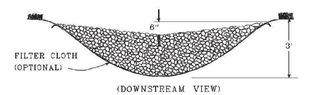
Design Criteria: No formal design is required. The following criteria shall be met:
Height- The minimum allowable height of the diversion is 18 inches;
Side Slopes- Side slopes should be 2:1 or flatter to allow the passage of construction traffic, along with a minimum base width of 6 feet;
Width-The measure should be constructed completely across the disturbed portion of the right-of-way;
Spacing-Use the following to determine the spacing of right-of-way diversions within the VA Erosion Control Handbook;
- less than 7% slope: 100 ft.
- between 7% and 25% slope: 75ft.
- between 25% and 40% slope: 50ft.
- Greater than 40%: 25 ft.

Grade- Positive drainage (with less than 2% slope) should be provided to a stabilized outlet, sediment-trapping facility, or a vegetative buffer strip of adequate size.

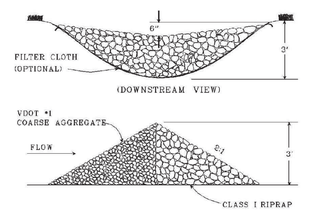
Outlet- Interceptor dikes must have an outlet which is not subject to erosion. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet. Concentrated flows should spread over the widest possible area after release. Flows with high sediment concentrations should pass through an appropriate sediment-trapping measure.

ROCK CHECK DAM - 3.20

2 ACRES OR LESS OF DRAINAGE AREA:

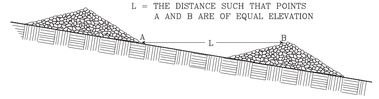


2-10 ACRES OF DRAINAGE AREA:



SPACING BETWEEN CHECK DAMS

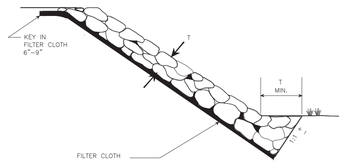
NOT TO SCALE



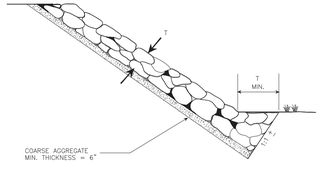
TOE REQUIREMENTS FOR BANK STABILIZATION

FILTER CLOTH UNDERLINER (PREFERRED)

NOT TO SCALE

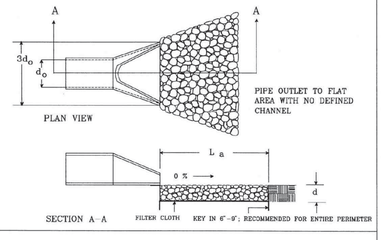


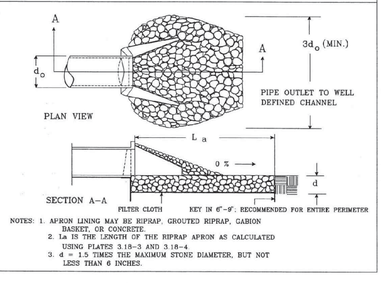
GRANULAR FILTER



Notes:
Filter Fabric Underlining: A lining of engineering filter fabric (geotextile) shall be placed between the riprap and the underlying soil surface to prevent soil movement into or through the riprap . The filter fabric must have opening size equal to or greater than U.S. No. 50 sieve; tensile strenght of at least 30 lb/linear in. and puncture strength of at least 80 lbs. Filter fabric shall not be used on slopes greater than 1 1/2:1 as slippage may occur and should be used in conjunction with a layer of course aggregate (granular filter blanket) when the riprap to be placed is Class II or larger.

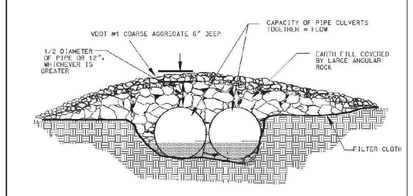
PIPE OUTLET CONDITIONS

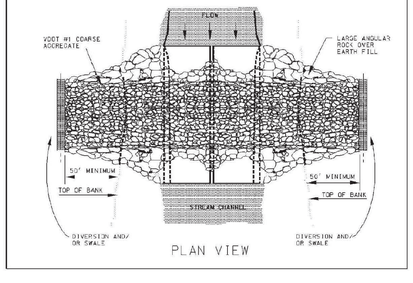




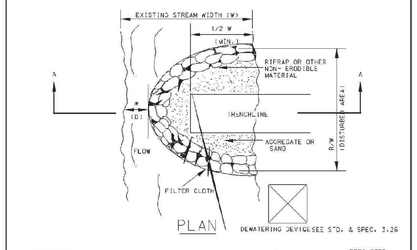
NOTES: 1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

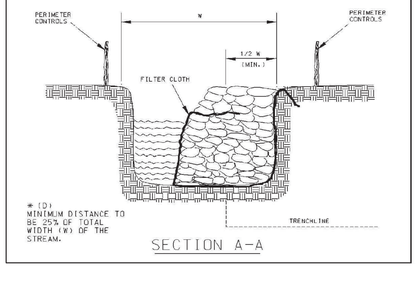
TEMPORARY CULVERT CROSSING - 3.24





COFFERDAM CROSSING - 3.25





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DANIEL R. GOLDSTEIN
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PROFESSIONAL ENGINEER

ERM Environmental Resources Management

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Atlantic Coast Pipeline, LLC
925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

TITLE:
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DISTRICT:	-	COUNTY:	-	STATE: VA	GROUP	DWG. NO.	REV.
DIR/FILE:	ACP\Virginia\				-	16 OF 17	0

GEOTEXTILE/DEWATERING BAG

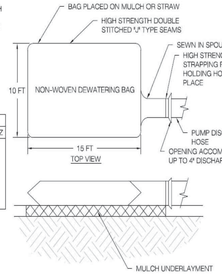
THE DEWATERING BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MIN. SURFACE AREA OF 225 SQUARE FEET PER SIDE. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. THE SEAM STRENGTH SHALL WITHSTAND 100 LB/IN USING ASTM D-4884 TEST METHOD. THE DEWATERING BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR INCH DISCHARGE HOSE. THE NOZZLE SHALL BE SEALED TIGHTLY AROUND THE DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNTREATED WATER FROM ESCAPING. THE GEOTEXTILE FABRIC SHALL BE A NON-WOVEN FABRIC WITH THE FOLLOWING PROPERTIES:

GEOTEXTILE FABRIC FOR DEWATERING BAG

PROPERTIES	TEST METHOD	UNITS	DEWATERING BAG 12 OZ
WEIGHT	ASTM D-3776	OZ/YD	12
GRAB TENSILE	ASTM D-4632	LBS.	300
PUNCTURE	ASTM D-4833	LBS.	175
FLOWRATE	ASTM D-4491	GAL/MIN/FT2	70
PERMITIVITY	ASTM D-4491	1.3 SEC-1	1
MULLEN BURST	ASTM D-3786	LBS./IN2	580
UV RESISTANT	ASTM D-4355	%	70
AOS % RETAINED	ASTM D-4751	0.40-0.80 MM	100

NOTE:
ALL PROPERTIES ARE MINIMUM AVERAGE ROLL VALUE EXCEPT THE WEIGHT OF THE FABRIC WHICH IS GIVEN FOR INFORMATION ONLY.

CONSTRUCTION:
THE DEWATERING BAG SHALL BE INSTALLED OVER A 3 INCH GRAVEL BASE TO PROMOTE INFILTRATION AND DEWATERING OF THE BAG.

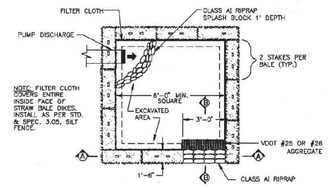


DETAIL: GEOTEXTILE BAG (DEWATERING BAG)

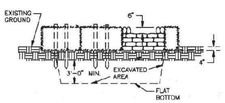
NTS

1992 3.26

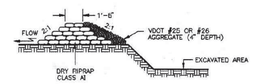
STRAW BALE/SILT FENCE PIT



PLAN VIEW



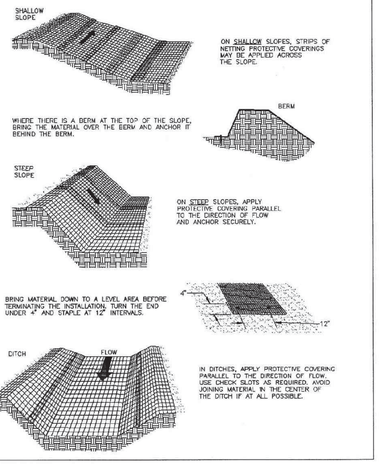
CROSS-SECTION A-A



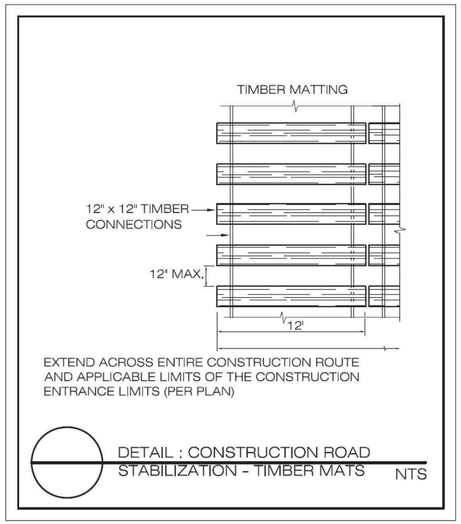
CROSS-SECTION B-B

1992 3.36

TYPICAL ORIENTATION OF TREATMENT – 1 (SOIL STABILIZATION BLANKET)



TIMBER MAT STABILIZATION

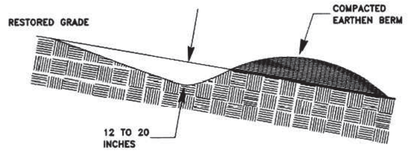


DETAIL : CONSTRUCTION ROAD STABILIZATION - TIMBER MATS

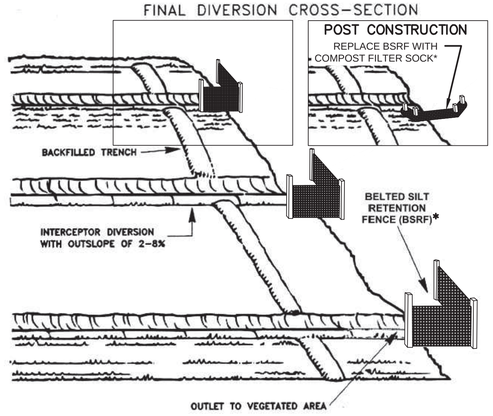
NTS

RIGHT-OF-WAY DIVERSION

NOT TO SCALE



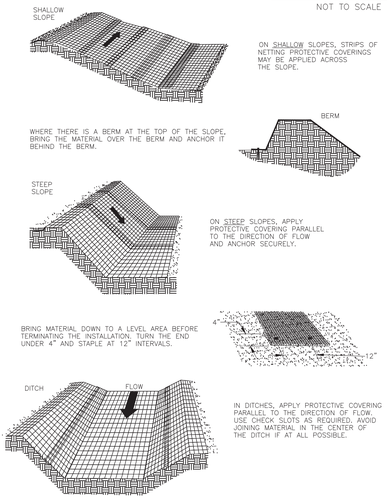
FINAL DIVERSION CROSS-SECTION



*CONTRACTOR MAY SUBSTITUTE STRAW WATTLES, COIR LOGS, MULCH SOCK OR SIMILAR BMP. FURTHER, SALVAGED OR IMPORTED ROCK MAY ALSO BE USED TO REDUCE VELOCITY AND DISTRIBUTE FLOW.

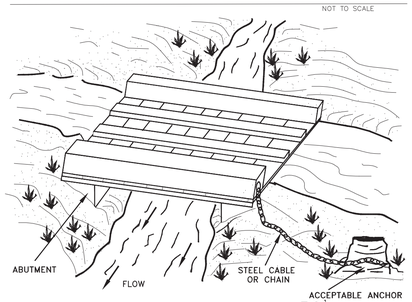
TYPICAL ORIENTATION OF TREATMENT – 1 (SOIL STABILIZATION BLANKET)

NOT TO SCALE



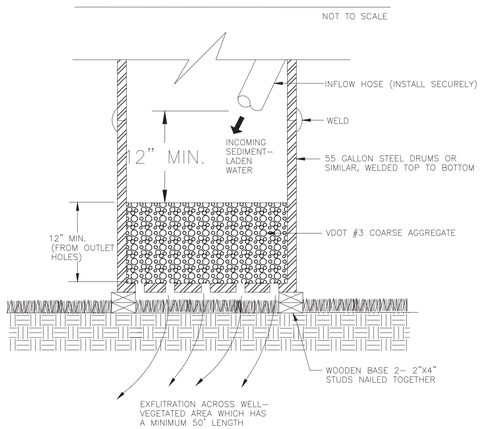
TEMPORARY BRIDGE CROSSING

NOT TO SCALE



FILTER BOX

NOT TO SCALE



ELEVATION VIEW

NOTES

1. EROSION CONTROL MATS/BLANKETS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

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-	-	VA	-	17 OF 17	0

DIR/FILE: ACP\Virginia\

APPENDIX J

FERC Table

FERC Regulatory Document	Regulation	Description	Are there more stringent requirements or practices?		Description of more stringent requirements/practices	Reference in SWPPP	Where Requirement/Practice Applies	
			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Upland Erosion Control, Revegetation, and Maintenance Plan								
FERC Plan	II.A.1: Environmental Inspection	At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.	no	NA	NA	7.1		x
FERC Plan	II.A.2: Environmental Inspection	Environmental Inspectors shall have peer status with all other activity inspectors.	no	NA	NA	7.1		x
FERC Plan	II.A.3: Environmental Inspection	Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the FERC's Orders, stipulations of other environmental permits or approvals, or landowner easement agreements; and to order appropriate corrective action.	no	NA	NA	7.1		x
FERC Plan	II.B.1: Responsibilities of Environmental Inspectors	Inspecting construction activities for compliance with the requirements of this Plan, the Procedures, the environmental conditions of the FERC's Orders, the mitigation measures proposed by the project sponsor (as approved and/or modified by the Order), other environmental permits and approvals, and environmental requirements in landowner easement agreements.	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.2: Responsibilities of Environmental Inspectors	Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.3: Responsibilities of Environmental Inspectors	Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.4: Responsibilities of Environmental Inspectors	Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.5: Responsibilities of Environmental Inspectors	Identifying erosion/sediment control and soil stabilization needs in all areas	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	3.3		x
FERC Plan	II.B.6: Responsibilities of Environmental Inspectors	Ensuring that the design of slope breakers will not cause erosion or direct water into sensitive environmental resource areas, including cultural resource sites, wetlands, waterbodies, and sensitive species habitats;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.7: Responsibilities of Environmental Inspectors	Verifying that dewatering activities are properly monitored and do not result in the deposition of sand, silt, and/or sediment into sensitive environmental resource areas, including wetlands, waterbodies, cultural resource sites, and sensitive species habitats; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	3.1.8.1 3.1.8.2		x
FERC Plan	II.B.8: Responsibilities of Environmental Inspectors	Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action	no	NA	NA	3.1.13.3		x
FERC Plan	II.B.9: Responsibilities of Environmental Inspectors	Advising the Chief Construction Inspector when environmental conditions (such as wet weather or frozen soils) make it advisable to restrict or delay construction activities to avoid topsoil mixing or excessive compaction;	no	NA	NA	7.1		x

FERC Regulatory Document	Regulation	Description	Are there more stringent requirements or practices?		Description of more stringent requirements/practices	Reference in SWPPP	Where Requirement/Practice Applies	
			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	II.B.10: Responsibilities of Environmental Inspectors	Ensuring restoration of contours and topsoil;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.11: Resposibilities of Environmental Inspectors	Verifying that the soils imported for agricultural or residential use are certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;	no	NA	NA	7.1		x
FERC Plan	II.B.12: Responsibilities of Environmental Inspectors	Ensuring that erosion control devices are properly installed to prevent sediment flow into sensitive environmental resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment.	7.1		x
FERC Plan	II.B.13: Responsibilities of Environmental Inspectors	Inspecting and ensuring the maintenance of temporary erosion control measures at least: a. on a daily basis in areas of active construction or equipment operation; b. on a weekly basis in areas with no construction or equipment operation; and c. within 24 hours of each 0.5 inch of rainfall;	yes	9 VAC 25-850-30 (Erosion and Sediment Control and Stormwater Management Certification Regulations)	Inspections of land-disturbing activities shall be conducted by a certified inspector in accordance with §§62.1-44.15:51 E and 62.1-44.15:53 of the Virginia Erosion and Sediment Control Act. A "certified inspector" means an employee or agent of a VESCP authority (or entity with standards and specifications such as DTI) who (i) holds a certificate of competence from the Board in the area of project inspection or (ii) is enrolled in the Board's training program for project inspection and successfully completes such program within one year after enrollment. **Note that FERC-related inspections conducted at the frequencies listed in FERC Plan II.B.13 do not require a Virginia-certified inspector.**	8.1.1		x
FERC Plan	II.B.14: Responsibilities of Environmental Inspectors	Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts;	no	NA	NA	7.1		x
FERC Plan	II.B.15: Responsibilities of Environmental Inspectors	Keeping records of compliance with the environmental conditions of the FERC's Orders, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other federal or state environmental permits during active construction and restoration;	no	NA	NA	7.1		x
FERC Plan	II.B.16: Responsibilities of Environmental Inspectors	Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase; and	no	NA	NA	7.1		x
FERC Plan	II.B.17: Responsibilities of Environmental Inspectors	Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with section III.E.	no	NA	NA	7.1		x
FERC Plan	III.A.1: Construction Work Areas	Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies.	no	NA	NA	2.11 2.18 2.19.5 2.19.9		x
FERC Plan	III.A.2: Construction Work Areas	Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of authorized work areas.	no	NA	NA	N/A		x
FERC Plan	III.A.3: Construction Work Areas	Plan construction sequencing to limit the amount and duration of open trench sections, as necessary, to prevent excessive erosion or sediment flow into sensitive environmental resource areas.	yes	VA Minimum Standard, MS-16a	Virginia Minimum Standard MS-16a requires that no more than 500 linear feet of trench may be opened at one time. In accordance with Virginia ESC Regulation for Variances (9 VAC 25-840-50.1), a variance to allow more than 500 linear feet of trench to be open at any one time is requested to become part of the approved Erosion and Sediment Control Plan (See General Notes on Construction Alignment Sheets)	Appendix A - Construction Alignment Sheets: General Notes		x
FERC Plan	III.B.1: Drain Tile and Irrigation Systems	Attempt to locate existing drain tiles and irrigation systems.	no	NA	NA	3.5.2		x
FERC Plan	III.B.2: Drain Tile and Irrigation Systems	Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.	no	NA	NA	3.5.2		x
FERC Plan	III.B.3: Drain Tile and Irrigation Systems	Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.	no	NA	NA	3.5.2		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	III.B.4: Drain Tile and Irrigation Systems	Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.	no	NA	NA	3.1		x
FERC Plan	III.C: Grazing Deferment	Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.	no	NA	NA	3.5.2		x
FERC Plan	III.D: Road Crossings and Access Points	Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.	no	NA	NA	3.1		x
FERC Plan	III.E: Disposal Planning	Determine methods and locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g., timber, slash, mats, garbage, drill cuttings and fluids, excess rock) throughout the construction process. Disposal of materials for beneficial reuse must not result in adverse environmental impact and is subject to compliance with all applicable survey, landowner or land management agency approval, and permit requirements.	no	NA	NA	6.4 6.6 7.1		x
FERC Plan	III.F.1: Agency Coordination	Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.	no	NA	NA	3.1.13.4 Appendix R- Restoration & Rehabilitation Plan		x
FERC Plan	III.F.2: Agency Coordination	Develop specific procedures in coordination with the appropriate agencies to prevent the introduction or spread of invasive species, noxious weeds, and soil pests resulting from construction and restoration activities.	no	NA	NA	6.4		x
FERC Plan	III.F.3: Agency Coordination	Develop specific procedures in coordination with the appropriate agencies and landowners, as necessary, to allow for livestock and wildlife movement and protection during construction.	no	NA	NA	3.5.2		x
FERC Plan	III.F.4: Agency Coordination	Develop specific blasting procedures in coordination with the appropriate agencies that address pre- and post-blast inspections; advanced public notification; and mitigation measures for building foundations, groundwater wells, and springs. Use appropriate methods (e.g., blasting mats) to prevent damage to nearby structures and to prevent debris from entering sensitive environmental resource areas.	no	NA	NA	3.1.6.3		x
FERC Plan	III.G: Spill Prevention and Response Procedures	The project sponsor shall develop project-specific Spill Prevention and Response Procedures, as specified in section IV of the staff's Procedures. A copy must be filed with the Secretary of the FERC (Secretary) prior to construction and made available in the field on each construction spread. The filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.	no	NA	NA	6.0		x
FERC Plan	III.H: Residential Construction	For all properties with residences located within 50 feet of construction work areas, project sponsors shall: avoid removal of mature trees and landscaping within the construction work area unless necessary for safe operation of construction equipment, or as specified in landowner agreements; fence the edge of the construction work area for a distance of 100 feet on either side of the residence; and restore all lawn areas and landscaping immediately following clean up operations, or as specified in landowner agreements. If seasonal or other weather conditions prevent compliance with these time frames, maintain and monitor temporary erosion controls (sediment barriers and mulch) until conditions allow completion of restoration.	no	NA	NA	3.5.4		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	III.I: Winter Construction Plans	If construction is planned to occur during winter weather conditions, project sponsors shall develop and file a project-specific winter construction plan with the FERC application. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations. The plan shall address: 1. winter construction procedures (e.g., snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, topsoil stripping); 2. stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and 3. final restoration procedures (e.g., subsidence and compaction repair, topsoil replacement, seeding).	no	NA	NA	3.5.5		x
FERC Plan	IV.A.1: Approved Areas of Disturbance	Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the FERC's Orders. Any project-related ground disturbing activities outside these areas will require prior Director approval. This requirement does not apply to activities needed to comply with the Plan and Procedures (i.e., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) or minor field realignments and workspace shifts per landowner needs and requirements that do not affect other landowners or sensitive environmental resource areas. All construction or restoration activities outside of authorized areas are subject to all applicable survey and permit requirements, and landowner easement agreements.	no	NA	NA	2.12 2.14 2.15		x
FERC Plan	IV.A.2: Approved Areas of Disturbance	The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a FERC Order. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (e.g., side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists. Project use of these additional limited areas is subject to landowner or land management agency approval and compliance with all applicable survey and permit requirements. When additional areas are used, each one shall be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material shall be included in the reports: a. the location of each additional area by station number and reference to previously filed alignment sheets, or updated alignment sheets showing the additional areas; b. identification of the filing at FERC containing evidence that the additional areas were previously surveyed; and c. a statement that landowner approval has been obtained and is available in project files.	no	NA	NA	2.12.1		x
FERC Plan	IV.B.1: Topsoil Segregation	Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in: a. cultivated or rotated croplands, and managed pastures; b. residential areas; c. hayfields; and d. other areas at the landowner's or land managing agency's request.	no	NA	NA **Note: Refer to the Construction, Operations, and Maintenance Plan (COM Plan) for practices to be implemented within the George Washington National Forest at the request of the USFS.**	3.1.6.1 3.6	x	x
FERC Plan	IV.B.2: Topsoil Segregation	In residential areas, importation of topsoil is an acceptable alternative to topsoil segregation.	no	NA	NA	3.1.6.1		x
FERC Plan	IV.B.3: Topsoil Segregation	Where topsoil segregation is required, the project sponsor must: a. segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil); and b. make every effort to segregate the entire topsoil layer in soils with less than 12 inches of topsoil.	no	NA	NA **Note: Refer to the Construction, Operations, and Maintenance Plan (COM Plan) for practices to be implemented within the George Washington National Forest at the request of the USFS.**	3.1.6.1 3.6	x	x
FERC Plan	IV.B.4: Topsoil Segregation	Maintain separation of salvaged topsoil and subsoil throughout all construction activities.	no	NA	NA **Note: Refer to the Construction, Operations, and Maintenance Plan (COM Plan) for practices to be implemented within the George Washington National Forest at the request of the USFS.**	3.1.6.1; 3.6	x	x
FERC Plan	IV.B.5: Topsoil Segregation	Segregated topsoil may not be used for padding the pipe, constructing temporary slope breakers or trench plugs, improving or maintaining roads, or as a fill material.	no	NA	NA	3.1.6.1		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	IV.B.6: Topsoil Segregation	Stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary.	yes	VA Minimum Standard MS-1; VA Minimum Standard MS-2; VESCH Std. & Spec 3.31 (Temporary Seeding); VESCH Std.&Spec 3.35(Mulching)	Seeding of stockpile must be completed within 7 days of the formation of the stockpile if it is to remain dormant for longer than 14 days in accordance with VESCH Std. & Spec. 3.31 (Temporary Seeding) and Minimum Standard MS-1 and MS-2. Stabilization of stockpiles with a temporary cover (i.e., mulch) in accordance with VESCH Std. & Spec. 3.35 (Mulching) is also acceptable. Virginia Minimum Standard MS-2 requires that soil stock piles be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site. ****Note that DETI's 2017 Standards and Specifications is requesting a case by case review to allows an exception to applying soil amendments for temporary seeding. Temporary seeding of stockpiles consists of adding annual grasses and mulch to achieve successful short-term stabilization. It is noted that, in accordance with Virginia Minimum Standard MS-2, erosion and sediment control measures will be in place during the temporary stabilization phase. Additionally, if during routine inspections it is observed that temporary seed is not successfully establishing within14 days, the appropriate soil amendments will be considered and if needed, will be incorporated in accordance with ESC Technical Bulletin #4. Temporary and permanent stabilization will be applied strictly in accordance with MS-1.**	3.1.6.1		x
FERC Plan	IV.C: Drain Tiles	1. Mark locations of drain tiles damaged during construction. 2. Probe all drainage tile systems within the area of disturbance to check for damage. 3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs. 4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).	no	NA	NA	3.5.2		x
FERC Plan	IV.D: Irrigation	Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.	no	NA	NA	3.5.2		x
FERC Plan	IV.E: Road Crossings and Access Points	1. Maintain safe and accessible conditions at all road crossings and access points during construction. 2. If crushed stone access pads are used in residential or agricultural areas, place the stone on synthetic fabric to facilitate removal. 3. Minimize the use of tracked equipment on public roadways. Remove any soil or gravel spilled or tracked onto roadways daily or more frequent as necessary to maintain safe road conditions. Repair any damages to roadway surfaces, shoulders, and bar ditches.	no	NA	NA	3.2		x
FERC Plan	IV.F: Temporary Erosion Control	Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.	no	NA	NA	3.0 3.1 3.1.5		x
FERC Plan	IV.F.1: Temporary Erosion Control	Temporary Slope Breakers a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags. b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing shall be used if necessary) Slope (%) Spacing (feet) 5-15 300 >15-30 200 >30 100 c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way. d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive environmental resource areas.	yes	VESCH Std. & Spec. 3.11 (Temporary Right-of-Way Diversion)	VESCH Std. & Spec 3.11 requires more stringent spacing and construction material (soil and gravel only), as well as specific construction specifications (height, width, grade, etc.). % Slope Spacing (ft.) Less than 7% 100 Between 7% and 25% 75 Between 25% and 40% 50 Greater than 40% 25 The minimum allowable height of the diversion is 18 inches. Side slopes should be 2:1 or flatter to allow the passage of construction traffice, along with a minimum base width of 6 feet. Positive drainage (with less than 2% slope) should be provided to a stabilized outlet, sediment-trapping facility, or a vegetative buffer strip of adequate size. ****Note that DETI's 2017 Standards and Specifications (approved by DEQ) allows a temporary ROW diversion slope between two and eight percent to help prevent temporary ROW diversion and overall potential slope failures by allowing the water to move off of the limits of disturbance. Temporary ROW diversions will have energy dissipating devices (coir logs, belted silt retention fence, rock aprons, etc.) installed at the outfall to slow and filter the water prior to exiting the limits of disturbance. In some instances it will be necessary to increase the fall slope to greater than eight percent to ensure runoff is able to move off the ROW. Approval for installation of temporary ROW diversions with a fall slope exceeding eight percent will be coordinated on a case-by-case basis.**	3.1.6.4		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	IV.F.2: Temporary Erosion Control	Temporary Trench Plugs: Temporary trench plugs are intended to segment a continuous open trench prior to backfill. a. Temporary trench plugs may consist of unexcavated portions of the trench, compacted subsoil, sandbags, or some functional equivalent. b. Position temporary trench plugs, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.	no	NA	NA	3.5.11.3		x
FERC Plan	IV.F.3: Temporary Erosion Control	Sediment Barriers: Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments beyond approved workspaces or into sensitive resources. a. Sediment barriers may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials. b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition. c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.	no	NA	NA	3.1.5 3.5.11.3 3.5.12.2 3.5.12.4		x
FERC Plan	IV.F.4: Temporary Erosion Control	Mulch: a. Apply mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing. b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent. c. Mulch all disturbed upland areas (except cultivated cropland) before seeding if: (1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or (2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions. d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent. e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release). f. Ensure that mulch is adequately anchored to minimize loss due to wind and water. g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies, except where the product is certified environmentally non-toxic by the appropriate state or federal agency or independent standards-setting organization. h. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.	yes	VA Minimum Standard MS-1; VESCH Std.&Spec 3.35 (Mulching)	Virginia Minimum Standard MS-1 is more stingent on timing of mulch placement if used as a temporary soil stabilization method: Permanent or temporary soil stabilization shall be applied to denuded areas within 7 days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within 7 days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than 1 year. VESCH Std.&Spec 3.35 is more prescriptive on the types of mulch available to use and their application rate (see table 3.35-A of the VESCH). Other materials may be used with the permission of the local Plan-approving authority. Organic mulches may be used in any area where mulch is required. Select mulch material based on site requirements, availability of materials, and availability of labor and equipment. Prior to Mulching, complete the required grading and install needed sediment control practices. Lime and Fertilizer, should be incorporated and surface roughening accomplished as needed. Seed should be applied prior to mulching except in the following cases: a. Where seed is to be applied as part of a hydroseeder slurry containing fiber mulch. b. Where seed is to be applied following a straw mulch spread during winter months. VESCH Std.& Spec 3.35 is more stringent on the application of the mulch. Mulch materials shall be spread uniformly, by hand or machine. When spreading straw mulch by hand, divide the area to be mulched into approximately 1,000 sq. ft. sections and place 70-90 lbs. (1 1/2 to 2 bales) of straw in each section to facilitate uniform distribution. **Mulching Anchoring:** Straw mulch must be anchored immediately after spreading to prevent displacement. The following methods of anchoring straw may be used: 1. Mulch anchoring tool (Krimer Tool), limited to use on slopes no steeper than 3:1, where equipment can operate safely and operate on the contour. 2. Fiber Mulch: Apply fiber mulch by means of a hydroseeder at a rate of 500-750 lbs./acre over top of straw mulch or hay. 3. Liquid Mulch Binders: Application of liquid mulch binders and tackifiers should be heaviest at edges of areas and at crests of ridges and banks, to prevent displacement. Binders may be applied after mulch is spread or may be sprayed into the mulch as it is being blown onto the soil. Following types of binders may be use: Synthetic Binders and Asphalt 4. Mulch Nettings: lightweight plastic, cotton, or paper nets may be stapled over the mulch according to manufacturer's recommendations. 5. Peg and Twine: because it is labor-intensive, this method is feasible only in small ares where other methods can not be used. Drive 8- to 10-Inch wooden pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes may be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross within a square pattern. Turn twine 2 or more times around each peg. **Chemical Mulches** may be used alone only in the following situations: a. Where no other mulching material is available b. In conjunction with temporary seeding during the times when mulch is not required for that practice c. From March 15-May 1 and August 15-September 30, provided that they are used on areas with slopes no steeper than 4:1, which have been roughened in accordance with surface roughening (VESCH Std. & Spec. 3.29) FERC Plan IV.F.4: Temporary Erosion Control is more stringent on uses of mulch and the distance to waterbodies. If mulching before seeding, increase mulch application on all slopes within **100 feet of waterbodies and wetlands** to a rate of 3 tons/acre of straw or equivalent. FERC Plan IV.F.4: Temporary Erosion Control is more stringent if wood chips are used as mulch. Do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release). FERC FERC Plan IV.F.4: Temporary Erosion Control is more stringent in sensitive wildlife habitat. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife.	Appendix R Restoration & Rehabilitation Plan 3.1.4 3.1.6 3.2.4 3.5.12.4		x

FERC Regulatory Document	Regulation	Description	Are there more stringent requirements or practices?		Description of more stringent requirements/practices	Reference in SWPPP	Where Requirement/Practice Applies	
			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	V.A.1: Restoration Cleanup	Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (i.e., temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup. If construction or restoration unexpectedly continues into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring, file with the Secretary for the review and written approval of the Director, a winter construction plan (as specified in section III.I). This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.	yes	VA Minimum Standard MS-1	Virginia Minimum Standard MS-1 is more stingent on timing of temporary and permanent soil stabilization: Permanent or temporary soil stabilization shall be applied to denuded areas within 7 days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within 7 days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than 1 year.	3.1.13		x
FERC Plan	V.A.2: Restoration Cleanup	A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section IV.F. and inspected and maintained as specified in sections II.B.12 through 14. When access is no longer required the travel lane must be removed and the right-of-way restored.	no	NA	NA	3.1.13		x
FERC Plan	V.A.3: Restoration Cleanup	Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench shall be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.	no	NA	NA	3.1.6.3		x
FERC Plan	V.A.4: Restoration Cleanup	Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.	no	NA	NA	3.1.13		x
FERC Plan	V.A.5: Restoration Cleanup	Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.	no	NA	NA	3.1.13		x
FERC Plan	V.A.6: Restoration Cleanup	Remove construction debris from all construction work areas unless the landowner or land managing agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.	no	NA	NA	3.1.13		x
FERC Plan	V.A.7: Restoration Cleanup	Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.	yes	VA Minimum Standard MS-18	Minimum Standard MS-18 – All temporary ESC measures shall be removed **within 30 days after final site stabilization or after the temporary measures are no longer needed**, unless otherwise authorized by the Virginia Erosion and Sedimentation Control Program (VESCP) authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.	3.1.5		x
FERC Plan	V.B.1: Permanent Erosion Control Devices	1. Trench Breakers a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers. b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers. c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required. d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland. Install trench breakers at wetland boundaries, as specified in the Procedures. Do not install trench breakers within a wetland.	no	NA	NA	3.1.7.1		x

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FERC Plan	V.B.2: Permanent Erosion Control Devices	Permanent Slope Breakers a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, stone, or some functional equivalent. b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, unless requested by the landowner, using spacing recommendations obtained from the local soil conservation authority or land managing agency. In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way: Slope (%) Spacing (feet) 5 - 15 300 >15 - 30 200 >30 100 c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker. d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.	no	NA	NA	3.1.13.1 3.1.6.4		x
FERC Plan	V.C.1: Soil Compaction Mitigation	Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.	no	NA	NA	3.1.13.3		x
FERC Plan	V.C.2: Soil Compaction Mitigation	Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.	no	NA	NA	3.1.13.3		x
FERC Plan	V.C.3: Soil Compaction Mitigation	Perform appropriate soil compaction mitigation in severely compacted residential areas.	no	NA	NA	3.1.13.3		x
FERC Plan	V.D.1: Revegetation	General: a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b. b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.	no	NA	NA	3.1.13.4 Appendix R- Restoration & Rehabilitation Plan		x
FERC Plan	V.D.2: Revegetation	Soil Additives: Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as practicable after application.	no	NA	FERC V.D.2 Revegetation requirement to consult with the local soil conservation authority or land management agency provides more county-specific information and up-to-date guidance than the 1992 Virginia Erosion and Sediment Control Handbook (VESCH).	Appendix R- Restoration & Rehabilitation Plan		x
FERC Plan	V.D.3: Revegetation	Seeding Requirements: a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed. b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. Seeding is not required in cultivated croplands unless requested by the landowner. c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the Environmental Inspector. Lawns may be seeded on a schedule established with the landowner. d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a through V.D.3.c. e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing. f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro). g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application. Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.	no	NA	FERC V.D.2 Revegetation requirement to consult with the local soil conservation authority or land management agency provides more county-specific information and up-to-date guidance than the 1992 Virginia Erosion and Sediment Control Handbook (VESCH).	Appendix R- Restoration & Rehabilitation Plan		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Plan	VI.Off-Road Vehicle Control	To each owner or manager of forested lands, offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include: A. signs; B. fences with locking gates; C. slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and D. conifers or other appropriate trees or shrubs across the right-of-way.	no	NA	NA	3.1.2		x
FERC Plan	VII.A.1: Post-Construction Activities and Reporting	MONITORING AND MAINTENANCE: Conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, conduct inspections after the first and second growing seasons.	no	NA	NA	Appendix R-Restoration & Rehabilitation Plan		x
FERC Plan	VII.A.2: Post-Construction Activities and Reporting	2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful when upon visual survey, crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise. Continue revegetation efforts until revegetation is successful.	no	NA	NA	Appendix R-Restoration & Rehabilitation Plan		x
FERC Plan	VII.A.3: Post-Construction Activities and Reporting	Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful.	no	NA	NA	3.5.2		x
FERC Plan	VII.A.4: Post-Construction Activities and Reporting	Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the landowner or land managing agency per section V.A.6), revegetation is successful, and proper drainage has been restored.	yes	VA Minimum Standard MS-3	Minimum Standard MS-3 more clearly defines the meaning of sucessful revegetation– A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, is mature enough to survive, and will inhibit erosion.	Appendix R-Restoration & Rehabilitation Plan		x
FERC Plan	VII.A.5: Post-Construction Activities and Reporting	Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion/leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In no case shall routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency or the U.S. Fish and Wildlife Service.	no	NA	NA	Appendix R-Restoration & Rehabilitation Plan		x
FERC Plan	VII.A.6: Post-Construction Activities and Reporting	Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and permanent access roads as necessary.	no	NA	NA	3.1.2		x
FERC Plan	VII.B.1: Reporting	1. The project sponsor shall maintain records that identify by milepost: a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used; b. acreage treated; c. dates of backfilling and seeding; d. names of landowners requesting special seeding treatment and a description of the follow-up actions; e. the location of any subsurface drainage repairs or improvements made during restoration; and f. any problem areas and how they were addressed.	no	NA	NA	Appendix R-Restoration and Rehabilitation plan		x
FERC Plan	VII.B.2: Reporting	The project sponsor shall file with the Secretary quarterly activity reports documenting the results of follow-up inspections required by section VII.A.1; any problem areas, including those identified by the landowner; and corrective actions taken for at least 2 years following construction. The requirement to file quarterly activity reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advanced notice provisions in the FERC's regulations.	no	NA	NA	Appendix R-Restoration and Rehabilitation plan		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Wetland and Waterbody Construction and Mitigation Procedures								
FERC Procedures	III.A: Environmental Inspectors	At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.	no	NA	NA	7.1		x
FERC Procedures	III.B: Environmental Inspectors	The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).	no	NA	NA	N/A		x
FERC Procedures	IV:A.1: Preconstruction Planning	The project sponsor shall develop project-specific Spill Prevention and Response Procedures that meet applicable requirements of state and federal agencies. A copy must be filed with the Secretary prior to construction and made available in the field on each construction spread. This filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that: a. all employees handling fuels and other hazardous materials are properly trained; b. all equipment is in good operating order and inspected on a regular basis; c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads; d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill; e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill; g. pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and h. bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.	no	NA	NA	6.0		x
FERC Procedures	IV.A.2: Preconstruction Planning	The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must: a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination; b. ensure that each construction crew has on hand sufficient tools and material to stop leaks; c. know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.	no	NA	NA	6.0		x
FERC Procedures	IV.B: Agency Coordination	The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in these Procedures and in the FERC's Orders.	no	NA	NA	1.0 10.0		x
FERC Procedures	V.A:Waterbody Crossings	NOTIFICATION PROCEDURES AND PERMITS: 1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits. 2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority. 3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver. 4. Notify appropriate federal and state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in applicable permits.	no	NA	NA	3.5.11		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.B.1:Installation	Time Window for Construction: Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows: a. coldwater fisheries - June 1 through September 30; and b. coolwater and warmwater fisheries - June 1 through November 30.	no	NA	NA	3.5.11.1		x
FERC Procedures	V.B.2:Installation	Extra Work Areas a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the conditions that will not permit a 50-foot setback and measures to ensure the waterbody is adequately protected. c. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.	no	NA	NA	3.5.11		x
FERC Procedures	V.B.3:Installation	General Crossing Procedures a. Comply with the COE, or its delegated agency, permit terms and conditions. b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit. c. Where pipelines parallel a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way, except where maintaining this offset will result in greater environmental impact. d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings. e. Maintain adequate waterbody flow rates to protect aquatic life, and prevent the interruption of existing downstream uses. f. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete. g. Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques in accordance with the Plan, provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for "waterbodies" as defined in section I.B.1.	no	NA	NA	3.5.11		x
FERC Procedures	V.B.4:Installation	Spoil Pile Placement and Control a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2. b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody.	no	NA	NA	3.5.11.4		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.B.5:Installation	Equipment Bridges a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment. b. Construct and maintain equipment bridges to allow unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include: (1) equipment pads and culvert(s); (2) equipment pads or railroad car bridges without culverts; (3) clean rock fill and culvert(s); and (4) flexi-float or portable bridges. Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges. c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts. d. Design and maintain equipment bridges to prevent soil from entering the waterbody. e. Remove temporary equipment bridges as soon as practicable after permanent seeding. f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove temporary equipment bridges as soon as practicable after final cleanup. g. Obtain any necessary approval from the COE, or the appropriate state agency for permanent bridges.	yes	VA Minimum Standard, MS-13 VESCH Std.& Spec. 3.24 (Temporary Vehicular Stream Crossing)	**VA Minimum Standard MS-13** - When a live watercourse must be crossed by construction vehicles **more than twice in any 6-month period**, a temporary vehicular stream crossing constructed of nonerodible material shall be provided. MS-13 is more stringent than FERC Procedure V.B.5.a which limits the number of equipment crossings of waterbodies prior to bridge installation to one crossing **per piece of clearing equipmen**t. **VESCH Std.&Spec 3.24- <u>Temporary Bridge Crossing</u> - (Design)**Structures may be designed in various configurations. However, the materials used to construct the bridge must be able to withstand the anticipated loading of the construction traffic. The temporary waterway crossing shall be at right angles to the stream. Where approach conditions dictate, the crossing may vary 15° from a line drawn perpendicular to the center line of the stream at the intended crossing location. The centerline of both roadway approaches shall coincide with the crossing alignment centerline for a minimum distance of 50 feet from each bank of the waterway being crossed. If physical or right-of-way restraints preclude the 50 feet minimum, a shorter distance may be provided. All fill materials associated with the roadway approach shall be limited to a maximum height of 2 feet above the existing flood plain elevation. A water diverting structure such as a dike or swale shall be constructed (across the roadway on both roadway approaches) 50 feet (maximum) on either side of the waterway crossing. If the roadway approach is constructed with a reverse grade away from the waterway, a separte diverting structure is not required. All crossings shall have one traffic lane. The minimum width shall be 12 feet with a maximum width of 20 feet. **<u>Temporary Bridge Crossing</u> - (Construction)** a. Clearing and excavation of the stream bed and banks shall be kept to a minimum. b. The temporary bridge structure shall be constructed at or above bank elevation to prevent the entrapment of floating materials and debris. c. Abutments shall be placed parallel to and on stable banks. d. Bridges shall be constructed to span the entire channel. If the channel width exceeds 8 feet (as measured from top-of-bank to top-of-bank), then a footing, pier or bridge support may be constructed within the waterway. One additional footing, pier or bridge support will be permitted for each additional 8-foot width of the channel. No footing, pier or bridge support, however, will be permitted within the channel for waterways which are less than 8 feet wide. e. Stringers shall either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials. f. Decking materials shall be of sufficient strength to support the anticipated load. All decking members shall be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below. g. Run planking (optional) shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads. h. Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option which will provide additional safety. i. Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floodwaters float the bridge. Acceptable anchors are large .trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. j. All areas disturbed during installation shall be stabilized within 7 calendar days of that disturbance in accordance with Minimum Standard #1. k. When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed immediately. l. Final clean-up shall consist of removal of the temporary bridge from the waterway, protection of banks from erosion, and removal of all construction materials. All removed materials shall be stored outside flood plain of the stream. Removal of the bridge and clean-up of the area shall be accomplished without construction equipment working in the waterway channel.	3.5.11.3 3.2.4 Appendix B (DTI Standards and Specifications and ACP Variance Requests)		x

FERC Regulatory Document	Regulation	Description	Are there more stringent requirements or practices?		Description of more stringent requirements/practices	Reference in SWPPP	Where Requirement/Practice Applies	
			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.B.6:Installation	a. Dry-Ditch Crossing Methods a. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally-designated as critical habitat. b. Dam and Pump (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage. (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria: (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows; (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner); (iii) screen pump intakes to minimize entrainment of fish; (iv) prevent streambed scour at pump discharge; and (v) continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing. c. Flume Crossing: The flume crossing method requires implementation of the following steps: (1) install flume pipe after blasting (if necessary), but before any trenching; (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal); (3) properly align flume pipe(s) to prevent bank erosion and streambed scour; (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete. d. Horizontal Directional Drill For each waterbody or wetland that would be crossed using the HDD method, file with the Secretary for the review and written approval by the Director, a plan that includes: (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction; (2) justification that disturbed areas are limited to the minimum needed to construct the crossing;	yes	VESCH E&S Std. & Spec 3.25 (Utility Stream Crossing)	VESCH Std.&Spec 3.25- **Flume Pipe Crossing -** To be used when in-stream construction will last less than 72 hours and stream is narrow (less than 10 feet wide), making "cofferdam" construction impractical. a. The flume pipe crossing must be made operational prior to the start of construction in the stream. b. The materials used (culvert(s), stone and filter fabric) must meet the physical constraints of those used in VEHICULAR STREAM CROSSING, Std. & Spec. 3.24. c. A large flume pipe (or culvert) of an adequate size to support normal water channel flow (see Table 3.24-A) shall then be installed in the stream bed across the proposed pipeline trench centerline. VDOT #1 Coarse Aggregate (minimum size) or riprap shall be placed close to each end of the flume pipe so as to dam off the creek forcing the water to flow through the flume pipe. d. The entrapped water can then be pumped from the creek within the dammed- off area and in the proposed trench centerline into an approved DEWATERING STRUCTURE (see Std. & Spec. 3.26). The trench can then be dug under the flume pipe. The pipe sections will then be installed to the proper depth under the flume pipe. After pipe sections are installed, the ditch will be backfilled and restabilization shall be carried out. e. Restabilization shall consist of the installation of ungrouted riprap on all disturbed streambank areas (or on the area 6 feet on both sides of the centerline of the utility trench, whichever is greater) with slopes of 3:1 or greater. Refer to Std. & Spec. 3.19, RIPRAP, for installation requirements. For slopes of 3:1 or less, vegetative stabilization may be used, pending approval by the Plan-Approving Authority or inspection authority. Stabilization of its streambed and banks and the approach areas should occur immediately following the attainment of final grade. f. After completion of backfilling operation and restoration of stream/creek banks and leveling of stream bed, the flume pipe can then be removed. The gravel can be removed or spread in the stream bed depending on permit requirements. Sediment control in approach areas shall not be removed until all construction is completed in stream/creek crossing area. All ground contours shall be returned to their original condition. ****Note that DETI's Standards and Specifications is requesting a review of a case by case basis with the DEQ the use of flume pipe crossing method on streams greater than 10 feet wide, consistent with the FERC Procedures. At the time of crossing, the method which allows for a safe and prompt crossing will be selected. Flume pipe crossings are an option along with dam and pump. The deviation request also included on a case by case basis with the DEQ, an extension to the 72 hour timeframe for in-stream construction, only in the event that rock is encountered which requires blasting/rock hammering that could significantly increase the amount of time needed to complete the crossing or a failure in crossing method requires additional time to either mitigate or change.** **Cofferdam Utility Crossing -** To be used when stream diversion is not practical and stream is wide enough (10 feet or wider) to make cofferdam installation practical. a. Construction is to be performed in low flow periods. b. Crossing shall be accomplished in a manner that will not prohibit the flow of the stream. (See Plate 3.25-4). c. As with all utility line crossings, approach areas must be controlled with perimeter measures such as silt fence or straw bales. d. Remove large rocks, woody vegetation, or other material from the streambed and banks that may get in the way of placing the riprap	3.5.11.4 3.5.1 3.5.11.2 Appendix B (DTI Standards and Specifications and ACP Variance Requests)		x
FERC Procedures	V.B.7:Installation	Crossings of Minor Waterbodies Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions: a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period; b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.	no	NA	NA	3.5.11.4		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.B.8:Installation	Crossings of Intermediate Waterbodies Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions: a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible; b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.	no	NA	NA	3.5.11.4		x
FERC Procedures	V.B.9:Installation	Crossings of Major Waterbodies Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan must be developed in consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations. The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to	no	NA	NA	3.5.11.4		x
FERC Procedures	V.B.10:Installation	Temporary Erosion and Sediment Control Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings: a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent; b. where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the waterbody; and	no	NA	NA	3.5.11.3		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.B.11:Installation	Trench Dewatering Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.	yes	VESCH Std.& Spec 3.26 (Dewatering Structure)	**VESCH Std.&Spec 3.26-** **Design Criteria:** 1. A dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure. 2. Material from any required excavation shall be stored in an area and protected in a manner that will prevent sediments from eroding and moving off-site. 3. An excavated basin (applicable to "Straw Bale/Silt Fence Pit") may be lined with filter fabric to help reduce scour and to prevent the inclusion of soil from within the structure. **Construction Specifications:** 1. **Portable Sediment Tank** a. The structure may be constructed with steel drums, sturdy wood or other material suitable for handling the pressure exerted by the volume of water. b. Sediment tanks will have a minimum depth of two feet. c. The sediment tank shall be located for easy clean-out and disposal of the trapped sediment and to minimize the interference with construction activities. d. The following formula shall be used to determine the storage volume of the sediment tank: Pump discharge (g.p.m.) x 16 = cubic feet of storage required e. Once the water level nears the top of the tank, the pump must be shut off while the tank drains and additional capacity is made available. f. The tank shall be designed to allow for emergency flow over top of the tank. g. Clean-out of the tank is required once1/3 of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point. 2. **Filter Box** a. The box selected should be made of steel, sturdy wood or other materials suitable to handle the pressure requirements imposed by the volume of water. Fifty-five gallon drums welded top to bottom are normally readily available and, in most cases, will suffice. b. Bottom of the box shall be made porous by drilling holes (or some other method). c. VDOT #3 Coarse Aggregate shall be placed over the holes at a minimum depth of 12 inches (metal "hardware" cloth may need to be placed between the aggregate and the holes if holes are drilled larger than the majority of the stone). d. As a result of the fast rate of flow of sediment-laden water through the aggregate, the effluent must be directed over a well-vegetated strip of at least 50 feet after leaving the base of the filter box. e. The box shall be sized as follows: Pump discharge (g.p.m.) x 16 = cubic feet of storage required f. Once the water level nears the top of the box, the pump must be shut off while the box drains and additional capacity is made available. g. The box shall be designed/ constructed to allow for emergency flow over the top of this box. h. Clean-out of the box is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point. i. If the stone filter does become clogged with sediment so that it no longer adequately performs its function, the stones must be pulled away from the inlet, cleaned and replaced. Note: Using a filter box only allows for minimal settling time for sediment particles; therefore, it should only be used when site conditions restrict the use of the other methods. 3. **Straw Bale /Silt Fence Pit** (see Plate 3.26-3): a. Measure shall consist of straw bales or silt fence. b. The structure must have a capacity which is dictated by the following formula: Pump discharge (g.p.m.) x 16 = cubic feet of storage required. In calculating the capacity, one should include the volume available from the floor of the excavation to the crest of the stone weir. c. The perimeter measures must be installed as per the guidelines found in Std. & Spec. 3.04, STRAW BALE BARRIER and Std. & Spec. 3.05, SILT FENCE. d. Once the water level nears the crest of the stone weir (emergency overflow), the pump must be shut off while the structure drains down to the elevation of the wet storage. e. The wet storage pit may be dewatered only after a minimum of 6 hours of sediment settling time. This effluent should be pumped across a well-vegetated area or through a silt fence prior to entering a watercourse. f. Once the wet storage area becomes filled to one-half of the excavated depth, accumulated sediment shall be removed and properly disposed of. ****Note that DETI's Standards and Specifications (approved by DEQ) allows the use of a modified dewatering structure in combination with a filter bag. The structure is similar to the straw bale/silt fence pit described in the VESCH, but the wet storage area is not excavated 3 ft below the perimeter measures since the structures are placed off the right-of-way in well vegetated areas. The filter bag discharges into the dewatering structure for additional filtration through the straw bales. Additional energy dissipating devices may be installed downgradient of the dewatering structure, as necessary. It is noted that filter bags are often installed off the right-of-way to avoid discharge to denuded areas on the right-of-way and to benefit from additional filtration provided by the vegetation that exists off the right-of-way. Prior to installing a dewatering structure off the right-of-way appropriate coordination with the landowner will occur. Installation and removal of the referenced dewatering practice does not involve ground disturbance.**	3.1.8.1 3.1.8.2 3.1.11 Appendix B (DTI Standards and Specifications and ACP Variance Requests)		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	V.C:Restoration	1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries. 2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. 3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector. 4. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices. 5. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions. 6. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric. 7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands. 8. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody. 9. Sections V.C.3 through V.C.7 above also apply to those perennial or intermittent streams not flowing at the time of construction.	no	NA	NA	3.5.11.3 3.5.11.5		x
FERC Procedures	V.D:Post-Construction Maintenance	1. Limit routine vegetation mowing or clearing adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points. 2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency. 3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.	no	NA	NA	3.5.11.6		x
FERC Procedures	VI: Wetland Crossings							
FERC Procedures	VI.A.1: General	The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction. The requirement to file a wetland delineation report does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations. This report shall identify: a. by milepost all wetlands that would be affected; b. the National Wetlands Inventory (NWI) classification for each wetland; c. the crossing length of each wetland in feet; and d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type. The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.	no	NA	NA	2.19.3 11.0		x
FERC Procedures	VI.A.2: General	Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.	no	NA	NA	2.19.3 3.5.12		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	VI.A.3: General	Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.	no	NA	NA	3.5.12		x
FERC Procedures	VI.A.4: General	Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.	no	NA	NA	3.5.12.1		x
FERC Procedures	VI.A.5: General	Implement the measures of sections V and VI in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V and VI cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum: a. spoil control; b. equipment bridges; c. restoration of waterbody banks and wetland hydrology; d. timing of the waterbody crossing; e. method of crossing; and f. size and location of all extra work areas.	no	NA	NA	3.5.12		x
FERC Procedures	VI.A.6: General	Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.	no	NA	NA	3.5.12		x
FERC Procedures	VI.B.1: Installation	Extra Work Areas and Access Roads a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected. c. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats). In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way. d. The only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland.	no	NA	NA	3.2 3.5.12		x
FERC Procedures	VI.B.2: Installation	Crossing Procedures a. Comply with COE, or its delegated agency, permit terms and conditions. b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe. c. Use “push-pull” or “float” techniques to place the pipe in the trench where water and other site conditions allow. d. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering in. e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way. f. Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal. The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal. g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way. h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location. i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way. j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats. k. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.	No	NA	NA	3.5.12.1 3.5.12.2 3.5.12.3		x

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			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	VI.B.3: Installation	Temporary Sediment Control Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c, maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan. a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland. b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the wetland. c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.	yes	VA Minimum Standard MS-3 VA Minimum Standard MS-18	Minimum Standard MS-3 more clearly defines the meaning of successful revegetation– A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, is mature enough to survive, and will inhibit erosion. Minimum Standard MS-18 – All temporary ESC measures shall be removed **within 30 days after final site stabilization** or after the temporary measures are no longer needed, unless otherwise authorized by the Virginia Erosion and Sedimentation Control Program (VESCP) authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.	3.5.12.2		x
FERC Procedures	VI.B.4: Installation	Trench Dewatering Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.	yes	VESCH Std.& Spec 3.26 (Dewatering Structure)	See FERC Procedures V.B.11 above	3.5.12.3		x
FERC Procedures	VI.C: Restoration	1. Where the pipeline trench may drain a wetland, construct trench breakers at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology. 2. Restore pre-construction wetland contours to maintain the original wetland hydrology. 3. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland. 4. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency. 5. Consult with the appropriate federal or state agencies to develop a project-specific wetland restoration plan. The restoration plan shall include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request. 6. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present). 7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species. 8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.4 of the Plan.	yes	VA Minimum Standard MS-3 VA Minimum Standard MS-18	Minimum Standard MS-3 more clearly defines the meaning of sucessful revegetation– A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, is mature enough to survive, and will inhibit erosion. Minimum Standard MS-18 – All temporary ESC measures shall be removed **within 30 days after final site stabilization** or after the temporary measures are no longer needed, unless otherwise authorized by the Virginia Erosion and Sedimentation Control Program (VESCP) authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.	3.5.12.4		x

FERC Regulatory Document	Regulation	Description	Are there more stringent requirements or practices?		Description of more stringent requirements/practices	Reference in SWPPP	Where Requirement/Practice Applies	
			yes/no	If yes, list requirements/practices			USFS National Forest	Non-specific Area
FERC Procedures	VI.D: Post-Construction Maintenance And Reporting	1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between HDD entry and exit points. 2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency. 3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of wetland areas. 4. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful. 5. Wetland revegetation shall be considered successful if all of the following criteria are satisfied: a. the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation); b. vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction; c. if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and d. invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction. 6. Within 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in section VI.D.5, above. The requirement to file wetland restoration reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advance notice provisions in the FERC's regulations. For any wetland where revegetation is not successful at the end of 3 years after construction, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.	yes	GWNF LRMP FW-111 GWNF LRMP FW-116	FERC Procedures VI.D: Wetland Crossings, Post-Construction Maintenance And Reporting states: "Do not use herbicides or pesticides in or within **100 feet of a wetland**...." GWNF LRMP FW-111 states: No herbicide is **aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet**, of lakes, wetlands, perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled pesticides) may occur within these buffers only to prevent significant environmental damage such as non-native invasive plant infestations. Buffers are clearly marked before treatment, so applicators can easily see and avoid them. GWNF LRMP FW-116 state: Herbicide **mixing, loading, or cleaning areas** in the field are not located **within 200 feet** of private land, riparian corridors, open water or wells, or other sensitive areas. All other requirements in FERC Procedures VI.D: Wetland Crossings, Post-Construction Maintenance And Reporting are most stringent.	3.5.12 Appendix R Restoration & Rehabilitation Plan	x	
FERC Procedures	VII: Hydrostatic Testing							
FERC Procedures	VII.A: Notification Procedures and Permits	1. Apply for state-issued water withdrawal permits, as required. 2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required. 3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.	no	NA	NA	3.1.11		x
FERC Procedures	VII.B: General	1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands. 2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address secondary containment and refueling of these pumps in the project's Spill Prevention and Response Procedures. 3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.	no	NA	NA	3.1.11		x
FERC Procedures	VII.C: Intake Source and Rate	1. Screen the intake hose to minimize the potential for entrainment of fish. 2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission. 3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users. 4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.	no	NA	NA	3.1.11		x
FERC Procedures	VII.D: Discharge Location, Method, and Rate	1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow. 2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.	no	NA	NA	3.1.11		x

APPENDIX K

Current Land Uses

APPENDIX K

Land Uses Affected by Construction and Operation of the Atlantic Coast Pipeline within Virginia(in acres) [a, b]

PROJECT/Facility Type/Facility	County	State	Agriculture (Cultivated Crop)		Agriculture (Pasture Land)		Agriculture (Tree Plantation/Harvested Forest)		Upland Forest/Woodland		Developed (Open to Low Intensity)		Developed (Medium to High Intensity)		Open Land		Wetlands		Open Water		Total	
			Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.	Constr.	Oper.
ATLANTIC COAST PIPELINE																						
Pipeline Facilities																						
AP-1	Highland	VA	0.2	0.1	11.0	6.8	2.0	1.3	143.0	75.6	2.9	1.7	0.0	0.0	3.4	1.9	0.2	0.1	0.9	0.5	163.5	88.1
	Bath	VA	1.5	1.0	32.8	19.2	1.9	1.1	286.0	157.9	8.4	5.8	0.0	0.0	0.4	0.2	3.3	2.2	1.5	1.0	335.8	188.4
	Augusta	VA	19.9	12.2	316.6	189.9	32.2	18.3	414.5	234.5	38.8	23.0	0.0	0.0	0.8	0.4	3.7	2.7	4.4	2.6	830.9	438.6
	Nelson	VA	1.4	0.9	30.7	18.6	8.4	5.0	353.9	215.5	8.9	5.9	0.0	0.0	0.1	0.1	0.4	0.4	1.6	1.2	405.5	247.5
	Buckingham	VA	1.9	1.1	39.1	23.7	124.2	75.8	177.5	107.7	10.1	6.0	0.0	0.0	46.8	28.3	4.5	3.5	1.5	1.0	405.7	247.1
	Cumberland	VA	2.3	1.3	25.5	15.6	13.4	8.1	74.8	44.8	2.4	1.4	0.0	0.0	14.3	8.9	1.2	0.8	0.9	0.6	134.6	81.2
	Prince Edward	VA	1.4	0.9	18.0	10.8	10.6	5.9	41.1	25.0	0.9	0.5	0.0	0.0	3.0	1.7	1.4	1.2	0.4	0.2	76.8	46.2
	Nottoway	VA	5.5	3.5	49.6	29.4	55.9	34.6	186.1	111.8	7.6	4.4	0.0	0.0	29.8	17.7	8.6	6.8	1.4	0.8	344.4	209.1
	Dinwiddie	VA	10.6	6.1	28.6	17.4	46.7	28.2	59.9	36.6	4.1	2.2	0.0	0.0	10.4	6.6	8.0	6.4	0.5	0.3	168.8	103.6
	Brunswick	VA	17.7	10.5	31.3	19.2	78.9	48.0	133.9	80.4	13.2	8.0	0.0	0.0	41.9	25.4	11.2	8.7	1.1	0.6	329.2	200.9
	Greensville	VA	31.6	18.9	14.7	9.3	102.4	63.1	51.0	30.5	3.6	2.2	0	0	1.4	0.9	31.4	24.7	1	0.7	237.1	150.3
TOTAL			**94.0**	**56.5**	**577.9**	**359.9**	**476.6**	**289.4**	**1921.7**	**1120.3**	**100.9**	**61.1**	**0.0**	**0.0**	**152.3**	**92.1**	**73.9**	**57.5**	**15.2**	**9.5**	**3422.3**	**2001.0**
AP-3	Greensville	VA	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.2	0.2	1.7	1.2
	Southampton	VA	75.4	48.7	22.3	14.8	30.7	19.8	44.3	29.2	1.0	0.7	< 0.1	0.0	8.0	5.4	58.0	40.0	0.9	0.6	240.0	159.2
	City of Suffolk	VA	90.4	50.9	23.6	15.6	24.4	14.5	64.7	43	3.1	2	0.3	0.2	12.9	7.5	97.6	65.2	2.7	2.4	319.7	201.3
	City of Chesapeake	VA	0.0	0.0	0.1	0.1	0.2	0.1	9.3	6.0	34.1	20.6	5.5	3.8	7.3	3.6	53.0	35.2	2.8	2.1	112.2	71.5
TOTAL			**165.8**	**99.6**	**46.0**	**30.5**	**55.3**	**34.4**	**118.9**	**78.6**	**38.2**	**23.3**	**5.8**	**4.0**	**28.2**	**16.5**	**209.5**	**141.0**	**6.6**	**5.3**	**683.6**	**433.2**
AP-4	Brunswick	VA	0.0	0.0	0.0	0.0	3.8	2.3	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	3.8	2.4
TOTAL			**0.0**	**0.0.**	**0.0**	**0.0**	**3.8**	**2.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**<0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.8**	**2.4**
AP-5	Greensville	VA	0.0	0.0	0.0	0.0	5.5	3.6	2.6	1.8	0.1	0.1	0.0	0.0	0.3	0.2	0.0	0.0	<0.1	<0.1	8.5	5.7
TOTAL			**0.0**	**0.0**	**0.0**	**0.0**	**5.5**	**3.6**	**2.6**	**1.8**	**0.1**	**0.1**	**0.0**	**0.0**	**0.3**	**0.2**	**0.0**	**0.0**	**<0.1**	**<0.1**	**8.5**	**5.7**
Compressor Station 2	Buckingham	VA	0.0	0.0	0.0	0.0	44.2	12.8	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.1	0.0	0.0	< 0.1	0.0	27.0	12.0
Elizabeth River M&R Station	City of Chesapeake	VA	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	1.0	1.0
Brunswick M&R Station	Brunswick	VA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4
Greenville M&R Station	Greensville	VA	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.43	1.43
VS #9 (launcher/receiver)	Bath	VA	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2
Site 8 (launcher) (AP-4)	Brunswick	VA	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
Site 10 (launcher) (AP-5)	Greensville	VA	0.0	0.0	0.0	0.0	0.9	0.9	< 0.1	< 0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
TOTALS			**259.8**	**156.1**	**623.9**	**390.4**	**588.1**	**351.2**	**2044.8**	**1202.3**	**139.6**	**84.9**	**7.2**	**5.4**	**186.7**	**108.9**	**283.5**	**198.6**	**43.6**	**14.8**	**4151.5**	**2460.6**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.

[b] Estimate based on the typical right-of-way configurations for each pipeline as described in Section 2.0.

APPENDIX L

Blasting Plan

ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE
Docket Nos. CP15-554-000
CP15-554-001

and

DOMINION TRANSMISSION, INC
SUPPLY HEADER PROJECT
Docket No. CP15-555-000

Blasting Plan

Updated, Rev. 2

Prepared by

ERM

July 18, 2016

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
Atlantic	Atlantic Coast Pipeline, LLC
DTI	Dominion Transmission, Inc.
GPS	global positioning system
PPV	peak particle velocity
Project	Atlantic Coast Pipeline
SHP	Supply Header Project

1.0 INTRODUCTION

Atlantic Coast Pipeline, LLC (Atlantic) – a company formed by four major energy companies - Dominion Resources, Inc.; Duke Energy Corporation; Piedmont Natural Gas Co., Inc.; and AGL Resources, Inc. – proposes to construct and operate approximately 600 miles of natural gas transmission pipelines and associated aboveground facilities in West Virginia, Virginia, and North Carolina. This Project, referred to as the Atlantic Coast Pipeline (ACP), will deliver up to 1.5 million dekatherms per day of natural gas from supply areas in the Appalachian region to demand areas in Virginia and North Carolina. Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion Resources, Inc., to construct and operate the ACP on behalf of Atlantic.

In conjunction with the ACP, DTI proposes to construct and operate approximately 37.5 miles of pipeline loop and modify existing compression facilities in Pennsylvania and West Virginia. This Project, referred to as the Supply Header Project (SHP), will enable DTI to provide firm transportation service to various customers, including Atlantic.

2.0 PURPOSE

Based on an analysis of the Natural Resource Conservation Service's Soil Survey Geographic Database, approximately 26 percent (155.8 miles) of the proposed ACP and SHP pipeline routes will cross areas with bedrock at depths of less than 60 inches. More than half (81.7 miles) of this bedrock are considered paralithic (soft) and may not require blasting during construction. The remaining areas will cross soils with a lithic contact (hard bedrock) within 60 inches of the surface that may require blasting or other special construction techniques during installation of the proposed pipelines.

This *Blasting Plan* outlines the procedures and safety measures that Atlantic's and DTI's construction contractors (referred to as the Contractor below) will adhere to while conducting blasting activities required for the construction of the ACP and SHP. Before blasting, a site-specific Blasting Specification Plan, which is consistent with the provisions in this *Blasting Plan*, will be submitted by the Contractor to Atlantic or DTI for approval. Approval of a site-specific Blasting Specification Plan does not relieve the Contractor from responsibility or liability.

3.0 GENERAL REQUIREMENTS

Blasting for grade or trench excavation will be used where deemed necessary by the Contractor, and approved by an Atlantic or DTI representative, after examination of the site. To the extent practical on USFS lands, rock trenching will be accomplished using mechanical means such as rippers, rock hammers, John Henry drills, etc.

Blasting operations will be conducted by or under the direct and constant supervision of personnel legally licensed and certified to perform such activity in the jurisdiction where blasting occurs. Prior to any blasting activities, the Contractor will provide Atlantic or DTI with appropriate information documenting the experience, licenses, and permits associated with blasting personnel.

Blasting-related operations will comply with applicable Federal, State/Commonwealth, and local regulations, permit conditions, and the construction contract. These operations include: obtaining, transporting, storing, handling, loading, detonating, and disposing of blasting material; drilling; and ground-motion monitoring.

4.0 PRE-BLASTING REQUIREMENTS

Prior to the initiation of blasting operations, the Contractor will comply with the following:

- The Contractor will obtain all required Federal, State/Commonwealth, and local permits relating to the transportation, storage, handling, loading, and detonation of explosives.
- The Contractor will be responsible for the protection of existing underground facilities.
- Before performing any work on, or accessing the construction right-of-way, the Contractor will verify with an Atlantic or DTI representative that all property owners have been notified of the upcoming construction activities. The Contractor will notify all such parties at least 48 hours prior to blasting.
- The Contractor will submit to Atlantic or DTI its site-specific Blasting Specification Plan for approval prior to the execution of blasting activity.

5.0 SITE-SPECIFIC BLASTING PLANS

For each area determined to require blasting, a site-specific Blasting Specification Plan will be prepared by the Contractor. This plan will include, at a minimum, the following information:

- blaster's name, company, copy of license, and statement of qualifications;
- seismograph company, names, equipment and sensor location;
- site location (milepost and stationing), applicable alignment sheet numbers, and associated rock type and geological structure (solid, layered, or fractured);
- copies of all required Federal, State/Commonwealth, and local permits;
- methods and materials, including explosive type, product name and size, weight per unit, and density; stemming material; tamping method; blasting sequence; use of non-electrical initiation systems for all blasting operations; and magazine type and locations for storage of explosives and detonating caps;
- site dimensions, including explosive depth, distribution, and maximum charge and weight per delay; and hole depth, diameter, pattern, and number of holes per delay;
- Global positioning system (GPS) coordinates of blasting location(s), distance and orientation to nearest aboveground and underground structures, and dates and hours blasting will be conducted;

- blasting procedures for:
    - storing, handling, transporting, loading, and firing explosives;
    - prevention of misfires, fly-rock, fire prevention, noise, and stray current accidental-detonation;
    - signs, flagmen, and warning signals prior to each blast;
    - locations where the pipeline route:
        - parallels or crosses an electrical transmission corridor, cable, or pipeline;
        - parallels or crosses a highway or road;
        - approaches within 500 feet of a water well or within 150 feet of an oil and gas well; or
        - approaches within 1,000 feet of any residence, building, or occupied structure;
    - local notification;
    - inspections after each blast;
    - disposal of waste blasting material; and
    - blasting on steep slopes.

6.0 MONITORING

During blasting operations, the Contractor will be required to monitor operations in the following manner:

- The Contractor will provide seismographic equipment to measure the peak particle velocity (PPV) of all blasts in the vertical, horizontal, and longitudinal directions.
- The Contractor will measure the PPV at any existing pipelines, domestic structures, water supply wells, oil and gas wells, electrical transmission tower footings, and other utilities within 150 feet of the blasting. If none of these structures/facilities are present, the Contractor will measure the PPV at the edge of the construction right-of-way.
- The Contractor will complete a Blasting Log Record immediately after each blast and submit a copy to an Atlantic or DTI representative upon completion of blasting activities at each blasting site.

7.0 SAFETY

7.1 Protection of Aboveground and Underground Structures

Where blasting is determined to be required, Atlantic and DTI will identify any municipal water mains proposed for crossing, and will consult the local water authority. Reports of

identified crossings will include location by milepost, owner, and status and results of contacts with the water authority.

The Contractor will exercise control to prevent damage to aboveground and underground structures including pipelines, domestic structures, water supply wells, oil and gas wells, electrical transmission tower footings, measures to minimize blasting impacts on steep slopes, and other utilities. The Contractor will implement the following procedures:

- If blasting occurs within 500 feet of an identified water well, water flow performance and water quality testing will be conducted before blasting. If the water well is damaged, the well will be repaired or otherwise restored or the well owner will be compensated for confirmed damages. Atlantic and DTI will provide an alternative potable water supply to the landowner until repairs occur.
- If blasting occurs within 150 feet of any aboveground structures, the Contractor and an Atlantic or DTI representative will inspect and photograph the structures before blasting. In the event that blasting damage to the aboveground structure is confirmed, the owner will be compensated.
- The Contractor will be responsible for the ultimate resolution of all damage claims resulting from blasting. Such liability is not restricted by the 150-foot inspection requirement cited above.
- Blasting will not be allowed within 15 feet of an existing pipeline, unless specifically authorized by an Atlantic or DTI representative.
- Holes that have contained explosive material will not be re-drilled. Holes will not be drilled where danger exists of intersecting another hole containing explosive material.
- Blasting mats or padding will be used on all shots where necessary to prevent scattering of loose rock onto adjacent property and to prevent damage to nearby structures and overhead utilities.
- Blasting will not begin until occupants of nearby buildings, stores, residences, places of business, places of public gathering, and farmers have been notified by the Contractor in advance to protect personnel, property, and livestock. The Contractor will notify all such parties at least 48 hours prior to blasting.
- Blasting in or near environmentally sensitive areas, such as streams and wildlife areas, may include additional restrictions.
- When blasting on steep slopes the following measures will be taken to minimize blasting impacts.
    - A safety berm may be created at the base of each shot to minimize the shot material movement down the slope after initiation, if practical.
    - A catch berm may be created at the base of the hill to stop material from leaving the right-of way, if practical.

- Berms may be constructed on the right-of-way to direct any rolling material away for the offside boundaries.
- Shots will be initiated from the lowest elevation of the trench.
- The blaster will conduct test blasts on areas without slope with a reduction of powder factor that will fracture the material while keeping it in place. Tight digging and higher vibrations may be associated with this adjustment.
- Decking the holes may be considered to lower the pounds per delay.
- Where multiple trench shots are to be initiated, the shot material will stay in place and remain muck bound. This will hold the following shots in place.

- All blasting will be subject to the following limitations:
  - Maximum PPV of 12.0 inches per second, or the maximum PPV in accordance with State/Commonwealth or local regulations, in any of three mutually perpendicular axes measured at the lesser distance of the nearest facility or the edge of the permanent easement.
  - Maximum drill size will be 2.5 inches unless otherwise approved by an Atlantic or DTI representative.
  - Maximum quantity of explosive per delay will be governed by the recorded measurements as influenced by the test blast program or a scaled distance formula.
  - Explosive agents and ignition methods will be approved by an Atlantic or DTI representative. Ammonium nitrate/fuel oil and other free flowing explosives and blasting agents are not acceptable and will not be used.
  - Drill holes will not be left loaded overnight.
  - Approved stemming material will be used in all holes.
- The drilling pattern will be set in a manner to achieve smaller rock fragmentation (maximum 1 foot in diameter) to use as much as possible of the blasted rock as backfill material after the pipe has been padded in accordance with the specifications. The Contractor will submit the proposed drilling pattern to an Atlantic or DTI representative for approval.
- Under pipeline crossings and all other areas where drilling and blasting is required within 15 feet of existing facilities:
  - Drill holes will be reduced to a maximum of 2 inches or less in diameter.
  - The number of holes shot at one time will be limited to three unless otherwise approved by an Atlantic or DTI representative.
  - Appropriate delay between charges will be used to attain desired fragmentation.

7.2 Protection of Personnel

The Contractor will include in its procedures all Federal, State/Commonwealth, and local safety requirements for blasting. The Contractor's procedures will address, at a minimum, the following requirements:

- Blasting will be performed during daylight hours only.
- Only authorized, qualified, and experienced personnel will handle explosives.
- No explosive materials will be located where they may be exposed to flame, excessive heat, sparks, or impact. Smoking, firearms, matches, open flames, and heat- and spark-producing devices will be prohibited in or near explosive magazines or while explosives are being handled, transported, or used.
- A code of blasting signals will be established, posted in conspicuous places, and utilized during blasting operations. Employee training will be conducted on the use and implementation of the code.
- The Contractor will use every reasonable precaution including, but not limited to, visual and audible warning signals, warning signs, flag persons, and barricades to ensure personnel safety.
- Warning signs, with lettering a minimum of 4 inches in height on a contrasting background, will be erected and maintained at all approaches to the blast area.
- Flaggers will be stationed on all roadways passing within 1,000 feet of the blast area to stop all traffic during blasting operations.
- Both workers involved in the detonation and personnel not involved in the detonation will stand back at a distances determined by the person in charge from the time the blast signal is given until the "ALL CLEAR" is sounded.
- No loaded holes will be left unattended or unprotected. No explosives or blasting agent will be abandoned.
- In the case of a misfire, the blaster will provide proper safeguards for personnel until the misfire has been re-blasted or safely removed.
- The exposed areas of the blast will be matted wherever practicable. In cases where such a procedure is not deemed to be feasible, the Contractor will submit an alternative procedure for review by an Atlantic or DTI representative and the site in question will be visited and examined by the consultant before any approval is granted.
- Atlantic and DTI may employ two-way radios for communication between vehicles and office facilities. The Contractor will advise Atlantic or DTI and other pipeline contractors of any need to cease use of such equipment during blasting activities.
- All loading and blasting activity will cease and personnel in and around the blast area will retreat to a position of safety during the approach and progress of an electrical storm irrespective of the type of explosives or initiation system used.

This is a major safety precaution and will always be observed. All explosive materials, all electrical initiation systems, and all non-electric initiation systems are susceptible to premature initiation by lightning.

- Previous blast areas must be inspected to verify the absence of misfires. No drilling may commence until such inspection occurs. If a misfire occurs adjacent to a hole to be drilled, the misfire will be cleared by the blaster using reasonable techniques required for the situation prior to commencement of drilling. If a misfire occurs at some distance from the drilling area, drilling may be stopped while clearing preparations are underway. When the misfire is to be cleared by re-shooting, drilling will be shut down and personnel evacuated to a place of safety prior to detonation.
- All transportation of explosives will be in accordance with applicable Federal, State/Commonwealth, and local laws and regulations. Vehicles used to transport explosives will be in good working condition and equipped with tight wooden or non-sparking metal floor and sides. If explosives are carried in an open-bodied truck, they will be covered with a waterproof and flame-resistant tarp. Wiring will be fully insulated to prevent short-circuiting and at least two fire extinguishers will be carried. The vehicle will be plainly marked to identify its cargo so that the public may be adequately warned. Metal, flammable, or corrosive substances will not be transported in the same vehicle with explosives. There will be no smoking, and unauthorized or unnecessary personnel will not be allowed in the vehicle. Competent, qualified personnel will load and unload explosives into or from the vehicle.
- No sparking metal tools will be used to open kegs or wooden cases of explosives. Metallic slitters will be used to open fiberboard cases, provided the metallic slitter does not come in contact with the metallic fasteners of the case. There will be no smoking, no matches, no open lights, or other fire or flame nearby while handling or using explosives. Explosives will not be placed where they are subject to flame, excessive heat, sparks, or impact. Partial cases or packages of explosives will be re-closed after use. No explosives will be carried in the pockets or clothing of personnel. The wires of an electric blasting cap will not be tampered with in any way. Wires will not be uncoiled. The use of electric blasting caps will not be permitted during dust storms or near any other source of large charges of static electricity. Uncoiling of the wires or use of electric caps will not be permitted near radio-frequency transmitters. The firing circuit will be completely insulated from the ground or other conductors.
- No blast will be fired without a positive signal from the person in charge. This person will have made certain that all surplus explosives are in a safe place; all persons, vehicles, and/or boats are at a safe distance; and adequate warning has been given. Adequate warning of a blast will consist of, but not be limited to, the following:
    - notifying nearby homeowners and local agencies, if necessary;
    - stopping vehicular and/or pedestrian traffic near the blast site; and

- signaling with an air horn, whistle, or similar device using standard warning signals.

- Only authorized and necessary personnel will be present where explosives are being handled or used.
- The condition of the hole will be checked with a wooden tamping pole prior to loading. Surplus explosives will not be stacked near working areas during loading. Detonating fans will be cut from spool before loading the balance of charge into the hole. No explosives will be forced into a bore hole past an obstruction. Loading will be done by a blaster holding a valid license or by personnel under his direct supervision.
- Fly-rock leaving the right-of-way will be collected immediately and disposed of at disposal sites approved by Atlantic or DTI. This work will not be left to the cleanup crew.

7.3 Lightning Hazard

A risk of accidental detonation caused by lightning strikes exists at any time the workplace is experiencing an electrical storm and there are loaded holes on site. If this hazard is judged to exist by an Atlantic or DTI representative, work will discontinue at all operations and workers will be moved to secure positions away from the loaded holes. Furthermore, workers will not return to the work site until the storm has passed and an Atlantic or DTI representative has indicated it is clear to return.

The Contractor will have on site an approved lightning instrument capable of measuring the degree of electrical activity as a storm approaches, and the distance to the storm front from the instrument on the right-of-way.

8.0 KARST

In accordance with Atlantic's and DTI's *Karst Monitoring and Mitigation Plan*, and in addition to the measures described above, the following procedures will be implemented in areas of karst terrain:

- Blasting will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of known or presumed habitat for federally listed threatened and endangered species in the subterranean karst environment (e.g. Madison cave isopod).
- Excavations will be inspected for voids, openings or other tell-tale signs of solution (karst) activity.
- If rock removal intercepts an open void, channel, or cave, construction activities will cease in the vicinity of the void, channel, or cave until a remedial assessment is performed by a qualified geologist or engineer with experience in karst terrain.

- Use of explosives will be limited to low-force charges 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).
- If the track drill used to prepare drill holes for explosive charges 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 will not be used until a subsurface exploration is conducted to determine if the voids have connectivity to a deeper karst structure. The subsurface exploration will 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.

9.0 STORAGE REQUIREMENTS

All explosives, blasting agents, and initiation devices will be stored in locked magazines that have been located, constructed, approved, and licensed in accordance with Federal, State/Commonwealth, and local regulations. Magazines will be dry, well ventilated, reasonably cool (painting of the exterior with a reflective color), bullet and fire resistant, and kept clean and in good condition.

Initiation devices will not be stored in the same box, container, or magazine with other explosives. Explosives, blasting agents, or initiation devices will not be stored in wet or damp areas; near oil, gasoline, or cleaning solvents; or near sources of heat radiators, steam pipes, stoves, etc. No metal or metal tools will be stored in the magazine. There will be no smoking, matches, open lights, or other fire or flame inside or within 50 feet of storage magazines or explosive materials.

Magazines will be constructed and located in accordance with Federal, State/ Commonwealth, and local regulations. Magazines will be marked in minimum 3-inch-high letters with the words “DANGER – EXPLOSIVES” prominently displayed on all sides and roof, and be kept locked at all times unless explosives are being delivered or removed by authorized personnel. Admittance will be restricted to the magazine keeper, blasting supervisor, or licensed blaster.

Accurate and current records will be kept of the explosive material inventory to ensure that oldest stocks are utilized first, satisfy regulatory requirements, and for immediate notification of any loss or theft. Magazine records will reflect the quantity of explosions removed, the amount returned, and the net quantity used at the blasting site.

When explosive materials are taken from the storage magazine, they will be kept in the original containers until used. Small quantities of explosive materials may be placed in day boxes, powder chests, or detonator boxes. Any explosive material not used at the blast site will be returned to the storage magazine and replaced in the original container as soon as possible.

APPENDIX M

USDA Soil Data

Appendix M

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
AP-1													
Highland County, VA													
83.92	83.94	44C	37%	Madsheep	0.01	N	N	N	Y	N	Y	Y	Lithic
			63%	Paddyknob	0.02	N	N	N	Y	N	Y	Y	Lithic
83.94	84.00	32G	100%	Madsheep	0.08	N	N	N	Y	N	Y	Y	Lithic
84.00	84.02	55G	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.02	N	N	N	Y	N	Y	Y	Lithic
84.02	84.20	53F	44%	Berks	0.11	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.14	N	N	N	Y	N	Y	Y	Lithic
84.20	84.21	55G	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.01	N	N	N	Y	N	Y	Y	Lithic
84.21	84.36	53F	44%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.12	N	N	N	Y	N	Y	Y	Lithic
84.36	84.69	6E	26%	Weikert	0.12	N	N	N	Y	N	Y	Y	Lithic
			74%	Berks	0.33	N	N	N	Y	N	Y	Y	Lithic
84.69	84.81	53F	44%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.09	N	N	N	Y	N	Y	Y	Lithic
84.81	84.90	48F	26%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.08	N	N	N	Y	N	Y	Y	N
84.90	84.94	31F	39%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Macove	0.03	N	N	N	Y	N	Y	Y	N
84.94	84.97	29C	100%	Macove	0.04	N	N	N	Y	N	Y	Y	N
84.97	84.98	29E	100%	Macove	0.01	N	N	N	Y	N	Y	Y	N
84.98	85.09	55G	18%	Rough	0.03	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.07	N	N	N	Y	N	Y	Y	Lithic
85.09	85.12	29C	100%	Macove	0.03	N	N	N	Y	N	Y	Y	N
85.12	85.21	55G	18%	Rough	0.02	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.05	N	N	N	Y	N	Y	Y	Lithic
85.21	85.26	48E	25%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.05	N	N	N	Y	N	Y	Y	N
85.26	85.35	55G	18%	Rough	0.02	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.06	N	N	N	Y	N	Y	Y	Lithic
85.35	85.36	31F	39%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Macove	<0.01	N	N	N	Y	N	Y	Y	N
85.36	85.47	29C	100%	Macove	0.15	N	N	N	Y	N	Y	Y	N
85.47	85.76	55G	18%	Rough	0.07	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			35%	Berks	0.14	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.18	N	N	N	Y	N	Y	Y	Lithic
85.76	86.27	53F	44%	Berks	0.32	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.40	N	N	N	Y	N	Y	Y	Lithic
86.27	86.32	55G	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
86.32	86.58	53F	44%	Berks	0.16	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.20	N	N	N	Y	N	Y	Y	Lithic
86.58	86.58	55G	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.01	N	N	N	Y	N	Y	Y	Lithic
86.58	86.87	53F	44%	Berks	0.17	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.22	N	N	N	Y	N	Y	Y	Lithic
86.87	86.90	53F	44%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			56%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
86.90	87.13	55G	18%	Rough	0.06	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.11	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.15	N	N	N	Y	N	Y	Y	Lithic
87.13	87.15	38B	100%	Nicelytown	0.03	Prime	N	N	N	N	N	N	N
87.15	87.18	1A	100%	Alonzville	0.03	Prime	N	N	N	N	N	N	N
87.18	87.22	39A	100%	Ogles	0.05	N	N	N	N	N	N	Y	N
87.22	87.23	W	100%	Water	0.01	N	N	N	N	N	N	N	N
87.23	87.25	39A	100%	Ogles	0.03	N	N	N	N	N	N	Y	N
87.25	87.37	40C	100%	Oriskany	0.14	N	N	N	Y	N	Y	Y	N
87.37	87.48	12F	24%	Lily	0.03	N	N	N	Y	N	Y	N	Lithic
			76%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
87.48	87.62	26F	47%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.09	N	N	N	Y	N	Y	Y	Lithic
87.62	87.87	26E	47%	Berks	0.14	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.16	N	N	N	Y	N	Y	Y	Lithic
87.87	87.94	26F	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
87.94	88.02	26E	47%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.05	N	N	N	Y	N	Y	Y	Lithic
88.02	88.08	26F	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
88.08	88.16	26E	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.05	N	N	N	Y	N	Y	Y	Lithic
88.16	88.26	26F	47%	Berks	0.06	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.07	N	N	N	Y	N	Y	Y	Lithic
88.26	88.31	5F	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
88.31	88.44	20F	44%	Poplimento	0.08	N	N	N	Y	N	Y	N	N
			56%	Faywood	0.10	N	N	N	Y	N	Y	N	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
88.44	88.53	37C	100%	Murrill	0.13	State	N	N	Y	N	Y	Y	N
88.53	88.56	42C	39%	Murrill	0.02	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.02	N	N	N	Y	N	Y	Y	N
88.56	88.73	8E	100%	Caneyville	0.26	N	N	N	Y	N	Y	N	Lithic
88.73	88.79	20E	44%	Poplimento	0.04	N	N	N	Y	N	Y	N	N
			56%	Faywood	0.05	N	N	N	Y	N	Y	N	Lithic
88.79	88.83	42E	39%	Murrill	0.02	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.04	N	N	N	Y	N	Y	Y	N
88.83	88.87	20E	44%	Poplimento	0.03	N	N	N	Y	N	Y	N	N
			56%	Faywood	0.03	N	N	N	Y	N	Y	N	Lithic
88.87	89.21	36E	100%	Murrill	0.51	N	N	N	Y	N	Y	Y	N
89.21	89.35	5F	100%	Berks	0.22	N	N	N	Y	N	Y	Y	Lithic
89.35	89.39	27G	11%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			42%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			47%	Lehew	0.03	N	N	N	Y	N	Y	Y	Lithic
89.39	89.69	44E	39%	Madsheep	0.18	N	N	N	Y	N	Y	Y	Lithic
			61%	Paddyknob	0.29	N	N	N	Y	N	Y	Y	Lithic
89.69	89.74	26F	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.05	N	N	N	Y	N	Y	Y	Lithic
89.74	89.78	40E	100%	Oriskany	0.07	N	N	N	Y	N	Y	Y	N
89.78	89.88	43F	28%	Murrill	0.04	N	N	N	Y	N	Y	Y	N
			72%	Oriskany	0.11	N	N	N	Y	N	Y	Y	N
89.88	89.98	42E	39%	Murrill	0.06	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.10	N	N	N	Y	N	Y	Y	N
89.98	90.03	27G	11%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			42%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			47%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
90.03	90.07	14G	33%	Rock outcrop	0.02	N	N	N	Y	N	N	N	Lithic
			67%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
90.07	90.11	26F	47%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.03	N	N	N	Y	N	Y	Y	Lithic
90.11	90.15	43F	28%	Murrill	0.02	N	N	N	Y	N	Y	Y	N
			72%	Oriskany	0.05	N	N	N	Y	N	Y	Y	N
90.15	90.21	8E	100%	Caneyville	0.11	N	N	N	Y	N	Y	N	Lithic
90.21	90.22	52F	44%	Frederick	0.01	N	N	N	Y	N	Y	N	N
			56%	Watahala	0.01	N	N	N	Y	N	Y	Y	N
90.22	90.25	8E	100%	Caneyville	0.05	N	N	N	Y	N	Y	N	Lithic
90.25	90.37	52F	44%	Frederick	0.08	N	N	N	Y	N	Y	N	N
			56%	Watahala	0.10	N	N	N	Y	N	Y	Y	N
90.37	90.59	29C	100%	Macove	0.33	N	N	N	Y	N	Y	Y	N
90.59	90.60	19C	100%	Escatawba	0.02	State	N	N	Y	N	Y	N	N
90.60	90.74	54F	18%	Rough	0.04	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.10	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
90.74	90.76	48F	26%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.02	N	N	N	Y	N	Y	Y	N
90.76	90.91	29C	100%	Macove	0.22	N	N	N	Y	N	Y	Y	N
90.91	91.03	19B	100%	Escatawba	0.16	Prime	N	N	N	N	N	N	N
91.03	91.12	29C	100%	Macove	0.14	N	N	N	Y	N	Y	Y	N
91.12	91.23	18B	100%	Escatawba	0.19	State	N	N	N	N	N	Y	N
91.23	91.28	18C	100%	Escatawba	0.08	State	N	N	Y	N	Y	Y	N
91.28	91.32	48F	26%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.06	N	N	N	Y	N	Y	Y	N
91.32	91.36	21A	100%	Feedstone	0.06	Prime	N	N	N	N	N	Y	N
91.36	91.39	3A	100%	Atkins	0.05	N	Y	Y	N	N	N	Y	N
91.39	91.42	21A	100%	Feedstone	0.05	Prime	N	N	N	N	N	Y	N
91.42	91.46	25A	100%	Irongate	0.06	Prime	N	N	N	N	N	N	N
91.46	91.46	W	100%	Water	0.01	N	N	N	N	N	N	N	N
91.46	91.50	25A	100%	Irongate	0.06	Prime	N	N	N	N	N	N	N
91.50	91.60	10A	100%	Coursey	0.15	Prime	N	N	N	N	N	N	N
91.60	91.61	34A	100%	Maurertown	0.02	N	Y	Y	N	N	N	Y	N
Bath County, VA													
91.61	91.61	34A	100%	Maurertown	0.01	N	Y	Y	N	N	N	Y	N
91.61	91.61	34A	100%	Maurertown	<0.01	N	Y	Y	N	N	N	Y	N
		36A	100%	Maurertown	<0.01	N	Y	Y	N	N	N	Y	N
91.61	91.78	36A	100%	Maurertown	0.26	N	Y	Y	N	N	N	Y	N
91.78	91.79	49A	100%	Purdy	0.03	N	Y	Y	N	N	N	Y	N
91.79	91.83	64B	100%	Zoar	0.06	State	N	N	N	N	N	N	N
91.83	92.00	57E	18%	Rough	0.05	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.12	N	N	N	Y	N	Y	Y	Lithic
92.00	92.03	44D	100%	Oriskany	0.06	N	N	N	Y	N	Y	Y	N
92.03	92.07	46D	39%	Murrill	0.02	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.04	N	N	N	Y	N	Y	Y	N
92.07	92.20	47E	28%	Murrill	0.06	N	N	N	Y	N	Y	Y	N
			72%	Oriskany	0.15	N	N	N	Y	N	Y	Y	N
92.20	92.24	46D	39%	Murrill	0.03	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.04	N	N	N	Y	N	Y	Y	N
92.24	92.29	27E	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
92.29	92.78	27D	47%	Berks	0.36	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.41	N	N	N	Y	N	Y	Y	Lithic
92.78	92.84	28F	11%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			42%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			47%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
92.84	92.90	20E	44%	Poplimento	0.04	N	N	N	Y	N	Y	N	N
			56%	Faywood	0.05	N	N	N	Y	N	Y	N	Lithic
92.90	92.95	40D	100%	Murrill	0.07	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
92.95	93.05	44C	100%	Oriskany	0.14	N	N	N	Y	N	Y	Y	N
93.05	93.13	46D	39%	Murrill	0.04	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.07	N	N	N	Y	N	Y	Y	N
93.13	93.26	40D	100%	Murrill	0.19	N	N	N	Y	N	Y	Y	N
93.26	93.36	20E	44%	Poplimento	0.06	N	N	N	Y	N	Y	N	N
			56%	Faywood	0.08	N	N	N	Y	N	Y	N	Lithic
93.36	93.43	40E	100%	Murrill	0.10	N	N	N	Y	N	Y	Y	N
93.43	93.49	5E	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
93.49	93.64	28F	11%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			42%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
			47%	Lehew	0.10	N	N	N	Y	N	Y	Y	Lithic
93.64	93.68	27C	47%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.03	N	N	N	Y	N	Y	Y	Lithic
93.68	93.73	27E	47%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.04	N	N	N	Y	N	Y	Y	Lithic
93.73	93.84	27E	47%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.08	N	N	N	Y	N	Y	Y	Lithic
93.84	94.16	44D	100%	Oriskany	0.46	N	N	N	Y	N	Y	Y	N
94.16	94.26	12D	29%	Alticrest	0.04	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
94.26	94.30	12D	29%	Alticrest	0.02	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
94.30	94.36	12E	29%	Alticrest	0.03	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
94.36	94.49	12D	29%	Alticrest	0.05	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.12	N	N	N	Y	N	Y	Y	Lithic
94.49	94.70	13D	18%	McClung	0.06	N	N	N	Y	N	Y	N	N
			35%	Lily	0.11	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.15	N	N	N	Y	N	Y	Y	Lithic
94.70	94.76	31C	21%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.03	N	N	N	Y	N	Y	N	N
			47%	Lily	0.04	N	N	N	Y	N	Y	N	Lithic
94.76	94.85	41B	100%	Nicelytown	0.12	Prime	N	N	N	N	N	N	N
94.85	94.92	13D	18%	McClung	0.02	N	N	N	Y	N	Y	N	N
			35%	Lily	0.03	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
94.92	94.98	31C	21%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.03	N	N	N	Y	N	Y	N	N
			47%	Lily	0.04	N	N	N	Y	N	Y	N	Lithic
94.98	95.03	13D	18%	McClung	0.01	N	N	N	Y	N	Y	N	N
			35%	Lily	0.03	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
95.03	95.19	31C	21%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.07	N	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			47%	Lily	0.10	N	N	N	Y	N	Y	N	Lithic
95.19	95.23	14E	24%	Lily	0.01	N	N	N	Y	N	Y	N	Lithic
			76%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
95.23	95.28	43B	100%	Oriskany	0.07	N	N	N	N	N	Y	Y	N
95.28	95.35	13D	18%	McClung	0.02	N	N	N	Y	N	Y	N	N
			35%	Lily	0.04	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
95.35	95.43	31C	21%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.03	N	N	N	Y	N	Y	N	N
			47%	Lily	0.05	N	N	N	Y	N	Y	N	Lithic
95.43	95.46	39C	100%	Murrill	0.05	State	N	N	Y	N	Y	Y	N
95.46	95.48	15D	33%	Rock outcrop	0.01	N	N	N	Y	N	N	N	Lithic
			67%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
95.48	95.61	41B	100%	Nicelytown	0.18	Prime	N	N	N	N	N	N	N
95.61	95.66	39C	100%	Murrill	0.06	State	N	N	Y	N	Y	Y	N
95.66	95.71	46D	39%	Murrill	0.03	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.04	N	N	N	Y	N	Y	Y	N
95.71	95.87	44D	100%	Oriskany	0.23	N	N	N	Y	N	Y	Y	N
95.87	95.89	44E	100%	Oriskany	0.02	N	N	N	Y	N	Y	Y	N
95.89	95.91	12E	29%	Alticrest	0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
95.91	96.00	12D	29%	Alticrest	0.04	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
96.00	96.07	29C	100%	Lily	0.10	N	N	N	Y	N	Y	N	Lithic
96.07	96.08	27E	47%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.01	N	N	N	Y	N	Y	Y	Lithic
96.08	96.13	27E	47%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			53%	Lehew	0.03	N	N	N	Y	N	Y	Y	Lithic
96.13	96.18	44E	100%	Oriskany	0.07	N	N	N	Y	N	Y	Y	N
96.18	96.20	44D	100%	Oriskany	0.03	N	N	N	Y	N	Y	Y	N
96.20	96.26	46D	39%	Murrill	0.04	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.06	N	N	N	Y	N	Y	Y	N
96.26	96.32	31C	21%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.03	N	N	N	Y	N	Y	N	N
			47%	Lily	0.04	N	N	N	Y	N	Y	N	Lithic
96.32	96.34	37B	44%	Lily	0.01	State	N	N	N	N	Y	N	Lithic
			56%	McClung	0.01	State	N	N	N	N	Y	N	N
96.34	96.42	37B	44%	Lily	0.05	State	N	N	N	N	Y	N	Lithic
			56%	McClung	0.07	State	N	N	N	N	Y	N	N
96.42	96.47	12D	29%	Alticrest	0.02	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
96.47	96.48	12D	29%	Alticrest	<0.01	N	N	N	Y	N	Y	Y	Lithic
			71%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
96.48	96.54	46C	39%	Murrill	0.03	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			61%	Oriskany	0.05	N	N	N	Y	N	Y	Y	N
96.54	96.62	9D	100%	Caneyville	0.10	N	N	N	Y	N	Y	N	Lithic
96.62	96.63	9D	100%	Caneyville	0.02	N	N	N	Y	N	Y	N	Lithic
96.63	96.66	16E	24%	McClung	0.01	N	N	N	Y	N	Y	N	N
			35%	Watahala	0.02	N	N	N	Y	N	Y	Y	N
			41%	Dekalb	0.02	N	N	N	Y	N	Y	Y	Lithic
96.66	96.75	9D	100%	Caneyville	0.13	N	N	N	Y	N	Y	N	Lithic
96.75	96.76	16E	24%	McClung	<0.01	N	N	N	Y	N	Y	N	N
			35%	Watahala	<0.01	N	N	N	Y	N	Y	Y	N
			41%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
96.76	96.77	38D	22%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	<0.01	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.01	N	N	N	Y	N	Y	N	N
96.77	97.21	38D	22%	Dekalb	0.14	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.18	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.33	N	N	N	Y	N	Y	N	N
97.21	97.25	38D	22%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.02	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.03	N	N	N	Y	N	Y	N	N
97.25	97.39	16E	24%	McClung	0.05	N	N	N	Y	N	Y	N	N
			35%	Watahala	0.07	N	N	N	Y	N	Y	Y	N
			41%	Dekalb	0.08	N	N	N	Y	N	Y	Y	Lithic
97.39	97.51	18C	100%	Escatawba	0.17	State	N	N	Y	N	Y	Y	N
97.51	97.54	18D	100%	Escatawba	0.05	N	N	N	Y	N	Y	Y	N
97.54	97.57	57E	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.02	N	N	N	Y	N	Y	Y	Lithic
97.57	97.59	41B	100%	Nicelytown	0.04	Prime	N	N	N	N	N	N	N
97.59	97.69	49A	100%	Purdy	0.15	N	Y	Y	N	N	N	Y	N
97.69	97.73	4A	100%	Atkins	0.05	N	Y	Y	N	N	N	Y	N
97.73	97.76	21A	100%	Feedstone	0.04	Prime	N	N	N	N	N	Y	N
97.76	97.79	62A	100%	Wolfgap	0.05	Prime	N	N	N	N	N	N	N
97.79	97.81	W	100%	Water	0.02	N	N	N	N	N	N	N	N
97.81	97.84	21A	100%	Feedstone	0.04	Prime	N	N	N	N	N	Y	N
97.84	97.92	10B	100%	Cottonbend	0.12	Prime	N	N	N	N	N	Y	N
97.92	97.99	32C	100%	Macove	0.10	N	N	N	Y	N	Y	Y	N
97.99	98.02	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.03	N	N	N	Y	N	Y	Y	N
98.02	98.07	57E	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
98.07	98.11	57D	13%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
98.11	98.13	60F	28%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			72%	Weikert	0.02	N	N	N	Y	N	Y	Y	Lithic
98.13	98.24	57D	13%	Rough	0.03	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.09	N	N	N	Y	N	Y	Y	Lithic
98.24	98.26	57E	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.01	N	N	N	Y	N	Y	Y	Lithic
98.26	98.26	57E	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	<0.01	N	N	N	Y	N	Y	Y	Lithic
98.26	98.28	32C	100%	Macove	0.03	N	N	N	Y	N	Y	Y	N
98.28	98.30	50E	26%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.03	N	N	N	Y	N	Y	Y	N
98.30	98.30	57E	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	<0.01	N	N	N	Y	N	Y	Y	Lithic
98.30	98.38	60F	28%	Rough	0.04	N	N	N	Y	N	Y	Y	Lithic
			72%	Weikert	0.11	N	N	N	Y	N	Y	Y	Lithic
98.38	98.86	57D	13%	Rough	0.11	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.38	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.38	N	N	N	Y	N	Y	Y	Lithic
98.86	98.87	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.02	N	N	N	Y	N	Y	Y	N
98.87	98.97	57D	13%	Rough	0.02	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.08	N	N	N	Y	N	Y	Y	Lithic
98.97	98.99	57E	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.02	N	N	N	Y	N	Y	Y	Lithic
98.99	99.00	50D	25%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.01	N	N	N	Y	N	Y	Y	N
99.00	99.00	50D	25%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	<0.01	N	N	N	Y	N	Y	Y	N
99.00	99.03	11A	100%	Coursey	0.05	Prime	N	N	N	N	N	N	N
99.03	99.15	57E	18%	Rough	0.04	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.10	N	N	N	Y	N	Y	Y	Lithic
99.15	99.19	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.03	N	N	N	Y	N	Y	Y	N
99.19	99.24	57E	18%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
99.24	99.26	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			75%	Shelocta	0.03	N	N	N	Y	N	Y	Y	N
99.26	99.29	11A	100%	Coursey	0.04	Prime	N	N	N	N	N	N	N
99.29	99.30	11A	100%	Coursey	0.01	Prime	N	N	N	N	N	N	N
99.30	99.31	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.02	N	N	N	Y	N	Y	Y	N
99.31	99.45	57E	18%	Rough	0.03	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.09	N	N	N	Y	N	Y	Y	Lithic
99.45	99.58	24C	100%	Gilpin	0.20	State	N	N	Y	N	Y	Y	Paralithic
99.58	99.59	57E	18%	Rough	<0.01	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.01	N	N	N	Y	N	Y	Y	Lithic
99.59	99.65	24C	100%	Gilpin	0.08	State	N	N	Y	N	Y	Y	Paralithic
99.65	99.67	24C	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
99.67	99.70	24D	100%	Gilpin	0.04	State	N	N	Y	N	Y	Y	Paralithic
99.70	99.73	50D	25%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
			75%	Shelocta	0.03	N	N	N	Y	N	Y	Y	N
99.73	99.75	24C	100%	Gilpin	0.03	State	N	N	Y	N	Y	Y	Paralithic
99.75	99.91	6C	39%	Weikert	0.09	N	N	N	Y	N	Y	Y	Lithic
			61%	Berks	0.14	N	N	N	Y	N	Y	Y	Lithic
99.91	100.57	57D	13%	Rough	0.12	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.41	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.42	N	N	N	Y	N	Y	Y	Lithic
100.57	100.63	57E	18%	Rough	0.02	N	N	N	Y	N	Y	Y	Lithic
			35%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			47%	Weikert	0.04	N	N	N	Y	N	Y	Y	Lithic
100.63	100.74	42A	100%	Ogles	0.16	N	N	N	N	N	N	Y	N
100.74	101.02	10B	100%	Cottonbend	0.39	Prime	N	N	N	N	N	Y	N
101.02	101.42	19B	100%	Escatawba	0.58	Prime	N	N	N	N	N	N	N
101.42	101.62	44C	100%	Oriskany	0.28	N	N	N	Y	N	Y	Y	N
101.62	101.74	57D	13%	Rough	0.02	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.08	N	N	N	Y	N	Y	Y	Lithic
101.74	101.83	18D	100%	Escatawba	0.12	N	N	N	Y	N	Y	Y	N
101.83	102.03	18C	100%	Escatawba	0.29	State	N	N	Y	N	Y	Y	N
102.03	102.07	44C	100%	Oriskany	0.06	N	N	N	Y	N	Y	Y	N
102.07	102.12	19C	100%	Escatawba	0.07	State	N	N	Y	N	Y	N	N
102.12	102.17	50E	26%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.05	N	N	N	Y	N	Y	Y	N
102.17	102.22	57D	13%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
102.22	102.22	50E	26%	Berks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			74%	Shelocta	0.01	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
102.22	102.26	57D	13%	Rough	0.01	N	N	N	Y	N	Y	Y	Lithic
			43%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
			44%	Weikert	0.03	N	N	N	Y	N	Y	Y	Lithic
102.26	102.38	46C	39%	Murrill	0.07	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.12	N	N	N	Y	N	Y	Y	N
102.38	102.57	46D	39%	Murrill	0.12	N	N	N	Y	N	Y	Y	N
			61%	Oriskany	0.18	N	N	N	Y	N	Y	Y	N
102.57	102.65	16E	24%	McClung	0.03	N	N	N	Y	N	Y	N	N
			35%	Watahala	0.05	N	N	N	Y	N	Y	Y	N
			41%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
102.65	102.76	38D	22%	Dekalb	0.04	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.05	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.08	N	N	N	Y	N	Y	N	N
102.76	102.82	40C	100%	Murrill	0.10	State	N	N	Y	N	Y	Y	N
102.82	102.90	41B	100%	Nicelytown	0.12	Prime	N	N	N	N	N	N	N
102.90	102.94	37B	44%	Lily	0.03	State	N	N	N	N	Y	N	Lithic
			56%	McClung	0.04	State	N	N	N	N	Y	N	N
102.94	103.04	23D	44%	Watahala	0.07	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.09	N	N	N	Y	N	Y	N	N
103.04	103.07	9E	100%	Caneyville	0.05	N	N	N	Y	N	Y	N	Lithic
103.07	103.08	38C	22%	Dekalb	<0.01	State	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	<0.01	State	N	N	Y	N	Y	Y	N
			50%	McClung	<0.01	State	N	N	Y	N	Y	N	N
103.08	103.12	4A	100%	Atkins	0.07	N	Y	Y	N	N	N	Y	N
103.12	103.20	41B	100%	Nicelytown	0.12	Prime	N	N	N	N	N	N	N
103.20	103.32	36A	100%	Maurertown	0.19	N	Y	Y	N	N	N	Y	N
103.32	103.95	18B	100%	Escatawba	0.96	State	N	N	N	N	N	Y	N
103.95	104.09	41B	100%	Nicelytown	0.23	Prime	N	N	N	N	N	N	N
104.09	104.31	4A	100%	Atkins	0.35	N	Y	Y	N	N	N	Y	N
104.31	104.35	10B	100%	Cottonbend	0.06	Prime	N	N	N	N	N	Y	N
104.35	104.38	4A	100%	Atkins	0.04	N	Y	Y	N	N	N	Y	N
104.38	104.45	18B	100%	Escatawba	0.12	State	N	N	N	N	N	Y	N
104.45	104.61	10B	100%	Cottonbend	0.25	Prime	N	N	N	N	N	Y	N
104.61	104.64	18C	100%	Escatawba	0.05	State	N	N	Y	N	Y	Y	N
104.64	104.69	10B	100%	Cottonbend	0.08	Prime	N	N	N	N	N	Y	N
104.69	104.72	18C	100%	Escatawba	0.05	State	N	N	Y	N	Y	Y	N
104.72	104.76	10B	100%	Cottonbend	0.07	Prime	N	N	N	N	N	Y	N
104.76	104.80	36A	100%	Maurertown	0.06	N	Y	Y	N	N	N	Y	N
104.80	104.87	4A	100%	Atkins	0.10	N	Y	Y	N	N	N	Y	N
104.87	104.93	13D	18%	McClung	0.02	N	N	N	Y	N	Y	N	N
			35%	Lily	0.03	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
104.93	105.13	31C	21%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.09	N	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			47%	Lily	0.13	N	N	N	Y	N	Y	N	Lithic
105.13	105.41	38C	22%	Dekalb	0.09	State	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.11	State	N	N	Y	N	Y	Y	N
			50%	McClung	0.20	State	N	N	Y	N	Y	N	N
105.41	105.42	38D	22%	Dekalb	0.01	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.01	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.01	N	N	N	Y	N	Y	N	N
105.42	105.51	38C	22%	Dekalb	0.03	State	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.04	State	N	N	Y	N	Y	Y	N
			50%	McClung	0.06	State	N	N	Y	N	Y	N	N
105.51	105.67	31C	21%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
			32%	McClung	0.07	N	N	N	Y	N	Y	N	N
			47%	Lily	0.10	N	N	N	Y	N	Y	N	Lithic
105.67	105.75	38C	22%	Dekalb	0.03	State	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	0.03	State	N	N	Y	N	Y	Y	N
			50%	McClung	0.06	State	N	N	Y	N	Y	N	N
105.75	105.91	13D	18%	McClung	0.04	N	N	N	Y	N	Y	N	N
			35%	Lily	0.08	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
105.91	106.06	13D	18%	McClung	0.04	N	N	N	Y	N	Y	N	N
			35%	Lily	0.07	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.10	N	N	N	Y	N	Y	Y	Lithic
106.06	106.14	13D	18%	McClung	0.02	N	N	N	Y	N	Y	N	N
			35%	Lily	0.04	N	N	N	Y	N	Y	N	Lithic
			47%	Dekalb	0.06	N	N	N	Y	N	Y	Y	Lithic
106.14	106.18	14E	24%	Lily	0.01	N	N	N	Y	N	Y	N	Lithic
			76%	Dekalb	0.03	N	N	N	Y	N	Y	Y	Lithic
106.18	106.77	15D	33%	Rock outcrop	0.28	N	N	N	Y	N	N	N	Lithic
			67%	Dekalb	0.56	N	N	N	Y	N	Y	Y	Lithic
Augusta County, VA													
106.77	106.82	15D	33%	Rock outcrop	0.02	N	N	N	Y	N	N	N	Lithic
			67%	Dekalb	0.05	N	N	N	Y	N	Y	Y	Lithic
106.82	106.83	38D	22%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	<0.01	N	N	N	Y	N	Y	Y	N
			50%	McClung	0.01	N	N	N	Y	N	Y	N	N
106.83	106.83	25D2	100%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
		38D	22%	Dekalb	<0.01	N	N	N	Y	N	Y	Y	Lithic
			28%	Watahala	<0.01	N	N	N	Y	N	Y	Y	N
			50%	McClung	<0.01	N	N	N	Y	N	Y	N	N
106.83	106.96	25D2	100%	Christian	0.18	State	N	N	Y	N	Y	Y	N
106.96	107.01	24E2	100%	Christian	0.08	N	N	N	Y	N	Y	Y	N
107.01	107.07	25D2	100%	Christian	0.08	State	N	N	Y	N	Y	Y	N
107.07	107.11	24E2	100%	Christian	0.07	N	N	N	Y	N	Y	Y	N
107.11	107.17	64D	100%	Nixa	0.08	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
107.17	107.22	25D2	100%	Christian	0.07	State	N	N	Y	N	Y	Y	N
107.22	107.29	24E2	100%	Christian	0.11	N	N	N	Y	N	Y	Y	N
107.29	107.37	25D2	100%	Christian	0.12	State	N	N	Y	N	Y	Y	N
107.37	107.42	24E2	100%	Christian	0.06	N	N	N	Y	N	Y	Y	N
107.42	107.48	8D	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Paralithic
107.48	107.52	28	100%	Craigsville	0.06	N	N	N	N	N	Y	Y	N
107.52	107.54	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
107.54	107.65	8D	100%	Berks	0.16	N	N	N	Y	N	Y	Y	Paralithic
107.65	107.69	8E	100%	Berks	0.06	N	N	N	Y	N	Y	Y	Lithic
107.69	107.75	63C	100%	Monongahela	0.08	N	N	N	Y	N	Y	Y	N
107.75	107.81	8E	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
107.81	107.82	25D2	100%	Christian	0.02	State	N	N	Y	N	Y	Y	N
107.82	107.85	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
107.85	107.86	25D2	100%	Christian	0.01	State	N	N	Y	N	Y	Y	N
107.86	107.95	8E	100%	Berks	0.13	N	N	N	Y	N	Y	Y	Lithic
107.95	107.99	25D2	100%	Christian	0.05	State	N	N	Y	N	Y	Y	N
107.99	108.00	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
108.00	108.04	85	100%	Udorthents	0.04	N	N	N	N	N	N	N	N
108.04	108.11	24E2	100%	Christian	0.10	N	N	N	Y	N	Y	Y	N
108.11	108.13	63C	100%	Monongahela	0.04	N	N	N	Y	N	Y	Y	N
108.13	108.15	24E2	100%	Christian	0.02	N	N	N	Y	N	Y	Y	N
108.15	108.19	63C	100%	Monongahela	0.06	N	N	N	Y	N	Y	Y	N
108.19	108.22	24E2	100%	Christian	0.05	N	N	N	Y	N	Y	Y	N
108.22	108.25	63C	100%	Monongahela	0.04	N	N	N	Y	N	Y	Y	N
108.25	108.28	24E2	100%	Christian	0.05	N	N	N	Y	N	Y	Y	N
108.28	108.36	67	100%	Purdy	0.12	N	Y	Y	N	N	N	Y	N
108.36	108.41	27	100%	Craigsville	0.10	N	N	N	N	N	N	Y	N
108.41	108.47	28	100%	Craigsville	0.09	N	N	N	N	N	Y	Y	N
108.47	108.55	62B	100%	Monongahela	0.15	N	N	N	N	N	N	Y	N
108.55	108.62	27	100%	Craigsville	0.12	N	N	N	N	N	N	Y	N
108.62	108.64	38B	100%	Ernest	0.04	N	N	N	N	N	N	Y	N
108.64	108.70	8D	100%	Berks	0.10	N	N	N	Y	N	Y	Y	Paralithic
108.70	108.77	62B	100%	Monongahela	0.11	N	N	N	N	N	N	Y	N
108.77	108.81	28	100%	Craigsville	0.08	N	N	N	N	N	Y	Y	N
108.81	108.84	47C	100%	Guernsey	0.05	State	N	N	N	N	N	Y	Lithic
108.84	108.86	62B	100%	Monongahela	0.04	N	N	N	N	N	N	Y	N
108.86	108.88	8E	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
108.88	108.89	8D	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
108.89	108.95	8E	100%	Berks	0.11	N	N	N	Y	N	Y	Y	Lithic
108.95	108.97	8F	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
108.97	108.99	28	100%	Craigsville	0.04	N	N	N	N	N	Y	Y	N
108.99	109.02	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
109.02	109.11	53C	100%	Jefferson	0.16	State	N	N	Y	N	Y	Y	N
109.11	109.14	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
109.14	109.15	62B	100%	Monongahela	0.02	N	N	N	N	N	N	Y	N
109.15	109.19	28	100%	Craigsville	0.08	N	N	N	N	N	Y	Y	N
109.19	109.20	8D	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
109.20	109.23	8F	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Paralithic
109.23	109.26	8D	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
109.26	109.29	67	100%	Purdy	0.05	N	Y	Y	N	N	N	Y	N
109.29	109.33	8E	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
109.33	109.38	89F3	100%	Weikert	0.08	N	N	N	Y	N	Y	Y	Paralithic
109.38	109.46	11B	100%	Buchanan	0.13	N	N	N	N	N	N	Y	N
109.46	109.50	67	100%	Purdy	0.08	N	Y	Y	N	N	N	Y	N
109.50	109.58	11B	100%	Buchanan	0.12	N	N	N	N	N	N	Y	N
109.58	109.59	67	100%	Purdy	0.01	N	Y	Y	N	N	N	Y	N
109.59	109.62	62B	100%	Monongahela	0.05	N	N	N	N	N	N	Y	N
109.62	109.65	67	100%	Purdy	0.04	N	Y	Y	N	N	N	Y	N
109.65	109.65	8D	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
109.65	109.72	11A	100%	Buchanan	0.10	N	N	N	N	N	N	Y	N
109.72	109.74	67	100%	Purdy	0.03	N	Y	Y	N	N	N	Y	N
109.74	109.77	66	100%	Philo	0.04	State	N	N	N	N	N	Y	N
109.77	109.78	8D	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
109.78	109.83	62B	100%	Monongahela	0.07	N	N	N	N	N	N	Y	N
109.83	109.86	8D	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
109.86	109.89	62B	100%	Monongahela	0.05	N	N	N	N	N	N	Y	N
109.89	109.91	8E	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
109.91	109.93	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
109.93	109.96	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
109.96	110.04	11A	100%	Buchanan	0.13	N	N	N	N	N	N	Y	N
110.04	110.07	39	100%	Fluvaquents	0.03	N	Y	N	N	N	N	Y	N
110.07	110.08	21E3	100%	Chilhowie	0.02	N	N	N	Y	N	Y	Y	Lithic
110.08	110.12	11B	100%	Buchanan	0.06	N	N	N	N	N	N	Y	N
110.12	110.21	22D2	38%	Edom	0.05	N	N	N	Y	N	Y	Y	Paralithic
			63%	Chilhowie	0.08	N	N	N	Y	N	Y	Y	Lithic
110.21	110.22	90D2	44%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
			56%	Weikert	0.01	N	N	N	Y	N	Y	Y	Paralithic
110.22	110.26	91C2	100%	Wheeling	0.05	State	N	N	Y	N	Y	N	N
110.26	110.28	90D2	44%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
			56%	Weikert	0.02	N	N	N	Y	N	Y	Y	Paralithic
110.28	110.29	62B	100%	Monongahela	0.02	N	N	N	N	N	N	Y	N
110.29	110.33	39	100%	Fluvaquents	0.06	N	Y	N	N	N	N	Y	N
110.33	110.44	11B	100%	Buchanan	0.17	N	N	N	N	N	N	Y	N
110.44	110.46	4B	50%	Allegheny	0.01	State	N	N	N	N	N	Y	N
				Cotaco	0.01	State	N	N	N	N	N	Y	N
110.46	110.55	11A	100%	Buchanan	0.15	N	N	N	N	N	N	Y	N
110.55	110.59	62B	100%	Monongahela	0.06	N	N	N	N	N	N	Y	N
110.59	110.64	19	100%	Chavies	0.09	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
110.64	110.66	28	100%	Craigsville	0.03	N	N	N	N	N	Y	Y	N
110.66	110.84	19	100%	Chavies	0.28	Prime	N	N	N	N	N	N	N
110.84	110.87	66	100%	Philo	0.05	State	N	N	N	N	N	Y	N
110.87	111.00	1B	100%	Allegheny	0.20	Prime	N	N	N	N	N	N	N
111.00	111.07	27	100%	Craigsville	0.10	N	N	N	N	N	N	Y	N
111.07	111.09	19	100%	Chavies	0.04	Prime	N	N	N	N	N	N	N
111.09	111.10	66	100%	Philo	0.02	State	N	N	N	N	N	Y	N
111.10	111.12	19	100%	Chavies	0.02	Prime	N	N	N	N	N	N	N
111.12	111.17	11A	100%	Buchanan	0.08	N	N	N	N	N	N	Y	N
111.17	111.26	1B	100%	Allegheny	0.14	Prime	N	N	N	N	N	N	N
111.26	111.28	19	100%	Chavies	0.02	Prime	N	N	N	N	N	N	N
111.28	111.33	27	100%	Craigsville	0.08	N	N	N	N	N	N	Y	N
111.33	111.36	19	100%	Chavies	0.03	Prime	N	N	N	N	N	N	N
111.36	111.40	27	100%	Craigsville	0.06	N	N	N	N	N	N	Y	N
111.40	111.43	83	100%	Udorthents	0.05	N	N	N	N	N	N	N	N
111.43	111.50	28	100%	Craigsville	0.10	N	N	N	N	N	Y	Y	N
111.50	111.54	83	100%	Udorthents	0.05	N	N	N	N	N	N	N	N
111.54	111.65	28	100%	Craigsville	0.16	N	N	N	N	N	Y	Y	N
111.65	111.89	27	100%	Craigsville	0.37	N	N	N	N	N	N	Y	N
111.89	112.02	28	100%	Craigsville	0.21	N	N	N	N	N	Y	Y	N
112.02	112.07	27	100%	Craigsville	0.08	N	N	N	N	N	N	Y	N
112.07	112.21	28	100%	Craigsville	0.21	N	N	N	N	N	Y	Y	N
112.21	112.25	27	100%	Craigsville	0.06	N	N	N	N	N	N	Y	N
112.25	112.34	19	100%	Chavies	0.12	Prime	N	N	N	N	N	N	N
112.34	112.37	1B	100%	Allegheny	0.05	Prime	N	N	N	N	N	N	N
112.37	112.40	62B	100%	Monongahela	0.03	N	N	N	N	N	N	Y	N
112.40	112.52	38B	100%	Ernest	0.17	N	N	N	N	N	N	Y	N
112.52	112.53	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
112.53	112.59	62B	100%	Monongahela	0.09	N	N	N	N	N	N	Y	N
112.59	112.59	8F	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
112.59	112.63	83	100%	Udorthents	0.06	N	N	N	N	N	N	N	N
112.63	112.65	28	100%	Craigsville	0.03	N	N	N	N	N	Y	Y	N
112.65	112.69	1B	100%	Allegheny	0.07	Prime	N	N	N	N	N	N	N
112.69	112.71	62B	100%	Monongahela	0.04	N	N	N	N	N	N	Y	N
112.71	112.74	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
112.74	112.77	62B	100%	Monongahela	0.04	N	N	N	N	N	N	Y	N
112.77	112.84	8D	100%	Berks	0.13	N	N	N	Y	N	Y	Y	Paralithic
112.84	112.92	8F	100%	Berks	0.13	N	N	N	Y	N	Y	Y	Paralithic
112.92	112.98	8D	100%	Berks	0.10	N	N	N	Y	N	Y	Y	Paralithic
112.98	113.03	8D	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Paralithic
113.03	113.05	72F	100%	Rushtown	0.03	N	N	N	Y	N	Y	Y	N
113.05	113.05	8F	100%	Berks	<0.01	N	N	N	Y	N	Y	Y	Paralithic
113.05	113.16	8F	100%	Berks	0.17	N	N	N	Y	N	Y	Y	Paralithic
113.16	113.19	8D	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
113.19	113.19	8D	100%	Berks	<0.01	N	N	N	Y	N	Y	Y	Paralithic
113.19	113.30	8D	100%	Berks	0.16	N	N	N	Y	N	Y	Y	Paralithic
113.30	113.31	72F	100%	Rushtown	0.02	N	N	N	Y	N	Y	Y	N
113.31	113.33	38B	100%	Ernest	0.03	N	N	N	N	N	N	Y	N
113.33	113.38	8E	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
113.38	113.40	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
113.40	113.43	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
113.43	113.46	62B	100%	Monongahela	0.05	N	N	N	N	N	N	Y	N
113.46	113.63	28	100%	Craigsville	0.27	N	N	N	N	N	Y	Y	N
113.63	113.64	19	100%	Chavies	0.01	Prime	N	N	N	N	N	N	N
113.64	113.66	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
113.66	113.85	8D	100%	Berks	0.30	N	N	N	Y	N	Y	Y	Paralithic
113.85	113.94	8E	100%	Berks	0.15	N	N	N	Y	N	Y	Y	Lithic
113.94	114.24	8D	100%	Berks	0.45	N	N	N	Y	N	Y	Y	Paralithic
114.24	114.25	8F	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
114.25	114.26	8D	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
114.26	114.32	8F	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
114.32	114.38	27	100%	Craigsville	0.09	N	N	N	N	N	N	Y	N
114.38	114.48	28	100%	Craigsville	0.16	N	N	N	N	N	Y	Y	N
114.48	114.54	27	100%	Craigsville	0.10	N	N	N	N	N	N	Y	N
114.54	114.71	19	100%	Chavies	0.26	Prime	N	N	N	N	N	N	N
114.71	114.73	66	100%	Philo	0.04	State	N	N	N	N	N	Y	N
114.73	114.79	67	100%	Purdy	0.09	N	Y	Y	N	N	N	Y	N
114.79	114.82	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
114.82	114.88	62B	100%	Monongahela	0.09	N	N	N	N	N	N	Y	N
114.88	114.99	8D	100%	Berks	0.15	N	N	N	Y	N	Y	Y	Paralithic
114.99	115.12	8E	100%	Berks	0.15	N	N	N	Y	N	Y	Y	Lithic
115.12	115.21	38B	100%	Ernest	0.09	N	N	N	N	N	N	Y	N
115.21	115.28	28	100%	Craigsville	0.08	N	N	N	N	N	Y	Y	N
115.28	115.35	38B	100%	Ernest	0.07	N	N	N	N	N	N	Y	N
115.35	115.40	89F3	100%	Weikert	0.05	N	N	N	Y	N	Y	Y	Paralithic
115.40	115.41	8F	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
115.41	115.47	38B	100%	Ernest	0.07	N	N	N	N	N	N	Y	N
115.47	115.54	8E	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
115.54	115.63	8D	100%	Berks	0.10	N	N	N	Y	N	Y	Y	Paralithic
115.63	115.66	8F	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
115.66	115.70	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
115.70	115.73	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
115.73	115.79	8E	100%	Berks	0.07	N	N	N	Y	N	Y	Y	Lithic
115.79	115.81	38B	100%	Ernest	0.02	N	N	N	N	N	N	Y	N
115.81	115.84	38B	100%	Ernest	0.03	N	N	N	N	N	N	Y	N
115.84	115.89	8E	100%	Berks	0.06	N	N	N	Y	N	Y	Y	Lithic
115.89	115.92	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
115.92	116.04	8E	100%	Berks	0.13	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
116.04	116.15	8D	100%	Berks	0.11	N	N	N	Y	N	Y	Y	Paralithic
116.15	116.18	8D	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
116.18	116.26	8F	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Paralithic
116.26	116.30	27	100%	Craigsville	0.04	N	N	N	N	N	N	Y	N
116.30	116.40	8E	100%	Berks	0.10	N	N	N	Y	N	Y	Y	Lithic
116.40	116.42	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
116.42	116.46	8F	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
116.46	116.46	28	100%	Craigsville	<0.01	N	N	N	N	N	Y	Y	N
116.46	116.51	28	100%	Craigsville	0.05	N	N	N	N	N	Y	Y	N
116.51	116.68	1B	100%	Allegheny	0.16	Prime	N	N	N	N	N	N	N
116.68	116.74	28	100%	Craigsville	0.06	N	N	N	N	N	Y	Y	N
116.74	116.75	1B	100%	Allegheny	0.02	Prime	N	N	N	N	N	N	N
116.75	116.75	1B	100%	Allegheny	<0.01	Prime	N	N	N	N	N	N	N
116.75	116.78	62B	100%	Monongahela	0.03	N	N	N	N	N	N	Y	N
116.78	116.89	8E	100%	Berks	0.11	N	N	N	Y	N	Y	Y	Lithic
116.89	116.99	8D	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
116.99	117.04	8F	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
117.04	117.09	27	100%	Craigsville	0.05	N	N	N	N	N	N	Y	N
117.09	117.11	8E	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
117.11	117.14	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
117.14	117.16	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
117.16	117.20	27	100%	Craigsville	0.04	N	N	N	N	N	N	Y	N
117.20	117.29	8E	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Lithic
117.29	117.65	8D	100%	Berks	0.36	N	N	N	Y	N	Y	Y	Paralithic
117.65	117.68	8F	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
117.68	117.78	8E	100%	Berks	0.10	N	N	N	Y	N	Y	Y	Lithic
117.78	117.93	8D	100%	Berks	0.16	N	N	N	Y	N	Y	Y	Paralithic
117.93	118.12	8E	100%	Berks	0.19	N	N	N	Y	N	Y	Y	Lithic
118.12	118.22	51D	100%	Hazleton	0.10	N	N	N	Y	N	Y	Y	Lithic
118.22	118.67	8D	100%	Berks	0.45	N	N	N	Y	N	Y	Y	Paralithic
118.67	118.72	8F	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
118.72	119.63	8D	100%	Berks	0.92	N	N	N	Y	N	Y	Y	Paralithic
119.63	119.68	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
119.68	120.06	8D	100%	Berks	0.39	N	N	N	Y	N	Y	Y	Paralithic
120.06	120.16	8F	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
120.16	120.19	28	100%	Craigsville	0.04	N	N	N	N	N	Y	Y	N
120.19	120.23	63B	100%	Monongahela	0.04	N	N	N	N	N	N	Y	N
120.23	120.37	8F	100%	Berks	0.14	N	N	N	Y	N	Y	Y	Paralithic
120.37	120.40	28	100%	Craigsville	0.03	N	N	N	N	N	Y	Y	N
120.40	120.43	63B	100%	Monongahela	0.02	N	N	N	N	N	N	Y	N
120.43	120.49	8E	100%	Berks	0.06	N	N	N	Y	N	Y	Y	Lithic
120.49	120.53	8D	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
120.53	120.57	8E	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
120.57	120.59	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
120.59	120.68	8D	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
120.68	120.81	8E	100%	Berks	0.14	N	N	N	Y	N	Y	Y	Lithic
120.81	120.83	8D	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
120.83	120.86	8F	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
120.86	120.94	8E	100%	Berks	0.08	N	N	N	Y	N	Y	Y	Lithic
120.94	120.97	8D	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Paralithic
120.97	121.00	8E	100%	Berks	0.03	N	N	N	Y	N	Y	Y	Lithic
121.00	121.05	2B	100%	Allegheny	0.05	State	N	N	N	N	N	Y	N
121.05	121.06	28	100%	Craigsville	0.01	N	N	N	N	N	Y	Y	N
121.06	121.08	28	100%	Craigsville	0.02	N	N	N	N	N	Y	Y	N
121.08	121.16	89F3	100%	Weikert	0.08	N	N	N	Y	N	Y	Y	Paralithic
121.16	121.20	8F	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Paralithic
121.20	121.29	8D	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
121.29	121.31	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
121.31	121.71	8D	100%	Berks	0.40	N	N	N	Y	N	Y	Y	Paralithic
121.71	121.81	50D	100%	Hazleton	0.11	N	N	N	Y	N	Y	Y	Lithic
121.81	121.82	8D	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Paralithic
121.82	121.84	8E	100%	Berks	0.02	N	N	N	Y	N	Y	Y	Lithic
121.84	122.42	8D	100%	Berks	0.58	N	N	N	Y	N	Y	Y	Paralithic
122.42	122.48	8E	100%	Berks	0.06	N	N	N	Y	N	Y	Y	Lithic
122.48	122.65	8D	100%	Berks	0.17	N	N	N	Y	N	Y	Y	Paralithic
122.65	122.69	8E	100%	Berks	0.04	N	N	N	Y	N	Y	Y	Lithic
122.69	122.74	8D	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Paralithic
122.74	122.79	90D2	44%	Berks	0.02	N	N	N	Y	N	Y	Y	Paralithic
			56%	Weikert	0.03	N	N	N	Y	N	Y	Y	Paralithic
122.79	122.84	8E	100%	Berks	0.05	N	N	N	Y	N	Y	Y	Lithic
122.84	122.93	8D	100%	Berks	0.09	N	N	N	Y	N	Y	Y	Paralithic
122.93	123.00	89F3	100%	Weikert	0.07	N	N	N	Y	N	Y	Y	Paralithic
123.00	123.19	51F	100%	Hazleton	0.18	N	N	N	Y	N	Y	Y	Lithic
123.19	123.21	69F	33%	Drall	<0.01	N	N	N	Y	N	Y	Y	Lithic
			67%	Rock outcrop	0.01	N	N	N	Y	N	Y	N	Lithic
123.21	123.22	69F	33%	Drall	<0.01	N	N	N	Y	N	Y	Y	Lithic
			67%	Rock outcrop	<0.01	N	N	N	Y	N	Y	N	Lithic
123.22	123.32	51F	100%	Hazleton	0.09	N	N	N	Y	N	Y	Y	Lithic
123.32	123.56	8E	100%	Berks	0.23	N	N	N	Y	N	Y	Y	Lithic
123.56	123.59	51D	100%	Hazleton	0.03	N	N	N	Y	N	Y	Y	Lithic
123.59	123.72	8E	100%	Berks	0.13	N	N	N	Y	N	Y	Y	Lithic
123.72	123.86	20C2	100%	Chilhowie	0.13	N	N	N	Y	N	Y	Y	Lithic
123.86	123.87	8E	100%	Berks	0.01	N	N	N	Y	N	Y	Y	Lithic
123.87	123.92	53C	100%	Jefferson	0.05	State	N	N	Y	N	Y	Y	N
123.92	124.00	82	100%	Udifluvents	0.08	N	N	N	N	N	N	Y	N
124.00	124.02	10C2	100%	Bookwood	0.02	State	N	N	Y	N	Y	Y	Lithic
124.02	124.08	10B2	100%	Bookwood	0.06	Prime	N	N	N	N	N	Y	Lithic
124.08	124.15	82	100%	Udifluvents	0.07	N	N	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
124.15	124.18	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
124.18	124.22	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
124.22	124.27	10C2	100%	Bookwood	0.05	State	N	N	Y	N	Y	Y	Lithic
124.27	124.29	10D2	100%	Bookwood	0.03	State	N	N	Y	N	Y	Y	Lithic
124.29	124.31	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
124.31	124.42	11B	100%	Buchanan	0.11	N	N	N	N	N	N	Y	N
124.42	124.48	10D2	100%	Bookwood	0.06	State	N	N	Y	N	Y	Y	Lithic
124.48	124.52	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
124.52	124.54	10B2	100%	Bookwood	0.01	Prime	N	N	N	N	N	Y	Lithic
124.54	124.57	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
124.57	124.71	10D2	100%	Bookwood	0.14	State	N	N	Y	N	Y	Y	Lithic
124.71	124.80	10C2	100%	Bookwood	0.09	State	N	N	Y	N	Y	Y	Lithic
124.80	124.85	10D2	100%	Bookwood	0.05	State	N	N	Y	N	Y	Y	Lithic
124.85	124.88	79B	100%	Timberville	0.03	N	N	N	N	N	N	Y	N
124.88	124.99	45E2	44%	Rock outcrop	0.05	N	N	N	N	N	N	N	Lithic
			56%	Frederick	0.06	N	N	N	Y	N	Y	N	N
124.99	125.05	10C2	100%	Bookwood	0.06	State	N	N	Y	N	Y	Y	Lithic
125.05	125.10	39	100%	Fluvaquents	0.05	N	Y	N	N	N	N	Y	N
125.10	125.19	70C	42%	Frederick	0.04	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.05	N	N	N	N	N	Y	N	Lithic
125.19	125.26	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
125.26	125.29	44D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
125.29	125.32	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
125.32	125.37	44D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
125.37	125.39	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
125.39	125.42	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
125.42	125.53	40D2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
125.53	125.56	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
125.56	125.61	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
125.61	125.68	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
125.68	125.76	70C	42%	Frederick	0.03	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.05	N	N	N	N	N	Y	N	Lithic
125.76	125.79	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
125.79	126.14	42C2	44%	Christian	0.15	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.19	State	N	N	Y	N	Y	Y	N
126.14	126.16	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
126.16	126.21	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	Y	N
126.21	126.33	42D2	47%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.06	State	N	N	Y	N	Y	Y	N
126.33	126.45	42C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	Y	N
126.45	126.48	42D2	47%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
126.48	126.70	40C2	44%	Christian	0.10	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.13	State	N	N	Y	N	Y	N	N
126.70	126.74	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
126.74	127.01	40C2	44%	Christian	0.12	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.15	State	N	N	Y	N	Y	N	N
127.01	127.14	42C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	Y	N
127.14	127.34	40C2	44%	Christian	0.09	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.11	State	N	N	Y	N	Y	N	N
127.34	127.36	41C3	44%	Christian	0.01	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	N	N	N	Y	N	Y	N	N
127.36	127.43	79B	100%	Timberville	0.07	N	N	N	N	N	N	Y	N
127.43	127.54	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
127.54	127.56	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
127.56	127.68	42C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	Y	N
127.68	127.70	42D2	47%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
127.70	127.71	42C2	44%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
127.71	128.01	42D2	47%	Christian	0.14	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.16	State	N	N	Y	N	Y	Y	N
128.01	128.11	42C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
128.11	128.18	42D2	47%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.04	State	N	N	Y	N	Y	Y	N
128.18	128.22	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
128.22	128.25	42D2	47%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
128.25	128.30	24C2	100%	Christian	0.05	State	N	N	Y	N	Y	Y	N
128.30	128.35	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
128.35	128.41	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
128.41	128.43	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
128.43	128.47	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
128.47	128.48	40C2	44%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
128.48	128.53	24D2	100%	Christian	0.05	State	N	N	Y	N	Y	Y	N
128.53	128.67	40C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.08	State	N	N	Y	N	Y	N	N
128.67	128.69	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
128.69	128.73	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
128.73	128.78	40E2	47%	Christian	0.02	N	N	N	Y	N	Y	Y	N
			53%	Frederick	0.03	N	N	N	Y	N	Y	N	N
128.78	128.83	76D	100%	Shenval	0.05	State	N	N	Y	N	Y	Y	N
128.83	129.11	76C	100%	Shenval	0.28	State	N	N	Y	N	Y	Y	N
129.11	129.13	76D	100%	Shenval	0.03	State	N	N	Y	N	Y	Y	N
129.13	129.15	70E	35%	Frederick	0.01	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.01	N	N	N	Y	N	Y	N	Lithic
129.15	129.21	18	100%	Chagrin	0.06	Prime	N	N	N	N	N	N	N
129.21	129.33	75D2	100%	Shenval	0.12	State	N	N	Y	N	Y	Y	N
129.33	129.37	42D2	47%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
129.37	129.42	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
129.42	129.53	42C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	Y	N
129.53	129.55	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
129.55	129.71	40B2	38%	Christian	0.06	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.11	Prime	N	N	N	N	N	N	N
129.71	129.83	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			56%	Frederick	0.07	State	N	N	Y	N	Y	N	N
129.83	130.00	75C2	100%	Shenval	0.17	State	N	N	Y	N	Y	Y	N
130.00	130.05	75B2	100%	Shenval	0.04	Prime	N	N	N	N	N	Y	N
130.05	130.08	75C2	100%	Shenval	0.03	State	N	N	Y	N	Y	Y	N
130.08	130.17	40E2	47%	Christian	0.04	N	N	N	Y	N	Y	Y	N
			53%	Frederick	0.05	N	N	N	Y	N	Y	N	N
130.17	130.20	75B2	100%	Shenval	0.04	Prime	N	N	N	N	N	Y	N
130.20	130.33	75C2	100%	Shenval	0.13	State	N	N	Y	N	Y	Y	N
130.33	130.33	40E2	47%	Christian	<0.01	N	N	N	Y	N	Y	Y	N
			53%	Frederick	<0.01	N	N	N	Y	N	Y	N	N
130.33	130.37	70E	35%	Frederick	0.01	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.03	N	N	N	Y	N	Y	N	Lithic
130.37	130.39	W	100%	Water	0.02	N	N	N	N	N	N	N	N
130.39	130.45	81	100%	Tioga	0.06	State	N	N	N	N	N	Y	N
130.45	130.48	91B	100%	Wheeling	0.03	Prime	N	N	N	N	N	N	N
130.48	130.51	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
130.51	130.59	42E2	44%	Christian	0.04	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	N	N	N	Y	N	Y	Y	N
130.59	130.74	42D2	47%	Christian	0.07	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.08	State	N	N	Y	N	Y	Y	N
130.74	130.97	70E	35%	Frederick	0.08	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.15	N	N	N	Y	N	Y	N	Lithic
130.97	131.07	45C2	38%	Rock outcrop	0.04	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.07	N	N	N	N	N	N	N	N
131.07	131.16	70E	35%	Frederick	0.03	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.06	N	N	N	Y	N	Y	N	Lithic
131.16	131.28	42D2	47%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.06	State	N	N	Y	N	Y	Y	N
131.28	131.35	41D3	44%	Christian	0.03	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	N	N	N	Y	N	Y	N	N
131.35	131.40	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
131.40	131.46	79B	100%	Timberville	0.06	N	N	N	N	N	N	Y	N
131.46	131.46	24D2	100%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
131.46	131.67	40D2	44%	Christian	0.09	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.12	State	N	N	Y	N	Y	N	N
131.67	131.71	80B	100%	Timberville	0.03	N	N	N	N	N	N	Y	N
131.71	131.77	40D2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
131.77	131.79	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
131.79	131.85	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.04	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
131.85	131.89	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
131.89	131.91	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
131.91	132.04	70E	35%	Frederick	0.05	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.09	N	N	N	Y	N	Y	N	Lithic
132.04	132.09	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
132.09	132.16	70E	35%	Frederick	0.02	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.04	N	N	N	Y	N	Y	N	Lithic
132.16	132.17	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
132.17	132.20	70E	35%	Frederick	0.01	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.01	N	N	N	Y	N	Y	N	Lithic
132.20	132.24	14	100%	Buckton	0.04	Prime	N	N	N	N	N	Y	N
132.24	132.30	70E	35%	Frederick	0.02	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.04	N	N	N	Y	N	Y	N	Lithic
132.30	132.30	40D2	44%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	<0.01	State	N	N	Y	N	Y	N	N
132.30	132.36	75C2	100%	Shenval	0.06	State	N	N	Y	N	Y	Y	N
132.36	132.39	91B	100%	Wheeling	0.04	Prime	N	N	N	N	N	N	N
132.39	132.40	40C2	44%	Christian	<0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	<0.01	State	N	N	Y	N	Y	N	N
132.40	132.52	40D2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	N	N
132.52	132.67	70E	35%	Frederick	0.05	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.10	N	N	N	Y	N	Y	N	Lithic
132.67	132.83	40D2	44%	Christian	0.07	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.09	State	N	N	Y	N	Y	N	N
132.83	132.95	45C2	38%	Rock outcrop	0.04	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.07	N	N	N	N	N	N	N	N
132.95	132.97	70E	35%	Frederick	<0.01	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.01	N	N	N	Y	N	Y	N	Lithic
132.97	133.06	40C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
133.06	133.18	42D2	47%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.07	State	N	N	Y	N	Y	Y	N
133.18	133.22	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
133.22	133.28	43D	44%	Christian	0.03	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	N	N	N	Y	N	Y	Y	N
133.28	133.36	42D2	47%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.04	State	N	N	Y	N	Y	Y	N
133.36	133.42	42B2	41%	Christian	0.02	Prime	N	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			59%	Frederick	0.03	Prime	N	N	N	N	N	Y	N
133.42	133.49	43D	44%	Christian	0.03	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	N	N	N	Y	N	Y	Y	N
133.49	133.58	42D2	47%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.05	State	N	N	Y	N	Y	Y	N
133.58	133.63	43D	44%	Christian	0.02	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	N	N	N	Y	N	Y	Y	N
133.63	133.66	42C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
133.66	133.78	70E	35%	Frederick	0.04	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.08	N	N	N	Y	N	Y	N	Lithic
133.78	133.85	70C	42%	Frederick	0.03	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.04	N	N	N	N	N	Y	N	Lithic
133.85	133.93	70E	35%	Frederick	0.03	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.05	N	N	N	Y	N	Y	N	Lithic
133.93	134.09	42D2	47%	Christian	0.08	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.09	State	N	N	Y	N	Y	Y	N
134.09	134.10	43D	44%	Christian	<0.01	N	N	N	Y	N	Y	Y	N
			56%	Frederick	<0.01	N	N	N	Y	N	Y	Y	N
134.10	134.15	42D2	47%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.03	State	N	N	Y	N	Y	Y	N
134.15	134.17	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
134.17	134.22	39	100%	Fluvaquents	0.04	N	Y	N	N	N	N	Y	N
134.22	134.41	40C2	44%	Christian	0.09	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.11	State	N	N	Y	N	Y	N	N
134.41	134.45	42D2	47%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
134.45	134.56	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
134.56	134.63	42C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	Y	N
134.63	134.81	40C2	44%	Christian	0.08	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.10	State	N	N	Y	N	Y	N	N
134.81	134.86	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
134.86	134.96	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
134.96	135.07	45C2	38%	Rock outcrop	0.04	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.07	N	N	N	N	N	N	N	N
135.07	135.11	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
135.11	135.15	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
135.15	135.18	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
135.18	135.27	40D2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
135.27	135.28	70C	42%	Frederick	0.01	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.01	N	N	N	N	N	Y	N	Lithic
135.28	135.29	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
135.29	135.42	40C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.08	State	N	N	Y	N	Y	N	N
135.42	135.45	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
135.45	135.47	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
135.47	135.55	42D2	47%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.05	State	N	N	Y	N	Y	Y	N
135.55	135.57	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	N	N
135.57	135.61	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
135.61	135.65	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
135.65	135.70	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
135.70	135.73	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
135.73	135.86	40C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.08	State	N	N	Y	N	Y	N	N
135.86	135.88	42D2	47%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
135.88	135.91	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
135.91	136.03	24C2	100%	Christian	0.14	State	N	N	Y	N	Y	Y	N
136.03	136.06	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
136.06	136.10	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
136.10	136.22	40C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.08	State	N	N	Y	N	Y	N	N
136.22	136.25	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
136.25	136.34	40C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
136.34	136.35	42C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			56%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
136.35	136.41	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
136.41	136.43	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
136.43	136.53	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	N	N
136.53	136.73	40B2	38%	Christian	0.08	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.14	Prime	N	N	N	N	N	N	N
136.73	136.80	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
136.80	136.82	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
136.82	136.90	40C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
136.90	136.92	41C3	44%	Christian	0.01	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	N	N	N	Y	N	Y	N	N
136.92	136.95	40C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
136.95	136.97	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
136.97	137.01	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
137.01	137.06	82	100%	Udifluvents	0.06	N	N	N	N	N	N	Y	N
137.06	137.12	42D2	47%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.04	State	N	N	Y	N	Y	Y	N
137.12	137.27	40C2	44%	Christian	0.07	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.09	State	N	N	Y	N	Y	N	N
137.27	137.36	40D2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
137.36	137.42	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
137.42	137.51	40B2	38%	Christian	0.04	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.07	Prime	N	N	N	N	N	N	N
137.51	137.79	40C2	44%	Christian	0.14	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.18	State	N	N	Y	N	Y	N	N
137.79	137.82	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
137.82	137.84	41C3	44%	Christian	0.01	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	N	N	N	Y	N	Y	N	N
137.84	138.01	40C2	44%	Christian	0.09	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.11	State	N	N	Y	N	Y	N	N
138.01	138.11	10C2	100%	Bookwood	0.11	State	N	N	Y	N	Y	Y	Lithic
138.11	138.14	10D2	100%	Bookwood	0.03	State	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
138.14	138.26	10C2	100%	Bookwood	0.14	State	N	N	Y	N	Y	Y	Lithic
138.26	138.31	10B2	100%	Bookwood	0.05	Prime	N	N	N	N	N	Y	Lithic
138.31	138.33	10E2	100%	Bookwood	0.03	N	N	N	Y	N	Y	Y	Lithic
138.33	138.47	42D2	47%	Christian	0.07	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.08	State	N	N	Y	N	Y	Y	N
138.47	138.54	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
138.54	138.72	42D2	47%	Christian	0.09	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.11	State	N	N	Y	N	Y	Y	N
138.72	138.77	40E2	47%	Christian	0.03	N	N	N	Y	N	Y	Y	N
			53%	Frederick	0.03	N	N	N	Y	N	Y	N	N
138.77	138.85	40D2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
138.85	138.87	10E2	100%	Bookwood	0.03	N	N	N	Y	N	Y	Y	Lithic
138.87	138.91	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
138.91	139.01	40B2	38%	Christian	0.04	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.07	Prime	N	N	N	N	N	N	N
139.01	139.10	45C2	38%	Rock outcrop	0.04	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.06	N	N	N	N	N	N	N	N
139.10	139.19	60	100%	Massanetta	0.11	Prime	N	N	N	N	N	Y	Lithic
139.19	139.28	42D2	47%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.05	State	N	N	Y	N	Y	Y	N
139.28	139.32	42E2	44%	Christian	0.02	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	N	N	N	Y	N	Y	Y	N
139.32	139.35	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
139.35	139.37	40D2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
139.37	139.42	45E2	44%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			56%	Frederick	0.03	N	N	N	Y	N	Y	N	N
139.42	139.47	70E	35%	Frederick	0.02	N	N	N	Y	N	Y	N	N
			65%	Rock outcrop	0.04	N	N	N	Y	N	Y	N	Lithic
139.47	139.57	40D2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
139.57	139.61	60	100%	Massanetta	0.05	Prime	N	N	N	N	N	Y	Lithic
139.61	139.67	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
139.67	139.86	42C2	44%	Christian	0.08	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.11	State	N	N	Y	N	Y	Y	N
139.86	139.89	46C	50%	Frederick	0.01	N	N	N	Y	N	Y	Y	N
				Nixa	0.01	N	N	N	Y	N	Y	Y	N
139.89	139.97	40C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
139.97	140.01	79B	100%	Timberville	0.03	N	N	N	N	N	N	Y	N
140.01	140.03	42C2	44%	Christian	0.01	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.01	State	N	N	Y	N	Y	Y	N
140.03	140.13	40C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	N	N
140.13	140.17	45C2	38%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.02	N	N	N	N	N	N	N	N
140.17	140.22	40D2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
140.22	140.29	45C2	38%	Rock outcrop	0.03	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.05	N	N	N	N	N	N	N	N
140.29	140.36	42C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	Y	N
140.36	140.47	42D2	47%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			53%	Frederick	0.05	State	N	N	Y	N	Y	Y	N
140.47	140.77	42C2	44%	Christian	0.13	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.17	State	N	N	Y	N	Y	Y	N
140.77	140.82	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
140.82	140.95	20C2	100%	Chilhowie	0.13	N	N	N	Y	N	Y	Y	Lithic
140.95	141.21	30C2	100%	Edom	0.26	State	N	N	Y	N	Y	Y	Paralithic
141.21	141.61	20C2	100%	Chilhowie	0.40	N	N	N	Y	N	Y	Y	Lithic
141.61	141.66	74C2	42%	Berks	0.02	State	N	N	Y	N	Y	Y	Paralithic
			58%	Sequoia	0.03	State	N	N	Y	N	Y	N	Paralithic
141.66	141.66	90D2	44%	Berks	<0.01	N	N	N	Y	N	Y	Y	Paralithic
			56%	Weikert	<0.01	N	N	N	Y	N	Y	Y	Paralithic
141.66	141.78	74C2	42%	Berks	0.05	State	N	N	Y	N	Y	Y	Paralithic
			58%	Sequoia	0.07	State	N	N	Y	N	Y	N	Paralithic
141.78	141.83	73B2	100%	Sequoia	0.05	Prime	N	N	N	N	N	N	Paralithic
141.83	141.88	21E3	100%	Chilhowie	0.05	N	N	N	Y	N	Y	Y	Lithic
141.88	141.96	73B2	100%	Sequoia	0.08	Prime	N	N	N	N	N	N	Paralithic
141.96	142.11	20C2	100%	Chilhowie	0.15	N	N	N	Y	N	Y	Y	Lithic
142.11	142.18	32E2	35%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			65%	Edom	0.04	N	N	N	Y	N	Y	Y	Paralithic
142.18	142.26	30D2	100%	Edom	0.08	State	N	N	Y	N	Y	Y	Paralithic
142.26	142.36	82	100%	Udifluvents	0.10	N	N	N	N	N	N	Y	N
142.36	142.40	11B	100%	Buchanan	0.04	N	N	N	N	N	N	Y	N
142.40	142.53	82	100%	Udifluvents	0.13	N	N	N	N	N	N	Y	N
142.53	142.56	21E3	100%	Chilhowie	0.03	N	N	N	Y	N	Y	Y	Lithic
142.56	142.65	30B2	100%	Edom	0.09	Prime	N	N	N	N	N	Y	Paralithic
142.65	142.90	30C2	100%	Edom	0.25	State	N	N	Y	N	Y	Y	Paralithic
142.90	142.95	20B2	100%	Chilhowie	0.05	N	N	N	N	N	N	Y	Lithic
142.95	143.05	20C2	100%	Chilhowie	0.10	N	N	N	Y	N	Y	Y	Lithic
143.05	143.16	5	100%	Aqualfs	0.11	N	Y	Y	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
143.16	143.18	20C2	100%	Chilhowie	0.02	N	N	N	Y	N	Y	Y	Lithic
143.18	143.22	5	100%	Aqualfs	0.05	N	Y	Y	N	N	N	Y	N
143.22	143.36	35B2	100%	Endcav	0.14	Prime	N	N	N	N	N	N	Lithic
143.36	143.43	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
143.43	143.44	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
143.44	143.52	40C2	44%	Christian	0.04	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.05	State	N	N	Y	N	Y	N	N
143.52	143.56	70C	42%	Frederick	0.01	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.02	N	N	N	N	N	Y	N	Lithic
143.56	143.73	45C2	38%	Rock outcrop	0.07	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.11	N	N	N	N	N	N	N	N
143.73	143.83	5	100%	Aqualfs	0.10	N	Y	Y	N	N	N	Y	N
143.83	143.91	11B	100%	Buchanan	0.09	N	N	N	N	N	N	Y	N
143.91	143.94	5	100%	Aqualfs	0.03	N	Y	Y	N	N	N	Y	N
143.94	144.04	11A	100%	Buchanan	0.10	N	N	N	N	N	N	Y	N
144.04	144.17	41C3	44%	Christian	0.06	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.08	N	N	N	Y	N	Y	N	N
144.17	144.21	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.03	Prime	N	N	N	N	N	N	N
144.21	144.25	41B3	41%	Christian	0.01	N	N	N	N	N	N	Y	N
			59%	Frederick	0.02	N	N	N	N	N	N	N	N
144.25	144.32	41C3	44%	Christian	0.03	N	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	N	N	N	Y	N	Y	N	N
144.32	144.42	42C2	44%	Christian	0.05	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.06	State	N	N	Y	N	Y	Y	N
144.42	144.47	42B2	41%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			59%	Frederick	0.03	Prime	N	N	N	N	N	Y	N
144.47	144.51	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	Y	N
144.51	144.56	42B2	41%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			59%	Frederick	0.03	Prime	N	N	N	N	N	Y	N
144.56	144.61	42C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	Y	N
144.61	144.69	40B2	38%	Christian	0.03	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.05	Prime	N	N	N	N	N	N	N
144.69	145.26	40C2	44%	Christian	0.25	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.32	State	N	N	Y	N	Y	N	N
145.26	145.51	40B2	38%	Christian	0.10	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.17	Prime	N	N	N	N	N	N	N
145.51	145.56	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.02	State	N	N	Y	N	Y	N	N
145.56	145.63	39	100%	Fluvaquents	0.07	N	Y	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
145.63	145.69	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
145.69	145.87	40B2	38%	Christian	0.08	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.12	Prime	N	N	N	N	N	N	N
145.87	146.09	40C2	44%	Christian	0.10	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.13	State	N	N	Y	N	Y	N	N
146.09	146.11	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.01	Prime	N	N	N	N	N	N	N
146.11	146.15	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
146.15	146.17	5	100%	Aqualfs	0.03	N	Y	Y	N	N	N	Y	N
146.17	146.22	10B2	100%	Bookwood	0.06	Prime	N	N	N	N	N	Y	Lithic
146.22	146.35	5	100%	Aqualfs	0.15	N	Y	Y	N	N	N	Y	N
146.35	146.37	39	100%	Fluvaquents	0.02	N	Y	N	N	N	N	Y	N
146.37	146.41	40C2	44%	Christian	0.02	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
146.41	146.48	40D2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.04	State	N	N	Y	N	Y	N	N
146.48	146.59	40C2	44%	Christian	0.06	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.07	State	N	N	Y	N	Y	N	N
146.59	146.64	40B2	38%	Christian	0.02	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.04	Prime	N	N	N	N	N	N	N
146.64	146.81	79B	100%	Timberville	0.19	N	N	N	N	N	N	Y	N
146.81	146.87	40B2	38%	Christian	0.03	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.05	Prime	N	N	N	N	N	N	N
146.87	146.88	70C	42%	Frederick	0.01	N	N	N	N	N	Y	N	N
			58%	Rock outcrop	0.01	N	N	N	N	N	Y	N	Lithic
146.88	146.93	45C2	38%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.04	N	N	N	N	N	N	N	N
146.93	146.96	44B2	41%	Christian	0.01	State	N	N	N	N	N	Y	N
			59%	Frederick	0.02	State	N	N	N	N	N	N	N
146.96	147.05	40B2	38%	Christian	0.03	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.05	Prime	N	N	N	N	N	N	N
147.05	147.09	45C2	38%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.02	N	N	N	N	N	N	N	N
147.09	147.13	44B2	41%	Christian	0.01	State	N	N	N	N	N	Y	N
			59%	Frederick	0.02	State	N	N	N	N	N	N	N
147.13	147.18	45C2	38%	Rock outcrop	0.01	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.02	N	N	N	N	N	N	N	N
147.18	147.23	44B2	41%	Christian	0.02	State	N	N	N	N	N	Y	N
			59%	Frederick	0.02	State	N	N	N	N	N	N	N
147.23	147.32	45C2	38%	Rock outcrop	0.02	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.04	N	N	N	N	N	N	N	N
147.32	147.37	79B	100%	Timberville	0.04	N	N	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
147.37	147.41	10B2	100%	Bookwood	0.03	Prime	N	N	N	N	N	Y	Lithic
147.41	147.55	79B	100%	Timberville	0.10	N	N	N	N	N	N	Y	N
147.55	147.64	10B2	100%	Bookwood	0.07	Prime	N	N	N	N	N	Y	Lithic
147.64	147.72	40C2	44%	Christian	0.03	State	N	N	Y	N	Y	Y	N
			56%	Frederick	0.03	State	N	N	Y	N	Y	N	N
147.72	147.76	40B2	38%	Christian	0.01	Prime	N	N	N	N	N	Y	N
			63%	Frederick	0.02	Prime	N	N	N	N	N	N	N
147.76	147.99	45C2	38%	Rock outcrop	0.07	N	N	N	N	N	N	N	Lithic
			63%	Frederick	0.11	N	N	N	N	N	N	N	N
147.99	148.03	86C2	100%	Unison	0.03	State	N	N	Y	N	Y	Y	N
148.03	148.09	39	100%	Fluvaquents	0.05	N	Y	N	N	N	N	Y	N
148.09	148.20	86B	100%	Unison	0.08	Prime	N	N	N	N	N	Y	N
148.20	148.24	39	100%	Fluvaquents	0.03	N	Y	N	N	N	N	Y	N
148.24	148.35	19	100%	Chavies	0.08	Prime	N	N	N	N	N	N	N
148.35	148.48	11A	100%	Buchanan	0.10	N	N	N	N	N	N	Y	N
148.48	148.62	39	100%	Fluvaquents	0.10	N	Y	N	N	N	N	Y	N
148.62	148.73	3B	47%	Cotaco	0.04	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.05	Prime	N	N	N	N	N	N	N
148.73	148.83	86C2	100%	Unison	0.07	State	N	N	Y	N	Y	Y	N
148.83	148.88	3B	47%	Cotaco	0.02	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.02	Prime	N	N	N	N	N	N	N
148.88	149.17	86B	100%	Unison	0.22	Prime	N	N	N	N	N	Y	N
149.17	149.27	86C2	100%	Unison	0.07	State	N	N	Y	N	Y	Y	N
149.27	149.33	86B	100%	Unison	0.05	Prime	N	N	N	N	N	Y	N
149.33	149.39	3B	47%	Cotaco	0.02	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.02	Prime	N	N	N	N	N	N	N
149.39	149.44	86B	100%	Unison	0.03	Prime	N	N	N	N	N	Y	N
149.44	149.79	3B	47%	Cotaco	0.13	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.14	Prime	N	N	N	N	N	N	N
149.79	149.98	3C	41%	Cotaco	0.06	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.08	State	N	N	Y	N	Y	N	N
149.98	150.24	86C2	100%	Unison	0.19	State	N	N	Y	N	Y	Y	N
150.24	150.31	3B	47%	Cotaco	0.03	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.03	Prime	N	N	N	N	N	N	N
150.31	150.51	73B2	100%	Sequoia	0.15	Prime	N	N	N	N	N	N	Paralithic
150.51	150.58	86B	100%	Unison	0.06	Prime	N	N	N	N	N	Y	N
150.58	150.74	3B	47%	Cotaco	0.06	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.06	Prime	N	N	N	N	N	N	N
150.74	150.80	4C	41%	Cotaco	0.02	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.03	State	N	N	Y	N	Y	Y	N
150.80	150.84	11A	100%	Buchanan	0.03	N	N	N	N	N	N	Y	N
150.84	150.98	3B	47%	Cotaco	0.05	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.06	Prime	N	N	N	N	N	N	N
150.98	151.01	26	100%	Cotaco	0.02	Prime	N	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
151.01	151.09	78C	100%	Sherando	0.07	N	N	N	Y	N	Y	Y	N
151.09	151.17	4B	50%	Allegheny	0.03	State	N	N	N	N	N	Y	N
				Cotaco	0.03	State	N	N	N	N	N	Y	N
151.17	151.23	87C	100%	Unison	0.05	State	N	N	Y	N	Y	Y	N
151.23	151.31	26	100%	Cotaco	0.06	Prime	N	N	N	N	N	Y	N
151.31	151.40	4B	50%	Allegheny	0.04	State	N	N	N	N	N	Y	N
				Cotaco	0.04	State	N	N	N	N	N	Y	N
151.40	151.59	28	100%	Craigsville	0.15	N	N	N	N	N	Y	Y	N
151.59	151.61	15C	100%	Burketown	0.02	N	N	N	Y	N	Y	N	N
151.61	151.63	3C	41%	Cotaco	<0.01	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.01	State	N	N	Y	N	Y	N	N
151.63	151.67	15C	100%	Burketown	0.04	N	N	N	Y	N	Y	N	N
151.67	151.72	3C	41%	Cotaco	0.02	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.03	State	N	N	Y	N	Y	N	N
151.72	151.79	86B	100%	Unison	0.06	Prime	N	N	N	N	N	Y	N
151.79	152.04	86C2	100%	Unison	0.20	State	N	N	Y	N	Y	Y	N
152.04	152.10	86B	100%	Unison	0.05	Prime	N	N	N	N	N	Y	N
152.10	152.19	86C2	100%	Unison	0.09	State	N	N	Y	N	Y	Y	N
152.19	152.25	3B	47%	Cotaco	0.03	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.03	Prime	N	N	N	N	N	N	N
152.25	152.32	67	100%	Purdy	0.06	N	Y	Y	N	N	N	Y	N
152.32	152.33	4C	41%	Cotaco	0.01	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.01	State	N	N	Y	N	Y	Y	N
152.33	152.37	3B	47%	Cotaco	0.02	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.02	Prime	N	N	N	N	N	N	N
152.37	152.38	4C	41%	Cotaco	0.01	State	N	N	Y	N	Y	Y	N
			59%	Allegheny	0.01	State	N	N	Y	N	Y	Y	N
152.38	152.46	67	100%	Purdy	0.08	N	Y	Y	N	N	N	Y	N
152.46	152.71	3B	47%	Cotaco	0.11	Prime	N	N	N	N	N	Y	N
			53%	Allegheny	0.13	Prime	N	N	N	N	N	N	N
152.71	152.74	26	100%	Cotaco	0.03	Prime	N	N	N	N	N	Y	N
152.74	152.83	28	100%	Craigsville	0.09	N	N	N	N	N	Y	Y	N
152.83	152.86	19	100%	Chavies	0.03	Prime	N	N	N	N	N	N	N
152.86	152.94	28	100%	Craigsville	0.08	N	N	N	N	N	Y	Y	N
152.94	153.00	4C	41%	Cotaco	0.03	State	N	N	Y	N	Y	Y	N
153.00	153.09	4B	50%	Allegheny	0.04	State	N	N	N	N	N	Y	N
				Cotaco	0.04	State	N	N	N	N	N	Y	N
153.09	153.13	19	100%	Chavies	0.05	Prime	N	N	N	N	N	N	N
153.13	153.15	78E	100%	Sherando	0.02	N	N	N	Y	N	Y	Y	N
153.15	153.20	4B	50%	Allegheny	0.03	State	N	N	N	N	N	Y	N
				Cotaco	0.03	State	N	N	N	N	N	Y	N
153.20	153.24	66	100%	Philo	0.04	State	N	N	N	N	N	Y	N
153.24	153.33	62B	100%	Monongahela	0.10	N	N	N	N	N	N	Y	N
153.33	153.37	78E	100%	Sherando	0.04	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
153.37	153.48	28	100%	Craigsville	0.11	N	N	N	N	N	Y	Y	N
153.48	153.56	63B	100%	Monongahela	0.08	N	N	N	N	N	N	Y	N
153.56	153.95	28	100%	Craigsville	0.39	N	N	N	N	N	Y	Y	N
153.95	154.00	16E	100%	Cataska	0.05	N	N	N	Y	N	Y	Y	Lithic
154.00	154.09	16E	100%	Cataska	0.09	N	N	N	Y	N	Y	Y	Lithic
154.09	154.15	62C	100%	Monongahela	0.06	N	N	N	Y	N	Y	Y	N
154.15	154.34	16E	100%	Cataska	0.20	N	N	N	Y	N	Y	Y	Lithic
154.34	154.45	48E	100%	Hartleton	0.10	N	N	N	Y	N	Y	Y	Lithic
154.45	154.92	59E	100%	Lew	0.48	N	N	N	Y	N	Y	Y	N
154.92	154.93	58D	100%	Lew	0.01	State	N	N	Y	N	Y	Y	N
154.93	155.04	59E	100%	Lew	0.11	N	N	N	Y	N	Y	Y	N
155.04	155.05	58D	100%	Lew	0.02	State	N	N	Y	N	Y	Y	N
155.05	155.13	59E	100%	Lew	0.09	N	N	N	Y	N	Y	Y	N
155.13	155.97	59E	100%	Lew	0.94	N	N	N	Y	N	Y	Y	N
155.97	156.45	27	100%	Craigsville	0.50	N	N	N	N	N	N	Y	N
156.45	157.04	59E	100%	Lew	0.63	N	N	N	Y	N	Y	Y	N
157.04	157.09	16E	100%	Cataska	0.06	N	N	N	Y	N	Y	Y	Lithic
157.09	157.12	16F	100%	Cataska	0.04	N	N	N	Y	N	Y	Y	Lithic
157.12	157.12	27	100%	Craigsville	<0.01	N	N	N	N	N	N	Y	N
157.12	157.19	16F	100%	Cataska	0.08	N	N	N	Y	N	Y	Y	Lithic
157.19	157.19	59E	100%	Lew	0.01	N	N	N	Y	N	Y	Y	N
157.19	157.20	27	100%	Craigsville	0.01	N	N	N	N	N	N	Y	N
157.20	157.22	59E	100%	Lew	0.02	N	N	N	Y	N	Y	Y	N
157.22	157.22	28	100%	Craigsville	<0.01	N	N	N	N	N	Y	Y	N
157.22	157.85	59E	100%	Lew	0.73	N	N	N	Y	N	Y	Y	N
157.85	158.01	59F	100%	Lew	0.16	N	N	N	Y	N	Y	Y	N
158.01	158.14	59F	100%	Lew	0.13	N	N	N	Y	N	Y	Y	N
158.14	158.17	59F	100%	Lew	0.04	N	N	N	Y	N	Y	Y	N
158.17	158.22	59F	100%	Lew	0.04	N	N	N	Y	N	Y	Y	N
158.22	158.24	58D	100%	Lew	0.03	State	N	N	Y	N	Y	Y	N
158.24	158.24	33E	39%	Catoctin	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Myersville	<0.01	N	N	N	Y	N	Y	Y	Paralithic
		58D	100%	Lew	<0.01	State	N	N	Y	N	Y	Y	N
158.24	158.25	33E	39%	Catoctin	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Myersville	<0.01	N	N	N	Y	N	Y	Y	Paralithic
Nelson County, VA													
158.25	158.27	33E	39%	Catoctin	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Myersville	0.02	N	N	N	Y	N	Y	Y	Paralithic
158.27	158.35	33E	39%	Catoctin	0.03	N	N	N	Y	N	Y	Y	Lithic
			61%	Myersville	0.05	N	N	N	Y	N	Y	Y	Paralithic
158.35	158.67	30E	100%	Lew	0.32	N	N	N	Y	N	Y	Y	N
158.67	158.96	30D	100%	Lew	0.29	N	N	N	Y	N	Y	Y	N
158.96	159.09	14E	39%	Peaks	0.05	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.08	N	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
159.09	159.32	36E	33%	Rock outcrop	0.08	N	N	N	Y	N	Y	N	Lithic
			67%	Peaks	0.16	N	N	N	Y	N	Y	Y	Lithic
159.32	159.44	14C	39%	Peaks	0.05	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.07	N	N	N	Y	N	Y	N	N
159.44	160.62	14E	39%	Peaks	0.47	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.74	N	N	N	Y	N	Y	N	N
160.62	160.67	13C	100%	Edneytown	0.06	State	N	N	Y	N	Y	N	N
160.67	160.76	14E	39%	Peaks	0.04	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.06	N	N	N	Y	N	Y	N	N
160.76	160.76	14D	39%	Peaks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	<0.01	N	N	N	Y	N	Y	N	N
160.76	160.79	14E	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.02	N	N	N	Y	N	Y	N	N
160.79	160.82	14D	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.02	N	N	N	Y	N	Y	N	N
160.82	160.89	14E	39%	Peaks	0.03	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.05	N	N	N	Y	N	Y	N	N
160.89	160.90	14D	39%	Peaks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.01	N	N	N	Y	N	Y	N	N
160.90	161.14	14E	39%	Peaks	0.10	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.15	N	N	N	Y	N	Y	N	N
161.14	161.70	33E	39%	Catoctin	0.22	N	N	N	Y	N	Y	Y	Lithic
			61%	Myersville	0.34	N	N	N	Y	N	Y	Y	Paralithic
161.70	161.81	32C	100%	Minnieville	0.10	State	N	N	Y	N	Y	N	N
161.81	161.88	14E	39%	Peaks	0.03	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.04	N	N	N	Y	N	Y	N	N
161.88	161.93	14D	39%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.03	N	N	N	Y	N	Y	N	N
161.93	162.16	14E	39%	Peaks	0.09	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.14	N	N	N	Y	N	Y	N	N
162.16	162.19	22B	100%	Hayesville	0.03	Prime	N	N	N	N	N	Y	N
162.19	162.37	22C	100%	Hayesville	0.19	State	N	N	Y	N	Y	Y	N
162.37	162.42	53C	100%	Wintergreen	0.05	N	N	N	Y	N	Y	Y	N
162.42	162.47	11A	100%	Craigsville	0.05	N	N	N	N	N	N	Y	N
162.47	162.58	22D	100%	Hayesville	0.12	State	N	N	Y	N	Y	Y	N
162.58	162.66	52C	100%	Wintergreen	0.08	State	N	N	Y	N	Y	Y	N
162.66	162.80	52D	100%	Wintergreen	0.15	State	N	N	Y	N	Y	Y	N
162.80	162.90	52C	100%	Wintergreen	0.10	State	N	N	Y	N	Y	Y	N
162.90	163.07	34E	100%	Occoquan	0.18	N	N	N	Y	N	Y	N	Paralithic
163.07	163.35	11A	100%	Craigsville	0.28	N	N	N	N	N	N	Y	N
163.35	163.45	21A	100%	Hatboro	0.11	N	Y	Y	N	N	N	N	N
163.45	163.54	43A	100%	Suches	0.09	N	N	N	N	N	N	N	N
163.54	163.73	11A	100%	Craigsville	0.19	N	N	N	N	N	N	Y	N
163.73	163.86	8A	100%	Codorus	0.14	Prime	N	Y	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
163.86	163.92	43A	100%	Suches	0.05	N	N	N	N	N	N	N	N
163.92	164.00	12B	100%	Delanco	0.09	Prime	N	N	N	N	N	N	N
164.00	164.05	22D	100%	Hayesville	0.05	State	N	N	Y	N	Y	Y	N
164.05	164.09	22C	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
164.09	164.14	23E	100%	Hayesville	0.05	N	N	N	Y	N	Y	Y	N
164.14	164.18	12B	100%	Delanco	0.04	Prime	N	N	N	N	N	N	N
164.18	164.26	34E	100%	Occoquan	0.08	N	N	N	Y	N	Y	N	Paralithic
164.26	164.36	34C	100%	Occoquan	0.10	N	N	N	Y	N	Y	N	Paralithic
164.36	164.40	34E	100%	Occoquan	0.04	N	N	N	Y	N	Y	N	Paralithic
164.40	164.45	12C	100%	Delanco	0.04	State	N	N	Y	N	Y	N	N
164.45	164.47	14E	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.01	N	N	N	Y	N	Y	N	N
164.47	164.48	12C	100%	Delanco	0.02	State	N	N	Y	N	Y	N	N
164.48	164.78	14E	39%	Peaks	0.11	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.18	N	N	N	Y	N	Y	N	N
164.78	164.80	14D	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.02	N	N	N	Y	N	Y	N	N
164.80	165.02	14E	39%	Peaks	0.09	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.13	N	N	N	Y	N	Y	N	N
165.02	165.29	52C	100%	Wintergreen	0.26	State	N	N	Y	N	Y	Y	N
165.29	165.36	39C	100%	Saunook	0.07	State	N	N	Y	N	Y	Y	N
165.36	165.38	12B	100%	Delanco	0.02	Prime	N	N	N	N	N	N	N
165.38	165.46	52D	100%	Wintergreen	0.08	State	N	N	Y	N	Y	Y	N
165.46	165.52	12B	100%	Delanco	0.06	Prime	N	N	N	N	N	N	N
165.52	165.55	52C	100%	Wintergreen	0.03	State	N	N	Y	N	Y	Y	N
165.55	165.78	52B	100%	Wintergreen	0.24	Prime	N	N	N	N	N	Y	N
165.78	165.88	49B	100%	Unison	0.11	Prime	N	N	N	N	N	Y	N
165.88	166.02	11A	100%	Craigsville	0.14	N	N	N	N	N	N	Y	N
166.02	166.07	22E	100%	Hayesville	0.04	N	N	N	Y	N	Y	Y	N
166.07	166.18	52B	100%	Wintergreen	0.11	Prime	N	N	N	N	N	Y	N
166.18	166.23	22E	100%	Hayesville	0.05	N	N	N	Y	N	Y	Y	N
166.23	166.28	43A	100%	Suches	0.06	N	N	N	N	N	N	N	N
166.28	166.31	12B	100%	Delanco	0.02	Prime	N	N	N	N	N	N	N
166.31	166.37	22E	100%	Hayesville	0.07	N	N	N	Y	N	Y	Y	N
166.37	166.45	22C	100%	Hayesville	0.07	State	N	N	Y	N	Y	Y	N
166.45	166.61	14E	39%	Peaks	0.07	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.10	N	N	N	Y	N	Y	N	N
166.61	166.69	24D	100%	Hayesville	0.08	State	N	N	Y	N	Y	Y	N
166.69	166.72	14E	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.02	N	N	N	Y	N	Y	N	N
166.72	166.75	12B	100%	Delanco	0.03	Prime	N	N	N	N	N	N	N
166.75	166.89	22E	100%	Hayesville	0.14	N	N	N	Y	N	Y	Y	N
166.89	166.89	52C	100%	Wintergreen	<0.01	State	N	N	Y	N	Y	Y	N
166.89	166.89	22E	100%	Hayesville	<0.01	N	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
166.89	166.99	52C	100%	Wintergreen	0.10	State	N	N	Y	N	Y	Y	N
166.99	167.06	52D	100%	Wintergreen	0.07	State	N	N	Y	N	Y	Y	N
167.06	167.22	13D	100%	Edneytown	0.18	State	N	N	Y	N	Y	N	N
167.22	167.40	14D	39%	Peaks	0.08	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.12	N	N	N	Y	N	Y	N	N
167.40	167.54	14E	39%	Peaks	0.06	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.09	N	N	N	Y	N	Y	N	N
167.54	167.63	36E	33%	Rock outcrop	0.03	N	N	N	Y	N	Y	N	Lithic
			67%	Peaks	0.06	N	N	N	Y	N	Y	Y	Lithic
167.63	167.65	14D	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.02	N	N	N	Y	N	Y	N	N
167.65	167.68	36E	33%	Rock outcrop	0.01	N	N	N	Y	N	Y	N	Lithic
			67%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
167.68	167.80	14D	39%	Peaks	0.05	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.08	N	N	N	Y	N	Y	N	N
167.80	167.89	14E	39%	Peaks	0.04	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.06	N	N	N	Y	N	Y	N	N
167.89	167.94	14D	39%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.03	N	N	N	Y	N	Y	N	N
167.94	167.94	14E	39%	Peaks	<0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	<0.01	N	N	N	Y	N	Y	N	N
167.94	168.01	14D	39%	Peaks	0.03	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.04	N	N	N	Y	N	Y	N	N
168.01	168.35	14E	39%	Peaks	0.15	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.23	N	N	N	Y	N	Y	N	N
168.35	168.42	52D	100%	Wintergreen	0.07	State	N	N	Y	N	Y	Y	N
168.42	168.52	52C	100%	Wintergreen	0.11	State	N	N	Y	N	Y	Y	N
168.52	168.57	35E	100%	Occoquan	0.06	N	N	N	Y	N	Y	N	Paralithic
168.57	168.62	52C	100%	Wintergreen	0.05	State	N	N	Y	N	Y	Y	N
168.62	168.64	35E	100%	Occoquan	0.03	N	N	N	Y	N	Y	N	Paralithic
168.64	168.70	52C	100%	Wintergreen	0.06	State	N	N	Y	N	Y	Y	N
168.70	168.76	35E	100%	Occoquan	0.06	N	N	N	Y	N	Y	N	Paralithic
168.76	168.78	10A	100%	Colvard	0.03	Prime	N	N	N	N	N	N	N
168.78	168.83	22E	100%	Hayesville	0.06	N	N	N	Y	N	Y	Y	N
168.83	168.88	52B	100%	Wintergreen	0.05	Prime	N	N	N	N	N	Y	N
168.88	168.96	22E	100%	Hayesville	0.09	N	N	N	Y	N	Y	Y	N
168.96	169.05	52C	100%	Wintergreen	0.09	State	N	N	Y	N	Y	Y	N
169.05	169.08	22D	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
169.08	169.22	52C	100%	Wintergreen	0.15	State	N	N	Y	N	Y	Y	N
169.22	169.27	35E	100%	Occoquan	0.05	N	N	N	Y	N	Y	N	Paralithic
169.27	169.30	10A	100%	Colvard	0.03	Prime	N	N	N	N	N	N	N
169.30	169.40	35E	100%	Occoquan	0.11	N	N	N	Y	N	Y	N	Paralithic
169.40	169.43	22D	100%	Hayesville	0.03	State	N	N	Y	N	Y	Y	N
169.43	169.48	52C	100%	Wintergreen	0.05	State	N	N	Y	N	Y	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
169.48	169.65	34E	100%	Occoquan	0.19	N	N	N	Y	N	Y	N	Paralithic
169.65	169.68	22D	100%	Hayesville	0.03	State	N	N	Y	N	Y	Y	N
169.68	169.72	12B	100%	Delanco	0.04	Prime	N	N	N	N	N	N	N
169.72	169.76	34E	100%	Occoquan	0.05	N	N	N	Y	N	Y	N	Paralithic
169.76	169.81	22D	100%	Hayesville	0.05	State	N	N	Y	N	Y	Y	N
169.81	169.86	22E	100%	Hayesville	0.05	N	N	N	Y	N	Y	Y	N
169.86	169.90	22C	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
169.90	169.92	22D	100%	Hayesville	0.03	State	N	N	Y	N	Y	Y	N
169.92	169.95	35E	100%	Occoquan	0.03	N	N	N	Y	N	Y	N	Paralithic
169.95	169.98	12B	100%	Delanco	0.03	Prime	N	N	N	N	N	N	N
169.98	170.03	22E	100%	Hayesville	0.04	N	N	N	Y	N	Y	Y	N
170.03	170.06	35E	100%	Occoquan	0.03	N	N	N	Y	N	Y	N	Paralithic
170.06	170.09	22C	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
170.09	170.12	35E	100%	Occoquan	0.04	N	N	N	Y	N	Y	N	Paralithic
170.12	170.22	23E	100%	Hayesville	0.13	N	N	N	Y	N	Y	Y	N
170.22	170.34	12B	100%	Delanco	0.15	Prime	N	N	N	N	N	N	N
170.34	170.41	22E	100%	Hayesville	0.09	N	N	N	Y	N	Y	Y	N
170.41	170.45	35E	100%	Occoquan	0.05	N	N	N	Y	N	Y	N	Paralithic
170.45	170.53	22C	100%	Hayesville	0.10	State	N	N	Y	N	Y	Y	N
170.53	170.57	35E	100%	Occoquan	0.06	N	N	N	Y	N	Y	N	Paralithic
170.57	170.69	22C	100%	Hayesville	0.15	State	N	N	Y	N	Y	Y	N
170.69	170.71	22E	100%	Hayesville	0.02	N	N	N	Y	N	Y	Y	N
170.71	170.75	12C	100%	Delanco	0.05	State	N	N	Y	N	Y	N	N
170.75	170.79	23D	100%	Hayesville	0.06	N	N	N	Y	N	Y	Y	N
170.79	170.80	23C	100%	Hayesville	0.01	N	N	N	Y	N	Y	Y	N
170.80	170.86	23D	100%	Hayesville	0.06	N	N	N	Y	N	Y	Y	N
170.86	170.99	12B	100%	Delanco	0.12	Prime	N	N	N	N	N	N	N
170.99	171.02	22D	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
171.02	171.06	22C	100%	Hayesville	0.04	State	N	N	Y	N	Y	Y	N
171.06	171.12	22D	100%	Hayesville	0.05	State	N	N	Y	N	Y	Y	N
171.12	171.22	22C	100%	Hayesville	0.10	State	N	N	Y	N	Y	Y	N
171.22	171.23	34C	100%	Occoquan	0.01	N	N	N	Y	N	Y	N	Paralithic
171.23	171.25	23D	100%	Hayesville	0.02	N	N	N	Y	N	Y	Y	N
171.25	171.28	35E	100%	Occoquan	0.03	N	N	N	Y	N	Y	N	Paralithic
171.28	171.31	12B	100%	Delanco	0.02	Prime	N	N	N	N	N	N	N
171.31	171.35	24E	100%	Hayesville	0.04	N	N	N	Y	N	Y	Y	N
171.35	171.52	22C	100%	Hayesville	0.17	State	N	N	Y	N	Y	Y	N
171.52	171.59	24E	100%	Hayesville	0.07	N	N	N	Y	N	Y	Y	N
171.59	171.65	10A	100%	Colvard	0.07	Prime	N	N	N	N	N	N	N
171.65	171.96	22E	100%	Hayesville	0.33	N	N	N	Y	N	Y	Y	N
171.96	172.06	22B	100%	Hayesville	0.11	Prime	N	N	N	N	N	Y	N
172.06	172.38	22C	100%	Hayesville	0.32	State	N	N	Y	N	Y	Y	N
172.38	172.51	22E	100%	Hayesville	0.13	N	N	N	Y	N	Y	Y	N
172.51	172.60	14E	39%	Peaks	0.04	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			61%	Edneytown	0.06	N	N	N	Y	N	Y	N	N
172.60	172.63	22E	100%	Hayesville	0.03	N	N	N	Y	N	Y	Y	N
172.63	172.73	35E	100%	Occoquan	0.10	N	N	N	Y	N	Y	N	Paralithic
172.73	172.77	14C	39%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.03	N	N	N	Y	N	Y	N	N
172.77	172.83	14E	39%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.03	N	N	N	Y	N	Y	N	N
172.83	172.87	46D	100%	Thurmont	0.04	State	N	N	Y	N	Y	Y	N
172.87	172.92	14E	39%	Peaks	0.02	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.03	N	N	N	Y	N	Y	N	N
172.92	172.97	22D	100%	Hayesville	0.05	State	N	N	Y	N	Y	Y	N
172.97	172.99	14E	39%	Peaks	0.01	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.01	N	N	N	Y	N	Y	N	N
172.99	173.04	35D	100%	Occoquan	0.05	N	N	N	Y	N	Y	N	Paralithic
173.04	173.16	35E	100%	Occoquan	0.12	N	N	N	Y	N	Y	N	Paralithic
173.16	173.21	46D	100%	Thurmont	0.05	State	N	N	Y	N	Y	Y	N
173.21	173.33	13D	100%	Edneytown	0.12	State	N	N	Y	N	Y	N	N
173.33	173.48	14E	39%	Peaks	0.06	N	N	N	Y	N	Y	Y	Lithic
			61%	Edneytown	0.09	N	N	N	Y	N	Y	N	N
173.48	173.59	22C	100%	Hayesville	0.11	State	N	N	Y	N	Y	Y	N
173.59	173.65	35E	100%	Occoquan	0.05	N	N	N	Y	N	Y	N	Paralithic
173.65	173.84	35D	100%	Occoquan	0.19	N	N	N	Y	N	Y	N	Paralithic
173.84	173.94	22C	100%	Hayesville	0.10	State	N	N	Y	N	Y	Y	N
173.94	174.08	35D	100%	Occoquan	0.15	N	N	N	Y	N	Y	N	Paralithic
174.08	174.23	18C	100%	Fauquier	0.15	State	N	N	Y	N	Y	N	Lithic
174.23	174.34	42E	100%	Spriggs	0.11	N	N	N	Y	N	Y	Y	Lithic
174.34	174.39	18E	100%	Fauquier	0.06	N	N	N	Y	N	Y	N	Lithic
174.39	174.56	18C	100%	Fauquier	0.17	State	N	N	Y	N	Y	N	Lithic
174.56	174.59	18D	100%	Fauquier	0.03	State	N	N	Y	N	Y	N	Lithic
174.59	174.67	18E	100%	Fauquier	0.08	N	N	N	Y	N	Y	N	Lithic
174.67	174.71	18C	100%	Fauquier	0.04	State	N	N	Y	N	Y	N	Lithic
174.71	174.83	18E	100%	Fauquier	0.13	N	N	N	Y	N	Y	N	Lithic
174.83	174.90	18D	100%	Fauquier	0.07	State	N	N	Y	N	Y	N	Lithic
174.90	175.08	32C	100%	Minnieville	0.19	State	N	N	Y	N	Y	N	N
175.08	175.11	18D	100%	Fauquier	0.04	State	N	N	Y	N	Y	N	Lithic
175.11	175.17	43A	100%	Suches	0.07	N	N	N	N	N	N	N	N
175.17	175.26	32D	100%	Minnieville	0.09	State	N	N	Y	N	Y	N	N
175.26	175.44	32C	100%	Minnieville	0.20	State	N	N	Y	N	Y	N	N
175.44	175.52	32D	100%	Minnieville	0.09	State	N	N	Y	N	Y	N	N
175.52	175.58	43A	100%	Suches	0.07	N	N	N	N	N	N	N	N
175.58	175.70	16D	100%	Elioak	0.14	N	N	N	Y	N	Y	N	N
175.70	175.86	15D	100%	Elioak	0.17	State	N	N	Y	N	Y	N	N
175.86	175.90	8A	100%	Codorus	0.05	Prime	N	Y	N	N	N	Y	N
175.90	175.94	25E	100%	Hazel	0.05	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
175.94	175.98	15D	100%	Elioak	0.04	State	N	N	Y	N	Y	N	N
175.98	176.03	25E	100%	Hazel	0.05	N	N	N	Y	N	Y	Y	Lithic
176.03	176.13	25D	100%	Hazel	0.11	N	N	N	Y	N	Y	Y	Lithic
176.13	176.21	25E	100%	Hazel	0.10	N	N	N	Y	N	Y	Y	Lithic
176.21	176.26	25D	100%	Hazel	0.07	N	N	N	Y	N	Y	Y	Lithic
176.26	176.51	15C	100%	Elioak	0.30	State	N	N	Y	N	Y	N	N
176.51	176.90	25D	100%	Hazel	0.41	N	N	N	Y	N	Y	Y	Lithic
176.90	176.95	25E	100%	Hazel	0.05	N	N	N	Y	N	Y	Y	Lithic
176.95	177.25	25D	100%	Hazel	0.31	N	N	N	Y	N	Y	Y	Lithic
177.25	177.41	25C	100%	Hazel	0.16	N	N	N	Y	N	Y	Y	Lithic
177.41	177.50	25E	100%	Hazel	0.09	N	N	N	Y	N	Y	Y	Lithic
177.50	177.53	25D	100%	Hazel	0.04	N	N	N	Y	N	Y	Y	Lithic
177.53	177.56	25E	100%	Hazel	0.03	N	N	N	Y	N	Y	Y	Lithic
177.56	177.63	25D	100%	Hazel	0.06	N	N	N	Y	N	Y	Y	Lithic
177.63	177.73	15C	100%	Elioak	0.11	State	N	N	Y	N	Y	N	N
177.73	177.77	25E	100%	Hazel	0.04	N	N	N	Y	N	Y	Y	Lithic
177.77	178.03	25D	100%	Hazel	0.26	N	N	N	Y	N	Y	Y	Lithic
178.03	178.28	25E	100%	Hazel	0.28	N	N	N	Y	N	Y	Y	Lithic
178.28	178.57	25D	100%	Hazel	0.33	N	N	N	Y	N	Y	Y	Lithic
178.57	178.61	25E	100%	Hazel	0.04	N	N	N	Y	N	Y	Y	Lithic
178.61	178.75	25C	100%	Hazel	0.16	N	N	N	Y	N	Y	Y	Lithic
178.75	178.85	25D	100%	Hazel	0.11	N	N	N	Y	N	Y	Y	Lithic
178.85	179.01	25E	100%	Hazel	0.17	N	N	N	Y	N	Y	Y	Lithic
179.00	179.02	15D	100%	Elioak	0.02	State	N	N	Y	N	Y	N	N
179.02	179.16	15C	100%	Elioak	0.15	State	N	N	Y	N	Y	N	N
179.16	179.19	15B	100%	Elioak	0.03	Prime	N	N	N	N	N	N	N
179.19	179.32	15C	100%	Elioak	0.14	State	N	N	Y	N	Y	N	N
179.32	179.38	15D	100%	Elioak	0.06	State	N	N	Y	N	Y	N	N
179.38	179.42	15B	100%	Elioak	0.05	Prime	N	N	N	N	N	N	N
179.42	179.46	15D	100%	Elioak	0.04	State	N	N	Y	N	Y	N	N
179.46	179.51	15B	100%	Elioak	0.05	Prime	N	N	N	N	N	N	N
179.51	179.58	16C	100%	Elioak	0.07	N	N	N	Y	N	Y	N	N
179.58	179.89	15B	100%	Elioak	0.32	Prime	N	N	N	N	N	N	N
179.89	179.90	16C	100%	Elioak	0.01	N	N	N	Y	N	Y	N	N
179.90	179.95	15B	100%	Elioak	0.05	Prime	N	N	N	N	N	N	N
179.95	180.08	16D	100%	Elioak	0.13	N	N	N	Y	N	Y	N	N
180.08	180.13	15B	100%	Elioak	0.05	Prime	N	N	N	N	N	N	N
180.13	180.17	16C	100%	Elioak	0.04	N	N	N	Y	N	Y	N	N
180.17	180.18	25E	100%	Hazel	0.01	N	N	N	Y	N	Y	Y	Lithic
180.18	180.20	49C	100%	Unison	0.03	State	N	N	Y	N	Y	Y	N
180.20	180.25	43A	100%	Suches	0.04	N	N	N	N	N	N	N	N
180.25	180.29	25E	100%	Hazel	0.04	N	N	N	Y	N	Y	Y	Lithic
180.29	180.33	15C	100%	Elioak	0.04	State	N	N	Y	N	Y	N	N
180.33	180.38	25E	100%	Hazel	0.05	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
180.38	180.48	15D	100%	Elioak	0.10	State	N	N	Y	N	Y	N	N
180.48	180.67	25E	100%	Hazel	0.19	N	N	N	Y	N	Y	Y	Lithic
180.67	180.73	15C	100%	Elioak	0.06	State	N	N	Y	N	Y	N	N
180.73	180.79	15D	100%	Elioak	0.06	State	N	N	Y	N	Y	N	N
180.79	180.84	32D	100%	Minnieville	0.05	State	N	N	Y	N	Y	N	N
180.84	180.85	32E	100%	Minnieville	0.01	N	N	N	Y	N	Y	N	N
180.85	180.87	25E	100%	Hazel	0.03	N	N	N	Y	N	Y	Y	Lithic
180.87	180.90	32E	100%	Minnieville	0.03	N	N	N	Y	N	Y	N	N
180.90	180.94	32D	100%	Minnieville	0.04	State	N	N	Y	N	Y	N	N
180.94	181.00	32B	100%	Minnieville	0.06	Prime	N	N	N	N	N	N	N
181.00	181.12	32D	100%	Minnieville	0.12	State	N	N	Y	N	Y	N	N
181.12	181.25	5D	100%	Bugley	0.13	N	N	N	Y	N	Y	Y	Lithic
181.25	181.43	5C	100%	Bugley	0.19	N	N	N	Y	N	Y	Y	Lithic
181.43	181.54	5E	100%	Bugley	0.11	N	N	N	Y	N	Y	Y	Lithic
181.54	181.66	5D	100%	Bugley	0.12	N	N	N	Y	N	Y	Y	Lithic
181.66	181.67	5C	100%	Bugley	0.01	N	N	N	Y	N	Y	Y	Lithic
181.67	181.69	5E	100%	Bugley	0.02	N	N	N	Y	N	Y	Y	Lithic
181.69	181.72	5C	100%	Bugley	0.03	N	N	N	Y	N	Y	Y	Lithic
181.72	181.98	5E	100%	Bugley	0.25	N	N	N	Y	N	Y	Y	Lithic
181.98	182.07	25C	100%	Hazel	0.10	N	N	N	Y	N	Y	Y	Lithic
182.07	182.14	25D	100%	Hazel	0.07	N	N	N	Y	N	Y	Y	Lithic
182.14	182.27	25E	100%	Hazel	0.12	N	N	N	Y	N	Y	Y	Lithic
182.27	182.29	5E	100%	Bugley	0.02	N	N	N	Y	N	Y	Y	Lithic
182.29	182.32	5C	100%	Bugley	0.03	N	N	N	Y	N	Y	Y	Lithic
182.32	182.41	5E	100%	Bugley	0.09	N	N	N	Y	N	Y	Y	Lithic
182.41	182.51	5C	100%	Bugley	0.10	N	N	N	Y	N	Y	Y	Lithic
182.51	182.55	5D	100%	Bugley	0.04	N	N	N	Y	N	Y	Y	Lithic
182.55	182.66	5E	100%	Bugley	0.11	N	N	N	Y	N	Y	Y	Lithic
182.66	182.79	5C	100%	Bugley	0.12	N	N	N	Y	N	Y	Y	Lithic
182.79	182.83	5E	100%	Bugley	0.05	N	N	N	Y	N	Y	Y	Lithic
182.83	182.89	5C	100%	Bugley	0.06	N	N	N	Y	N	Y	Y	Lithic
182.89	182.97	5E	100%	Bugley	0.07	N	N	N	Y	N	Y	Y	Lithic
182.97	183.07	5D	100%	Bugley	0.10	N	N	N	Y	N	Y	Y	Lithic
183.07	183.09	4C	100%	Buffstat	0.03	State	N	N	Y	N	Y	Y	Lithic
183.09	183.12	4B	100%	Buffstat	0.03	Prime	N	N	N	N	N	Y	Lithic
183.12	183.14	4C	100%	Buffstat	0.02	State	N	N	Y	N	Y	Y	Lithic
183.14	183.21	5D	100%	Bugley	0.07	N	N	N	Y	N	Y	Y	Lithic
183.21	183.28	4C	100%	Buffstat	0.08	State	N	N	Y	N	Y	Y	Lithic
183.28	183.32	5D	100%	Bugley	0.04	N	N	N	Y	N	Y	Y	Lithic
183.32	183.36	5D	100%	Bugley	0.05	N	N	N	Y	N	Y	Y	Lithic
183.36	183.40	31C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
183.40	183.46	5D	100%	Bugley	0.06	N	N	N	Y	N	Y	Y	Lithic
183.46	183.50	5C	100%	Bugley	0.04	N	N	N	Y	N	Y	Y	Lithic
183.50	183.54	31B	100%	Littlejoe	0.04	Prime	N	N	N	N	N	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
183.54	183.58	5D	100%	Bugley	0.04	N	N	N	Y	N	Y	Y	Lithic
183.58	183.61	31B	100%	Littlejoe	0.03	Prime	N	N	N	N	N	N	Paralithic
183.61	183.72	5E	100%	Bugley	0.11	N	N	N	Y	N	Y	Y	Lithic
183.72	183.75	5D	100%	Bugley	0.03	N	N	N	Y	N	Y	Y	Lithic
183.75	183.82	5C	100%	Bugley	0.07	N	N	N	Y	N	Y	Y	Lithic
183.82	183.88	5E	100%	Bugley	0.06	N	N	N	Y	N	Y	Y	Lithic
183.88	183.95	4D	100%	Buffstat	0.06	State	N	N	Y	N	Y	Y	Lithic
183.95	184.03	5E	100%	Bugley	0.08	N	N	N	Y	N	Y	Y	Lithic
184.03	184.16	5D	100%	Bugley	0.15	N	N	N	Y	N	Y	Y	Lithic
184.16	184.21	5E	100%	Bugley	0.05	N	N	N	Y	N	Y	Y	Lithic
184.21	184.26	1E	100%	Arcola	0.06	N	N	N	Y	N	Y	N	Lithic
184.26	184.27	50C	100%	Warminster	0.02	N	N	N	Y	N	Y	N	Paralithic
184.27	184.31	50B	100%	Warminster	0.04	Prime	N	N	N	N	N	N	Paralithic
184.31	184.33	1D	100%	Arcola	0.02	N	N	N	Y	N	Y	N	Lithic
184.33	184.40	1D	100%	Arcola	0.07	N	N	N	Y	N	Y	N	Lithic
184.40	184.43	50C	100%	Warminster	0.04	N	N	N	Y	N	Y	N	Paralithic
184.43	184.45	1E	100%	Arcola	0.01	N	N	N	Y	N	Y	N	Lithic
184.45	184.46	1E	100%	Arcola	0.02	N	N	N	Y	N	Y	N	Lithic
184.46	184.47	19A	100%	Galtsmill	<0.01	Prime	N	N	N	N	N	N	N
184.47	184.49	19A	100%	Galtsmill	0.02	Prime	N	N	N	N	N	N	N
184.49	184.51	19A	100%	Galtsmill	0.03	Prime	N	N	N	N	N	N	N
184.51	184.53	19A	100%	Galtsmill	0.01	Prime	N	N	N	N	N	N	N
184.53	184.54	51A	100%	Wingina	0.01	Prime	N	N	N	N	N	N	N
184.54	184.65	51A	100%	Wingina	0.13	Prime	N	N	N	N	N	N	N
184.65	184.65	W	100%	Water	<0.01	N	N	N	N	N	N	N	N
184.65	184.69	W	100%	Water	0.04	N	N	N	N	N	N	N	N
Buckingham County, VA													
184.69	184.70	W	100%	Water	<0.01	N	N	N	N	N	N	N	N
184.70	184.72	W	100%	Water	0.02	N	N	N	N	N	N	N	N
184.72	184.80	38A	100%	Speedwell	0.09	Prime	N	N	N	N	N	N	N
184.80	184.85	46A	100%	Yogaville	0.06	N	Y	Y	N	N	N	N	N
184.85	184.88	14B	100%	Delanco	0.03	Prime	N	N	N	N	N	N	N
184.88	184.92	35A	100%	Sindion	0.04	Prime	N	N	N	N	N	N	N
184.92	184.94	10F	37%	Rock outcrop	0.01	N	N	N	Y	N	N	N	Lithic
			63%	Bugley	0.02	N	N	N	Y	N	Y	Y	Lithic
184.94	184.97	45C3	100%	Wintergreen	0.03	N	N	N	Y	N	Y	N	N
184.97	185.03	37E	33%	Bugley	0.02	N	N	N	Y	N	Y	Y	Lithic
			67%	Spears mountain	0.05	N	N	N	Y	N	Y	N	Paralithic
185.03	185.08	45C3	100%	Wintergreen	0.05	N	N	N	Y	N	Y	N	N
185.08	185.31	45B3	100%	Wintergreen	0.25	N	N	N	N	N	Y	N	N
185.31	185.33	2B	35%	Littlejoe	0.01	N	N	N	N	N	N	N	Paralithic
			65%	Appomattox	0.02	N	N	N	N	N	Y	N	N
185.33	185.39	45C3	100%	Wintergreen	0.07	N	N	N	Y	N	Y	N	N
185.39	185.44	37E	33%	Bugley	0.02	N	N	N	Y	N	Y	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			67%	Spears mountain	0.03	N	N	N	Y	N	Y	N	Paralithic
185.44	185.71	36C	100%	Spears mountain	0.30	State	N	N	Y	N	Y	N	Paralithic
185.71	186.07	28C	100%	Oak Level	0.40	N	N	N	Y	N	Y	N	N
186.07	186.26	7B	41%	Penhook	0.08	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.12	Prime	N	N	N	Y	Y	N	N
186.26	186.31	28C	100%	Oak Level	0.06	N	N	N	Y	N	Y	N	N
186.31	186.52	23B	100%	Littlejoe	0.22	Prime	N	N	N	N	N	N	Paralithic
186.52	186.61	36C	100%	Spears mountain	0.10	State	N	N	Y	N	Y	N	Paralithic
186.61	186.67	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
186.67	186.75	36C	100%	Spears mountain	0.08	State	N	N	Y	N	Y	N	Paralithic
186.75	186.78	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.03	N	N	Y	N	N	N	N	N
186.78	186.84	36C	100%	Spears mountain	0.06	State	N	N	Y	N	Y	N	Paralithic
186.84	186.86	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
186.86	186.94	36C	100%	Spears mountain	0.08	State	N	N	Y	N	Y	N	Paralithic
186.94	186.98	23B	100%	Littlejoe	0.04	Prime	N	N	N	N	N	N	Paralithic
186.98	187.13	36C	100%	Spears mountain	0.16	State	N	N	Y	N	Y	N	Paralithic
187.13	187.19	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
187.19	187.24	36C	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
187.24	187.29	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
187.29	187.43	36C	100%	Spears mountain	0.14	State	N	N	Y	N	Y	N	Paralithic
187.43	187.45	23B	100%	Littlejoe	0.02	Prime	N	N	N	N	N	N	Paralithic
187.45	187.54	36C	100%	Spears mountain	0.10	State	N	N	Y	N	Y	N	Paralithic
187.54	187.60	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.04	N	N	Y	N	N	N	N	N
187.60	187.99	36C	100%	Spears mountain	0.41	State	N	N	Y	N	Y	N	Paralithic
187.99	188.08	23B	100%	Littlejoe	0.09	Prime	N	N	N	N	N	N	Paralithic
188.08	188.13	36C	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
188.13	188.15	23B	100%	Littlejoe	0.02	Prime	N	N	N	N	N	N	Paralithic
188.15	188.27	36C	100%	Spears mountain	0.13	State	N	N	Y	N	Y	N	Paralithic
188.27	188.32	23B	100%	Littlejoe	0.04	Prime	N	N	N	N	N	N	Paralithic
188.32	188.35	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
188.35	188.41	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
188.41	188.49	36C	100%	Spears mountain	0.08	State	N	N	Y	N	Y	N	Paralithic
188.49	188.71	23B	100%	Littlejoe	0.22	Prime	N	N	N	N	N	N	Paralithic
188.71	188.74	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
188.74	188.76	23B	100%	Littlejoe	0.02	Prime	N	N	N	N	N	N	Paralithic
188.76	188.81	2B	35%	Littlejoe	0.02	N	N	N	N	N	N	N	Paralithic
			65%	Appomattox	0.03	N	N	N	N	N	Y	N	N
188.81	188.89	23B	100%	Littlejoe	0.09	Prime	N	N	N	N	N	N	Paralithic
188.89	189.11	25C	47%	Bentley	0.10	State	N	N	Y	Y	Y	N	N
			53%	Littlejoe	0.12	State	N	N	Y	N	Y	N	Paralithic
189.11	189.14	7B	41%	Penhook	0.01	Prime	N	N	N	N	N	Y	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			59%	Bentley	0.02	Prime	N	N	N	Y	Y	N	N
189.14	189.26	25C	47%	Bentley	0.05	State	N	N	Y	Y	Y	N	N
			53%	Littlejoe	0.06	State	N	N	Y	N	Y	N	Paralithic
189.26	189.28	7B	41%	Penhook	0.01	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.01	Prime	N	N	N	Y	Y	N	N
189.28	189.37	25C	47%	Bentley	0.04	State	N	N	Y	Y	Y	N	N
			53%	Littlejoe	0.05	State	N	N	Y	N	Y	N	Paralithic
189.37	189.73	7B	41%	Penhook	0.15	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.22	Prime	N	N	N	Y	Y	N	N
189.73	189.81	28C	100%	Oak Level	0.08	N	N	N	Y	N	Y	N	N
189.81	189.89	31B	100%	Penhook	0.08	Prime	N	N	N	N	N	Y	N
189.89	189.97	23C	100%	Littlejoe	0.08	State	N	N	Y	N	Y	N	Paralithic
189.97	190.04	31B	100%	Penhook	0.06	Prime	N	N	N	N	N	Y	N
190.04	190.08	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
190.08	190.09	36D	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
190.09	190.13	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.03	N	N	Y	N	N	N	N	N
190.13	190.15	36D	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
190.15	190.18	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
190.18	190.23	3B	31%	Penhook	0.01	Prime	N	N	N	N	N	Y	N
			69%	Appomattox	0.03	Prime	N	N	N	N	Y	N	N
190.23	190.29	36C	100%	Spears mountain	0.07	State	N	N	Y	N	Y	N	Paralithic
190.29	190.39	31B	100%	Penhook	0.10	Prime	N	N	N	N	N	Y	N
190.39	190.63	19B	33%	Delanco	0.08	State	N	N	N	N	N	N	N
			67%	Grassland	0.17	State	N	N	N	N	N	Y	Lithic
190.63	190.72	23C	100%	Littlejoe	0.10	State	N	N	Y	N	Y	N	Paralithic
190.72	190.74	21A	100%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
190.74	190.75	23C	100%	Littlejoe	0.01	State	N	N	Y	N	Y	N	Paralithic
190.75	190.84	21A	100%	Hatboro	0.10	N	Y	Y	N	N	N	N	N
190.84	191.00	23C	100%	Littlejoe	0.16	State	N	N	Y	N	Y	N	Paralithic
191.00	191.03	21A	100%	Hatboro	0.03	N	Y	Y	N	N	N	N	N
191.03	191.07	14B	100%	Delanco	0.03	Prime	N	N	N	N	N	N	N
191.07	191.09	23C	100%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
191.09	191.32	7B	41%	Penhook	0.09	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.12	Prime	N	N	N	Y	Y	N	N
191.32	191.37	25C	47%	Bentley	0.02	State	N	N	Y	Y	Y	N	N
			53%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
191.37	191.48	14B	100%	Delanco	0.10	Prime	N	N	N	N	N	N	N
191.48	191.52	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.03	N	N	Y	N	N	N	N	N
191.52	191.59	14B	100%	Delanco	0.06	Prime	N	N	N	N	N	N	N
191.59	191.67	7B	41%	Penhook	0.03	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.04	Prime	N	N	N	Y	Y	N	N
191.67	191.70	14B	100%	Delanco	0.03	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
191.70	191.78	7B	41%	Penhook	0.03	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.04	Prime	N	N	N	Y	Y	N	N
191.78	191.86	25C	47%	Bentley	0.04	State	N	N	Y	Y	Y	N	N
			53%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
191.86	191.92	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.04	N	N	Y	N	N	N	N	N
191.92	191.94	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic
191.94	192.12	7B	41%	Penhook	0.07	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.10	Prime	N	N	N	Y	Y	N	N
192.12	192.26	23C	100%	Littlejoe	0.14	State	N	N	Y	N	Y	N	Paralithic
192.26	192.49	31B	100%	Penhook	0.23	Prime	N	N	N	N	N	Y	N
192.49	192.53	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
192.53	192.59	31B	100%	Penhook	0.06	Prime	N	N	N	N	N	Y	N
192.59	192.68	24C	44%	Appomattox	0.04	State	N	N	Y	N	Y	N	N
			56%	Littlejoe	0.05	State	N	N	Y	N	Y	N	Paralithic
192.68	192.73	31B	100%	Penhook	0.05	Prime	N	N	N	N	N	Y	N
192.73	192.83	24C	44%	Appomattox	0.05	State	N	N	Y	N	Y	N	N
			56%	Littlejoe	0.06	State	N	N	Y	N	Y	N	Paralithic
192.83	192.87	31B	100%	Penhook	0.04	Prime	N	N	N	N	N	Y	N
192.87	192.89	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic
192.89	192.91	24C	44%	Appomattox	0.01	State	N	N	Y	N	Y	N	N
			56%	Littlejoe	0.01	State	N	N	Y	N	Y	N	Paralithic
192.91	192.93	23C	100%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
192.93	192.97	31B	100%	Penhook	0.04	Prime	N	N	N	N	N	Y	N
192.97	192.99	23C	100%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
192.99	193.08	31B	100%	Penhook	0.09	Prime	N	N	N	N	N	Y	N
193.08	193.24	23C	100%	Littlejoe	0.16	State	N	N	Y	N	Y	N	Paralithic
193.24	193.35	31B	100%	Penhook	0.11	Prime	N	N	N	N	N	Y	N
193.35	193.37	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.01	Prime	N	N	N	N	N	N	N
193.37	193.39	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
193.39	193.42	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.02	Prime	N	N	N	N	N	N	N
193.42	193.80	22B	27%	Mirerock	0.10	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.28	State	N	Y	N	N	N	N	N
193.80	193.91	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.07	State	N	N	Y	N	Y	N	N
193.91	194.02	22B	27%	Mirerock	0.03	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.08	State	N	Y	N	N	N	N	N
194.02	194.08	14B	100%	Delanco	0.06	Prime	N	N	N	N	N	N	N
194.08	194.17	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.07	N	N	Y	N	N	N	N	N
194.17	194.19	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
194.19	194.29	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
194.29	194.66	29B	31%	Diana Mills	0.12	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.26	Prime	N	N	N	N	N	N	N
194.66	194.76	22B	27%	Mirerock	0.03	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.07	State	N	Y	N	N	N	N	N
194.76	194.86	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.07	State	N	N	Y	N	Y	N	N
194.86	194.88	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
194.88	195.01	12A	23%	Hatboro	0.03	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.10	N	N	Y	N	N	N	N	N
195.01	195.05	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
195.05	195.07	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
195.07	195.16	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
195.16	195.20	39C	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
195.20	195.27	22B	27%	Mirerock	0.02	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.06	State	N	Y	N	N	N	N	N
195.27	195.33	39C	38%	Toast	0.02	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.03	State	N	N	Y	N	Y	N	Paralithic
195.33	195.35	22B	27%	Mirerock	0.01	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.02	State	N	Y	N	N	N	N	N
195.35	195.38	39C	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
195.38	195.42	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
195.42	195.51	22B	27%	Mirerock	0.02	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.06	State	N	Y	N	N	N	N	N
195.51	195.55	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
195.55	196.05	22B	27%	Mirerock	0.14	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.37	State	N	Y	N	N	N	N	N
196.05	196.09	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
196.09	196.23	22B	27%	Mirerock	0.04	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.11	State	N	Y	N	N	N	N	N
196.23	196.43	30C	38%	Siloam	0.07	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.12	State	N	N	Y	N	Y	N	N
196.43	196.50	22B	27%	Mirerock	0.02	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.05	State	N	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
196.50	196.54	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
196.54	196.57	22B	27%	Mirerock	0.01	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.02	State	N	Y	N	N	N	N	N
196.57	196.73	29B	31%	Diana Mills	0.05	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.12	Prime	N	N	N	N	N	N	N
196.73	196.98	22B	27%	Mirerock	0.07	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.18	State	N	Y	N	N	N	N	N
196.98	197.00	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.02	Prime	N	N	N	N	N	N	N
197.00	197.10	22B	27%	Mirerock	0.03	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.08	State	N	Y	N	N	N	N	N
197.10	197.17	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
197.17	197.18	29B	31%	Diana Mills	<0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	<0.01	Prime	N	N	N	N	N	N	N
197.18	197.35	30C	38%	Siloam	0.07	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.11	State	N	N	Y	N	Y	N	N
197.35	197.37	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
197.37	197.39	12A	23%	Hatboro	<0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
197.39	197.54	30D	44%	Siloam	0.07	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.08	State	N	N	Y	N	Y	N	N
197.54	197.56	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
197.56	197.58	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.01	Prime	N	N	N	N	N	N	N
197.58	197.62	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.03	State	N	N	Y	N	Y	N	N
197.62	197.67	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.03	Prime	N	N	N	N	N	N	N
197.67	197.81	30C	38%	Siloam	0.05	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.08	State	N	N	Y	N	Y	N	N
197.81	197.83	28C	100%	Oak Level	0.03	N	N	N	Y	N	Y	N	N
197.83	197.91	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.06	N	N	Y	N	N	N	N	N
197.91	197.94	13A	100%	Dan River	0.03	Prime	N	N	N	N	N	N	N
197.94	197.96	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
197.96	197.99	21A	100%	Hatboro	0.03	N	Y	Y	N	N	N	N	N
197.99	198.00	14B	100%	Delanco	0.01	Prime	N	N	N	N	N	N	N
198.00	198.01	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
198.01	198.18	30C	38%	Siloam	0.06	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.10	State	N	N	Y	N	Y	N	N
198.18	198.21	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.02	Prime	N	N	N	N	N	N	N
198.21	198.27	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
198.27	198.28	29B	31%	Diana Mills	<0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.01	Prime	N	N	N	N	N	N	N
198.28	198.32	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
198.32	198.33	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
198.33	198.35	12A	23%	Hatboro	<0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
198.35	198.39	36D	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
198.39	198.52	36C	100%	Spears mountain	0.13	State	N	N	Y	N	Y	N	Paralithic
198.52	198.54	36D	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
198.54	198.60	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.05	N	N	Y	N	N	N	N	N
198.60	198.62	36D	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
198.62	198.67	23B	100%	Littlejoe	0.05	Prime	N	N	N	N	N	N	Paralithic
198.67	198.71	36D	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
198.71	198.80	36C	100%	Spears mountain	0.09	State	N	N	Y	N	Y	N	Paralithic
198.80	198.83	23B	100%	Littlejoe	0.03	Prime	N	N	N	N	N	N	Paralithic
198.83	198.86	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
198.86	198.87	36D	100%	Spears mountain	0.01	State	N	N	Y	N	Y	N	Paralithic
198.87	198.89	36C	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
198.89	198.95	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
198.95	198.95	36C	100%	Spears mountain	<0.01	State	N	N	Y	N	Y	N	Paralithic
198.95	198.99	23B	100%	Littlejoe	0.04	Prime	N	N	N	N	N	N	Paralithic
198.99	199.02	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
199.02	199.06	36D	100%	Spears mountain	0.04	State	N	N	Y	N	Y	N	Paralithic
199.06	199.11	36C	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
199.11	199.29	3B	31%	Penhook	0.06	Prime	N	N	N	N	N	Y	N
			69%	Appomattox	0.12	Prime	N	N	N	N	Y	N	N
199.29	199.51	36C	100%	Spears mountain	0.23	State	N	N	Y	N	Y	N	Paralithic
199.51	199.63	23B	100%	Littlejoe	0.12	Prime	N	N	N	N	N	N	Paralithic
199.63	199.69	7B	41%	Penhook	0.03	Prime	N	N	N	N	N	Y	N
			59%	Bentley	0.04	Prime	N	N	N	Y	Y	N	N
199.69	199.75	36C	100%	Spears mountain	0.06	State	N	N	Y	N	Y	N	Paralithic
199.75	200.08	31B	100%	Penhook	0.34	Prime	N	N	N	N	N	Y	N
200.08	200.11	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic
200.11	200.14	19B	33%	Delanco	0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.02	State	N	N	N	N	N	Y	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
200.14	200.20	23C	100%	Littlejoe	0.06	State	N	N	Y	N	Y	N	Paralithic
200.20	200.22	31B	100%	Penhook	0.02	Prime	N	N	N	N	N	Y	N
200.22	200.25	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic
200.25	200.26	36C	100%	Spears mountain	0.01	State	N	N	Y	N	Y	N	Paralithic
200.26	200.27	19B	33%	Delanco	<0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.01	State	N	N	N	N	N	Y	Lithic
200.27	200.28	36C	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
200.28	200.30	23C	100%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
200.30	200.32	31B	100%	Penhook	0.02	Prime	N	N	N	N	N	Y	N
200.32	200.36	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
200.36	200.47	31B	100%	Penhook	0.11	Prime	N	N	N	N	N	Y	N
200.47	200.49	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic
200.49	200.53	19B	33%	Delanco	0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.02	State	N	N	N	N	N	Y	Lithic
200.53	200.55	23C	100%	Littlejoe	0.02	State	N	N	Y	N	Y	N	Paralithic
200.55	200.64	19B	33%	Delanco	0.03	State	N	N	N	N	N	N	N
			67%	Grassland	0.07	State	N	N	N	N	N	Y	Lithic
200.64	200.82	31B	100%	Penhook	0.18	Prime	N	N	N	N	N	Y	N
200.82	200.82	23C	100%	Littlejoe	0.01	State	N	N	Y	N	Y	N	Paralithic
200.82	200.85	31B	100%	Penhook	0.03	Prime	N	N	N	N	N	Y	N
200.85	200.89	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
200.89	200.99	31B	100%	Penhook	0.10	Prime	N	N	N	N	N	Y	N
200.99	201.05	23B	100%	Littlejoe	0.06	Prime	N	N	N	N	N	N	Paralithic
201.05	201.11	36C	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
201.11	201.14	36D	100%	Spears mountain	0.04	State	N	N	Y	N	Y	N	Paralithic
201.14	201.18	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.03	N	N	Y	N	N	N	N	N
201.18	201.22	36D	100%	Spears mountain	0.04	State	N	N	Y	N	Y	N	Paralithic
201.22	201.30	36C	100%	Spears mountain	0.08	State	N	N	Y	N	Y	N	Paralithic
201.30	201.35	36D	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
201.35	201.47	23C	100%	Littlejoe	0.12	State	N	N	Y	N	Y	N	Paralithic
201.47	201.70	31B	100%	Penhook	0.24	Prime	N	N	N	N	N	Y	N
201.70	201.76	23C	100%	Littlejoe	0.06	State	N	N	Y	N	Y	N	Paralithic
201.76	201.82	36D	100%	Spears mountain	0.06	State	N	N	Y	N	Y	N	Paralithic
201.82	201.84	12A	23%	Hatboro	<0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.01	N	N	Y	N	N	N	N	N
201.84	201.86	19B	33%	Delanco	0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.02	State	N	N	N	N	N	Y	Lithic
201.86	201.88	36D	100%	Spears mountain	0.02	State	N	N	Y	N	Y	N	Paralithic
201.88	202.01	23C	100%	Littlejoe	0.13	State	N	N	Y	N	Y	N	Paralithic
202.01	202.07	31B	100%	Penhook	0.06	Prime	N	N	N	N	N	Y	N
202.07	202.11	23C	100%	Littlejoe	0.04	State	N	N	Y	N	Y	N	Paralithic
202.11	202.31	31B	100%	Penhook	0.20	Prime	N	N	N	N	N	Y	N
202.31	202.34	23C	100%	Littlejoe	0.03	State	N	N	Y	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
202.34	202.49	3B	31%	Penhook	0.05	Prime	N	N	N	N	N	Y	N
			69%	Appomattox	0.11	Prime	N	N	N	N	Y	N	N
202.49	202.56	19B	33%	Delanco	0.02	State	N	N	N	N	N	N	N
			67%	Grassland	0.05	State	N	N	N	N	N	Y	Lithic
202.56	202.62	29B	31%	Diana Mills	0.02	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.04	Prime	N	N	N	N	N	N	N
202.62	202.72	19B	33%	Delanco	0.03	State	N	N	N	N	N	N	N
			67%	Grassland	0.06	State	N	N	N	N	N	Y	Lithic
202.72	202.72	30C	38%	Siloam	<0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	<0.01	State	N	N	Y	N	Y	N	N
202.72	202.77	36C	100%	Spears mountain	0.05	State	N	N	Y	N	Y	N	Paralithic
202.77	202.78	19B	33%	Delanco	<0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.01	State	N	N	N	N	N	Y	Lithic
202.78	202.80	36D	100%	Spears mountain	0.01	State	N	N	Y	N	Y	N	Paralithic
202.80	202.83	36C	100%	Spears mountain	0.03	State	N	N	Y	N	Y	N	Paralithic
202.83	202.94	23B	100%	Littlejoe	0.11	Prime	N	N	N	N	N	N	Paralithic
202.94	203.00	36C	100%	Spears mountain	0.06	State	N	N	Y	N	Y	N	Paralithic
203.00	203.06	36D	100%	Spears mountain	0.06	State	N	N	Y	N	Y	N	Paralithic
203.06	203.18	23C	100%	Littlejoe	0.12	State	N	N	Y	N	Y	N	Paralithic
203.18	203.30	29B	31%	Diana Mills	0.04	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.09	Prime	N	N	N	N	N	N	N
203.30	203.37	36B	100%	Spears mountain	0.07	Prime	N	N	Y	N	Y	N	Paralithic
203.37	203.53	36C	100%	Spears mountain	0.16	State	N	N	Y	N	Y	N	Paralithic
203.53	203.57	36D	100%	Spears mountain	0.04	State	N	N	Y	N	Y	N	Paralithic
203.57	203.57	19B	33%	Delanco	<0.01	State	N	N	N	N	N	N	N
			67%	Grassland	<0.01	State	N	N	N	N	N	Y	Lithic
203.57	203.65	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.06	N	N	Y	N	N	N	N	N
203.65	203.68	19B	33%	Delanco	0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.02	State	N	N	N	N	N	Y	Lithic
203.68	203.70	42D	45%	Devotion	0.01	State	N	N	Y	N	Y	N	Lithic
			55%	Toast	0.01	State	N	N	Y	N	Y	N	N
203.70	203.78	42C	44%	Devotion	0.04	State	N	N	Y	N	Y	N	Lithic
			56%	Toast	0.05	State	N	N	Y	N	Y	N	N
203.78	203.81	41B	100%	Toast	0.03	Prime	N	N	N	N	Y	N	N
203.81	203.86	42C	44%	Devotion	0.03	State	N	N	Y	N	Y	N	Lithic
			56%	Toast	0.03	State	N	N	Y	N	Y	N	N
203.86	203.94	41B	100%	Toast	0.08	Prime	N	N	N	N	Y	N	N
203.94	204.15	17B	100%	Fairview	0.22	Prime	N	N	N	N	Y	N	N
204.15	204.17	18C	41%	Devotion	0.01	State	N	N	Y	N	Y	N	Lithic
			59%	Fairview	0.02	State	N	N	Y	N	Y	N	N
204.17	204.25	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.05	State	N	N	Y	N	Y	N	N
204.25	204.29	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			77%	Codorus	0.03	N	N	Y	N	N	N	N	N
204.29	204.54	30C	38%	Siloam	0.10	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.16	State	N	N	Y	N	Y	N	N
204.54	204.57	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
204.57	204.61	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
204.61	204.66	39D	38%	Toast	0.02	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.03	State	N	N	Y	N	Y	N	Paralithic
204.66	204.68	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
204.68	204.71	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
204.71	204.73	39C	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
204.73	204.75	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
204.75	204.80	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.04	N	N	Y	N	N	N	N	N
204.80	204.83	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
204.83	204.85	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
204.85	204.89	30D	44%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
204.89	204.91	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
204.91	204.93	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
204.93	205.03	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
205.03	205.07	39E	33%	Toast	0.01	N	N	N	Y	N	Y	N	N
			67%	Spriggs	0.03	N	N	N	Y	N	Y	N	Paralithic
205.07	205.09	12A	23%	Hatboro	<0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
205.09	205.19	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
205.19	205.23	30D	44%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
205.23	205.24	39E	33%	Toast	<0.01	N	N	N	Y	N	Y	N	N
			67%	Spriggs	<0.01	N	N	N	Y	N	Y	N	Paralithic
205.24	205.31	30D	44%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
205.31	205.38	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			62%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
205.38	205.45	29B	31%	Diana Mills	0.02	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.05	Prime	N	N	N	N	N	N	N
205.45	205.47	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
205.47	205.54	29B	31%	Diana Mills	0.02	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.04	Prime	N	N	N	N	N	N	N
205.54	205.64	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.07	State	N	N	Y	N	Y	N	N
205.64	205.69	30D	44%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
205.69	205.74	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.03	State	N	N	Y	N	Y	N	N
205.74	205.77	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
205.77	205.84	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
205.84	205.89	30D	44%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.03	State	N	N	Y	N	Y	N	N
205.89	205.91	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
205.91	205.93	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N
205.93	205.95	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
205.95	205.97	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N
205.97	205.99	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
205.99	206.05	29B	31%	Diana Mills	0.02	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.04	Prime	N	N	N	N	N	N	N
206.05	206.08	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
206.08	206.10	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N
206.10	206.13	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
206.13	206.16	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
206.16	206.19	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.02	Prime	N	N	N	N	N	N	N
206.19	206.21	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
206.21	206.25	29B	31%	Diana Mills	0.01	Prime	N	N	N	N	N	Y	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			69%	Oak Level	0.02	Prime	N	N	N	N	N	N	N
206.25	206.31	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
206.31	206.33	17B	100%	Fairview	0.02	Prime	N	N	N	N	Y	N	N
206.33	206.34	30C	38%	Siloam	<0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
206.34	206.44	29B	31%	Diana Mills	0.03	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.07	Prime	N	N	N	N	N	N	N
206.44	206.54	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
206.54	206.56	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N
206.56	206.60	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
206.60	206.63	20B	47%	Delanco	0.02	State	N	N	N	N	N	N	N
			53%	Halifax	0.02	State	N	N	N	N	Y	N	N
206.63	206.66	30C	38%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
206.66	206.75	29B	31%	Diana Mills	0.03	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.06	Prime	N	N	N	N	N	N	N
206.75	206.85	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
206.85	206.91	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.04	N	N	Y	N	N	N	N	N
206.91	206.97	30D	44%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.04	State	N	N	Y	N	Y	N	N
206.97	207.06	18C	41%	Devotion	0.03	State	N	N	Y	N	Y	N	Lithic
			59%	Fairview	0.05	State	N	N	Y	N	Y	N	N
207.06	207.15	30C	38%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
207.15	207.18	39C	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
207.18	207.26	39D	38%	Toast	0.03	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.05	State	N	N	Y	N	Y	N	Paralithic
207.26	207.31	39C	38%	Toast	0.02	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.03	State	N	N	Y	N	Y	N	Paralithic
207.31	207.32	39D	38%	Toast	<0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
207.32	207.34	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N
207.34	207.39	39C	38%	Toast	0.02	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.03	State	N	N	Y	N	Y	N	Paralithic
207.39	207.42	20B	47%	Delanco	0.01	State	N	N	N	N	N	N	N
			53%	Halifax	0.01	State	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
207.42	207.44	39C	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.02	State	N	N	Y	N	Y	N	Paralithic
207.44	207.45	30C	38%	Siloam	<0.01	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.01	State	N	N	Y	N	Y	N	N
207.45	207.55	30D	44%	Siloam	0.04	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
207.55	207.70	18C	41%	Devotion	0.06	State	N	N	Y	N	Y	N	Lithic
			59%	Fairview	0.09	State	N	N	Y	N	Y	N	N
207.70	207.74	15D	100%	Devotion	0.05	N	N	N	Y	N	Y	N	Lithic
207.74	207.78	20B	47%	Delanco	0.02	State	N	N	N	N	N	N	N
			53%	Halifax	0.02	State	N	N	N	N	Y	N	N
207.78	207.87	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.07	N	N	Y	N	N	N	N	N
207.87	207.90	18D	43%	Devotion	0.01	N	N	N	Y	N	Y	N	Lithic
			57%	Fairview	0.02	N	N	N	Y	N	Y	N	N
207.90	208.05	18C	41%	Devotion	0.06	State	N	N	Y	N	Y	N	Lithic
			59%	Fairview	0.09	State	N	N	Y	N	Y	N	N
208.05	208.06	22B	27%	Mirerock	<0.01	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.01	State	N	Y	N	N	N	N	N
208.06	208.21	39C	38%	Toast	0.06	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.10	State	N	N	Y	N	Y	N	Paralithic
208.21	208.23	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
208.23	208.26	30D	44%	Siloam	0.01	State	N	N	Y	N	Y	N	Lithic
			56%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
208.26	208.35	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.06	State	N	N	Y	N	Y	N	N
208.35	208.49	22B	27%	Mirerock	0.04	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.11	State	N	Y	N	N	N	N	N
208.49	208.56	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.05	State	N	N	Y	N	Y	N	N
208.56	208.64	39D	38%	Toast	0.03	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.05	State	N	N	Y	N	Y	N	Paralithic
208.64	208.69	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.03	State	N	N	Y	N	Y	N	N
208.69	208.90	22B	27%	Mirerock	0.06	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.16	State	N	Y	N	N	N	N	N
208.90	209.05	30C	38%	Siloam	0.06	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.10	State	N	N	Y	N	Y	N	N
209.05	209.21	12A	23%	Hatboro	0.04	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.13	N	N	Y	N	N	N	N	N
209.21	209.38	20B	47%	Delanco	0.08	State	N	N	N	N	N	N	N
			53%	Halifax	0.09	State	N	N	N	N	Y	N	N
209.38	209.40	12A	23%	Hatboro	<0.01	N	Y	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			77%	Codorus	0.02	N	N	Y	N	N	N	N	N
209.40	209.44	30C	38%	Siloam	0.02	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.02	State	N	N	Y	N	Y	N	N
209.44	209.53	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.07	N	N	Y	N	N	N	N	N
209.53	209.55	39D	38%	Toast	0.01	State	N	N	Y	N	Y	N	N
			63%	Spriggs	0.01	State	N	N	Y	N	Y	N	Paralithic
209.55	209.63	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.05	State	N	N	Y	N	Y	N	N
209.63	209.70	22B	27%	Mirerock	0.02	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.05	State	N	Y	N	N	N	N	N
209.70	209.77	30C	38%	Siloam	0.03	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.05	State	N	N	Y	N	Y	N	N
209.77	209.81	17B	100%	Fairview	0.04	Prime	N	N	N	N	Y	N	N
209.81	209.81	29B	31%	Diana Mills	<0.01	Prime	N	N	N	N	N	Y	Paralithic
			69%	Oak Level	0.01	Prime	N	N	N	N	N	N	N
209.81	209.92	22B	27%	Mirerock	0.03	State	N	N	N	N	N	N	Paralithic
			73%	Jackland	0.08	State	N	Y	N	N	N	N	N
209.92	210.08	30C	38%	Siloam	0.06	State	N	N	Y	N	Y	N	Lithic
			62%	Oak Level	0.10	State	N	N	Y	N	Y	N	N
210.08	210.11	19B	33%	Delanco	0.01	State	N	N	N	N	N	N	N
			67%	Grassland	0.03	State	N	N	N	N	N	Y	Lithic
210.11	210.14	21A	100%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
210.14	210.21	12A	23%	Hatboro	0.02	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.06	N	N	Y	N	N	N	N	N
210.21	210.30	26C	49%	Exway	0.05	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.05	State	N	N	Y	N	Y	N	N
210.30	210.34	9B	41%	Creedmoor	0.02	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.02	State	N	N	N	N	N	N	Paralithic
210.34	210.37	26C	49%	Exway	0.01	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.01	State	N	N	Y	N	Y	N	N
210.37	210.48	26B	47%	Exway	0.06	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.06	Prime	N	N	N	N	N	N	N
210.48	210.71	9B	41%	Creedmoor	0.10	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.14	State	N	N	N	N	N	N	Paralithic
210.71	211.08	11A	100%	Carbonton	0.38	N	N	N	N	N	N	N	Paralithic
211.08	211.14	9B	41%	Creedmoor	0.02	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.04	State	N	N	N	N	N	N	Paralithic
211.14	211.21	9C	40%	Creedmoor	0.03	State	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.04	State	N	N	Y	N	Y	N	Paralithic
211.21	211.30	9B	41%	Creedmoor	0.04	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.06	State	N	N	N	N	N	N	Paralithic
211.30	211.34	34B	43%	Altavista	0.01	Prime	N	N	N	Y	Y	N	N
			57%	Polkton	0.02	Prime	N	N	N	N	N	N	Lithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
211.34	211.40	12A	23%	Hatboro	0.01	N	Y	Y	N	N	N	N	N
			77%	Codorus	0.05	N	N	Y	N	N	N	N	N
211.40	211.46	9C	40%	Creedmoor	0.03	State	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.04	State	N	N	Y	N	Y	N	Paralithic
211.46	211.50	26B	47%	Exway	0.02	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.02	Prime	N	N	N	N	N	N	N
211.50	211.52	26C	49%	Exway	0.01	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.01	State	N	N	Y	N	Y	N	N
211.52	211.53	9B	41%	Creedmoor	<0.01	State	N	N	N	N	N	N	N
			59%	Brickhaven	<0.01	State	N	N	N	N	N	N	Paralithic
211.53	211.55	26B	47%	Exway	0.01	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.01	Prime	N	N	N	N	N	N	N
211.55	211.63	9B	41%	Creedmoor	0.03	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.05	State	N	N	N	N	N	N	Paralithic
211.63	211.71	34B	43%	Altavista	0.04	Prime	N	N	N	Y	Y	N	N
			57%	Polkton	0.05	Prime	N	N	N	N	N	N	Lithic
211.71	211.81	9B	41%	Creedmoor	0.04	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.06	State	N	N	N	N	N	N	Paralithic
Cumberland County, VA													
211.81	211.82	9B	41%	Creedmoor	0.01	State	N	N	N	N	N	N	N
			59%	Brickhaven	0.01	State	N	N	N	N	N	N	Paralithic
211.82	212.03	5B	41%	Creedmoor	0.08	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.12	N	N	N	N	N	N	N	Paralithic
212.03	212.07	31C	43%	Carbonton	0.02	N	N	N	Y	N	Y	N	Paralithic
			57%	Pinoka	0.03	N	N	N	Y	N	Y	N	Paralithic
212.07	212.13	24B	47%	Exway	0.03	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.03	Prime	N	N	N	N	N	N	N
212.13	212.17	31D	40%	Carbonton	0.01	N	N	N	Y	N	Y	N	Paralithic
			60%	Pinoka	0.02	N	N	N	Y	N	Y	N	Paralithic
212.17	212.18	40A	100%	Toccoa	0.01	N	N	N	N	N	N	N	N
212.18	212.20	8A	47%	Monacan	0.01	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.01	N	N	Y	N	N	N	N	N
212.20	212.25	5C	40%	Creedmoor	0.02	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.03	N	N	N	Y	N	Y	N	Paralithic
212.25	212.28	5B	41%	Creedmoor	0.02	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.02	N	N	N	N	N	N	N	Paralithic
212.28	212.41	5C	40%	Creedmoor	0.05	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.07	N	N	N	Y	N	Y	N	Paralithic
212.41	212.88	5B	41%	Creedmoor	0.19	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.28	N	N	N	N	N	N	N	Paralithic
212.88	212.96	5C	40%	Creedmoor	0.03	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.05	N	N	N	Y	N	Y	N	Paralithic
212.96	212.98	5B	41%	Creedmoor	0.01	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.01	N	N	N	N	N	N	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
212.98	213.03	5C	40%	Creedmoor	0.02	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.03	N	N	N	Y	N	Y	N	Paralithic
213.03	213.08	5B	41%	Creedmoor	0.02	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.03	N	N	N	N	N	N	N	Paralithic
213.08	213.21	5C	40%	Creedmoor	0.05	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.07	N	N	N	Y	N	Y	N	Paralithic
213.21	213.34	5B	41%	Creedmoor	0.06	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.08	N	N	N	N	N	N	N	Paralithic
213.34	213.37	5C	40%	Creedmoor	0.01	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.02	N	N	N	Y	N	Y	N	Paralithic
213.37	213.62	5B	41%	Creedmoor	0.10	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.15	N	N	N	N	N	N	N	Paralithic
213.62	213.72	24C	49%	Exway	0.05	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.05	State	N	N	Y	N	Y	N	N
213.72	213.75	24B	47%	Exway	0.02	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.02	Prime	N	N	N	N	N	N	N
213.75	213.82	24C	49%	Exway	0.03	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.03	State	N	N	Y	N	Y	N	N
213.82	213.93	24B	47%	Exway	0.05	Prime	N	N	N	N	N	N	Paralithic
			53%	Mayodan	0.06	Prime	N	N	N	N	N	N	N
213.93	214.10	24C	49%	Exway	0.08	State	N	N	Y	N	Y	N	Paralithic
			51%	Mayodan	0.08	State	N	N	Y	N	Y	N	N
214.10	214.15	31B	40%	Carbonton	0.02	N	N	N	N	N	N	N	Paralithic
			60%	Pinoka	0.03	N	N	N	N	N	N	N	Paralithic
214.15	214.21	5C	40%	Creedmoor	0.02	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.04	N	N	N	Y	N	Y	N	Paralithic
214.21	214.26	31C	43%	Carbonton	0.02	N	N	N	Y	N	Y	N	Paralithic
			57%	Pinoka	0.03	N	N	N	Y	N	Y	N	Paralithic
214.26	214.28	5C	40%	Creedmoor	0.01	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.01	N	N	N	Y	N	Y	N	Paralithic
214.28	214.36	17C	38%	Helena	0.03	State	N	N	Y	N	Y	N	N
			62%	Enon	0.05	State	N	N	Y	N	Y	N	N
214.36	214.38	5B	41%	Creedmoor	0.01	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.01	N	N	N	N	N	N	N	Paralithic
214.38	214.41	5C	40%	Creedmoor	0.01	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.02	N	N	N	Y	N	Y	N	Paralithic
214.41	214.51	5B	41%	Creedmoor	0.04	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.06	N	N	N	N	N	N	N	Paralithic
214.51	214.57	5C	40%	Creedmoor	0.03	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.04	N	N	N	Y	N	Y	N	Paralithic
214.57	214.61	5B	41%	Creedmoor	0.02	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.02	N	N	N	N	N	N	N	Paralithic
214.61	214.68	5C	40%	Creedmoor	0.03	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.04	N	N	N	Y	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
214.68	214.73	5B	41%	Creedmoor	0.02	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.03	N	N	N	N	N	N	N	Paralithic
214.73	214.76	5C	40%	Creedmoor	0.01	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.02	N	N	N	Y	N	Y	N	Paralithic
214.76	214.78	5B	41%	Creedmoor	0.01	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.01	N	N	N	N	N	N	N	Paralithic
214.78	214.89	5C	40%	Creedmoor	0.04	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.07	N	N	N	Y	N	Y	N	Paralithic
214.89	214.91	5B	41%	Creedmoor	0.01	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.01	N	N	N	N	N	N	N	Paralithic
214.91	215.02	5C	40%	Creedmoor	0.04	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.07	N	N	N	Y	N	Y	N	Paralithic
215.02	215.05	5B	41%	Creedmoor	0.01	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.02	N	N	N	N	N	N	N	Paralithic
215.05	215.14	5C	40%	Creedmoor	0.04	N	N	N	Y	N	Y	N	N
			60%	Brickhaven	0.05	N	N	N	Y	N	Y	N	Paralithic
215.14	215.18	8A	47%	Monacan	0.02	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.02	N	N	Y	N	N	N	N	N
215.18	215.31	5B	41%	Creedmoor	0.06	N	N	N	N	N	N	N	N
			59%	Brickhaven	0.08	N	N	N	N	N	N	N	Paralithic
215.31	215.40	31C	43%	Carbonton	0.04	N	N	N	Y	N	Y	N	Paralithic
			57%	Pinoka	0.05	N	N	N	Y	N	Y	N	Paralithic
215.40	215.51	16B	46%	Helena	0.05	State	N	N	N	N	Y	N	N
			54%	Enon	0.06	State	N	N	N	N	Y	N	N
215.51	215.67	30D	29%	Wateree	0.05	N	N	N	Y	N	Y	N	Lithic
			71%	Pacolet	0.11	N	N	N	Y	N	Y	N	N
215.67	215.78	2C	31%	Helena	0.04	State	N	N	Y	N	Y	N	N
			69%	Appling	0.08	State	N	N	Y	N	Y	N	N
215.78	215.85	1B	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
215.85	216.08	21C	100%	Helena	0.23	State	N	N	Y	N	Y	N	N
216.08	216.10	21B	100%	Helena	0.02	Prime	N	N	N	N	Y	N	N
216.10	216.27	30D	29%	Wateree	0.05	N	N	N	Y	N	Y	N	Lithic
			71%	Pacolet	0.12	N	N	N	Y	N	Y	N	N
216.27	216.31	21B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
216.31	216.35	21C	100%	Helena	0.04	State	N	N	Y	N	Y	N	N
216.35	216.39	21B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
216.39	216.55	1B	100%	Appling	0.16	Prime	N	N	N	N	Y	N	N
216.55	216.66	2C	31%	Helena	0.04	State	N	N	Y	N	Y	N	N
			69%	Appling	0.08	State	N	N	Y	N	Y	N	N
216.66	216.68	1B	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
216.68	216.72	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.03	State	N	N	Y	N	Y	N	N
216.72	216.75	1B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
216.75	216.86	2C	31%	Helena	0.03	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			69%	Appling	0.07	State	N	N	Y	N	Y	N	N
216.86	216.88	32C	38%	Wedowee	0.01	State	N	N	Y	N	Y	N	N
			63%	Poindexter	0.02	State	N	N	Y	N	Y	N	Paralithic
216.88	216.91	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.02	State	N	N	Y	N	Y	N	N
216.91	216.95	1B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
216.95	216.97	30D	29%	Wateree	0.01	N	N	N	Y	N	Y	N	Lithic
			71%	Pacolet	0.02	N	N	N	Y	N	Y	N	N
216.97	217.01	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.03	State	N	N	Y	N	Y	N	N
217.01	217.10	32C	38%	Wedowee	0.03	State	N	N	Y	N	Y	N	N
			63%	Poindexter	0.06	State	N	N	Y	N	Y	N	Paralithic
217.10	217.24	1B	100%	Appling	0.15	Prime	N	N	N	N	Y	N	N
217.24	217.29	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.03	State	N	N	Y	N	Y	N	N
217.29	217.36	6B	100%	Cecil	0.07	Prime	N	N	N	N	Y	N	N
217.36	217.40	7C	100%	Cecil	0.04	State	N	N	Y	N	Y	N	N
217.40	217.45	6B	100%	Cecil	0.05	Prime	N	N	N	N	Y	N	N
217.45	217.47	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.01	State	N	N	Y	N	Y	N	N
217.47	217.49	1B	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
217.49	217.55	2C	31%	Helena	0.02	State	N	N	Y	N	Y	N	N
			69%	Appling	0.04	State	N	N	Y	N	Y	N	N
217.55	217.56	1B	100%	Appling	0.01	Prime	N	N	N	N	Y	N	N
217.56	217.57	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.01	State	N	N	Y	N	Y	N	N
217.57	217.67	16C	42%	Helena	0.04	State	N	N	Y	N	Y	N	N
			58%	Enon	0.06	State	N	N	Y	N	Y	N	N
217.67	217.71	21B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
217.71	217.88	21C	100%	Helena	0.16	State	N	N	Y	N	Y	N	N
217.88	217.93	21B	100%	Helena	0.05	Prime	N	N	N	N	Y	N	N
217.93	217.97	16D	41%	Helena	0.02	N	N	N	Y	N	Y	N	N
			59%	Enon	0.02	N	N	N	Y	N	Y	N	N
217.97	217.98	21B	100%	Helena	0.01	Prime	N	N	N	N	Y	N	N
217.98	218.08	16D	41%	Helena	0.04	N	N	N	Y	N	Y	N	N
			59%	Enon	0.06	N	N	N	Y	N	Y	N	N
218.08	218.15	8A	47%	Monacan	0.03	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.04	N	N	Y	N	N	N	N	N
218.15	218.16	32C	38%	Wedowee	<0.01	State	N	N	Y	N	Y	N	N
			63%	Poindexter	0.01	State	N	N	Y	N	Y	N	Paralithic
218.16	218.18	8A	47%	Monacan	0.01	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.01	N	N	Y	N	N	N	N	N
218.18	218.21	32C	38%	Wedowee	0.01	State	N	N	Y	N	Y	N	N
			63%	Poindexter	0.02	State	N	N	Y	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
218.21	218.32	21C	100%	Helena	0.11	State	N	N	Y	N	Y	N	N
218.32	218.36	1B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
218.36	218.48	32D	38%	Wedowee	0.05	N	N	N	Y	N	Y	N	N
			63%	Poindexter	0.08	N	N	N	Y	N	Y	N	Paralithic
218.48	218.53	1B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
218.53	218.60	32D	38%	Wedowee	0.03	N	N	N	Y	N	Y	N	N
			63%	Poindexter	0.05	N	N	N	Y	N	Y	N	Paralithic
218.60	218.64	1B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
218.64	218.79	32D	38%	Wedowee	0.06	N	N	N	Y	N	Y	N	N
			63%	Poindexter	0.10	N	N	N	Y	N	Y	N	Paralithic
218.79	218.84	2C	31%	Helena	0.02	State	N	N	Y	N	Y	N	N
			69%	Appling	0.03	State	N	N	Y	N	Y	N	N
218.84	218.89	1B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
218.89	218.91	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.02	State	N	N	Y	N	Y	N	N
218.91	218.97	1B	100%	Appling	0.06	Prime	N	N	N	N	Y	N	N
218.97	219.01	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.03	State	N	N	Y	N	Y	N	N
219.01	219.06	1B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
219.06	219.10	2C	31%	Helena	0.01	State	N	N	Y	N	Y	N	N
			69%	Appling	0.02	State	N	N	Y	N	Y	N	N
219.10	219.12	32C	38%	Wedowee	0.01	State	N	N	Y	N	Y	N	N
			63%	Poindexter	0.01	State	N	N	Y	N	Y	N	Paralithic
219.12	219.18	32D	38%	Wedowee	0.02	N	N	N	Y	N	Y	N	N
			63%	Poindexter	0.04	N	N	N	Y	N	Y	N	Paralithic
219.18	219.24	8A	47%	Monacan	0.03	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.03	N	N	Y	N	N	N	N	N
219.24	219.29	15B	100%	Dogue	0.05	Prime	N	N	N	N	N	N	N
219.29	219.33	25C	100%	Mecklenburg	0.04	N	N	N	Y	N	Y	N	N
219.33	219.38	15B	100%	Dogue	0.05	Prime	N	N	N	N	N	N	N
219.38	219.58	8A	47%	Monacan	0.09	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.11	N	N	Y	N	N	N	N	N
219.58	219.61	42D	100%	Wateree	0.03	N	N	N	Y	N	Y	N	Lithic
219.61	219.65	32D	38%	Wedowee	0.02	N	N	N	Y	N	Y	N	N
			63%	Poindexter	0.03	N	N	N	Y	N	Y	N	Paralithic
219.65	219.70	6B	100%	Cecil	0.05	Prime	N	N	N	N	Y	N	N
219.70	219.85	2C	31%	Helena	0.05	State	N	N	Y	N	Y	N	N
			69%	Appling	0.10	State	N	N	Y	N	Y	N	N
219.85	219.99	15B	100%	Dogue	0.14	Prime	N	N	N	N	N	N	N
219.99	220.05	23B	28%	Appling	0.02	Prime	N	N	N	N	Y	N	N
			72%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
220.05	220.30	15B	100%	Dogue	0.26	Prime	N	N	N	N	N	N	N
220.30	220.38	23B	28%	Appling	0.02	Prime	N	N	N	N	Y	N	N
			72%	Mattaponi	0.06	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
220.38	220.43	30E	22%	Wateree	0.01	N	N	N	Y	N	Y	N	Lithic
			78%	Pacolet	0.04	N	N	N	Y	N	Y	N	N
220.43	220.46	43A	100%	Wehadkee	0.03	N	Y	N	N	N	N	N	N
220.46	220.49	8A	47%	Monacan	0.01	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.01	N	N	Y	N	N	N	N	N
220.49	220.51	43A	100%	Wehadkee	0.02	N	Y	N	N	N	N	N	N
220.51	220.54	8A	47%	Monacan	0.01	N	N	Y	N	N	N	N	N
			53%	Chewacla	0.02	N	N	Y	N	N	N	N	N
220.54	220.75	35A	47%	Tuckahoe	0.10	Prime	N	N	N	N	N	N	N
			53%	Riverview	0.12	Prime	N	N	N	N	N	N	N
220.75	220.76	W	100%	Water	0.01	N	N	N	N	N	N	N	N
Prince Edward County, VA													
220.76	220.76	W	100%	Water	<0.01	N	N	N	N	N	N	N	N
220.76	220.78	W	100%	Water	0.02	N	N	N	N	N	N	N	N
220.78	220.84	Be	100%	Buncombe	0.06	N	N	N	N	Y	Y	N	N
220.84	220.85	Mc	100%	Madison	0.01	N	N	N	N	N	N	N	N
220.85	220.86	Mb	100%	Madison	0.01	N	N	N	Y	N	Y	N	N
220.86	220.89	Mc	100%	Madison	0.03	N	N	N	N	N	N	N	N
220.89	220.93	Mb	100%	Madison	0.04	N	N	N	Y	N	Y	N	N
220.93	220.95	Lc	100%	Lloyd	0.02	N	N	N	N	N	N	N	N
220.95	221.00	Lh	100%	Louisa	0.05	N	N	N	Y	N	Y	N	Paralithic
221.00	221.02	Mb	100%	Madison	0.03	N	N	N	Y	N	Y	N	N
221.02	221.03	Ll	100%	Louisa	0.01	N	N	N	N	N	N	N	Paralithic
221.03	221.05	Mb	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
221.05	221.14	Ll	100%	Louisa	0.10	N	N	N	N	N	N	N	Paralithic
221.14	221.15	Mb	100%	Madison	0.01	N	N	N	Y	N	Y	N	N
221.15	221.18	Ll	100%	Louisa	0.04	N	N	N	N	N	N	N	Paralithic
221.18	221.24	Mb	100%	Madison	0.06	N	N	N	Y	N	Y	N	N
221.24	221.32	Mf	100%	Madison	0.08	Prime	N	N	N	N	N	N	N
221.32	221.40	Lg	100%	Louisa	0.09	N	N	N	Y	N	Y	N	Paralithic
221.40	221.47	Mf	100%	Madison	0.07	Prime	N	N	N	N	N	N	N
221.47	221.53	Wn	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
221.53	221.58	Wg	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
221.58	221.67	Wf	100%	Wilkes	0.09	N	N	N	Y	N	Y	N	Paralithic
221.67	221.70	Wg	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
221.70	221.76	Wk	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
221.76	221.79	Wo	100%	Worsham	0.04	N	Y	N	N	N	N	N	N
221.79	221.82	Wf	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
221.82	221.86	Va	100%	Vance	0.04	State	N	N	Y	N	Y	N	N
221.86	221.88	Wf	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
221.88	221.91	Va	100%	Vance	0.03	State	N	N	Y	N	Y	N	N
221.91	221.95	Vb	100%	Vance	0.05	Prime	N	N	N	N	N	N	N
221.95	221.98	Wg	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
221.98	222.01	Wf	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
222.01	222.04	Wg	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
222.04	222.08	Wf	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
222.08	222.10	Wg	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
222.10	222.14	Wf	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
222.14	222.18	Va	100%	Vance	0.04	State	N	N	Y	N	Y	N	N
222.18	222.23	Wf	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
222.23	222.28	Va	100%	Vance	0.05	State	N	N	Y	N	Y	N	N
222.28	222.44	Wf	100%	Wilkes	0.17	N	N	N	Y	N	Y	N	Paralithic
222.44	222.47	Vb	100%	Vance	0.03	Prime	N	N	N	N	N	N	N
222.47	222.59	Va	100%	Vance	0.13	State	N	N	Y	N	Y	N	N
222.59	222.64	Vb	100%	Vance	0.05	Prime	N	N	N	N	N	N	N
222.64	222.76	Lr	100%	Louisburg	0.12	N	N	N	Y	N	Y	N	Paralithic
222.76	222.82	Wf	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
222.82	222.84	Lo	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
222.84	222.87	Ls	100%	Louisburg	0.03	N	N	N	N	N	Y	N	Paralithic
222.87	222.97	Wf	100%	Wilkes	0.10	N	N	N	Y	N	Y	N	Paralithic
222.97	223.01	Ls	100%	Louisburg	0.04	N	N	N	N	N	Y	N	Paralithic
223.01	223.08	Wd	100%	Wickham	0.07	State	N	N	Y	N	Y	N	N
223.08	223.10	Af	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
223.10	223.12	Ha	100%	Helena	0.01	State	N	N	Y	N	Y	N	N
223.12	223.23	Ml	100%	Mixed alluvium	0.12	N	Y	Y	N	N	N	N	N
223.23	223.26	Me	100%	Madison	0.03	State	N	N	Y	N	Y	N	N
223.26	223.33	Wf	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
223.33	223.39	Ad	100%	Appling	0.05	Prime	N	N	N	N	N	N	N
223.39	223.57	Wf	100%	Wilkes	0.19	N	N	N	Y	N	Y	N	Paralithic
223.57	223.60	Mf	100%	Madison	0.03	Prime	N	N	N	N	N	N	N
223.60	223.64	Wf	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
223.64	223.68	Mf	100%	Madison	0.04	Prime	N	N	N	N	N	N	N
223.68	223.68	Wn	100%	Wilkes	<0.01	N	N	N	Y	N	Y	N	Paralithic
223.68	223.77	Ma	100%	Madison	0.09	N	N	N	Y	N	Y	N	N
223.77	223.82	Hb	100%	Helena	0.05	Prime	N	N	N	N	N	N	N
223.82	223.88	Ma	100%	Madison	0.07	N	N	N	Y	N	Y	N	N
223.88	223.91	Wo	100%	Worsham	0.03	N	Y	N	N	N	N	N	N
223.91	223.98	Me	100%	Madison	0.07	State	N	N	Y	N	Y	N	N
223.98	224.15	Cf	100%	Cecil	0.17	State	N	N	Y	N	Y	N	N
224.15	224.24	Cg	100%	Cecil	0.09	Prime	N	N	N	N	N	N	N
224.24	224.31	Cf	100%	Cecil	0.07	State	N	N	Y	N	Y	N	N
224.31	224.50	Cg	100%	Cecil	0.19	Prime	N	N	N	N	N	N	N
224.50	224.56	Af	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
224.56	224.58	Ad	100%	Appling	0.02	Prime	N	N	N	N	N	N	N
224.58	224.71	Cg	100%	Cecil	0.13	Prime	N	N	N	N	N	N	N
224.71	224.76	Ag	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
224.76	224.80	Af	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
224.80	224.82	Sa	100%	Seneca	0.02	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
224.82	224.87	Af	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
224.87	224.93	Ag	100%	Appling	0.06	Prime	N	N	N	N	Y	N	N
224.93	224.95	Cf	100%	Cecil	0.02	State	N	N	Y	N	Y	N	N
224.95	224.99	Cg	100%	Cecil	0.04	Prime	N	N	N	N	N	N	N
224.99	225.06	Ag	100%	Appling	0.08	Prime	N	N	N	N	Y	N	N
225.06	225.08	Cf	100%	Cecil	0.02	State	N	N	Y	N	Y	N	N
225.08	225.11	Cg	100%	Cecil	0.02	Prime	N	N	N	N	N	N	N
225.11	225.12	Cf	100%	Cecil	0.02	State	N	N	Y	N	Y	N	N
225.12	225.14	Ml	100%	Mixed alluvium	0.02	N	Y	Y	N	N	N	N	N
225.14	225.16	Cf	100%	Cecil	0.02	State	N	N	Y	N	Y	N	N
225.16	225.17	Ad	100%	Appling	0.01	Prime	N	N	N	N	N	N	N
225.17	225.24	Lr	100%	Louisburg	0.07	N	N	N	Y	N	Y	N	Paralithic
225.24	225.31	Ls	100%	Louisburg	0.07	N	N	N	N	N	Y	N	Paralithic
225.31	225.41	Ad	100%	Appling	0.10	Prime	N	N	N	N	N	N	N
225.41	225.46	Lr	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
225.46	225.52	Ls	100%	Louisburg	0.07	N	N	N	N	N	Y	N	Paralithic
225.52	225.52	Da	100%	Durham	<0.01	Prime	N	N	N	N	Y	N	N
225.52	225.55	Af	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
225.55	225.60	Ls	100%	Louisburg	0.05	N	N	N	N	N	Y	N	Paralithic
225.60	225.67	Da	100%	Durham	0.07	Prime	N	N	N	N	Y	N	N
Nottoway County, VA													
225.87	225.96	Ac	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
225.96	225.98	Mn	100%	Mixed alluvial land	0.01	N	Y	N	N	N	N	N	N
225.98	226.01	Lh	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
226.01	226.07	Lg	100%	Louisburg	0.06	N	N	N	N	N	Y	N	Paralithic
226.07	226.08	Lk	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
226.08	226.10	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
226.10	226.14	Ab	100%	Appling	0.04	N	N	N	Y	N	Y	Y	N
226.14	226.20	Aa	100%	Appling	0.06	N	N	N	N	N	Y	Y	N
226.20	226.25	Ab	100%	Appling	0.05	N	N	N	Y	N	Y	Y	N
226.25	226.32	Aa	100%	Appling	0.07	N	N	N	N	N	Y	Y	N
226.32	226.33	Wh	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
226.33	226.34	Sa	100%	Seneca	<0.01	Prime	N	N	N	N	Y	N	N
226.34	226.36	Ch	100%	Cecil	0.02	Prime	N	N	N	N	N	N	N
226.36	226.38	Wh	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
226.38	226.39	Ch	100%	Cecil	0.01	Prime	N	N	N	N	N	N	N
226.39	226.45	Wf	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
226.45	226.55	Ac	100%	Appling	0.10	Prime	N	N	N	N	Y	N	N
226.55	226.56	Ae	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
226.56	226.59	Af	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
226.59	226.66	Mn	100%	Mixed alluvial land	0.06	N	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
226.66	226.73	Ab	100%	Appling	0.07	N	N	N	Y	N	Y	Y	N
226.73	226.78	Aa	100%	Appling	0.06	N	N	N	N	N	Y	Y	N
226.78	226.81	Ab	100%	Appling	0.03	N	N	N	Y	N	Y	Y	N
226.81	226.93	Aa	100%	Appling	0.12	N	N	N	N	N	Y	Y	N
226.93	226.96	Ab	100%	Appling	0.03	N	N	N	Y	N	Y	Y	N
226.96	227.01	Aa	100%	Appling	0.05	N	N	N	N	N	Y	Y	N
227.01	227.09	Ac	100%	Appling	0.08	Prime	N	N	N	N	Y	N	N
227.09	227.12	Dd	100%	Durham	0.02	State	N	N	N	N	Y	N	N
227.12	227.17	Hd	100%	Helena	0.05	State	N	N	Y	N	Y	N	N
227.17	227.25	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
227.25	227.27	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
227.27	227.34	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
227.34	227.38	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
227.38	227.46	Ca	100%	Cecil	0.08	N	N	N	N	N	N	N	N
227.46	227.52	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
227.52	227.54	Wh	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
227.54	227.56	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
227.56	227.58	Wh	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
227.58	227.69	Ia	38%	Mecklenburg	0.04	State	N	N	N	N	N	N	N
			63%	Iredell	0.07	State	N	N	N	N	N	N	N
227.69	227.72	Sc	100%	Stony land	0.04	N	N	N	N	N	N	N	N
227.72	227.75	Ic	38%	Mecklenburg	0.01	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.02	State	N	N	Y	N	Y	N	N
227.75	227.77	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
227.77	227.79	Ic	38%	Mecklenburg	0.01	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.02	State	N	N	Y	N	Y	N	N
227.79	227.84	Bb	100%	Bremo	0.05	N	N	N	Y	N	Y	Y	Lithic
227.84	227.86	Ib	38%	Mecklenburg	0.01	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.01	State	N	N	Y	N	Y	N	N
227.86	227.91	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
227.91	227.94	Ic	38%	Mecklenburg	0.01	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.02	State	N	N	Y	N	Y	N	N
227.94	227.98	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
227.98	228.07	Ic	38%	Mecklenburg	0.04	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.06	State	N	N	Y	N	Y	N	N
228.07	228.17	Eg	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.04	State	N	N	Y	N	Y	N	N
				Vance	0.04	State	N	N	Y	N	Y	N	N
228.17	228.21	Wc	100%	Wickham	0.04	Prime	N	N	N	N	N	N	N
228.21	228.30	Mn	100%	Mixed alluvial land	0.09	N	Y	N	N	N	N	N	N
228.30	228.34	Wh	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
228.34	228.42	Eg	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
228.42	228.48	Wh	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
228.48	228.54	Wf	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
228.54	228.56	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
228.56	228.64	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
228.64	228.71	Ee	25%	Helena	0.02	State	N	N	N	N	N	N	N
			38%	Enon	0.03	State	N	N	N	N	N	N	N
				Vance	0.03	State	N	N	N	N	N	N	N
228.71	228.75	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
228.75	228.78	Wh	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
228.78	228.83	Mn	100%	Mixed alluvial land	0.06	N	Y	N	N	N	N	N	N
228.83	228.84	Wh	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
228.84	228.84	Mn	100%	Mixed alluvial land	<0.01	N	Y	N	N	N	N	N	N
228.84	228.94	Wg	100%	Wilkes	0.09	N	N	N	Y	N	Y	N	Paralithic
228.94	228.94	Eh	25%	Helena	<0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	<0.01	State	N	N	Y	N	Y	N	N
				Vance	<0.01	State	N	N	Y	N	Y	N	N
228.94	228.96	Bb	100%	Bremo	0.01	N	N	N	Y	N	Y	Y	Lithic
228.96	229.00	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
229.00	229.04	Wh	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
229.04	229.06	Ib	38%	Mecklenburg	0.01	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.01	State	N	N	Y	N	Y	N	N
229.06	229.09	Le	100%	Lloyd	0.03	State	N	N	Y	N	Y	N	N
229.09	229.13	Wh	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
229.13	229.28	Mn	100%	Mixed alluvial land	0.15	N	Y	N	N	N	N	N	N
229.28	229.29	Wh	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
229.29	229.29	Mn	100%	Mixed alluvial land	<0.01	N	Y	N	N	N	N	N	N
229.29	229.37	Wh	100%	Wilkes	0.08	N	N	N	Y	N	Y	N	Paralithic
229.37	229.44	Ib	38%	Mecklenburg	0.03	State	N	N	Y	N	Y	N	N
			63%	Iredell	0.04	State	N	N	Y	N	Y	N	N
229.44	229.62	Ae	100%	Appling	0.18	State	N	N	Y	N	Y	N	N
229.62	229.66	Sa	100%	Seneca	0.04	Prime	N	N	N	N	Y	N	N
229.66	229.68	Wg	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
229.68	229.70	Dc	100%	Durham	0.02	Prime	N	N	N	N	N	N	N
229.70	229.75	Ac	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
229.75	229.76	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
229.76	229.79	Dc	100%	Durham	0.03	Prime	N	N	N	N	N	N	N
229.79	229.83	Lg	100%	Louisburg	0.04	N	N	N	N	N	Y	N	Paralithic
229.83	229.88	Lh	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
229.88	229.90	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
229.90	230.02	Ae	100%	Appling	0.12	State	N	N	Y	N	Y	N	N
230.02	230.06	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
230.06	230.09	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
230.09	230.11	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
230.11	230.13	Ca	100%	Cecil	0.02	N	N	N	N	N	N	N	N
230.13	230.20	Ac	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
230.20	230.22	Sa	100%	Seneca	0.01	Prime	N	N	N	N	Y	N	N
230.22	230.25	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
230.25	230.27	Dc	100%	Durham	0.02	Prime	N	N	N	N	N	N	N
230.27	230.36	Ac	100%	Appling	0.10	Prime	N	N	N	N	Y	N	N
230.36	230.39	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
230.39	230.39	Ae	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
230.39	230.56	Ac	100%	Appling	0.17	Prime	N	N	N	N	Y	N	N
230.56	230.66	Eh	25%	Helena	0.03	State	N	N	Y	N	Y	N	N
			38%	Enon	0.04	State	N	N	Y	N	Y	N	N
				Vance	0.04	State	N	N	Y	N	Y	N	N
230.66	230.73	Wh	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
230.73	230.78	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
230.78	230.99	Wh	100%	Wilkes	0.22	N	N	N	Y	N	Y	N	Paralithic
230.99	231.06	Ee	25%	Helena	0.02	State	N	N	N	N	N	N	N
			38%	Enon	0.03	State	N	N	N	N	N	N	N
				Vance	0.03	State	N	N	N	N	N	N	N
231.06	231.10	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
231.10	231.16	Mf	100%	Madison	0.05	Prime	N	N	N	N	Y	N	N
231.16	231.18	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
231.18	231.19	Ce	100%	Cecil	0.02	Prime	N	N	N	N	Y	N	N
231.19	231.23	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
231.23	231.25	Ce	100%	Cecil	0.02	Prime	N	N	N	N	Y	N	N
231.25	231.33	Ca	100%	Cecil	0.08	N	N	N	N	N	N	N	N
231.33	231.39	Af	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
231.39	231.41	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
231.41	231.42	Af	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
231.42	231.47	Ac	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
231.47	231.50	Af	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
231.50	231.57	Ac	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
231.57	231.60	Dc	100%	Durham	0.03	Prime	N	N	N	N	N	N	N
231.60	231.71	Ae	100%	Appling	0.11	State	N	N	Y	N	Y	N	N
231.71	231.74	Lh	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
231.74	231.81	Ln	100%	Louisburg	0.07	N	N	N	Y	N	Y	N	Paralithic
231.81	231.82	Lh	100%	Louisburg	0.02	N	N	N	Y	N	Y	N	Paralithic
231.82	231.88	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
231.88	231.97	Ae	100%	Appling	0.09	State	N	N	Y	N	Y	N	N
231.97	231.98	Lm	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
231.98	232.04	Mn	100%	Mixed alluvial land	0.06	N	Y	N	N	N	N	N	N
232.04	232.09	Lk	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
232.09	232.12	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
232.12	232.14	Lg	100%	Louisburg	0.02	N	N	N	N	N	Y	N	Paralithic
232.14	232.16	Eg	25%	Helena	<0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
232.16	232.17	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
232.17	232.21	Ac	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
232.21	232.27	Ae	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
232.27	232.29	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
232.29	232.30	Lg	100%	Louisburg	0.01	N	N	N	N	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
232.30	232.33	Ld	100%	Lloyd	0.03	Prime	N	N	N	N	N	N	N
232.33	232.36	Lf	100%	Lloyd	0.03	State	N	N	Y	N	Y	N	N
232.36	232.41	Lh	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
232.41	232.47	Lm	100%	Louisburg	0.06	N	N	N	Y	N	Y	N	Paralithic
232.47	232.50	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
232.50	232.51	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
232.51	232.54	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
232.54	232.55	Ae	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
232.55	232.58	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
232.58	232.61	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
232.61	232.68	Ac	100%	Appling	0.06	Prime	N	N	N	N	Y	N	N
232.68	232.74	Mn	100%	Mixed alluvial land	0.06	N	Y	N	N	N	N	N	N
232.74	232.83	Ln	100%	Louisburg	0.10	N	N	N	Y	N	Y	N	Paralithic
232.83	232.89	Ag	100%	Appling	0.05	Prime	N	N	N	N	N	N	N
232.89	232.90	Ln	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
232.90	232.93	Ag	100%	Appling	0.03	Prime	N	N	N	N	N	N	N
232.93	233.00	Ln	100%	Louisburg	0.08	N	N	N	Y	N	Y	N	Paralithic
233.00	233.02	Lh	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
233.02	233.04	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
233.04	233.08	Ln	100%	Louisburg	0.04	N	N	N	Y	N	Y	N	Paralithic
233.08	233.12	Af	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
233.12	233.15	Ak	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
233.15	233.17	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
233.17	233.23	Ag	100%	Appling	0.06	Prime	N	N	N	N	N	N	N
233.23	233.25	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
233.25	233.28	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
233.28	233.32	Ae	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
233.32	233.33	Sa	100%	Seneca	0.01	Prime	N	N	N	N	Y	N	N
233.33	233.34	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
233.34	233.36	Ac	100%	Appling	0.01	Prime	N	N	N	N	Y	N	N
233.36	233.37	Ae	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
233.37	233.40	Mn	100%	Mixed alluvial land	0.03	N	Y	N	N	N	N	N	N
233.40	233.43	Ln	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
233.43	233.45	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
233.45	233.47	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
233.47	233.52	Ae	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
233.52	233.54	Wk	100%	Worsham	0.02	N	Y	N	N	N	N	N	N
233.54	233.59	Dd	100%	Durham	0.04	State	N	N	N	N	Y	N	N
233.59	233.61	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
233.61	233.70	Ce	100%	Cecil	0.09	Prime	N	N	N	N	Y	N	N
233.70	233.77	Ae	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
233.77	233.99	Ac	100%	Appling	0.23	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
233.99	234.01	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
234.01	234.06	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
234.06	234.10	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N
234.10	234.13	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
234.13	234.14	Wg	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
234.14	234.18	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
234.18	234.19	Wg	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
234.19	234.22	We	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
234.22	234.37	Eh	25%	Helena	0.04	State	N	N	Y	N	Y	N	N
			38%	Enon	0.06	State	N	N	Y	N	Y	N	N
				Vance	0.06	State	N	N	Y	N	Y	N	N
234.37	234.41	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N
234.41	234.55	Ag	100%	Appling	0.14	Prime	N	N	N	N	N	N	N
234.55	234.64	Ch	100%	Cecil	0.10	Prime	N	N	N	N	N	N	N
234.64	234.72	Cb	100%	Cecil	0.08	N	N	N	Y	N	Y	N	N
234.72	234.76	Ch	100%	Cecil	0.04	Prime	N	N	N	N	N	N	N
234.76	234.81	Cb	100%	Cecil	0.06	N	N	N	Y	N	Y	N	N
234.81	234.84	Sb	100%	Starr	0.03	State	N	N	N	N	N	N	N
234.84	234.86	Cb	100%	Cecil	0.02	N	N	N	Y	N	Y	N	N
234.86	234.89	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
234.89	234.93	Ch	100%	Cecil	0.04	Prime	N	N	N	N	N	N	N
234.93	234.95	Eh	25%	Helena	<0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
234.95	234.98	Ch	100%	Cecil	0.04	Prime	N	N	N	N	N	N	N
234.98	235.00	Eh	25%	Helena	<0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
235.00	235.12	El	25%	Helena	0.03	State	N	N	Y	N	Y	N	N
			38%	Enon	0.04	State	N	N	Y	N	Y	N	N
				Vance	0.04	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
235.12	235.17	Mb	100%	Madison	0.05	N	N	N	Y	N	Y	N	N
235.17	235.19	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
235.19	235.22	Wh	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
235.22	235.28	Mb	100%	Madison	0.06	N	N	N	Y	N	Y	N	N
235.28	235.32	Wh	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
235.32	235.41	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
235.41	235.55	Wg	100%	Wilkes	0.14	N	N	N	Y	N	Y	N	Paralithic
235.55	235.58	Mn	100%	Mixed alluvial land	0.03	N	Y	N	N	N	N	N	N
235.58	235.61	Wh	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
235.61	235.67	Eg	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
235.67	235.70	Wk	100%	Worsham	0.03	N	Y	N	N	N	N	N	N
235.70	235.71	Eg	25%	Helena	<0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	<0.01	State	N	N	Y	N	Y	N	N
				Vance	<0.01	State	N	N	Y	N	Y	N	N
235.71	235.73	Wk	100%	Worsham	0.02	N	Y	N	N	N	N	N	N
235.73	235.74	Ee	25%	Helena	<0.01	State	N	N	N	N	N	N	N
			38%	Enon	<0.01	State	N	N	N	N	N	N	N
				Vance	<0.01	State	N	N	N	N	N	N	N
235.74	235.80	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
235.80	235.83	Wg	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
235.83	235.94	Eg	25%	Helena	0.03	State	N	N	Y	N	Y	N	N
			38%	Enon	0.04	State	N	N	Y	N	Y	N	N
				Vance	0.04	State	N	N	Y	N	Y	N	N
235.94	235.96	Lm	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
235.96	236.06	Mn	100%	Mixed alluvial land	0.10	N	Y	N	N	N	N	N	N
236.06	236.14	Af	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
236.14	236.18	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
236.18	236.21	Ch	100%	Cecil	0.03	Prime	N	N	N	N	N	N	N
236.21	236.23	Wh	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
236.23	236.25	Mn	100%	Mixed alluvial land	0.03	N	Y	N	N	N	N	N	N
236.25	236.30	Wh	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
236.30	236.35	Ek	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
				Vance	0.02	State	N	N	Y	N	Y	N	N
236.35	236.43	Ee	25%	Helena	0.02	State	N	N	N	N	N	N	N
			38%	Enon	0.03	State	N	N	N	N	N	N	N
				Vance	0.03	State	N	N	N	N	N	N	N
236.43	236.49	Wh	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
236.49	236.51	Lm	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
236.51	236.52	Mn	100%	Mixed alluvial land	0.01	N	Y	N	N	N	N	N	N
236.52	236.62	Lm	100%	Louisburg	0.10	N	N	N	Y	N	Y	N	Paralithic
236.62	236.65	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
236.65	236.72	Wf	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
236.72	236.77	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N
236.77	236.81	Ae	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
236.81	236.83	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
236.83	236.87	Ln	100%	Louisburg	0.04	N	N	N	Y	N	Y	N	Paralithic
236.87	236.90	Wg	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
236.90	236.92	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
236.92	237.01	Wh	100%	Wilkes	0.09	N	N	N	Y	N	Y	N	Paralithic
237.01	237.04	Lm	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
237.04	237.13	Eg	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.03	State	N	N	Y	N	Y	N	N
				Vance	0.03	State	N	N	Y	N	Y	N	N
237.13	237.20	Ee	25%	Helena	0.02	State	N	N	N	N	N	N	N
			38%	Enon	0.03	State	N	N	N	N	N	N	N
				Vance	0.03	State	N	N	N	N	N	N	N
237.20	237.26	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
237.26	237.27	Mn	100%	Mixed alluvial land	0.01	N	Y	N	N	N	N	N	N
237.27	237.30	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
237.30	237.34	Ld	100%	Lloyd	0.04	Prime	N	N	N	N	N	N	N
237.34	237.41	Lb	100%	Lloyd	0.06	N	N	N	Y	N	Y	N	N
237.41	237.42	Wg	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
237.42	237.46	Wk	100%	Worsham	0.04	N	Y	N	N	N	N	N	N
237.46	237.47	Lh	100%	Louisburg	0.02	N	N	N	Y	N	Y	N	Paralithic

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
237.47	237.50	Ak	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
237.50	237.52	Ac	100%	Appling	0.01	Prime	N	N	N	N	Y	N	N
237.52	237.54	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
237.54	237.67	Ch	100%	Cecil	0.13	Prime	N	N	N	N	N	N	N
237.67	237.68	Ak	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
237.68	237.71	Ch	100%	Cecil	0.03	Prime	N	N	N	N	N	N	N
237.71	237.76	Ak	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
237.76	237.95	Ch	100%	Cecil	0.19	Prime	N	N	N	N	N	N	N
237.95	238.02	Ag	100%	Appling	0.08	Prime	N	N	N	N	N	N	N
238.02	238.24	Ak	100%	Appling	0.22	State	N	N	Y	N	Y	N	N
238.24	238.32	Wg	100%	Wilkes	0.08	N	N	N	Y	N	Y	N	Paralithic
238.32	238.41	Ac	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
238.41	238.50	Wf	100%	Wilkes	0.09	N	N	N	Y	N	Y	N	Paralithic
238.50	238.55	Mf	100%	Madison	0.05	Prime	N	N	N	N	Y	N	N
238.55	238.60	Wf	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
238.60	238.65	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N
238.65	238.70	Wh	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
238.70	238.73	Wf	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
238.73	238.80	Wh	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
238.80	238.87	Mc	100%	Madison	0.07	N	N	N	Y	N	Y	N	N
238.87	238.92	Wf	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
238.92	238.97	Mf	100%	Madison	0.05	Prime	N	N	N	N	Y	N	N
238.97	239.08	Wh	100%	Wilkes	0.11	N	N	N	Y	N	Y	N	Paralithic
239.08	239.13	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
239.13	239.19	Ln	100%	Louisburg	0.07	N	N	N	Y	N	Y	N	Paralithic
239.19	239.24	Lh	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
239.24	239.35	Ln	100%	Louisburg	0.11	N	N	N	Y	N	Y	N	Paralithic
239.35	239.37	Mf	100%	Madison	0.02	Prime	N	N	N	N	Y	N	N
239.37	239.42	Ln	100%	Louisburg	0.05	N	N	N	Y	N	Y	N	Paralithic
239.42	239.44	Mf	100%	Madison	0.02	Prime	N	N	N	N	Y	N	N
239.44	239.46	Md	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
239.46	239.48	Mf	100%	Madison	0.02	Prime	N	N	N	N	Y	N	N
239.48	239.50	Md	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
239.50	239.52	Ce	100%	Cecil	0.01	Prime	N	N	N	N	Y	N	N
239.52	239.56	Md	100%	Madison	0.04	N	N	N	Y	N	Y	N	N
239.56	239.59	Cd	100%	Cecil	0.03	N	N	N	Y	N	Y	N	N
239.59	239.70	Cf	100%	Cecil	0.11	State	N	N	Y	N	Y	N	N
239.70	239.74	Ac	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
239.74	239.80	Ae	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
239.80	239.81	Ac	100%	Appling	<0.01	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
239.81	239.92	Lm	100%	Louisburg	0.11	N	N	N	Y	N	Y	N	Paralithic
239.92	239.93	Mf	100%	Madison	0.01	Prime	N	N	N	N	Y	N	N
239.93	239.97	Cg	100%	Cecil	0.04	State	N	N	Y	N	Y	N	N
239.97	240.09	Ce	100%	Cecil	0.12	Prime	N	N	N	N	Y	N	N
240.09	240.17	Mf	100%	Madison	0.08	Prime	N	N	N	N	Y	N	N
240.17	240.18	Mh	100%	Madison	0.01	State	N	N	Y	N	Y	N	N
240.18	240.27	Mf	100%	Madison	0.09	Prime	N	N	N	N	Y	N	N
240.27	240.29	Mh	100%	Madison	0.01	State	N	N	Y	N	Y	N	N
240.29	240.46	Mf	100%	Madison	0.17	Prime	N	N	N	N	Y	N	N
240.46	240.50	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
240.50	240.65	Wa	100%	Wehadkee	0.15	N	Y	Y	N	N	N	N	N
240.65	240.75	Wh	100%	Wilkes	0.10	N	N	N	Y	N	Y	N	Paralithic
240.75	240.80	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N
240.80	240.84	Wh	100%	Wilkes	0.04	N	N	N	Y	N	Y	N	Paralithic
240.84	240.85	Ee	25%	Helena	<0.01	State	N	N	N	N	N	N	N
			38%	Enon	<0.01	State	N	N	N	N	N	N	N
				Vance	<0.01	State	N	N	N	N	N	N	N
240.85	240.92	Wh	100%	Wilkes	0.07	N	N	N	Y	N	Y	N	Paralithic
240.92	240.99	Ea	100%	Enon	0.07	State	N	N	N	N	N	N	N
240.99	241.08	Eh	25%	Helena	0.02	State	N	N	Y	N	Y	N	N
			38%	Enon	0.04	State	N	N	Y	N	Y	N	N
				Vance	0.04	State	N	N	Y	N	Y	N	N
241.08	241.34	Ha	100%	Helena	0.27	Prime	N	N	N	N	N	N	N
241.34	241.38	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
241.38	241.41	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
241.41	241.44	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
241.44	241.47	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
241.47	241.52	Ag	100%	Appling	0.06	Prime	N	N	N	N	N	N	N
241.52	241.57	Mn	100%	Mixed alluvial land	0.06	N	Y	N	N	N	N	N	N
241.57	241.62	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
241.62	241.64	Md	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
241.64	241.65	Wg	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
241.65	241.69	Ma	100%	Madison	0.04	N	N	N	N	N	N	N	N
241.69	241.69	Wg	100%	Wilkes	<0.01	N	N	N	Y	N	Y	N	Paralithic
241.69	241.71	Mb	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
241.71	241.74	Ma	100%	Madison	0.04	N	N	N	N	N	N	N	N
241.74	241.76	Mb	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
241.76	241.98	Mf	100%	Madison	0.23	Prime	N	N	N	N	Y	N	N
241.98	242.05	Ee	25%	Helena	0.02	State	N	N	N	N	N	N	N
			38%	Enon	0.03	State	N	N	N	N	N	N	N
				Vance	0.03	State	N	N	N	N	N	N	N
242.05	242.07	Mf	100%	Madison	0.01	Prime	N	N	N	N	Y	N	N
242.07	242.08	Ee	25%	Helena	<0.01	State	N	N	N	N	N	N	N
			38%	Enon	<0.01	State	N	N	N	N	N	N	N
				Vance	<0.01	State	N	N	N	N	N	N	N
242.08	242.12	Cp	100%	Colfax	0.04	N	N	N	N	N	N	N	Paralithic
242.12	242.18	Mf	100%	Madison	0.07	Prime	N	N	N	N	Y	N	N
242.18	242.20	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
242.20	242.21	Mf	100%	Madison	0.01	Prime	N	N	N	N	Y	N	N
242.21	242.27	Ag	100%	Appling	0.05	Prime	N	N	N	N	N	N	N
242.27	242.37	Ch	100%	Cecil	0.10	Prime	N	N	N	N	N	N	N
242.37	242.51	Ck	100%	Cecil	0.15	State	N	N	Y	N	Y	N	N
242.51	242.59	Mf	100%	Madison	0.08	Prime	N	N	N	N	Y	N	N
242.59	242.66	Lm	100%	Louisburg	0.06	N	N	N	Y	N	Y	N	Paralithic
242.66	242.69	Eh	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
242.69	242.74	Al	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
242.74	242.78	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
242.78	242.81	Lk	100%	Louisburg	0.03	N	N	N	Y	N	Y	N	Paralithic
242.81	242.84	Bb	100%	Bremo	0.02	N	N	N	Y	N	Y	Y	Lithic
242.84	242.88	Wa	100%	Wehadkee	0.04	N	Y	Y	N	N	N	N	N
242.88	243.04	Mn	100%	Mixed alluvial land	0.17	N	Y	N	N	N	N	N	N
243.04	243.24	Mc	100%	Madison	0.20	N	N	N	Y	N	Y	N	N
243.24	243.26	Ma	100%	Madison	0.02	N	N	N	N	N	N	N	N
243.26	243.27	Ee	25%	Helena	<0.01	State	N	N	N	N	N	N	N
			38%	Enon	<0.01	State	N	N	N	N	N	N	N
				Vance	<0.01	State	N	N	N	N	N	N	N
243.27	243.29	We	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
243.29	243.30	Wk	100%	Worsham	0.01	N	Y	N	N	N	N	N	N
243.30	243.31	Ee	25%	Helena	<0.01	State	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			38%	Enon	<0.01	State	N	N	N	N	N	N	N
				Vance	<0.01	State	N	N	N	N	N	N	N
243.31	243.36	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N
			38%	Enon	0.02	State	N	N	Y	N	Y	N	N
				Vance	0.02	State	N	N	Y	N	Y	N	N
243.36	243.38	Wk	100%	Worsham	0.02	N	Y	N	N	N	N	N	N
243.38	243.40	Ha	100%	Helena	0.02	Prime	N	N	N	N	N	N	N
243.40	243.52	Va	100%	Vance	0.12	Prime	N	N	N	N	N	N	N
243.52	243.54	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.01	State	N	N	N	N	N	N	N
				Vance	0.01	State	N	N	N	N	N	N	N
243.54	243.57	Wh	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
243.57	243.58	Wk	100%	Worsham	0.01	N	Y	N	N	N	N	N	N
243.58	243.60	Wh	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
243.60	243.63	Wk	100%	Worsham	0.03	N	Y	N	N	N	N	N	N
243.63	243.66	Ea	100%	Enon	0.04	State	N	N	N	N	N	N	N
243.66	243.91	Ch	100%	Cecil	0.26	Prime	N	N	N	N	N	N	N
243.91	243.96	Mb	100%	Madison	0.05	N	N	N	Y	N	Y	N	N
243.96	244.02	Ch	100%	Cecil	0.06	Prime	N	N	N	N	N	N	N
244.02	244.08	We	100%	Wilkes	0.06	N	N	N	Y	N	Y	N	Paralithic
244.08	244.18	Mn	100%	Mixed alluvial land	0.11	N	Y	N	N	N	N	N	N
244.18	244.22	Ag	100%	Appling	0.05	Prime	N	N	N	N	N	N	N
244.22	244.25	We	100%	Wilkes	0.03	N	N	N	Y	N	Y	N	Paralithic
244.25	244.36	Ac	100%	Appling	0.12	Prime	N	N	N	N	Y	N	N
244.36	244.42	Ae	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
244.42	244.47	Ag	100%	Appling	0.05	Prime	N	N	N	N	N	N	N
244.47	244.50	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
244.50	244.51	Wg	100%	Wilkes	0.01	N	N	N	Y	N	Y	N	Paralithic
244.51	244.53	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N
244.53	244.54	Wg	100%	Wilkes	0.02	N	N	N	Y	N	Y	N	Paralithic
244.54	244.56	Af	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
244.56	244.62	Ch	100%	Cecil	0.07	Prime	N	N	N	N	N	N	N
244.62	244.66	Af	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
244.66	244.69	Wk	100%	Worsham	0.02	N	Y	N	N	N	N	N	N
244.69	244.75	Af	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
244.75	244.77	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
244.77	244.78	Ca	100%	Cecil	0.02	N	N	N	N	N	N	N	N
244.78	244.82	Cb	100%	Cecil	0.04	N	N	N	Y	N	Y	N	N
244.82	244.85	Ca	100%	Cecil	0.04	N	N	N	N	N	N	N	N
244.85	244.87	Ak	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
244.87	244.88	Wk	100%	Worsham	0.02	N	Y	N	N	N	N	N	N
244.88	244.90	Ae	100%	Appling	0.02	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
244.90	245.01	Ag	100%	Appling	0.11	Prime	N	N	N	N	N	N	N
245.01	245.03	Dc	100%	Durham	0.03	Prime	N	N	N	N	N	N	N
245.03	245.04	Cp	100%	Colfax	0.01	N	N	N	N	N	N	N	Paralithic
245.04	245.08	Wk	100%	Worsham	0.04	N	Y	N	N	N	N	N	N
245.08	245.14	Cp	100%	Colfax	0.06	N	N	N	N	N	N	N	Paralithic
245.14	245.27	Ag	100%	Appling	0.13	Prime	N	N	N	N	N	N	N
245.27	245.32	Ca	100%	Cecil	0.04	N	N	N	N	N	N	N	N
245.32	245.36	Ae	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
245.36	245.39	Wk	100%	Worsham	0.03	N	Y	N	N	N	N	N	N
245.39	245.47	Ae	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
245.47	245.52	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N
245.52	245.55	Ae	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
245.55	245.60	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N
245.60	245.66	Af	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
245.66	245.69	Sa	100%	Seneca	0.03	Prime	N	N	N	N	Y	N	N
245.69	245.77	Af	100%	Appling	0.08	State	N	N	Y	N	Y	N	N
245.77	245.85	Ce	100%	Cecil	0.08	Prime	N	N	N	N	Y	N	N
245.85	245.97	Af	100%	Appling	0.12	State	N	N	Y	N	Y	N	N
245.97	246.01	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
246.01	246.05	Ae	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
246.05	246.12	Ac	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
246.12	246.21	Ae	100%	Appling	0.09	State	N	N	Y	N	Y	N	N
246.21	246.25	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
246.25	246.28	Da	100%	Durham	0.03	Prime	N	N	N	N	Y	N	N
246.28	246.45	Ac	100%	Appling	0.17	Prime	N	N	N	N	Y	N	N
246.45	246.48	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
246.48	246.51	Wk	100%	Worsham	0.03	N	Y	N	N	N	N	N	N
246.51	246.59	Ac	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
246.59	246.63	Da	100%	Durham	0.03	Prime	N	N	N	N	Y	N	N
246.63	246.65	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
246.65	246.69	Af	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
246.69	246.72	Ac	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
246.72	246.74	Af	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
246.74	246.76	Sa	100%	Seneca	0.02	Prime	N	N	N	N	Y	N	N
246.76	246.79	Af	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
246.79	246.88	Ac	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
246.88	246.92	Af	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
246.92	246.95	Ac	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
246.95	246.97	Af	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
246.97	246.99	Mn	100%	Mixed alluvial land	0.02	N	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
246.99	247.03	Sa	100%	Seneca	0.04	Prime	N	N	N	N	Y	N	N
247.03	247.05	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
247.05	247.11	Ae	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
247.11	247.16	Mn	100%	Mixed alluvial land	0.05	N	Y	N	N	N	N	N	N
247.16	247.45	Ac	100%	Appling	0.29	Prime	N	N	N	N	Y	N	N
247.45	247.50	Da	100%	Durham	0.06	Prime	N	N	N	N	Y	N	N
247.50	247.57	Ac	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
247.57	247.64	Da	100%	Durham	0.07	Prime	N	N	N	N	Y	N	N
247.64	247.74	Ac	100%	Appling	0.11	Prime	N	N	N	N	Y	N	N
247.74	247.76	Da	100%	Durham	0.02	Prime	N	N	N	N	Y	N	N
247.76	247.83	Db	100%	Durham	0.07	State	N	N	N	N	Y	N	N
247.83	247.93	Ac	100%	Appling	0.10	Prime	N	N	N	N	Y	N	N
247.93	247.95	Ce	100%	Cecil	0.02	Prime	N	N	N	N	Y	N	N
247.95	248.08	Ac	100%	Appling	0.13	Prime	N	N	N	N	Y	N	N
248.08	248.10	Lk	100%	Louisburg	0.02	N	N	N	Y	N	Y	N	Paralithic
248.10	248.14	Mn	100%	Mixed alluvial land	0.03	N	Y	N	N	N	N	N	N
248.14	248.15	Lm	100%	Louisburg	0.01	N	N	N	Y	N	Y	N	Paralithic
248.15	248.19	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
248.19	248.22	Ae	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
248.22	248.27	Da	100%	Durham	0.05	Prime	N	N	N	N	Y	N	N
248.27	248.32	Ae	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
248.32	248.36	Da	100%	Durham	0.04	Prime	N	N	N	N	Y	N	N
248.36	248.39	Mn	100%	Mixed alluvial land	0.03	N	Y	N	N	N	N	N	N
248.39	248.44	We	100%	Wilkes	0.05	N	N	N	Y	N	Y	N	Paralithic
248.44	248.57	Af	100%	Appling	0.13	State	N	N	Y	N	Y	N	N
248.57	248.61	Mn	100%	Mixed alluvial land	0.04	N	Y	N	N	N	N	N	N
248.61	248.64	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
248.64	248.66	Ce	100%	Cecil	0.02	Prime	N	N	N	N	Y	N	N
248.66	248.69	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
248.69	248.70	Wl	100%	Worsham	0.02	N	Y	Y	N	N	N	Y	N
248.70	248.75	Ae	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
248.75	248.77	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
248.77	248.79	Ae	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
248.79	248.83	Cp	100%	Colfax	0.03	N	N	N	N	N	N	N	Paralithic
248.83	248.85	Ac	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
248.85	248.90	Ee	25%	Helena	0.01	State	N	N	N	N	N	N	N
			38%	Enon	0.02	State	N	N	N	N	N	N	N
				Vance	0.02	State	N	N	N	N	N	N	N
248.90	248.93	Eg	25%	Helena	0.01	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			38%	Enon	0.01	State	N	N	Y	N	Y	N	N
				Vance	0.01	State	N	N	Y	N	Y	N	N
248.93	248.94	Mn	100%	Mixed alluvial land	0.01	N	Y	N	N	N	N	N	N
248.94	248.98	Sb	100%	Starr	0.04	State	N	N	N	N	N	N	N
248.98	249.03	Ea	100%	Enon	0.05	State	N	N	N	N	N	N	N
Dinwiddie County, VA													
249.03	249.03	Ea	100%	Enon	<0.01	State	N	N	N	N	N	N	N
249.03	249.13	2C	100%	Appling	0.10	State	N	N	Y	N	Y	N	N
249.13	249.19	4C	100%	Cecil	0.06	State	N	N	Y	N	Y	N	N
249.19	249.28	2B	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
249.28	249.32	4C	100%	Cecil	0.04	State	N	N	Y	N	Y	N	N
249.32	249.47	2B	100%	Appling	0.15	Prime	N	N	N	N	Y	N	N
249.47	249.48	2C	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
249.48	249.53	2B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
249.53	249.71	2C	100%	Appling	0.19	State	N	N	Y	N	Y	N	N
249.71	249.84	2B	100%	Appling	0.12	Prime	N	N	N	N	Y	N	N
249.84	249.97	2C	100%	Appling	0.13	State	N	N	Y	N	Y	N	N
249.97	250.17	2B	100%	Appling	0.21	Prime	N	N	N	N	Y	N	N
250.17	250.21	2C	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
250.21	250.25	909A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
250.25	250.41	2C	100%	Appling	0.17	State	N	N	Y	N	Y	N	N
250.41	250.43	2B	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N
250.43	250.51	2C	100%	Appling	0.08	State	N	N	Y	N	Y	N	N
250.51	250.54	2B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
250.54	250.76	2C	100%	Appling	0.22	State	N	N	Y	N	Y	N	N
250.76	251.23	2B	100%	Appling	0.47	Prime	N	N	N	N	Y	N	N
251.23	251.27	2C	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
251.27	251.49	2B	100%	Appling	0.22	Prime	N	N	N	N	Y	N	N
251.49	251.71	2C	100%	Appling	0.22	State	N	N	Y	N	Y	N	N
251.71	251.75	2B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
251.75	251.81	2C	100%	Appling	0.06	State	N	N	Y	N	Y	N	N
251.81	251.86	2B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
251.86	251.90	2C	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
251.90	252.00	2B	100%	Appling	0.10	Prime	N	N	N	N	Y	N	N
252.00	252.08	2C	100%	Appling	0.08	State	N	N	Y	N	Y	N	N
252.08	252.11	2B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
252.11	252.15	2C	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
252.15	252.17	2B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
252.17	252.21	2C	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
252.21	252.28	2B	100%	Appling	0.07	Prime	N	N	N	N	Y	N	N
252.28	252.30	2C	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
252.30	252.32	2B	100%	Appling	0.02	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
252.32	252.36	2C	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
252.36	252.39	2B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
252.39	252.44	2C	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
252.44	252.52	2B	100%	Appling	0.08	Prime	N	N	N	N	Y	N	N
252.52	252.61	2C	100%	Appling	0.10	State	N	N	Y	N	Y	N	N
252.61	252.65	2B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
252.65	252.70	2C	100%	Appling	0.05	State	N	N	Y	N	Y	N	N
252.70	252.74	2B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
252.74	252.84	2C	100%	Appling	0.11	State	N	N	Y	N	Y	N	N
252.84	252.94	2B	100%	Appling	0.10	Prime	N	N	N	N	Y	N	N
252.94	253.01	2C	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
253.01	253.04	2B	100%	Appling	0.03	Prime	N	N	N	N	Y	N	N
253.04	253.15	2C	100%	Appling	0.11	State	N	N	Y	N	Y	N	N
253.15	253.21	4B	100%	Cecil	0.06	Prime	N	N	N	N	Y	N	N
253.21	253.50	2C	100%	Appling	0.30	State	N	N	Y	N	Y	N	N
253.50	253.51	4B	100%	Cecil	0.01	Prime	N	N	N	N	Y	N	N
253.51	253.56	9B	100%	Helena	0.05	Prime	N	N	N	N	N	N	N
253.56	253.80	16A	100%	Roanoke	0.25	N	Y	Y	N	N	N	N	N
253.80	253.82	2C	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
253.82	253.88	16A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
253.88	253.91	2C	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
253.91	253.97	2B	100%	Appling	0.06	Prime	N	N	N	N	Y	N	N
253.97	254.08	2C	100%	Appling	0.12	State	N	N	Y	N	Y	N	N
254.08	254.25	2B	100%	Appling	0.18	Prime	N	N	N	N	Y	N	N
254.25	254.55	2C	100%	Appling	0.32	State	N	N	Y	N	Y	N	N
254.55	254.76	2B	100%	Appling	0.23	Prime	N	N	N	N	Y	N	N
254.76	254.82	2C	100%	Appling	0.07	State	N	N	Y	N	Y	N	N
254.82	255.00	16A	100%	Roanoke	0.20	N	Y	Y	N	N	N	N	N
255.00	255.04	2C	100%	Appling	0.04	State	N	N	Y	N	Y	N	N
255.04	255.29	2B	100%	Appling	0.26	Prime	N	N	N	N	Y	N	N
255.29	255.32	2C	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
255.32	255.35	2B	100%	Appling	0.04	Prime	N	N	N	N	Y	N	N
255.35	255.48	2C	100%	Appling	0.13	State	N	N	Y	N	Y	N	N
255.48	255.54	2B	100%	Appling	0.06	Prime	N	N	N	N	Y	N	N
255.54	255.63	2C	100%	Appling	0.08	State	N	N	Y	N	Y	N	N
255.63	255.93	2B	100%	Appling	0.31	Prime	N	N	N	N	Y	N	N
255.93	255.96	2C	100%	Appling	0.03	State	N	N	Y	N	Y	N	N
255.96	256.00	4B	100%	Cecil	0.04	Prime	N	N	N	N	Y	N	N
256.00	256.02	2C	100%	Appling	0.02	State	N	N	Y	N	Y	N	N
256.02	256.07	4B	100%	Cecil	0.05	Prime	N	N	N	N	Y	N	N
256.07	256.16	2B	100%	Appling	0.09	Prime	N	N	N	N	Y	N	N
256.16	256.24	2C	100%	Appling	0.08	State	N	N	Y	N	Y	N	N
256.24	256.47	4C	100%	Cecil	0.23	State	N	N	Y	N	Y	N	N
256.47	256.99	2C	100%	Appling	0.50	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
256.99	257.18	2B	100%	Appling	0.18	Prime	N	N	N	N	Y	N	N
257.18	257.27	4B	100%	Cecil	0.09	Prime	N	N	N	N	Y	N	N
257.27	257.28	4C	100%	Cecil	0.01	State	N	N	Y	N	Y	N	N
257.28	257.45	4B	100%	Cecil	0.16	Prime	N	N	N	N	Y	N	N
257.45	257.82	2B	100%	Appling	0.36	Prime	N	N	N	N	Y	N	N
257.82	258.00	4B	100%	Cecil	0.17	Prime	N	N	N	N	Y	N	N
258.00	258.02	4C	100%	Cecil	0.03	State	N	N	Y	N	Y	N	N
258.02	258.95	4B	100%	Cecil	0.89	Prime	N	N	N	N	Y	N	N
258.95	258.96	4C	100%	Cecil	0.01	State	N	N	Y	N	Y	N	N
258.96	259.09	4B	100%	Cecil	0.12	Prime	N	N	N	N	Y	N	N
259.09	259.25	4C	100%	Cecil	0.16	State	N	N	Y	N	Y	N	N
259.25	259.31	16A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
259.31	259.52	4C	100%	Cecil	0.21	State	N	N	Y	N	Y	N	N
259.52	259.64	4B	100%	Cecil	0.12	Prime	N	N	N	N	Y	N	N
259.64	259.80	2B	100%	Appling	0.16	Prime	N	N	N	N	Y	N	N
259.80	259.89	4C	100%	Cecil	0.09	State	N	N	Y	N	Y	N	N
259.89	260.05	2B	100%	Appling	0.17	Prime	N	N	N	N	Y	N	N
260.05	260.18	4B	100%	Cecil	0.13	Prime	N	N	N	N	Y	N	N
260.18	260.23	2B	100%	Appling	0.05	Prime	N	N	N	N	Y	N	N
260.23	260.25	4B	100%	Cecil	0.02	Prime	N	N	N	N	Y	N	N
260.25	260.39	2C	100%	Appling	0.14	State	N	N	Y	N	Y	N	N
260.39	260.43	4C	100%	Cecil	0.04	State	N	N	Y	N	Y	N	N
260.43	260.53	2C	100%	Appling	0.11	State	N	N	Y	N	Y	N	N
260.53	260.70	16A	100%	Roanoke	0.18	N	Y	Y	N	N	N	N	N
Brunswick County, VA													
260.70	260.71	16A	100%	Roanoke	0.01	N	Y	Y	N	N	N	N	N
260.71	260.82	9A	40%	Wehadkee	0.04	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.07	N	N	Y	N	N	N	N	N
260.82	260.85	24C	40%	Ashlar	0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.02	State	N	N	Y	N	Y	N	N
260.85	261.24	23B	100%	Rion	0.39	Prime	N	N	N	N	Y	N	N
261.24	261.37	1C	100%	Appling	0.13	State	N	N	Y	N	Y	N	N
261.37	261.46	23B	100%	Rion	0.08	Prime	N	N	N	N	Y	N	N
261.46	261.49	24C	40%	Ashlar	0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.02	State	N	N	Y	N	Y	N	N
261.49	261.50	23B	100%	Rion	<0.01	Prime	N	N	N	N	Y	N	N
261.50	261.62	24C	40%	Ashlar	0.05	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.08	State	N	N	Y	N	Y	N	N
261.62	261.78	2B	37%	Mattaponi	0.06	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.10	Prime	N	N	N	N	Y	N	N
261.78	261.82	16B	100%	Helena	0.05	Prime	N	N	N	N	Y	N	N
261.82	262.11	2B	37%	Mattaponi	0.11	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.18	Prime	N	N	N	N	Y	N	N
262.11	262.19	16B	100%	Helena	0.08	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
262.19	262.37	2B	37%	Mattaponi	0.07	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.11	Prime	N	N	N	N	Y	N	N
262.37	262.53	24C	40%	Ashlar	0.06	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.10	State	N	N	Y	N	Y	N	N
262.53	262.58	30A	100%	Wehadkee	0.05	N	Y	Y	N	N	N	N	N
262.58	262.92	16C	100%	Helena	0.35	State	N	N	Y	N	Y	N	N
262.92	262.96	30A	100%	Wehadkee	0.04	N	Y	Y	N	N	N	N	N
262.96	263.16	1C	100%	Appling	0.21	State	N	N	Y	N	Y	N	N
263.16	263.21	5B	100%	Cecil	0.04	Prime	N	N	N	N	Y	N	N
263.21	263.22	1C	100%	Appling	0.01	State	N	N	Y	N	Y	N	N
263.22	263.25	5B	100%	Cecil	0.03	Prime	N	N	N	N	Y	N	N
263.25	263.43	1C	100%	Appling	0.18	State	N	N	Y	N	Y	N	N
263.43	263.58	5B	100%	Cecil	0.15	Prime	N	N	N	N	Y	N	N
263.58	263.60	2B	37%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.02	Prime	N	N	N	N	Y	N	N
263.60	263.67	16B	100%	Helena	0.07	Prime	N	N	N	N	Y	N	N
263.67	263.79	5B	100%	Cecil	0.12	Prime	N	N	N	N	Y	N	N
263.79	263.99	16B	100%	Helena	0.21	Prime	N	N	N	N	Y	N	N
263.99	264.12	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.08	Prime	N	N	N	N	Y	N	N
264.12	264.13	26B	100%	Santuc	0.02	Prime	N	N	N	N	Y	N	N
264.13	264.18	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.03	Prime	N	N	N	N	Y	N	N
264.18	264.22	26B	100%	Santuc	0.04	Prime	N	N	N	N	Y	N	N
264.22	264.37	2B	37%	Mattaponi	0.06	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.10	Prime	N	N	N	N	Y	N	N
264.37	264.41	26B	100%	Santuc	0.04	Prime	N	N	N	N	Y	N	N
264.41	264.45	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.03	Prime	N	N	N	N	Y	N	N
264.45	264.56	24C	40%	Ashlar	0.04	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.07	State	N	N	Y	N	Y	N	N
264.56	264.59	30A	100%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
264.59	264.78	24C	40%	Ashlar	0.08	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.11	State	N	N	Y	N	Y	N	N
264.78	264.84	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.04	Prime	N	N	N	N	Y	N	N
264.84	264.94	24C	40%	Ashlar	0.04	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.06	State	N	N	Y	N	Y	N	N
264.94	265.06	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.08	Prime	N	N	N	N	Y	N	N
265.06	265.09	20C3	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
265.09	265.11	20D3	100%	Madison	0.03	N	N	N	Y	N	Y	N	N
265.11	265.19	20C3	100%	Madison	0.08	N	N	N	Y	N	Y	N	N
265.19	265.22	20D3	100%	Madison	0.03	N	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
265.22	265.24	20C3	100%	Madison	0.02	N	N	N	Y	N	Y	N	N
265.24	265.30	5B	100%	Cecil	0.06	Prime	N	N	N	N	Y	N	N
265.30	265.30	24C	40%	Ashlar	<0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	<0.01	State	N	N	Y	N	Y	N	N
265.30	265.33	16B	100%	Helena	0.02	Prime	N	N	N	N	Y	N	N
265.33	265.37	5B	100%	Cecil	0.04	Prime	N	N	N	N	Y	N	N
265.37	265.42	24C	40%	Ashlar	0.02	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.03	State	N	N	Y	N	Y	N	N
265.42	265.48	29B	100%	Wedowee	0.05	Prime	N	N	N	N	Y	N	N
265.48	265.55	22D	100%	Pacolet	0.07	State	N	N	Y	N	Y	N	N
265.55	265.62	24C	40%	Ashlar	0.03	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.04	State	N	N	Y	N	Y	N	N
265.62	265.65	30A	100%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
265.65	265.71	6C3	100%	Cecil	0.07	N	N	N	Y	N	Y	N	N
265.71	265.75	6B3	100%	Cecil	0.04	N	N	N	N	N	N	N	N
265.75	265.87	6C3	100%	Cecil	0.12	N	N	N	Y	N	Y	N	N
265.87	266.05	6B3	100%	Cecil	0.18	N	N	N	N	N	N	N	N
266.05	266.19	6C3	100%	Cecil	0.14	N	N	N	Y	N	Y	N	N
266.19	266.22	6B3	100%	Cecil	0.03	N	N	N	N	N	N	N	N
266.22	266.26	24C	40%	Ashlar	0.02	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.03	State	N	N	Y	N	Y	N	N
266.26	266.29	3D	15%	Rock outcrop	<0.01	N	N	N	Y	N	N	N	Lithic
			85%	Ashlar	0.02	N	N	N	Y	N	Y	N	Lithic
266.29	266.32	24C	40%	Ashlar	0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.02	State	N	N	Y	N	Y	N	N
266.32	266.43	23B	100%	Rion	0.11	Prime	N	N	N	N	Y	N	N
266.43	266.46	2B	37%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.02	Prime	N	N	N	N	Y	N	N
266.46	266.50	3E	15%	Rock outcrop	0.01	N	N	N	Y	N	N	N	Lithic
			85%	Ashlar	0.03	N	N	N	Y	N	Y	N	Lithic
266.50	266.58	24C	40%	Ashlar	0.03	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.05	State	N	N	Y	N	Y	N	N
266.58	266.71	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.08	Prime	N	N	N	N	Y	N	N
266.71	266.80	26B	100%	Santuc	0.09	Prime	N	N	N	N	Y	N	N
266.80	266.87	23B	100%	Rion	0.07	Prime	N	N	N	N	Y	N	N
266.87	266.88	24C	40%	Ashlar	<0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.01	State	N	N	Y	N	Y	N	N
266.88	266.97	3E	15%	Rock outcrop	0.01	N	N	N	Y	N	N	N	Lithic
			85%	Ashlar	0.08	N	N	N	Y	N	Y	N	Lithic
266.97	267.03	24C	40%	Ashlar	0.02	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.03	State	N	N	Y	N	Y	N	N
267.03	267.18	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.09	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
267.18	267.24	24C	40%	Ashlar	0.03	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.04	State	N	N	Y	N	Y	N	N
267.24	267.31	3D	15%	Rock outcrop	0.01	N	N	N	Y	N	N	N	Lithic
			85%	Ashlar	0.05	N	N	N	Y	N	Y	N	Lithic
267.31	267.33	3E	15%	Rock outcrop	<0.01	N	N	N	Y	N	N	N	Lithic
			85%	Ashlar	0.02	N	N	N	Y	N	Y	N	Lithic
267.33	267.48	30A	100%	Wehadkee	0.15	N	Y	Y	N	N	N	N	N
267.48	267.56	22D	100%	Pacolet	0.07	State	N	N	Y	N	Y	N	N
267.56	267.57	24C	40%	Ashlar	<0.01	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.01	State	N	N	Y	N	Y	N	N
267.57	267.66	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
267.66	267.73	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
267.73	267.85	24C	40%	Ashlar	0.05	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.07	State	N	N	Y	N	Y	N	N
267.85	267.93	30A	100%	Wehadkee	0.08	N	Y	Y	N	N	N	N	N
267.93	267.98	22D	100%	Pacolet	0.05	State	N	N	Y	N	Y	N	N
267.98	268.03	24C	40%	Ashlar	0.02	State	N	N	Y	N	Y	N	Lithic
			60%	Rion	0.03	State	N	N	Y	N	Y	N	N
268.03	268.10	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.05	Prime	N	N	N	N	Y	N	N
268.10	268.20	22D	100%	Pacolet	0.10	State	N	N	Y	N	Y	N	N
268.20	268.27	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.04	Prime	N	N	N	N	Y	N	N
268.27	268.42	10B	100%	Emporia	0.16	Prime	N	N	N	N	Y	N	N
268.42	268.54	5B	100%	Cecil	0.12	Prime	N	N	N	N	Y	N	N
268.54	268.58	6C3	100%	Cecil	0.04	N	N	N	Y	N	Y	N	N
268.58	268.68	5B	100%	Cecil	0.10	Prime	N	N	N	N	Y	N	N
268.68	268.74	6C3	100%	Cecil	0.05	N	N	N	Y	N	Y	N	N
268.74	268.83	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
268.83	268.92	6C3	100%	Cecil	0.09	N	N	N	Y	N	Y	N	N
268.92	269.00	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.05	Prime	N	N	N	N	Y	N	N
269.00	269.06	6C3	100%	Cecil	0.07	N	N	N	Y	N	Y	N	N
269.06	269.63	2B	37%	Mattaponi	0.22	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.37	Prime	N	N	N	N	Y	N	N
269.63	269.71	16B	100%	Helena	0.08	Prime	N	N	N	N	Y	N	N
269.71	270.01	2B	37%	Mattaponi	0.12	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.20	Prime	N	N	N	N	Y	N	N
270.01	270.06	16B	100%	Helena	0.05	Prime	N	N	N	N	Y	N	N
270.06	270.17	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.07	Prime	N	N	N	N	Y	N	N
270.17	270.33	1C	100%	Appling	0.17	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
270.33	270.53	5B	100%	Cecil	0.21	Prime	N	N	N	N	Y	N	N
270.53	270.56	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
270.56	271.40	2B	37%	Mattaponi	0.32	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.54	Prime	N	N	N	N	Y	N	N
271.40	271.45	16B	100%	Helena	0.05	Prime	N	N	N	N	Y	N	N
271.45	271.55	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
271.55	271.61	9A	40%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.04	N	N	Y	N	N	N	N	N
271.61	271.68	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
271.68	271.73	5B	100%	Cecil	0.05	Prime	N	N	N	N	Y	N	N
271.73	271.81	5C	100%	Cecil	0.09	State	N	N	Y	N	Y	N	N
271.81	271.87	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
271.87	272.02	9A	40%	Wehadkee	0.06	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.09	N	N	Y	N	N	N	N	N
272.02	272.12	5C	100%	Cecil	0.10	State	N	N	Y	N	Y	N	N
272.12	272.32	5B	100%	Cecil	0.20	Prime	N	N	N	N	Y	N	N
272.32	272.40	5C	100%	Cecil	0.09	State	N	N	Y	N	Y	N	N
272.40	272.46	5B	100%	Cecil	0.06	Prime	N	N	N	N	Y	N	N
272.46	272.55	29B	100%	Wedowee	0.09	Prime	N	N	N	N	Y	N	N
272.55	272.66	16B	100%	Helena	0.11	Prime	N	N	N	N	Y	N	N
272.66	272.86	5B	100%	Cecil	0.21	Prime	N	N	N	N	Y	N	N
272.86	272.93	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
272.93	273.02	5B	100%	Cecil	0.09	Prime	N	N	N	N	Y	N	N
273.02	273.06	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
273.06	273.42	5B	100%	Cecil	0.36	Prime	N	N	N	N	Y	N	N
273.42	273.49	16B	100%	Helena	0.07	Prime	N	N	N	N	Y	N	N
273.49	273.68	5B	100%	Cecil	0.20	Prime	N	N	N	N	Y	N	N
273.68	273.77	16B	100%	Helena	0.09	Prime	N	N	N	N	Y	N	N
273.77	273.87	5B	100%	Cecil	0.10	Prime	N	N	N	N	Y	N	N
273.87	273.89	16B	100%	Helena	0.02	Prime	N	N	N	N	Y	N	N
273.89	274.00	5B	100%	Cecil	0.11	Prime	N	N	N	N	Y	N	N
274.00	274.03	16B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
274.03	274.13	5B	100%	Cecil	0.10	Prime	N	N	N	N	Y	N	N
274.13	274.30	16B	100%	Helena	0.17	Prime	N	N	N	N	Y	N	N
274.30	274.36	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
274.36	274.58	2B	37%	Mattaponi	0.09	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.15	Prime	N	N	N	N	Y	N	N
274.58	274.80	16B	100%	Helena	0.21	Prime	N	N	N	N	Y	N	N
274.80	274.87	9A	40%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.04	N	N	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
274.87	274.90	16B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
274.90	274.98	9A	40%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.05	N	N	Y	N	N	N	N	N
274.98	275.06	16B	100%	Helena	0.08	Prime	N	N	N	N	Y	N	N
275.06	275.10	10B	100%	Emporia	0.04	Prime	N	N	N	N	Y	N	N
275.10	275.17	16B	100%	Helena	0.07	Prime	N	N	N	N	Y	N	N
275.17	275.22	10B	100%	Emporia	0.05	Prime	N	N	N	N	Y	N	N
275.22	275.29	16B	100%	Helena	0.07	Prime	N	N	N	N	Y	N	N
275.29	275.33	10B	100%	Emporia	0.04	Prime	N	N	N	N	Y	N	N
275.33	275.38	16B	100%	Helena	0.05	Prime	N	N	N	N	Y	N	N
275.38	275.46	10B	100%	Emporia	0.08	Prime	N	N	N	N	Y	N	N
275.46	275.60	16B	100%	Helena	0.14	Prime	N	N	N	N	Y	N	N
275.60	275.71	10B	100%	Emporia	0.11	Prime	N	N	N	N	Y	N	N
275.71	276.10	16B	100%	Helena	0.40	Prime	N	N	N	N	Y	N	N
276.10	276.20	9A	40%	Wehadkee	0.04	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.07	N	N	Y	N	N	N	N	N
276.20	276.35	16B	100%	Helena	0.15	Prime	N	N	N	N	Y	N	N
276.35	276.57	2B	37%	Mattaponi	0.08	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.14	Prime	N	N	N	N	Y	N	N
276.57	276.61	16B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
276.61	276.66	22C	100%	Pacolet	0.05	State	N	N	Y	N	Y	N	N
276.66	276.68	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.01	N	N	Y	N	N	N	N	N
276.68	276.72	22C	100%	Pacolet	0.04	State	N	N	Y	N	Y	N	N
276.72	276.78	5B	100%	Cecil	0.07	Prime	N	N	N	N	Y	N	N
276.78	276.85	22C	100%	Pacolet	0.07	State	N	N	Y	N	Y	N	N
276.85	276.93	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
276.93	277.03	22C	100%	Pacolet	0.10	State	N	N	Y	N	Y	N	N
277.03	277.40	2B	37%	Mattaponi	0.14	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.24	Prime	N	N	N	N	Y	N	N
277.40	277.54	22C	100%	Pacolet	0.14	State	N	N	Y	N	Y	N	N
277.54	277.61	9A	40%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.04	N	N	Y	N	N	N	N	N
277.61	277.74	5C	100%	Cecil	0.13	State	N	N	Y	N	Y	N	N
277.74	277.77	13B	100%	Georgeville	0.03	Prime	N	N	N	N	N	N	N
277.77	277.78	5B	100%	Cecil	0.01	Prime	N	N	N	N	Y	N	N
277.78	277.82	13B	100%	Georgeville	0.04	Prime	N	N	N	N	N	N	N
277.82	277.87	5C	100%	Cecil	0.04	State	N	N	Y	N	Y	N	N
277.87	277.90	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
277.90	277.95	6C3	100%	Cecil	0.05	N	N	N	Y	N	Y	N	N
277.95	278.03	5B	100%	Cecil	0.08	Prime	N	N	N	N	Y	N	N
278.03	278.11	6C3	100%	Cecil	0.08	N	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
278.11	278.21	5B	100%	Cecil	0.10	Prime	N	N	N	N	Y	N	N
278.21	278.27	6C3	100%	Cecil	0.05	N	N	N	Y	N	Y	N	N
278.27	278.32	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
278.32	278.39	29C	100%	Wedowee	0.06	State	N	N	Y	N	Y	N	N
278.39	278.43	5B	100%	Cecil	0.05	Prime	N	N	N	N	Y	N	N
278.43	278.47	29C	100%	Wedowee	0.04	State	N	N	Y	N	Y	N	N
278.47	278.53	5B	100%	Cecil	0.06	Prime	N	N	N	N	Y	N	N
278.53	278.57	29C	100%	Wedowee	0.04	State	N	N	Y	N	Y	N	N
278.57	278.62	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
278.62	278.66	29C	100%	Wedowee	0.04	State	N	N	Y	N	Y	N	N
278.66	278.74	5B	100%	Cecil	0.07	Prime	N	N	N	N	Y	N	N
278.74	278.85	29C	100%	Wedowee	0.11	State	N	N	Y	N	Y	N	N
278.85	278.94	9A	40%	Wehadkee	0.03	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.05	N	N	Y	N	N	N	N	N
278.94	279.01	29C	100%	Wedowee	0.07	State	N	N	Y	N	Y	N	N
279.01	279.04	16B	100%	Helena	0.03	Prime	N	N	N	N	Y	N	N
279.04	279.11	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.05	Prime	N	N	N	N	Y	N	N
279.11	279.29	16B	100%	Helena	0.19	Prime	N	N	N	N	Y	N	N
279.29	279.34	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
279.34	279.38	29C	100%	Wedowee	0.03	State	N	N	Y	N	Y	N	N
279.38	279.42	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.03	Prime	N	N	N	N	Y	N	N
279.42	279.50	29C	100%	Wedowee	0.08	State	N	N	Y	N	Y	N	N
279.50	279.61	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.08	Prime	N	N	N	N	Y	N	N
279.61	279.72	29C	100%	Wedowee	0.11	State	N	N	Y	N	Y	N	N
279.72	279.75	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
279.75	279.91	29C	100%	Wedowee	0.17	State	N	N	Y	N	Y	N	N
279.91	280.01	2B	37%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
280.01	280.04	29C	100%	Wedowee	0.04	State	N	N	Y	N	Y	N	N
280.04	280.08	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
280.08	280.20	16B	100%	Helena	0.13	Prime	N	N	N	N	Y	N	N
280.20	280.24	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
280.24	280.30	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
280.30	280.40	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.07	Prime	N	N	N	N	Y	N	N
280.40	280.50	16B	100%	Helena	0.10	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
280.50	280.55	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.03	Prime	N	N	N	N	Y	N	N
280.55	280.68	16B	100%	Helena	0.13	Prime	N	N	N	N	Y	N	N
280.68	280.78	2B	37%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.06	Prime	N	N	N	N	Y	N	N
280.78	280.84	16B	100%	Helena	0.06	Prime	N	N	N	N	Y	N	N
280.84	280.90	2B	37%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.04	Prime	N	N	N	N	Y	N	N
280.90	280.94	16B	100%	Helena	0.04	Prime	N	N	N	N	Y	N	N
280.94	281.08	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.09	Prime	N	N	N	N	Y	N	N
281.08	281.22	10B	100%	Emporia	0.14	Prime	N	N	N	N	Y	N	N
281.22	281.30	26B	100%	Santuc	0.08	Prime	N	N	N	N	Y	N	N
281.30	281.86	2B	37%	Mattaponi	0.21	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.35	Prime	N	N	N	N	Y	N	N
281.86	281.98	16B	100%	Helena	0.12	Prime	N	N	N	N	Y	N	N
281.98	282.12	2B	37%	Mattaponi	0.06	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.10	Prime	N	N	N	N	Y	N	N
282.12	282.17	9A	40%	Wehadkee	0.02	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.03	N	N	Y	N	N	N	N	N
282.17	282.68	2B	37%	Mattaponi	0.19	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.33	Prime	N	N	N	N	Y	N	N
282.68	283.03	16B	100%	Helena	0.35	Prime	N	N	N	N	Y	N	N
Greensville County, VA													
283.03	283.03	16B	100%	Helena	<0.01	Prime	N	N	N	N	Y	N	N
283.03	283.05	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
283.05	283.19	31A	100%	Roanoke	0.14	N	Y	Y	N	N	N	N	N
283.19	283.23	21B	100%	Iredell	0.04	State	N	N	N	N	N	N	N
283.23	283.25	20B	100%	Helena	0.03	Prime	N	N	N	N	Y	N	N
283.25	283.32	21B	100%	Iredell	0.07	State	N	N	N	N	N	N	N
283.32	283.38	31A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
283.38	283.46	17C	44%	Mattaponi	0.03	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.04	State	N	N	Y	N	Y	N	N
283.46	283.48	17B	44%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.01	Prime	N	N	N	N	N	N	N
283.48	283.51	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
283.51	283.60	21B	100%	Iredell	0.10	State	N	N	N	N	N	N	N
283.60	283.67	1B	100%	Abell	0.07	Prime	N	N	N	N	N	N	N
283.67	283.71	21B	100%	Iredell	0.03	State	N	N	N	N	N	N	N
283.71	283.72	1B	100%	Abell	0.02	Prime	N	N	N	N	N	N	N
283.72	283.75	20B	100%	Helena	0.03	Prime	N	N	N	N	Y	N	N
283.75	283.79	10B3	100%	Craven	0.03	N	N	N	Y	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
283.79	283.80	25B	100%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
283.80	283.82	10B3	100%	Craven	0.02	N	N	N	Y	N	N	N	N
283.82	283.93	20B	100%	Helena	0.11	Prime	N	N	N	N	Y	N	N
283.93	284.04	33A	100%	Slagle	0.11	Prime	N	N	N	N	N	N	N
284.04	284.05	10B3	100%	Craven	0.01	N	N	N	Y	N	N	N	N
284.05	284.13	31A	100%	Roanoke	0.08	N	Y	Y	N	N	N	N	N
284.13	284.18	10C3	100%	Craven	0.05	N	N	N	Y	N	Y	N	N
284.18	284.30	31A	100%	Roanoke	0.12	N	Y	Y	N	N	N	N	N
284.30	284.40	33A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
284.40	284.47	25B	100%	Mattaponi	0.08	Prime	N	N	N	N	Y	N	N
284.47	284.50	33A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
284.50	284.77	40A	100%	Woodington	0.27	N	Y	N	N	N	N	N	N
284.77	284.79	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
284.79	284.85	12B	100%	Emporia	0.05	Prime	N	N	N	Y	Y	N	N
284.85	284.86	40A	100%	Woodington	0.02	N	Y	N	N	N	N	N	N
284.86	284.90	15C3	100%	Fluvanna	0.03	N	N	N	Y	N	Y	N	N
284.90	284.94	14B	100%	Fluvanna	0.04	Prime	N	N	N	N	N	N	N
284.94	284.96	15C3	100%	Fluvanna	0.02	N	N	N	Y	N	Y	N	N
284.96	284.98	14B	100%	Fluvanna	0.03	Prime	N	N	N	N	N	N	N
284.98	285.01	15C3	100%	Fluvanna	0.02	N	N	N	Y	N	Y	N	N
285.01	285.05	31A	100%	Roanoke	0.04	N	Y	Y	N	N	N	N	N
285.05	285.16	17C	44%	Mattaponi	0.05	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.06	State	N	N	Y	N	Y	N	N
285.16	285.32	25B	100%	Mattaponi	0.16	Prime	N	N	N	N	Y	N	N
285.32	285.39	17C	44%	Mattaponi	0.03	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.04	State	N	N	Y	N	Y	N	N
285.39	285.48	25B	100%	Mattaponi	0.09	Prime	N	N	N	N	Y	N	N
285.48	285.53	17C	44%	Mattaponi	0.02	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.03	State	N	N	Y	N	Y	N	N
285.53	285.57	25B	100%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
285.57	285.61	17C	44%	Mattaponi	0.02	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
285.61	285.64	25B	100%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
285.64	285.68	17C	44%	Mattaponi	0.02	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
285.68	285.72	16C3	40%	Goldston	0.01	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.02	N	N	N	Y	N	Y	N	N
285.72	285.79	17B	44%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.04	Prime	N	N	N	N	N	N	N
285.79	285.86	17C	44%	Mattaponi	0.03	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.04	State	N	N	Y	N	Y	N	N
285.86	285.89	32A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
285.89	285.96	17C	44%	Mattaponi	0.03	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.04	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
285.96	285.98	17B	44%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.01	Prime	N	N	N	N	N	N	N
285.98	286.09	17C	44%	Mattaponi	0.05	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.06	State	N	N	Y	N	Y	N	N
286.09	286.16	17B	44%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.04	Prime	N	N	N	N	N	N	N
286.16	286.30	17C	44%	Mattaponi	0.06	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.08	State	N	N	Y	N	Y	N	N
286.30	286.32	31A	100%	Roanoke	0.01	N	Y	Y	N	N	N	N	N
286.32	286.34	30A	100%	Riverview	0.03	Prime	N	N	N	N	N	N	N
286.34	286.36	W	100%	Water	0.02	N	N	N	N	N	N	N	N
286.36	286.38	30A	100%	Riverview	0.02	Prime	N	N	N	N	N	N	N
286.38	286.43	9A	100%	Chenneby	0.04	N	N	Y	N	N	N	N	N
286.43	286.49	32A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
286.49	286.52	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
286.52	286.65	34A	100%	State	0.14	Prime	N	N	N	Y	Y	N	N
286.65	286.72	2A	100%	Altavista	0.07	Prime	N	N	N	N	N	N	N
286.72	286.78	31A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
286.78	286.91	16C3	40%	Goldston	0.05	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.08	N	N	N	Y	N	Y	N	N
286.91	286.99	16B3	40%	Goldston	0.03	N	N	N	N	N	N	Y	Lithic
			60%	Fluvanna	0.05	N	N	N	N	N	N	N	N
286.99	287.03	16C3	40%	Goldston	0.01	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.02	N	N	N	Y	N	Y	N	N
287.03	287.06	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
287.06	287.15	17C	44%	Mattaponi	0.04	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.05	State	N	N	Y	N	Y	N	N
287.15	287.16	21B	100%	Iredell	<0.01	State	N	N	N	N	N	N	N
287.16	287.37	17C	44%	Mattaponi	0.09	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.11	State	N	N	Y	N	Y	N	N
287.37	287.40	25B	100%	Mattaponi	0.04	Prime	N	N	N	N	Y	N	N
287.40	287.42	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
287.42	287.71	40A	100%	Woodington	0.28	N	Y	N	N	N	N	N	N
287.71	287.74	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
287.74	287.93	40A	100%	Woodington	0.19	N	Y	N	N	N	N	N	N
287.93	288.00	33A	100%	Slagle	0.08	Prime	N	N	N	N	N	N	N
288.00	288.14	12B	100%	Emporia	0.14	Prime	N	N	N	Y	Y	N	N
288.14	288.16	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
288.16	288.21	31A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
288.21	288.23	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
288.23	288.32	40A	100%	Woodington	0.09	N	Y	N	N	N	N	N	N
288.32	288.34	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
288.34	288.37	14B	100%	Fluvanna	0.04	Prime	N	N	N	N	N	N	N
288.37	288.47	1B	100%	Abell	0.10	Prime	N	N	N	N	N	N	N
288.47	288.48	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
288.48	288.50	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
288.50	288.52	25C	100%	Mattaponi	0.02	N	N	N	Y	N	Y	Y	N
288.52	288.60	31A	100%	Roanoke	0.09	N	Y	Y	N	N	N	N	N
288.60	288.64	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
288.64	288.73	14B	100%	Fluvanna	0.10	Prime	N	N	N	N	N	N	N
288.73	288.77	31A	100%	Roanoke	0.04	N	Y	Y	N	N	N	N	N
288.77	288.80	17C	44%	Mattaponi	0.02	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
288.80	288.86	31A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
288.86	288.88	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
288.88	288.89	17B	44%	Mattaponi	<0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.01	Prime	N	N	N	N	N	N	N
288.89	288.91	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
288.91	288.92	31A	100%	Roanoke	0.01	N	Y	Y	N	N	N	N	N
288.92	288.95	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
288.95	288.97	17B	44%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.01	Prime	N	N	N	N	N	N	N
288.97	289.00	36B	100%	Uchee	0.04	Prime	N	N	N	Y	Y	N	N
289.00	289.03	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
289.03	289.05	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
289.05	289.09	10C3	100%	Craven	0.04	N	N	N	Y	N	Y	N	N
289.09	289.24	36B	100%	Uchee	0.15	Prime	N	N	N	Y	Y	N	N
289.24	289.29	33A	100%	Slagle	0.05	Prime	N	N	N	N	N	N	N
289.29	289.57	36B	100%	Uchee	0.29	Prime	N	N	N	Y	Y	N	N
289.57	289.67	25B	100%	Mattaponi	0.10	Prime	N	N	N	N	Y	N	N
289.67	289.71	36B	100%	Uchee	0.04	Prime	N	N	N	Y	Y	N	N
289.71	289.73	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
289.73	289.82	31A	100%	Roanoke	0.08	N	Y	Y	N	N	N	N	N
289.82	289.85	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N
289.85	289.87	17B	44%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.01	Prime	N	N	N	N	N	N	N
289.87	289.90	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.02	State	N	N	Y	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
289.90	289.93	17B	44%	Mattaponi	0.01	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.02	Prime	N	N	N	N	N	N	N
289.93	289.95	17C	44%	Mattaponi	0.01	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.01	State	N	N	Y	N	Y	N	N
289.95	289.97	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
289.97	290.00	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
290.00	290.10	33A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
290.10	290.13	40A	100%	Woodington	0.03	N	Y	N	N	N	N	N	N
290.13	290.14	33A	100%	Slagle	0.01	Prime	N	N	N	N	N	N	N
290.14	290.37	40A	100%	Woodington	0.23	N	Y	N	N	N	N	N	N
290.37	290.54	33A	100%	Slagle	0.17	Prime	N	N	N	N	N	N	N
290.54	290.78	40A	100%	Woodington	0.24	N	Y	N	N	N	N	N	N
290.78	290.82	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
290.82	290.85	40A	100%	Woodington	0.03	N	Y	N	N	N	N	N	N
290.85	290.85	12B	100%	Emporia	<0.01	Prime	N	N	N	Y	Y	N	N
290.85	290.88	33A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
290.88	290.91	40A	100%	Woodington	0.03	N	Y	N	N	N	N	N	N
290.91	290.96	33A	100%	Slagle	0.05	Prime	N	N	N	N	N	N	N
290.96	290.99	12B	100%	Emporia	0.03	Prime	N	N	N	Y	Y	N	N
290.99	291.05	40A	100%	Woodington	0.06	N	Y	N	N	N	N	N	N
291.05	291.15	33A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
291.15	291.17	40A	100%	Woodington	0.02	N	Y	N	N	N	N	N	N
291.17	291.25	33A	100%	Slagle	0.09	Prime	N	N	N	N	N	N	N
291.25	291.31	40A	100%	Woodington	0.05	N	Y	N	N	N	N	N	N
291.31	291.33	33A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
291.33	291.40	40A	100%	Woodington	0.07	N	Y	N	N	N	N	N	N
291.40	291.44	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
291.44	291.55	25B	100%	Mattaponi	0.11	Prime	N	N	N	N	Y	N	N
291.55	291.70	40A	100%	Woodington	0.15	N	Y	N	N	N	N	N	N
291.70	291.74	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
291.74	291.78	10B3	100%	Craven	0.04	N	N	N	Y	N	N	N	N
291.78	292.16	40A	100%	Woodington	0.39	N	Y	N	N	N	N	N	N
292.16	292.20	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
292.20	292.32	40A	100%	Woodington	0.13	N	Y	N	N	N	N	N	N
292.32	292.35	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
292.35	292.39	12B	100%	Emporia	0.04	Prime	N	N	N	Y	Y	N	N
292.39	292.42	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
292.42	292.59	40A	100%	Woodington	0.17	N	Y	N	N	N	N	N	N
292.59	292.62	12B	100%	Emporia	0.03	Prime	N	N	N	Y	Y	N	N
292.62	292.90	40A	100%	Woodington	0.28	N	Y	N	N	N	N	N	N
292.90	292.93	33A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
292.93	293.07	40A	100%	Woodington	0.14	N	Y	N	N	N	N	N	N
293.07	293.12	37	100%	Udorthents	0.05	N	N	N	Y	N	N	N	N
293.12	293.15	40A	100%	Woodington	0.03	N	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
293.15	293.41	33A	100%	Slagle	0.27	Prime	N	N	N	N	N	N	N
293.41	293.53	10C3	100%	Craven	0.14	N	N	N	Y	N	Y	N	N
293.53	293.70	33A	100%	Slagle	0.20	Prime	N	N	N	N	N	N	N
293.70	293.75	12B	100%	Emporia	0.07	Prime	N	N	N	Y	Y	N	N
293.75	293.95	33A	100%	Slagle	0.24	Prime	N	N	N	N	N	N	N
293.95	293.99	10C3	100%	Craven	0.05	N	N	N	Y	N	Y	N	N
293.99	294.01	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
294.01	294.04	10C3	100%	Craven	0.04	N	N	N	Y	N	Y	N	N
294.04	294.09	31A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
294.09	294.11	10C3	100%	Craven	0.03	N	N	N	Y	N	Y	N	N
294.11	294.13	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
294.13	294.15	10C3	100%	Craven	0.03	N	N	N	Y	N	Y	N	N
294.15	294.18	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
294.18	294.24	10C3	100%	Craven	0.07	N	N	N	Y	N	Y	N	N
294.24	294.25	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
294.25	294.27	10C3	100%	Craven	0.02	N	N	N	Y	N	Y	N	N
294.27	294.33	12B	100%	Emporia	0.07	Prime	N	N	N	Y	Y	N	N
294.33	294.35	10C3	100%	Craven	0.02	N	N	N	Y	N	Y	N	N
294.35	294.36	33A	100%	Slagle	0.01	Prime	N	N	N	N	N	N	N
294.36	294.39	10C3	100%	Craven	0.04	N	N	N	Y	N	Y	N	N
294.39	294.39	33A	100%	Slagle	<0.01	Prime	N	N	N	N	N	N	N
294.39	294.41	10C3	100%	Craven	0.03	N	N	N	Y	N	Y	N	N
294.41	294.46	12B	100%	Emporia	0.05	Prime	N	N	N	Y	Y	N	N
294.46	294.49	10C3	100%	Craven	0.04	N	N	N	Y	N	Y	N	N
294.49	294.52	12B	100%	Emporia	0.03	Prime	N	N	N	Y	Y	N	N
294.52	294.57	10C3	100%	Craven	0.06	N	N	N	Y	N	Y	N	N
294.57	294.67	12B	100%	Emporia	0.12	Prime	N	N	N	Y	Y	N	N
294.67	294.70	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
294.70	294.72	40A	100%	Woodington	0.03	N	Y	N	N	N	N	N	N
294.72	294.82	33A	100%	Slagle	0.13	Prime	N	N	N	N	N	N	N
294.82	294.96	12B	100%	Emporia	0.16	Prime	N	N	N	Y	Y	N	N
294.96	295.02	33A	100%	Slagle	0.06	Prime	N	N	N	N	N	N	N
295.02	295.53	12B	100%	Emporia	0.51	Prime	N	N	N	Y	Y	N	N
295.53	295.60	10C3	100%	Craven	0.07	N	N	N	Y	N	Y	N	N
295.60	295.71	31A	100%	Roanoke	0.12	N	Y	Y	N	N	N	N	N
295.71	295.75	10B3	100%	Craven	0.04	N	N	N	Y	N	N	N	N
295.75	295.79	12B	100%	Emporia	0.04	Prime	N	N	N	Y	Y	N	N
295.79	295.84	33A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
295.84	295.89	36B	100%	Uchee	0.05	Prime	N	N	N	Y	Y	N	N
295.89	295.94	31A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
295.94	295.96	10B3	100%	Craven	0.02	N	N	N	Y	N	N	N	N
295.96	296.03	12B	100%	Emporia	0.07	Prime	N	N	N	Y	Y	N	N
296.03	296.05	10B3	100%	Craven	0.02	N	N	N	Y	N	N	N	N
296.05	296.08	12B	100%	Emporia	0.02	Prime	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
296.08	296.26	10B3	100%	Craven	0.19	N	N	N	Y	N	N	N	N
296.26	296.34	36B	100%	Uchee	0.09	Prime	N	N	N	Y	Y	N	N
296.34	296.43	12B	100%	Emporia	0.09	Prime	N	N	N	Y	Y	N	N
296.43	296.54	10B3	100%	Craven	0.11	N	N	N	Y	N	N	N	N
296.54	296.62	12B	100%	Emporia	0.08	Prime	N	N	N	Y	Y	N	N
296.62	296.64	36B	100%	Uchee	0.02	Prime	N	N	N	Y	Y	N	N
296.64	296.76	12B	100%	Emporia	0.12	Prime	N	N	N	Y	Y	N	N
296.76	296.79	33A	100%	Slagle	0.02	Prime	N	N	N	N	N	N	N
296.79	296.94	31A	100%	Roanoke	0.16	N	Y	Y	N	N	N	N	N
296.94	296.99	10C3	100%	Craven	0.05	N	N	N	Y	N	Y	N	N
296.99	297.05	36B	100%	Uchee	0.06	Prime	N	N	N	Y	Y	N	N
297.05	297.13	10C3	100%	Craven	0.08	N	N	N	Y	N	Y	N	N
297.13	297.18	32A	100%	Roanoke	0.06	N	Y	Y	N	N	N	N	N
297.18	297.23	10C3	100%	Craven	0.04	N	N	N	Y	N	Y	N	N
297.23	297.26	32A	100%	Roanoke	0.04	N	Y	Y	N	N	N	N	N
297.26	297.31	10C3	100%	Craven	0.05	N	N	N	Y	N	Y	N	N
297.31	297.39	32A	100%	Roanoke	0.09	N	Y	Y	N	N	N	N	N
297.39	297.43	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
297.43	297.54	33A	100%	Slagle	0.11	Prime	N	N	N	N	N	N	N
297.54	297.56	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
297.56	297.62	33A	100%	Slagle	0.06	Prime	N	N	N	N	N	N	N
297.62	297.63	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
297.63	297.67	32A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
297.67	297.75	31A	100%	Roanoke	0.08	N	Y	Y	N	N	N	N	N
297.75	297.82	32A	100%	Roanoke	0.07	N	Y	Y	N	N	N	N	N
297.82	298.04	31A	100%	Roanoke	0.22	N	Y	Y	N	N	N	N	N
298.04	298.07	32A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
298.07	298.23	31A	100%	Roanoke	0.16	N	Y	Y	N	N	N	N	N
298.23	298.29	3A	100%	Altavista	0.06	Prime	N	N	N	N	N	N	N
298.29	298.44	31A	100%	Roanoke	0.15	N	Y	Y	N	N	N	N	N
298.44	298.45	8A	100%	Bojac	0.01	Prime	N	N	N	Y	Y	N	N
298.45	298.48	32A	100%	Roanoke	0.04	N	Y	Y	N	N	N	N	N
298.48	298.53	8A	100%	Bojac	0.05	Prime	N	N	N	Y	Y	N	N
298.53	298.55	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
298.55	298.58	32A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
298.58	298.63	31A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
298.63	298.68	39A	100%	Wickham	0.05	Prime	N	N	N	N	Y	N	N
298.68	298.70	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
298.70	298.72	3A	100%	Altavista	0.02	Prime	N	N	N	N	N	N	N
298.72	298.99	31A	100%	Roanoke	0.27	N	Y	Y	N	N	N	N	N
298.99	299.04	3A	100%	Altavista	0.05	Prime	N	N	N	N	N	N	N
299.04	299.05	31A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
299.05	299.13	3A	100%	Altavista	0.08	Prime	N	N	N	N	N	N	N
299.13	299.20	39A	100%	Wickham	0.07	Prime	N	N	N	N	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
299.20	299.26	8A	100%	Bojac	0.06	Prime	N	N	N	Y	Y	N	N
299.26	299.29	3A	100%	Altavista	0.03	Prime	N	N	N	N	N	N	N
299.29	299.33	8A	100%	Bojac	0.04	Prime	N	N	N	Y	Y	N	N
299.33	299.61	31A	100%	Roanoke	0.28	N	Y	Y	N	N	N	N	N
299.61	299.62	W	100%	Water	0.01	N	N	N	N	N	N	N	N
299.62	299.66	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
299.66	299.83	32A	100%	Roanoke	0.17	N	Y	Y	N	N	N	N	N
299.83	299.93	10C3	100%	Craven	0.10	N	N	N	Y	N	Y	N	N
299.93	299.93	25B	100%	Mattaponi	<0.01	Prime	N	N	N	N	Y	N	N
299.93	299.98	10C3	100%	Craven	0.05	N	N	N	Y	N	Y	N	N
299.98	300.04	40A	100%	Woodington	0.06	N	Y	N	N	N	N	N	N
300.04	300.06	10B3	100%	Craven	0.01	N	N	N	Y	N	N	N	N
300.06	300.06	GyB2	100%	Gritney	<0.01	N	N	N	Y	N	N	N	N
AP-3													
Greensville County, VA													
12.21	12.22	Wh	11%	Wehadkee	<0.01	N	Y	Y	N	N	N	N	N
			89%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
12.22	12.38	31A	100%	Roanoke	0.16	N	Y	Y	N	N	N	N	N
12.38	12.39	W	100%	Water	0.01	N	N	N	N	N	N	N	N
12.39	12.39	W	100%	Water	0.01	N	N	N	N	N	N	N	N
12.39	12.40	9A	100%	Chewacla	<0.01	N	N	Y	N	N	N	N	N
Southampton County, VA													
12.40	12.53	9A	100%	Chewacla	0.13	N	N	Y	N	N	N	N	N
12.53	12.66	8A	100%	Chastain	0.13	N	Y	Y	N	N	N	N	N
12.66	12.86	22A	100%	Riverview	0.21	N	N	N	N	N	Y	N	N
12.86	12.98	8A	100%	Chastain	0.12	N	Y	Y	N	N	N	N	N
12.98	13.03	27B	100%	State	0.05	Prime	N	N	N	N	N	N	N
13.03	13.26	27A	100%	State	0.24	Prime	N	N	N	N	N	N	N
13.26	13.37	2A	100%	Altavista	0.11	Prime	N	N	N	N	N	N	N
13.37	13.47	7A	100%	Chastain	0.11	N	Y	Y	N	N	N	N	N
13.47	13.49	9A	100%	Chewacla	0.01	N	N	Y	N	N	N	N	N
13.49	13.51	7A	100%	Chastain	0.02	N	Y	Y	N	N	N	N	N
13.51	13.66	8A	100%	Chastain	0.15	N	Y	Y	N	N	N	N	N
13.66	14.08	9A	100%	Chewacla	0.42	N	N	Y	N	N	N	N	N
14.08	14.13	8A	100%	Chastain	0.05	N	Y	Y	N	N	N	N	N
14.13	14.32	9A	100%	Chewacla	0.20	N	N	Y	N	N	N	N	N
14.32	14.37	7A	100%	Chastain	0.04	N	Y	Y	N	N	N	N	N
14.37	14.46	8A	100%	Chastain	0.10	N	Y	Y	N	N	N	N	N
14.46	15.05	23A	100%	Roanoke	0.59	N	Y	Y	N	N	N	N	N
15.05	15.07	8A	100%	Chastain	0.02	N	Y	Y	N	N	N	N	N
15.07	15.13	3A	100%	Augusta	0.06	Prime	N	N	N	N	N	N	N
15.13	15.17	2A	100%	Altavista	0.04	Prime	N	N	N	N	N	N	N
15.17	15.19	3A	100%	Augusta	0.02	Prime	N	N	N	N	N	N	N
15.19	15.28	2A	100%	Altavista	0.08	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
15.28	15.32	3A	100%	Augusta	0.04	Prime	N	N	N	N	N	N	N
15.32	15.43	8A	100%	Chastain	0.11	N	Y	Y	N	N	N	N	N
15.43	15.44	23A	100%	Roanoke	0.02	N	Y	Y	N	N	N	N	N
15.44	15.51	2A	100%	Altavista	0.07	Prime	N	N	N	N	N	N	N
15.51	15.81	10A	100%	Craven	0.30	Prime	N	N	N	N	N	N	N
15.81	15.86	23A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
15.86	15.89	10B	100%	Craven	0.03	Prime	N	N	N	N	N	N	N
15.89	15.94	7A	100%	Chastain	0.05	N	Y	Y	N	N	N	N	N
15.94	16.01	3A	100%	Augusta	0.07	Prime	N	N	N	N	N	N	N
16.01	16.09	29A	100%	Tomotley	0.08	Prime	Y	N	N	N	N	N	N
16.09	16.12	3A	100%	Augusta	0.03	Prime	N	N	N	N	N	N	N
16.12	16.51	29A	100%	Tomotley	0.40	Prime	Y	N	N	N	N	N	N
16.51	16.54	7A	100%	Chastain	0.03	N	Y	Y	N	N	N	N	N
16.54	16.58	3A	100%	Augusta	0.04	Prime	N	N	N	N	N	N	N
16.58	16.89	29A	100%	Tomotley	0.33	Prime	Y	N	N	N	N	N	N
16.89	16.94	15A	100%	Munden	0.05	Prime	N	N	N	Y	Y	N	N
16.94	16.97	29A	100%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
16.97	16.99	24B	16%	Uchee	<0.01	N	N	N	N	Y	Y	N	N
			37%	Kenansville	0.01	N	N	N	N	Y	Y	N	N
			47%	Rumford	0.01	N	N	N	N	Y	Y	N	N
16.99	17.04	25A	100%	Seabrook	0.05	N	N	N	N	Y	Y	N	N
17.04	17.08	29A	100%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
17.08	17.14	25A	100%	Seabrook	0.06	N	N	N	N	Y	Y	N	N
17.14	17.26	29A	100%	Tomotley	0.12	Prime	Y	N	N	N	N	N	N
17.26	17.38	17B	100%	Nansemond	0.12	Prime	N	N	N	Y	Y	N	N
17.38	17.63	13B	100%	Emporia	0.26	Prime	N	N	N	N	N	N	N
17.63	17.67	30D	100%	Uchee	0.04	N	N	N	Y	Y	Y	N	N
17.67	17.90	4A	100%	Bibb	0.24	N	Y	N	N	N	N	N	N
17.90	17.96	21A	100%	Pactolus	0.06	N	N	N	N	Y	Y	N	N
17.96	18.05	4A	100%	Bibb	0.10	N	Y	N	N	N	N	N	N
18.05	18.21	16A	100%	Myatt	0.16	Prime	Y	Y	N	N	N	N	N
18.21	18.50	26A	100%	Slagle	0.29	Prime	N	N	N	N	N	N	N
18.50	18.66	13B	100%	Emporia	0.16	Prime	N	N	N	N	N	N	N
18.66	18.71	26C	100%	Slagle	0.05	State	N	N	N	N	N	N	N
18.71	18.79	26B	100%	Slagle	0.08	Prime	N	N	N	N	N	N	N
18.79	18.87	13B	100%	Emporia	0.09	Prime	N	N	N	N	N	N	N
18.87	18.98	30D	100%	Uchee	0.11	N	N	N	Y	Y	Y	N	N
18.98	19.02	4A	100%	Bibb	0.03	N	Y	N	N	N	N	N	N
19.02	19.04	26B	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
19.04	19.14	30D	100%	Uchee	0.10	N	N	N	Y	Y	Y	N	N
19.14	19.18	26B	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
19.18	19.22	4A	100%	Bibb	0.04	N	Y	N	N	N	N	N	N
19.22	19.37	26B	100%	Slagle	0.15	Prime	N	N	N	N	N	N	N
19.37	19.57	26C	100%	Slagle	0.19	State	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
19.57	19.67	26A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
19.67	19.86	13A	100%	Emporia	0.19	Prime	N	N	N	N	N	N	N
19.86	20.04	26C	100%	Slagle	0.18	State	N	N	N	N	N	N	N
20.04	20.09	4A	100%	Bibb	0.05	N	Y	N	N	N	N	N	N
20.09	20.12	26C	100%	Slagle	0.03	State	N	N	N	N	N	N	N
20.12	20.21	26B	100%	Slagle	0.09	Prime	N	N	N	N	N	N	N
20.21	20.35	30B	100%	Uchee	0.14	N	N	N	N	Y	Y	N	N
20.35	20.40	26A	100%	Slagle	0.05	Prime	N	N	N	N	N	N	N
20.40	20.50	30B	100%	Uchee	0.10	N	N	N	N	Y	Y	N	N
20.50	20.59	24B	16%	Uchee	0.01	N	N	N	N	Y	Y	N	N
			37%	Kenansville	0.03	N	N	N	N	Y	Y	N	N
			47%	Rumford	0.04	N	N	N	N	Y	Y	N	N
20.59	20.64	30D	100%	Uchee	0.05	N	N	N	Y	Y	Y	N	N
20.64	20.72	4A	100%	Bibb	0.08	N	Y	N	N	N	N	N	N
20.72	20.85	26B	100%	Slagle	0.14	Prime	N	N	N	N	N	N	N
20.85	20.86	4A	100%	Bibb	0.01	N	Y	N	N	N	N	N	N
20.86	20.94	26B	100%	Slagle	0.08	Prime	N	N	N	N	N	N	N
20.94	20.98	4A	100%	Bibb	0.04	N	Y	N	N	N	N	N	N
20.98	21.06	26C	100%	Slagle	0.07	State	N	N	N	N	N	N	N
21.06	21.06	4A	100%	Bibb	<0.01	N	Y	N	N	N	N	N	N
21.06	21.20	26C	100%	Slagle	0.14	State	N	N	N	N	N	N	N
21.20	21.26	26B	100%	Slagle	0.06	Prime	N	N	N	N	N	N	N
21.26	21.35	4A	100%	Bibb	0.09	N	Y	N	N	N	N	N	N
21.35	21.40	26B	100%	Slagle	0.05	Prime	N	N	N	N	N	N	N
21.40	21.51	30B	100%	Uchee	0.11	N	N	N	N	Y	Y	N	N
21.51	21.69	26B	100%	Slagle	0.18	Prime	N	N	N	N	N	N	N
21.69	21.70	4A	100%	Bibb	0.02	N	Y	N	N	N	N	N	N
21.70	21.73	26B	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
21.73	21.80	4A	100%	Bibb	0.06	N	Y	N	N	N	N	N	N
21.80	21.84	26B	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
21.84	21.94	13B	100%	Emporia	0.10	Prime	N	N	N	N	N	N	N
21.94	22.27	26A	100%	Slagle	0.33	Prime	N	N	N	N	N	N	N
22.27	22.40	13B	100%	Emporia	0.14	Prime	N	N	N	N	N	N	N
22.40	22.70	26A	100%	Slagle	0.30	Prime	N	N	N	N	N	N	N
22.70	22.87	23A	100%	Roanoke	0.17	N	Y	Y	N	N	N	N	N
22.87	22.93	16A	100%	Myatt	0.06	Prime	Y	Y	N	N	N	N	N
22.93	23.01	10A	100%	Craven	0.08	Prime	N	N	N	N	N	N	N
23.01	23.06	23A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
23.06	23.10	26A	100%	Slagle	0.04	Prime	N	N	N	N	N	N	N
23.10	23.15	10A	100%	Craven	0.05	Prime	N	N	N	N	N	N	N
23.15	23.32	13A	100%	Emporia	0.17	Prime	N	N	N	N	N	N	N
23.32	23.39	30B	100%	Uchee	0.08	N	N	N	N	Y	Y	N	N
23.39	23.60	13B	100%	Emporia	0.22	Prime	N	N	N	N	N	N	N
23.60	23.69	26B	100%	Slagle	0.08	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
23.69	23.76	4A	100%	Bibb	0.07	N	Y	N	N	N	N	N	N
23.76	23.81	10B	100%	Craven	0.05	Prime	N	N	N	N	N	N	N
23.81	23.84	11B	100%	Craven	0.04	N	N	N	N	N	N	N	N
23.84	24.08	10B	100%	Craven	0.24	Prime	N	N	N	N	N	N	N
24.08	24.14	30B	100%	Uchee	0.06	N	N	N	N	Y	Y	N	N
24.14	24.18	17B	100%	Nansemond	0.03	Prime	N	N	N	Y	Y	N	N
24.18	24.30	30B	100%	Uchee	0.12	N	N	N	N	Y	Y	N	N
24.30	24.33	4A	100%	Bibb	0.04	N	Y	N	N	N	N	N	N
24.33	24.38	13B	100%	Emporia	0.05	Prime	N	N	N	N	N	N	N
24.38	24.42	13A	100%	Emporia	0.04	Prime	N	N	N	N	N	N	N
24.42	24.45	13B	100%	Emporia	0.03	Prime	N	N	N	N	N	N	N
24.45	24.49	16A	100%	Myatt	0.04	Prime	Y	Y	N	N	N	N	N
24.49	24.65	13B	100%	Emporia	0.16	Prime	N	N	N	N	N	N	N
24.65	24.86	26A	100%	Slagle	0.21	Prime	N	N	N	N	N	N	N
24.86	24.90	13A	100%	Emporia	0.05	Prime	N	N	N	N	N	N	N
24.90	25.01	34A	100%	Yemassee	0.10	Prime	N	N	N	N	N	N	N
25.01	25.13	16A	100%	Myatt	0.12	Prime	Y	Y	N	N	N	N	N
25.13	25.35	34A	100%	Yemassee	0.22	Prime	N	N	N	N	N	N	N
25.35	25.38	16A	100%	Myatt	0.03	Prime	Y	Y	N	N	N	N	N
25.38	25.85	26A	100%	Slagle	0.48	Prime	N	N	N	N	N	N	N
25.85	25.92	13A	100%	Emporia	0.07	Prime	N	N	N	N	N	N	N
25.92	25.99	13B	100%	Emporia	0.07	Prime	N	N	N	N	N	N	N
25.99	26.06	16A	100%	Myatt	0.07	Prime	Y	Y	N	N	N	N	N
26.06	26.12	13B	100%	Emporia	0.06	Prime	N	N	N	N	N	N	N
26.12	26.15	16A	100%	Myatt	0.04	Prime	Y	Y	N	N	N	N	N
26.15	26.24	13B	100%	Emporia	0.08	Prime	N	N	N	N	N	N	N
26.24	26.31	13A	100%	Emporia	0.08	Prime	N	N	N	N	N	N	N
26.31	26.31	13B	100%	Emporia	<0.01	Prime	N	N	N	N	N	N	N
26.31	26.41	26A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
26.41	26.55	13B	100%	Emporia	0.14	Prime	N	N	N	N	N	N	N
26.55	26.66	26B	100%	Slagle	0.11	Prime	N	N	N	N	N	N	N
26.66	26.82	26A	100%	Slagle	0.17	Prime	N	N	N	N	N	N	N
26.82	26.91	13A	100%	Emporia	0.09	Prime	N	N	N	N	N	N	N
26.91	27.20	26A	100%	Slagle	0.30	Prime	N	N	N	N	N	N	N
27.20	27.37	30B	100%	Uchee	0.17	N	N	N	N	Y	Y	N	N
27.37	27.42	29A	100%	Tomotley	0.05	Prime	Y	N	N	N	N	N	N
27.42	27.45	26A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
27.45	27.51	26B	100%	Slagle	0.07	Prime	N	N	N	N	N	N	N
27.51	27.64	13A	100%	Emporia	0.13	Prime	N	N	N	N	N	N	N
27.64	27.70	26B	100%	Slagle	0.06	Prime	N	N	N	N	N	N	N
27.70	27.78	29A	100%	Tomotley	0.08	Prime	Y	N	N	N	N	N	N
27.78	27.85	30B	100%	Uchee	0.07	N	N	N	N	Y	Y	N	N
27.85	27.89	13B	100%	Emporia	0.04	Prime	N	N	N	N	N	N	N
27.89	27.95	30B	100%	Uchee	0.06	N	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
27.95	28.04	26B	100%	Slagle	0.08	Prime	N	N	N	N	N	N	N
28.04	28.30	30B	100%	Uchee	0.26	N	N	N	N	Y	Y	N	N
28.30	28.34	29A	100%	Tomotley	0.04	Prime	Y	N	N	N	N	N	N
28.34	28.48	30B	100%	Uchee	0.13	N	N	N	N	Y	Y	N	N
28.48	28.63	30C	100%	Uchee	0.16	N	N	N	N	Y	Y	N	N
28.63	28.79	29A	100%	Tomotley	0.16	Prime	Y	N	N	N	N	N	N
28.79	28.82	2A	100%	Altavista	0.03	Prime	N	N	N	N	N	N	N
28.82	28.91	27A	100%	State	0.09	Prime	N	N	N	N	N	N	N
28.91	29.41	2A	100%	Altavista	0.49	Prime	N	N	N	N	N	N	N
29.41	29.64	29A	100%	Tomotley	0.22	Prime	Y	N	N	N	N	N	N
29.64	29.69	2A	100%	Altavista	0.05	Prime	N	N	N	N	N	N	N
29.69	29.89	28B	100%	Tarboro	0.19	N	N	N	N	Y	Y	N	N
29.89	29.94	5B	100%	Bojac	0.05	Prime	N	N	N	Y	Y	N	N
29.94	30.08	2A	100%	Altavista	0.14	Prime	N	N	N	N	N	N	N
30.08	30.20	3A	100%	Augusta	0.12	Prime	N	N	N	N	N	N	N
30.20	30.33	2A	100%	Altavista	0.13	Prime	N	N	N	N	N	N	N
30.33	30.45	3A	100%	Augusta	0.12	Prime	N	N	N	N	N	N	N
30.45	30.68	27A	100%	State	0.23	Prime	N	N	N	N	N	N	N
30.68	30.75	8A	100%	Chastain	0.07	N	Y	Y	N	N	N	N	N
30.75	31.73	2A	100%	Altavista	0.98	Prime	N	N	N	N	N	N	N
31.73	31.77	18F	44%	Remlik	0.02	N	N	N	Y	Y	Y	N	N
			56%	Nevarc	0.02	N	N	N	Y	N	Y	N	N
31.77	31.87	8A	100%	Chastain	0.10	N	Y	Y	N	N	N	N	N
31.87	31.93	28B	100%	Tarboro	0.06	N	N	N	N	Y	Y	N	N
31.93	31.95	2A	100%	Altavista	0.02	Prime	N	N	N	N	N	N	N
31.95	31.97	8A	100%	Chastain	0.01	N	Y	Y	N	N	N	N	N
31.97	31.99	2A	100%	Altavista	0.02	Prime	N	N	N	N	N	N	N
31.99	32.01	28B	100%	Tarboro	0.02	N	N	N	N	Y	Y	N	N
32.01	32.12	27A	100%	State	0.11	Prime	N	N	N	N	N	N	N
32.12	32.14	8A	100%	Chastain	0.02	N	Y	Y	N	N	N	N	N
32.14	32.26	27A	100%	State	0.12	Prime	N	N	N	N	N	N	N
32.26	32.28	8A	100%	Chastain	0.02	N	Y	Y	N	N	N	N	N
32.28	32.30	9A	100%	Chewacla	0.02	N	N	Y	N	N	N	N	N
32.30	32.33	8A	100%	Chastain	0.03	N	Y	Y	N	N	N	N	N
32.33	32.57	9A	100%	Chewacla	0.24	N	N	Y	N	N	N	N	N
32.57	32.61	8A	100%	Chastain	0.04	N	Y	Y	N	N	N	N	N
32.61	32.64	W	100%	Water	0.04	N	N	N	N	N	N	N	N
32.64	32.79	7A	100%	Chastain	0.15	N	Y	Y	N	N	N	N	N
32.79	32.94	27A	100%	State	0.15	Prime	N	N	N	N	N	N	N
32.94	33.05	28B	100%	Tarboro	0.10	N	N	N	N	Y	Y	N	N
33.05	33.07	25A	100%	Seabrook	0.03	N	N	N	N	Y	Y	N	N
33.07	33.12	15A	100%	Munden	0.04	Prime	N	N	N	Y	Y	N	N
33.12	33.18	25A	100%	Seabrook	0.06	N	N	N	N	Y	Y	N	N
33.18	33.22	28B	100%	Tarboro	0.04	N	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
33.22	33.28	15B	100%	Munden	0.06	Prime	N	N	N	Y	Y	N	N
33.28	33.32	28B	100%	Tarboro	0.04	N	N	N	N	Y	Y	N	N
33.32	33.33	15A	100%	Munden	0.01	Prime	N	N	N	Y	Y	N	N
33.33	33.34	28B	100%	Tarboro	0.02	N	N	N	N	Y	Y	N	N
33.34	33.43	3A	100%	Augusta	0.08	Prime	N	N	N	N	N	N	N
33.43	33.46	15A	100%	Munden	0.03	Prime	N	N	N	Y	Y	N	N
33.46	33.53	3A	100%	Augusta	0.07	Prime	N	N	N	N	N	N	N
33.53	33.57	2A	100%	Altavista	0.04	Prime	N	N	N	N	N	N	N
33.57	33.63	19A	100%	Nimmo	0.06	Prime	Y	N	N	N	N	N	N
33.63	33.67	25A	100%	Seabrook	0.05	N	N	N	N	Y	Y	N	N
33.67	33.76	19A	100%	Nimmo	0.09	Prime	Y	N	N	N	N	N	N
33.76	33.78	15A	100%	Munden	0.02	Prime	N	N	N	Y	Y	N	N
33.78	33.87	25A	100%	Seabrook	0.09	N	N	N	N	Y	Y	N	N
33.87	33.97	19A	100%	Nimmo	0.10	Prime	Y	N	N	N	N	N	N
33.97	33.99	25A	100%	Seabrook	0.02	N	N	N	N	Y	Y	N	N
33.99	34.02	15A	100%	Munden	0.02	Prime	N	N	N	Y	Y	N	N
34.02	34.09	2B	100%	Altavista	0.08	Prime	N	N	N	N	N	N	N
34.09	34.16	29A	100%	Tomotley	0.06	Prime	Y	N	N	N	N	N	N
34.16	34.20	25A	100%	Seabrook	0.04	N	N	N	N	Y	Y	N	N
34.20	34.24	29A	100%	Tomotley	0.04	Prime	Y	N	N	N	N	N	N
34.24	34.32	15A	100%	Munden	0.09	Prime	N	N	N	Y	Y	N	N
34.32	34.34	29A	100%	Tomotley	0.02	Prime	Y	N	N	N	N	N	N
34.34	34.38	15A	100%	Munden	0.04	Prime	N	N	N	Y	Y	N	N
34.38	34.39	29A	100%	Tomotley	0.01	Prime	Y	N	N	N	N	N	N
34.39	34.45	19A	100%	Nimmo	0.06	Prime	Y	N	N	N	N	N	N
34.45	34.49	15A	100%	Munden	0.03	Prime	N	N	N	Y	Y	N	N
34.49	34.49	19A	100%	Nimmo	0.01	Prime	Y	N	N	N	N	N	N
34.49	34.56	29A	100%	Tomotley	0.07	Prime	Y	N	N	N	N	N	N
34.56	34.64	23A	100%	Roanoke	0.08	N	Y	Y	N	N	N	N	N
34.64	34.72	10A	100%	Craven	0.08	Prime	N	N	N	N	N	N	N
34.72	34.73	3A	100%	Augusta	0.01	Prime	N	N	N	N	N	N	N
34.73	34.95	23A	100%	Roanoke	0.22	N	Y	Y	N	N	N	N	N
34.95	35.02	2A	100%	Altavista	0.07	Prime	N	N	N	N	N	N	N
35.02	35.18	23A	100%	Roanoke	0.16	N	Y	Y	N	N	N	N	N
35.18	35.21	3A	100%	Augusta	0.03	Prime	N	N	N	N	N	N	N
35.21	35.23	2B	100%	Altavista	0.02	Prime	N	N	N	N	N	N	N
35.23	35.27	3A	100%	Augusta	0.04	Prime	N	N	N	N	N	N	N
35.27	35.32	29A	100%	Tomotley	0.04	Prime	Y	N	N	N	N	N	N
35.32	35.35	3A	100%	Augusta	0.03	Prime	N	N	N	N	N	N	N
35.35	35.44	23A	100%	Roanoke	0.10	N	Y	Y	N	N	N	N	N
35.44	35.82	29A	100%	Tomotley	0.38	Prime	Y	N	N	N	N	N	N
35.82	35.91	23A	100%	Roanoke	0.09	N	Y	Y	N	N	N	N	N
35.91	36.06	2A	100%	Altavista	0.14	Prime	N	N	N	N	N	N	N
36.06	36.15	23A	100%	Roanoke	0.10	N	Y	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
36.15	36.24	2A	100%	Altavista	0.09	Prime	N	N	N	N	N	N	N
36.24	36.35	19A	100%	Nimmo	0.11	Prime	Y	N	N	N	N	N	N
36.35	36.45	5B	100%	Bojac	0.09	Prime	N	N	N	Y	Y	N	N
36.45	36.50	15A	100%	Munden	0.05	Prime	N	N	N	Y	Y	N	N
36.50	36.54	29A	100%	Tomotley	0.05	Prime	Y	N	N	N	N	N	N
36.54	36.57	3A	100%	Augusta	0.02	Prime	N	N	N	N	N	N	N
36.57	36.61	2A	100%	Altavista	0.04	Prime	N	N	N	N	N	N	N
36.61	36.63	3A	100%	Augusta	0.03	Prime	N	N	N	N	N	N	N
36.63	36.70	2A	100%	Altavista	0.07	Prime	N	N	N	N	N	N	N
36.70	36.78	27A	100%	State	0.08	Prime	N	N	N	N	N	N	N
36.78	36.81	26A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
36.81	36.86	27A	100%	State	0.05	Prime	N	N	N	N	N	N	N
36.86	36.96	26A	100%	Slagle	0.10	Prime	N	N	N	N	N	N	N
36.96	36.99	2A	100%	Altavista	0.03	Prime	N	N	N	N	N	N	N
36.99	37.02	26A	100%	Slagle	0.03	Prime	N	N	N	N	N	N	N
37.02	37.08	16A	100%	Myatt	0.06	Prime	Y	Y	N	N	N	N	N
37.08	37.30	17A	100%	Nansemond	0.22	Prime	N	N	N	Y	Y	N	N
37.30	37.32	16A	100%	Myatt	0.02	Prime	Y	Y	N	N	N	N	N
37.32	37.37	21A	100%	Pactolus	0.05	N	N	N	N	Y	Y	N	N
37.37	37.39	1B	100%	Alaga	0.02	N	N	N	N	Y	Y	N	N
37.39	37.42	21A	100%	Pactolus	0.02	N	N	N	N	Y	Y	N	N
37.42	37.56	4A	100%	Bibb	0.14	N	Y	N	N	N	N	N	N
37.56	37.82	21A	100%	Pactolus	0.26	N	N	N	N	Y	Y	N	N
37.82	37.88	16A	100%	Myatt	0.07	Prime	Y	Y	N	N	N	N	N
37.88	37.91	17A	100%	Nansemond	0.03	Prime	N	N	N	Y	Y	N	N
37.91	37.95	16A	100%	Myatt	0.04	Prime	Y	Y	N	N	N	N	N
37.95	37.96	17A	100%	Nansemond	0.02	Prime	N	N	N	Y	Y	N	N
37.96	38.08	21A	100%	Pactolus	0.12	N	N	N	N	Y	Y	N	N
38.08	38.23	4A	100%	Bibb	0.15	N	Y	N	N	N	N	N	N
38.23	38.37	22A	100%	Riverview	0.13	N	N	N	N	N	Y	N	N
38.37	38.40	4A	100%	Bibb	0.03	N	Y	N	N	N	N	N	N
38.40	38.42	21A	100%	Pactolus	0.03	N	N	N	N	Y	Y	N	N
38.42	38.58	4A	100%	Bibb	0.16	N	Y	N	N	N	N	N	N
City of Suffolk, VA													
38.58	38.58	4A	100%	Bibb	<0.01	N	Y	N	N	N	N	N	N
38.58	38.61	W	100%	Water	0.02	N	N	N	N	N	N	N	N
38.61	38.62	W	100%	Water	0.01	N	N	N	N	N	N	N	N
38.62	38.66	13	100%	Levy	0.03	N	Y	Y	N	N	N	N	N
38.66	38.68	15D	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
38.68	38.71	12	100%	Kenansville	0.03	N	N	N	N	Y	Y	N	N
38.71	39.10	23A	100%	Tetotum	0.39	Prime	N	N	N	N	N	N	N
39.10	39.15	24	100%	Tomotley	0.05	Prime	Y	Y	N	N	N	N	N
39.15	39.19	6	100%	Dragston	0.03	Prime	N	N	N	N	N	N	N
39.19	39.25	11	100%	Kenansville	0.07	N	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
39.25	39.29	6	100%	Dragston	0.03	Prime	N	N	N	N	N	N	N
39.29	39.36	8A	100%	Eunola	0.07	Prime	N	N	N	Y	Y	N	N
39.36	39.47	16A	100%	Nansemond	0.11	Prime	N	N	N	N	N	N	N
39.47	39.54	29	100%	Weston	0.07	Prime	Y	N	N	N	N	N	N
39.54	39.57	14	100%	Lynchburg	0.03	Prime	N	N	N	N	N	N	N
39.57	39.59	29	100%	Weston	0.02	Prime	Y	N	N	N	N	N	N
39.59	39.59	11	100%	Kenansville	0.01	N	N	N	N	Y	Y	N	N
39.59	39.62	16A	100%	Nansemond	0.03	Prime	N	N	N	N	N	N	N
39.62	39.67	11	100%	Kenansville	0.05	N	N	N	N	Y	Y	N	N
39.67	39.75	6	100%	Dragston	0.08	Prime	N	N	N	N	N	N	N
39.75	39.78	29	100%	Weston	0.03	Prime	Y	N	N	N	N	N	N
39.78	39.79	22A	100%	Suffolk	0.01	State	N	N	N	Y	Y	N	N
39.79	39.81	16A	100%	Nansemond	0.03	Prime	N	N	N	N	N	N	N
39.81	39.86	22A	100%	Suffolk	0.04	State	N	N	N	Y	Y	N	N
39.86	39.89	16A	100%	Nansemond	0.04	Prime	N	N	N	N	N	N	N
39.89	39.91	19	100%	Rains	0.02	Prime	Y	N	N	N	N	N	N
39.91	39.97	8A	100%	Eunola	0.06	Prime	N	N	N	Y	Y	N	N
39.97	40.13	19	100%	Rains	0.17	Prime	Y	N	N	N	N	N	N
40.13	40.16	8A	100%	Eunola	0.02	Prime	N	N	N	Y	Y	N	N
40.16	40.24	19	100%	Rains	0.08	Prime	Y	N	N	N	N	N	N
40.24	40.26	8A	100%	Eunola	0.02	Prime	N	N	N	Y	Y	N	N
40.26	40.37	22B	100%	Suffolk	0.12	State	N	N	N	Y	Y	N	N
40.37	40.85	8A	100%	Eunola	0.48	Prime	N	N	N	Y	Y	N	N
40.85	40.85	9B2	100%	Goldsboro	<0.01	Prime	N	N	N	N	N	N	N
40.85	40.91	22A	100%	Suffolk	0.06	State	N	N	N	Y	Y	N	N
40.91	40.94	9A	100%	Goldsboro	0.04	Prime	N	N	N	N	N	N	N
40.94	41.24	9B2	100%	Goldsboro	0.31	Prime	N	N	N	N	N	N	N
41.24	41.28	13	100%	Levy	0.04	N	Y	Y	N	N	N	N	N
41.28	41.38	9A	100%	Goldsboro	0.11	Prime	N	N	N	N	N	N	N
41.38	41.41	9B2	100%	Goldsboro	0.03	Prime	N	N	N	N	N	N	N
41.41	41.47	15D	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
41.47	41.98	9B2	100%	Goldsboro	0.53	Prime	N	N	N	N	N	N	N
41.98	42.02	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
42.02	42.10	9B2	100%	Goldsboro	0.08	Prime	N	N	N	N	N	N	N
42.10	42.16	8A	100%	Eunola	0.06	Prime	N	N	N	Y	Y	N	N
42.16	42.26	9B2	100%	Goldsboro	0.09	Prime	N	N	N	N	N	N	N
42.26	42.33	13	100%	Levy	0.08	N	Y	Y	N	N	N	N	N
42.33	42.39	15D	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
42.39	42.51	7B2	100%	Emporia	0.11	Prime	N	N	N	N	N	N	N
42.51	42.60	9A	100%	Goldsboro	0.09	Prime	N	N	N	N	N	N	N
42.60	42.73	15D	100%	Nansemond	0.13	N	N	N	Y	Y	Y	N	N
42.73	42.80	9B2	100%	Goldsboro	0.08	Prime	N	N	N	N	N	N	N
42.80	42.89	5B2	100%	Dogue	0.09	Prime	N	N	N	N	N	N	N
42.89	43.07	8A	100%	Eunola	0.18	Prime	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
43.07	43.10	9B2	100%	Goldsboro	0.03	Prime	N	N	N	N	N	N	N
43.10	43.20	14	100%	Lynchburg	0.10	Prime	N	N	N	N	N	N	N
43.20	43.32	19	100%	Rains	0.13	Prime	Y	N	N	N	N	N	N
43.32	43.35	14	100%	Lynchburg	0.02	Prime	N	N	N	N	N	N	N
43.35	43.41	9A	100%	Goldsboro	0.07	Prime	N	N	N	N	N	N	N
43.41	43.48	19	100%	Rains	0.07	Prime	Y	N	N	N	N	N	N
43.48	43.62	15B	100%	Nansemond	0.14	N	N	N	N	Y	Y	N	N
43.62	43.65	11	100%	Kenansville	0.02	N	N	N	N	Y	Y	N	N
43.65	43.71	19	100%	Rains	0.06	Prime	Y	N	N	N	N	N	N
43.71	43.83	16A	100%	Nansemond	0.12	Prime	N	N	N	N	N	N	N
43.83	44.05	19	100%	Rains	0.23	Prime	Y	N	N	N	N	N	N
44.05	44.09	15D	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
44.09	44.14	22B	100%	Suffolk	0.05	State	N	N	N	Y	Y	N	N
44.14	44.18	15D	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
44.18	44.24	13	100%	Levy	0.07	N	Y	Y	N	N	N	N	N
44.24	44.28	15D	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
44.28	44.33	14	100%	Lynchburg	0.05	Prime	N	N	N	N	N	N	N
44.33	44.41	8A	100%	Eunola	0.08	Prime	N	N	N	Y	Y	N	N
44.41	44.47	11	100%	Kenansville	0.06	N	N	N	N	Y	Y	N	N
44.47	44.54	14	100%	Lynchburg	0.07	Prime	N	N	N	N	N	N	N
44.54	44.55	15B	100%	Nansemond	0.01	N	N	N	N	Y	Y	N	N
44.55	44.64	19	100%	Rains	0.10	Prime	Y	N	N	N	N	N	N
44.64	44.72	5B2	100%	Dogue	0.08	Prime	N	N	N	N	N	N	N
44.72	44.76	14	100%	Lynchburg	0.04	Prime	N	N	N	N	N	N	N
44.76	44.78	9B2	100%	Goldsboro	0.02	Prime	N	N	N	N	N	N	N
44.78	44.84	14	100%	Lynchburg	0.06	Prime	N	N	N	N	N	N	N
44.84	45.08	8A	100%	Eunola	0.25	Prime	N	N	N	Y	Y	N	N
45.08	45.10	9B2	100%	Goldsboro	0.02	Prime	N	N	N	N	N	N	N
45.10	45.18	19	100%	Rains	0.08	Prime	Y	N	N	N	N	N	N
45.18	45.29	9B2	100%	Goldsboro	0.11	Prime	N	N	N	N	N	N	N
45.29	45.32	6	100%	Dragston	0.03	Prime	N	N	N	N	N	N	N
45.32	45.36	19	100%	Rains	0.04	Prime	Y	N	N	N	N	N	N
45.36	45.47	6	100%	Dragston	0.11	Prime	N	N	N	N	N	N	N
45.47	45.48	19	100%	Rains	0.01	Prime	Y	N	N	N	N	N	N
45.48	45.51	16A	100%	Nansemond	0.03	Prime	N	N	N	N	N	N	N
45.51	45.67	19	100%	Rains	0.17	Prime	Y	N	N	N	N	N	N
45.67	45.82	16A	100%	Nansemond	0.16	Prime	N	N	N	N	N	N	N
45.82	45.87	6	100%	Dragston	0.05	Prime	N	N	N	N	N	N	N
45.87	45.98	8A	100%	Eunola	0.11	Prime	N	N	N	Y	Y	N	N
45.98	46.03	14	100%	Lynchburg	0.06	Prime	N	N	N	N	N	N	N
46.03	46.05	8A	100%	Eunola	0.02	Prime	N	N	N	Y	Y	N	N
46.05	46.10	19	100%	Rains	0.04	Prime	Y	N	N	N	N	N	N
46.10	46.15	14	100%	Lynchburg	0.05	Prime	N	N	N	N	N	N	N
46.15	48.03	19	100%	Rains	1.90	Prime	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
48.03	48.07	14	100%	Lynchburg	0.04	Prime	N	N	N	N	N	N	N
48.07	48.11	19	100%	Rains	0.04	Prime	Y	N	N	N	N	N	N
48.11	48.20	14	100%	Lynchburg	0.10	Prime	N	N	N	N	N	N	N
48.20	48.61	19	100%	Rains	0.41	Prime	Y	N	N	N	N	N	N
48.61	48.77	8A	100%	Eunola	0.16	Prime	N	N	N	Y	Y	N	N
48.77	48.79	22B	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
48.79	48.86	11	100%	Kenansville	0.07	N	N	N	N	Y	Y	N	N
48.86	48.92	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
48.92	48.98	22B	100%	Suffolk	0.06	State	N	N	N	Y	Y	N	N
48.98	49.06	11	100%	Kenansville	0.09	N	N	N	N	Y	Y	N	N
49.06	49.12	14	100%	Lynchburg	0.05	Prime	N	N	N	N	N	N	N
49.12	49.25	11	100%	Kenansville	0.13	N	N	N	N	Y	Y	N	N
49.25	49.28	19	100%	Rains	0.03	Prime	Y	N	N	N	N	N	N
49.28	49.63	13	100%	Levy	0.35	N	Y	Y	N	N	N	N	N
49.63	49.66	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
49.66	49.69	13	100%	Levy	0.03	N	Y	Y	N	N	N	N	N
49.69	49.91	15E	100%	Nansemond	0.22	N	N	N	Y	Y	Y	N	N
49.91	49.93	11	100%	Kenansville	0.02	N	N	N	N	Y	Y	N	N
49.93	50.12	15E	100%	Nansemond	0.20	N	N	N	Y	Y	Y	N	N
50.12	50.27	13	100%	Levy	0.16	N	Y	Y	N	N	N	N	N
50.27	50.29	15D	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
50.29	50.34	9B2	100%	Goldsboro	0.05	Prime	N	N	N	N	N	N	N
50.34	50.37	7B2	100%	Emporia	0.03	Prime	N	N	N	N	N	N	N
50.37	50.48	5B2	100%	Dogue	0.13	Prime	N	N	N	N	N	N	N
50.48	50.51	15D	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
50.51	50.56	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
50.56	50.59	15D	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
50.59	50.65	8A	100%	Eunola	0.06	Prime	N	N	N	Y	Y	N	N
50.65	51.23	19	100%	Rains	0.64	Prime	Y	N	N	N	N	N	N
51.23	51.34	14	100%	Lynchburg	0.13	Prime	N	N	N	N	N	N	N
51.34	51.39	15D	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
51.39	51.48	13	100%	Levy	0.10	N	Y	Y	N	N	N	N	N
51.48	51.67	22A	100%	Suffolk	0.22	State	N	N	N	Y	Y	N	N
51.67	52.05	8A	100%	Eunola	0.43	Prime	N	N	N	Y	Y	N	N
52.05	52.10	22B	100%	Suffolk	0.04	State	N	N	N	Y	Y	N	N
52.10	52.12	19	100%	Rains	0.03	Prime	Y	N	N	N	N	N	N
52.12	52.18	22B	100%	Suffolk	0.05	State	N	N	N	Y	Y	N	N
52.18	52.20	8A	100%	Eunola	0.02	Prime	N	N	N	Y	Y	N	N
52.20	52.26	22B	100%	Suffolk	0.06	State	N	N	N	Y	Y	N	N
52.26	52.35	19	100%	Rains	0.09	Prime	Y	N	N	N	N	N	N
52.35	52.53	8A	100%	Eunola	0.19	Prime	N	N	N	Y	Y	N	N
52.53	53.62	19	100%	Rains	1.06	Prime	Y	N	N	N	N	N	N
53.62	53.78	14	100%	Lynchburg	0.16	Prime	N	N	N	N	N	N	N
53.78	53.78	19	100%	Rains	<0.01	Prime	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
53.78	53.82	14	100%	Lynchburg	0.04	Prime	N	N	N	N	N	N	N
53.82	53.90	8A	100%	Eunola	0.07	Prime	N	N	N	Y	Y	N	N
53.90	54.12	14	100%	Lynchburg	0.22	Prime	N	N	N	N	N	N	N
54.12	54.32	8A	100%	Eunola	0.20	Prime	N	N	N	Y	Y	N	N
54.32	54.55	14	100%	Lynchburg	0.23	Prime	N	N	N	N	N	N	N
54.55	54.67	19	100%	Rains	0.12	Prime	Y	N	N	N	N	N	N
54.67	54.73	14	100%	Lynchburg	0.06	Prime	N	N	N	N	N	N	N
54.73	54.82	8A	100%	Eunola	0.10	Prime	N	N	N	Y	Y	N	N
54.82	54.90	22A	100%	Suffolk	0.08	State	N	N	N	Y	Y	N	N
54.90	54.95	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
54.95	55.25	14	100%	Lynchburg	0.31	Prime	N	N	N	N	N	N	N
55.25	55.30	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
55.30	55.32	19	100%	Rains	0.02	Prime	Y	N	N	N	N	N	N
55.32	55.36	22B	100%	Suffolk	0.04	State	N	N	N	Y	Y	N	N
55.36	55.39	19	100%	Rains	0.03	Prime	Y	N	N	N	N	N	N
55.39	55.42	22B	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
55.42	55.60	8A	100%	Eunola	0.18	Prime	N	N	N	Y	Y	N	N
55.60	55.67	6	100%	Dragston	0.07	Prime	N	N	N	N	N	N	N
55.67	55.70	8A	100%	Eunola	0.03	Prime	N	N	N	Y	Y	N	N
55.70	55.76	6	100%	Dragston	0.06	Prime	N	N	N	N	N	N	N
55.76	55.84	22A	100%	Suffolk	0.08	State	N	N	N	Y	Y	N	N
55.84	56.09	11	100%	Kenansville	0.25	N	N	N	N	Y	Y	N	N
56.09	56.24	13	100%	Levy	0.14	N	Y	Y	N	N	N	N	N
56.24	56.26	15E	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
56.26	56.29	13	100%	Levy	0.03	N	Y	Y	N	N	N	N	N
56.29	56.51	15E	100%	Nansemond	0.22	N	N	N	Y	Y	Y	N	N
56.51	56.61	11	100%	Kenansville	0.10	N	N	N	N	Y	Y	N	N
56.61	56.66	15E	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
56.66	56.74	11	100%	Kenansville	0.08	N	N	N	N	Y	Y	N	N
56.74	56.81	8A	100%	Eunola	0.07	Prime	N	N	N	Y	Y	N	N
56.81	56.86	14	100%	Lynchburg	0.06	Prime	N	N	N	N	N	N	N
56.86	56.91	19	100%	Rains	0.05	Prime	Y	N	N	N	N	N	N
56.91	57.08	14	100%	Lynchburg	0.17	Prime	N	N	N	N	N	N	N
57.08	57.16	8A	100%	Eunola	0.08	Prime	N	N	N	Y	Y	N	N
57.16	57.19	22A	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
57.19	57.24	8A	100%	Eunola	0.05	Prime	N	N	N	Y	Y	N	N
57.24	57.31	22A	100%	Suffolk	0.07	State	N	N	N	Y	Y	N	N
57.31	57.35	22B	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
57.35	57.38	8A	100%	Eunola	0.03	Prime	N	N	N	Y	Y	N	N
57.38	57.43	19	100%	Rains	0.05	Prime	Y	N	N	N	N	N	N
57.43	57.50	11	100%	Kenansville	0.07	N	N	N	N	Y	Y	N	N
57.50	57.55	19	100%	Rains	0.05	Prime	Y	N	N	N	N	N	N
57.55	57.56	11	100%	Kenansville	0.01	N	N	N	N	Y	Y	N	N
57.56	57.61	13	100%	Levy	0.06	N	Y	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
57.61	57.66	15E	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
57.66	57.70	11	100%	Kenansville	0.04	N	N	N	N	Y	Y	N	N
57.70	57.76	22A	100%	Suffolk	0.05	State	N	N	N	Y	Y	N	N
57.76	57.83	11	100%	Kenansville	0.07	N	N	N	N	Y	Y	N	N
57.83	57.86	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
57.86	58.14	19	100%	Rains	0.29	Prime	Y	N	N	N	N	N	N
58.14	58.29	11	100%	Kenansville	0.16	N	N	N	N	Y	Y	N	N
58.29	58.36	22A	100%	Suffolk	0.07	State	N	N	N	Y	Y	N	N
58.36	58.43	19	100%	Rains	0.07	Prime	Y	N	N	N	N	N	N
58.43	58.72	11	100%	Kenansville	0.29	N	N	N	N	Y	Y	N	N
58.72	58.79	8A	100%	Eunola	0.07	Prime	N	N	N	Y	Y	N	N
58.79	59.07	14	100%	Lynchburg	0.29	Prime	N	N	N	N	N	N	N
59.07	59.32	9A	100%	Goldsboro	0.28	Prime	N	N	N	N	N	N	N
59.32	59.35	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
59.35	59.38	9A	100%	Goldsboro	0.04	Prime	N	N	N	N	N	N	N
59.38	59.44	15E	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
59.44	59.51	11	100%	Kenansville	0.08	N	N	N	N	Y	Y	N	N
59.51	59.52	15E	100%	Nansemond	0.01	N	N	N	Y	Y	Y	N	N
59.52	59.70	11	100%	Kenansville	0.19	N	N	N	N	Y	Y	N	N
59.70	59.79	8A	100%	Eunola	0.08	Prime	N	N	N	Y	Y	N	N
59.79	59.82	22A	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
59.82	59.92	8A	100%	Eunola	0.10	Prime	N	N	N	Y	Y	N	N
59.92	60.02	11	100%	Kenansville	0.10	N	N	N	N	Y	Y	N	N
60.02	60.08	19	100%	Rains	0.06	Prime	Y	N	N	N	N	N	N
60.08	60.14	11	100%	Kenansville	0.05	N	N	N	N	Y	Y	N	N
60.14	60.25	22A	100%	Suffolk	0.11	State	N	N	N	Y	Y	N	N
60.25	60.44	11	100%	Kenansville	0.18	N	N	N	N	Y	Y	N	N
60.44	60.51	15E	100%	Nansemond	0.07	N	N	N	Y	Y	Y	N	N
60.51	60.62	11	100%	Kenansville	0.11	N	N	N	N	Y	Y	N	N
60.62	60.72	22A	100%	Suffolk	0.10	State	N	N	N	Y	Y	N	N
60.72	60.74	15E	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
60.74	60.91	22B	100%	Suffolk	0.17	State	N	N	N	Y	Y	N	N
60.91	61.01	15E	100%	Nansemond	0.10	N	N	N	Y	Y	Y	N	N
61.01	61.04	W	100%	Water	0.03	N	N	N	N	N	N	N	N
61.04	61.08	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
61.08	61.11	W	100%	Water	0.03	N	N	N	N	N	N	N	N
61.11	61.20	15E	100%	Nansemond	0.09	N	N	N	Y	Y	Y	N	N
61.20	61.62	11	100%	Kenansville	0.42	N	N	N	N	Y	Y	N	N
61.62	61.69	15E	100%	Nansemond	0.07	N	N	N	Y	Y	Y	N	N
61.69	61.75	11	100%	Kenansville	0.06	N	N	N	N	Y	Y	N	N
61.75	61.84	15E	100%	Nansemond	0.09	N	N	N	Y	Y	Y	N	N
61.84	61.89	11	100%	Kenansville	0.05	N	N	N	N	Y	Y	N	N
61.89	61.98	22A	100%	Suffolk	0.09	State	N	N	N	Y	Y	N	N
61.98	62.37	11	100%	Kenansville	0.40	N	N	N	N	Y	Y	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
62.37	62.42	15E	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
62.42	62.48	W	100%	Water	0.05	N	N	N	N	N	N	N	N
62.48	62.52	15E	100%	Nansemond	0.04	N	N	N	Y	Y	Y	N	N
62.52	62.55	22B	100%	Suffolk	0.03	State	N	N	N	Y	Y	N	N
62.55	62.58	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
62.58	62.69	22B	100%	Suffolk	0.12	State	N	N	N	Y	Y	N	N
62.69	62.74	15E	100%	Nansemond	0.05	N	N	N	Y	Y	Y	N	N
62.74	62.87	22A	100%	Suffolk	0.13	State	N	N	N	Y	Y	N	N
62.87	62.93	22B	100%	Suffolk	0.06	State	N	N	N	Y	Y	N	N
62.93	62.99	15E	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
62.99	63.17	22B	100%	Suffolk	0.18	State	N	N	N	Y	Y	N	N
63.17	63.28	7A	100%	Emporia	0.11	Prime	N	N	N	N	N	N	N
63.28	63.40	11	100%	Kenansville	0.12	N	N	N	N	Y	Y	N	N
63.40	63.50	22B	100%	Suffolk	0.10	State	N	N	N	Y	Y	N	N
63.50	63.54	11	100%	Kenansville	0.04	N	N	N	N	Y	Y	N	N
63.54	63.60	15E	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
63.60	63.63	W	100%	Water	0.02	N	N	N	N	N	N	N	N
63.63	64.00	3	100%	Bohicket	0.38	N	Y	Y	N	N	N	N	N
64.00	64.06	15E	100%	Nansemond	0.06	N	N	N	Y	Y	Y	N	N
64.06	64.25	12	100%	Kenansville	0.19	N	N	N	N	Y	Y	N	N
64.25	64.28	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
64.28	64.30	3	100%	Bohicket	0.02	N	Y	Y	N	N	N	N	N
64.30	64.32	15E	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
64.32	64.36	3	100%	Bohicket	0.04	N	Y	Y	N	N	N	N	N
64.36	64.79	W	100%	Water	0.44	N	N	N	N	N	N	N	N
64.79	64.88	3	100%	Bohicket	0.09	N	Y	Y	N	N	N	N	N
64.88	64.91	15E	100%	Nansemond	0.03	N	N	N	Y	Y	Y	N	N
64.91	65.22	12	100%	Kenansville	0.30	N	N	N	N	Y	Y	N	N
65.22	65.23	15E	100%	Nansemond	0.01	N	N	N	Y	Y	Y	N	N
65.23	65.25	16A	100%	Nansemond	0.02	Prime	N	N	N	N	N	N	N
65.25	65.27	15E	100%	Nansemond	0.02	N	N	N	Y	Y	Y	N	N
65.27	65.33	16A	100%	Nansemond	0.06	Prime	N	N	N	N	N	N	N
65.33	65.38	12	100%	Kenansville	0.05	N	N	N	N	Y	Y	N	N
65.38	65.43	23B	100%	Tetotum	0.05	Prime	N	N	N	N	N	N	N
65.43	65.48	16A	100%	Nansemond	0.05	Prime	N	N	N	N	N	N	N
65.48	65.55	6	100%	Dragston	0.07	Prime	N	N	N	N	N	N	N
65.55	65.57	16A	100%	Nansemond	0.02	Prime	N	N	N	N	N	N	N
65.57	65.65	15E	100%	Nansemond	0.08	N	N	N	Y	Y	Y	N	N
65.65	65.79	16A	100%	Nansemond	0.15	Prime	N	N	N	N	N	N	N
65.79	65.89	15E	100%	Nansemond	0.09	N	N	N	Y	Y	Y	N	N
65.89	65.91	16A	100%	Nansemond	0.03	Prime	N	N	N	N	N	N	N
65.91	66.00	6	100%	Dragston	0.09	Prime	N	N	N	N	N	N	N
66.00	66.81	24	100%	Tomotley	0.81	Prime	Y	Y	N	N	N	N	N
66.81	67.72	25	100%	Torhunta	0.92	N	Y	Y	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
67.72	67.77	4	100%	Deloss	0.05	Prime	Y	Y	N	N	N	N	N
67.77	68.20	25	100%	Torhunta	0.45	N	Y	Y	N	N	N	N	N
68.20	68.49	4	100%	Deloss	0.32	Prime	Y	Y	N	N	N	N	N
68.49	68.90	2	100%	Belhaven	0.45	N	Y	N	N	Y	N	N	N
68.90	69.27	4	100%	Deloss	0.38	Prime	Y	Y	N	N	N	N	N
69.27	69.65	2	100%	Belhaven	0.38	N	Y	N	N	Y	N	N	N
69.65	70.30	25	100%	Torhunta	0.64	N	Y	Y	N	N	N	N	N
70.30	70.59	4	100%	Deloss	0.30	Prime	Y	Y	N	N	N	N	N
70.59	71.39	25	100%	Torhunta	0.78	N	Y	Y	N	N	N	N	N
71.39	71.40	43	42%	Deloss	<0.01	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	<0.01	Prime	Y	N	N	N	N	N	N
City of Chesapeake, VA													
71.40	71.48	43	42%	Deloss	0.03	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.05	Prime	Y	N	N	N	N	N	N
71.48	71.72	49	26%	Urban Land	0.06	N	N	N	N	N	N	N	N
			74%	Udorthents	0.17	N	N	N	Y	N	N	N	N
71.72	72.60	43	42%	Deloss	0.37	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.51	Prime	Y	N	N	N	N	N	N
72.60	73.04	36	39%	Belhaven	0.17	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.27	N	Y	N	N	N	N	N	N
73.04	73.12	43	42%	Deloss	0.03	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.05	Prime	Y	N	N	N	N	N	N
73.12	73.16	36	39%	Belhaven	0.02	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.02	N	Y	N	N	N	N	N	N
73.16	73.21	43	42%	Deloss	0.02	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
73.21	73.30	36	39%	Belhaven	0.04	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.06	N	Y	N	N	N	N	N	N
73.30	73.60	43	42%	Deloss	0.12	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.17	Prime	Y	N	N	N	N	N	N
73.60	73.63	36	39%	Belhaven	0.01	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.02	N	Y	N	N	N	N	N	N
73.63	73.98	43	42%	Deloss	0.15	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.20	Prime	Y	N	N	N	N	N	N
73.98	74.02	36	39%	Belhaven	0.02	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.03	N	Y	N	N	N	N	N	N
74.02	74.04	43	42%	Deloss	0.01	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.01	Prime	Y	N	N	N	N	N	N
74.04	74.06	34	100%	Portsmouth	0.01	Prime	Y	N	N	N	N	N	N
74.06	74.16	43	42%	Deloss	0.04	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.06	Prime	Y	N	N	N	N	N	N
74.16	74.19	36	39%	Belhaven	0.01	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.02	N	Y	N	N	N	N	N	N
74.19	74.32	34	100%	Portsmouth	0.12	Prime	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
74.32	74.35	36	39%	Belhaven	0.01	N	Y	N	N	Y	N	N	N
			61%	Pungo	0.02	N	Y	N	N	N	N	N	N
74.35	74.36	6	100%	Arapahoe	0.01	Prime	Y	N	N	N	N	N	N
74.36	74.40	34	100%	Portsmouth	0.04	Prime	Y	N	N	N	N	N	N
74.40	74.45	6	100%	Arapahoe	0.05	Prime	Y	N	N	N	N	N	N
74.45	74.48	34	100%	Portsmouth	0.04	Prime	Y	N	N	N	N	N	N
74.48	74.48	6	100%	Arapahoe	<0.01	Prime	Y	N	N	N	N	N	N
74.48	74.55	34	100%	Portsmouth	0.07	Prime	Y	N	N	N	N	N	N
74.55	74.70	6	100%	Arapahoe	0.15	Prime	Y	N	N	N	N	N	N
74.70	74.80	15	100%	Deloss	0.10	Prime	Y	N	N	N	N	N	N
74.80	75.09	6	100%	Arapahoe	0.29	Prime	Y	N	N	N	N	N	N
75.09	75.31	45	20%	Nimmo	0.04	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.17	Prime	Y	N	N	N	N	N	N
75.31	75.39	24	100%	Hyde	0.08	Prime	Y	Y	N	N	N	N	N
75.39	75.44	6	100%	Arapahoe	0.05	Prime	Y	N	N	N	N	N	N
75.44	75.92	34	100%	Portsmouth	0.48	Prime	Y	N	N	N	N	N	N
75.92	75.96	6	100%	Arapahoe	0.03	Prime	Y	N	N	N	N	N	N
75.96	76.01	43	42%	Deloss	0.02	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
76.01	76.01	6	100%	Arapahoe	<0.01	Prime	Y	N	N	N	N	N	N
76.01	76.02	6	100%	Arapahoe	0.01	Prime	Y	N	N	N	N	N	N
76.02	76.43	6	100%	Arapahoe	0.45	Prime	Y	N	N	N	N	N	N
76.43	76.50	45	20%	Nimmo	0.01	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.06	Prime	Y	N	N	N	N	N	N
76.50	76.71	6	100%	Arapahoe	0.23	Prime	Y	N	N	N	N	N	N
76.71	76.75	45	20%	Nimmo	0.01	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
76.75	76.77	6	100%	Arapahoe	0.02	Prime	Y	N	N	N	N	N	N
76.77	76.85	31	100%	Pactolus	0.08	N	N	N	N	Y	Y	N	N
76.85	76.90	43	42%	Deloss	0.02	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
76.90	76.90	31	100%	Pactolus	<0.01	N	N	N	N	Y	Y	N	N
	76.91	43	42%	Deloss	0.01	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.01	Prime	Y	N	N	N	N	N	N
76.91	77.00	53	100%	Wando	0.08	N	N	N	N	Y	Y	N	N
77.00	77.04	31	100%	Pactolus	0.04	N	N	N	N	Y	Y	N	N
77.04	77.23	53	100%	Wando	0.19	N	N	N	N	Y	Y	N	N
77.23	77.26	49	26%	Urban Land	0.01	N	N	N	N	N	N	N	N
			74%	Udorthents	0.02	N	N	N	Y	N	N	N	N
77.26	77.34	53	100%	Wando	0.07	N	N	N	N	Y	Y	N	N
77.34	77.36	30	100%	Nawney	0.03	N	Y	N	N	N	N	N	N
77.36	77.39	31	100%	Pactolus	0.03	N	N	N	N	Y	Y	N	N
77.39	77.44	20	26%	Tomotley	0.01	Prime	Y	N	N	N	N	N	N
			74%	Dragston	0.03	Prime	N	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
77.44	77.55	38	100%	Tetotum	0.11	Prime	N	N	N	N	N	N	N
77.55	77.66	20	26%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
			74%	Dragston	0.08	Prime	N	N	N	N	N	N	N
77.66	77.74	47	26%	Bertie	0.02	N	N	N	N	N	N	N	N
			32%	Urban Land	0.02	N	N	N	N	N	N	N	N
			42%	Tomotley	0.03	N	Y	N	N	N	N	N	N
77.74	77.77	22	21%	Tomotley	0.01	N	Y	N	N	N	N	N	N
			32%	Urban Land	0.01	N	N	N	N	N	N	N	N
			47%	Dragston	0.02	N	N	N	N	N	N	N	N
77.77	78.01	48	13%	Nimmo	0.03	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.07	N	N	N	N	N	N	N	N
			56%	Tomotley	0.13	N	Y	N	N	N	N	N	N
78.01	78.63	43	42%	Deloss	0.25	Prime	Y	N	N	N	N	N	N
			58%	Tomotley	0.34	Prime	Y	N	N	N	N	N	N
78.63	79.04	44	23%	Urban Land	0.09	N	N	N	N	N	N	N	N
			36%	Deloss	0.14	N	Y	N	N	N	N	N	N
			41%	Tomotley	0.16	N	Y	N	N	N	N	N	N
79.04	79.22	48	13%	Nimmo	0.02	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.05	N	N	N	N	N	N	N	N
			56%	Tomotley	0.10	N	Y	N	N	N	N	N	N
79.22	79.64	44	23%	Urban Land	0.10	N	N	N	N	N	N	N	N
			36%	Deloss	0.15	N	Y	N	N	N	N	N	N
			41%	Tomotley	0.17	N	Y	N	N	N	N	N	N
79.64	79.86	48	13%	Nimmo	0.03	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.07	N	N	N	N	N	N	N	N
			56%	Tomotley	0.12	N	Y	N	N	N	N	N	N
79.86	79.90	22	21%	Tomotley	0.01	N	Y	N	N	N	N	N	N
			32%	Urban Land	0.01	N	N	N	N	N	N	N	N
			47%	Dragston	0.02	N	N	N	N	N	N	N	N
79.90	79.91	W	100%	Water	0.01	N	N	N	N	N	N	N	N
79.91	80.06	22	21%	Tomotley	0.03	N	Y	N	N	N	N	N	N
			32%	Urban Land	0.05	N	N	N	N	N	N	N	N
			47%	Dragston	0.07	N	N	N	N	N	N	N	N
80.06	80.32	48	13%	Nimmo	0.03	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.08	N	N	N	N	N	N	N	N
			56%	Tomotley	0.15	N	Y	N	N	N	N	N	N
80.32	80.39	45	20%	Nimmo	0.01	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.06	Prime	Y	N	N	N	N	N	N
80.39	80.39	38	100%	Tetotum	<0.01	Prime	N	N	N	N	N	N	N
80.39	80.51	45	20%	Nimmo	0.02	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.09	Prime	Y	N	N	N	N	N	N
80.51	80.56	42	37%	Bertie	0.02	Prime	N	N	N	N	N	N	N
			63%	Tomotley	0.04	Prime	Y	N	N	N	N	N	N
80.56	80.75	45	20%	Nimmo	0.04	Prime	Y	N	N	N	N	N	N

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
			80%	Tomotley	0.15	Prime	Y	N	N	N	N	N	N
80.75	80.79	48	13%	Nimmo	0.01	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.01	N	N	N	N	N	N	N	N
			56%	Tomotley	0.02	N	Y	N	N	N	N	N	N
80.79	80.84	45	20%	Nimmo	0.01	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.03	Prime	Y	N	N	N	N	N	N
80.84	80.85	33	100%	Pocaty	0.02	N	Y	N	N	N	N	N	N
80.85	81.02	45	20%	Nimmo	0.03	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.14	Prime	Y	N	N	N	N	N	N
81.02	81.81	49	26%	Urban Land	0.21	N	N	N	N	N	N	N	N
			74%	Udorthents	0.59	N	N	N	Y	N	N	N	N
81.81	81.97	W	100%	Water	0.16	N	N	N	N	N	N	N	N
81.97	82.28	49	26%	Urban Land	0.08	N	N	N	N	N	N	N	N
			74%	Udorthents	0.23	N	N	N	Y	N	N	N	N
82.28	82.37	22	21%	Tomotley	0.02	N	Y	N	N	N	N	N	N
			32%	Urban Land	0.03	N	N	N	N	N	N	N	N
			47%	Dragston	0.05	N	N	N	N	N	N	N	N
82.37	82.39	48	13%	Nimmo	<0.01	N	Y	N	N	N	N	N	N
			31%	Urban Land	<0.01	N	N	N	N	N	N	N	N
			56%	Tomotley	0.01	N	Y	N	N	N	N	N	N
82.39	82.42	22	21%	Tomotley	0.01	N	Y	N	N	N	N	N	N
			32%	Urban Land	0.01	N	N	N	N	N	N	N	N
			47%	Dragston	0.02	N	N	N	N	N	N	N	N
82.42	82.44	49	26%	Urban Land	<0.01	N	N	N	N	N	N	N	N
			74%	Udorthents	0.01	N	N	N	Y	N	N	N	N
82.44	82.53	30	100%	Nawney	0.09	N	Y	N	N	N	N	N	N
82.53	82.66	45	20%	Nimmo	0.03	Prime	Y	N	N	N	N	N	N
			80%	Tomotley	0.11	Prime	Y	N	N	N	N	N	N
82.66	82.70	48	13%	Nimmo	0.01	N	Y	N	N	N	N	N	N
			31%	Urban Land	0.01	N	N	N	N	N	N	N	N
			56%	Tomotley	0.02	N	Y	N	N	N	N	N	N
AP-4													
Brunswich County, VA													
0.01	0.12	29C	100%	Wedowee	0.12	State	N	N	Y	N	Y	N	N
0.12	0.15	9A	40%	Wehadkee	0.01	N	Y	Y	N	N	N	N	N
			60%	Chewacla	0.02	N	N	Y	N	N	N	N	N
0.15	0.20	29C	100%	Wedowee	0.04	State	N	N	Y	N	Y	N	N
0.20	0.34	2B	37%	Mattaponi	0.05	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.09	Prime	N	N	N	N	Y	N	N
0.34	0.40	29C	100%	Wedowee	0.05	State	N	N	Y	N	Y	N	N
0.40	0.41	2B	37%	Mattaponi	<0.01	Prime	N	N	N	N	Y	N	N
			63%	Appling	0.01	Prime	N	N	N	N	Y	N	N
AP-5													
Greensville, County, VA													

Appendix M (continued)

Soil Characteristics by Milepost Segement for Each Soil Map Unit Along the Proposed Pipeline Routes [a]

Milepost		Map Unit	Component		Length	Prime	Hydric	Compaction	Highly Erodible		Revegetation	Stony/	Shallow to
Begin	End	Symbol	Percent	Component Name	(miles)	Farmland [b]	Soils [b]	Prone [c]	Water [d]	Wind [e]	Concerns [f]	Rocky [g]	Bedrock [h]
0.01	0.09	25B	100%	Mattaponi	0.09	Prime	N	N	N	N	Y	N	N
0.09	0.29	17C	44%	Mattaponi	0.09	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.11	State	N	N	Y	N	Y	N	N
0.29	0.38	16C3	40%	Goldston	0.04	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.05	N	N	N	Y	N	Y	N	N
0.38	0.41	31A	100%	Roanoke	0.03	N	Y	Y	N	N	N	N	N
0.41	0.47	16C3	40%	Goldston	0.03	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.04	N	N	N	Y	N	Y	N	N
0.47	0.52	17B	44%	Mattaponi	0.02	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.02	Prime	N	N	N	N	N	N	N
0.52	0.57	16C3	40%	Goldston	0.02	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.03	N	N	N	Y	N	Y	N	N
0.57	0.62	17B	44%	Mattaponi	0.03	Prime	N	N	N	N	Y	N	N
			56%	Fluvanna	0.03	Prime	N	N	N	N	N	N	N
0.62	0.66	16C3	40%	Goldston	0.02	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.02	N	N	N	Y	N	Y	N	N
0.66	0.73	17C	44%	Mattaponi	0.03	State	N	N	Y	N	Y	N	N
			56%	Fluvanna	0.04	State	N	N	Y	N	Y	N	N
0.73	0.80	15C3	100%	Fluvanna	0.07	N	N	N	Y	N	Y	N	N
0.80	0.85	31A	100%	Roanoke	0.05	N	Y	Y	N	N	N	N	N
0.85	0.94	16C3	40%	Goldston	0.04	N	N	N	Y	N	Y	Y	Lithic
			60%	Fluvanna	0.06	N	N	N	Y	N	Y	N	N
0.94	0.98	1B	100%	Abell	0.04	Prime	N	N	N	N	N	N	N

[a] The mileposts used in the Federal Energy Regulatory Commission (FERC) application, which was filed on September 18, 2015 (FERC Accession Number 20150918-5212), were based on three-dimensional changes in topography along the proposed pipeline routes. In areas where a pipeline route has changed due to the adoption of an alternative, the mileposts in the affected area have been scaled to account for the resulting difference in the length of the route. The straight-line distance between consecutive mileposts as indicated or depicted in tables and figures in this filing may be greater than or less than 5,280 feet. The mileposts should be considered as reference points only.

[b] As designated by the Natural Resources Conservation Service. Prime = Prime with no mitigation, State = soil of statewide importance

[c] Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.

[d] Includes land in capability subclasses IVE through VIIIE and soils with an average slope greater than or equal to 9 percent.

[e] Includes soils with Wind Erodibility Group classification of one or two.

[f] Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained and soils with an average slope greater than or equal to 9 percent.

[g] Includes soils that have either: 1) a very gravelly, extremely gravelly, cobbley, stony, bouldery, flaggy, or channery modifier to the textural class, or 2) have greater than 5 percent (weight basis) of rock fragments larger than 3 inches in any layer within the profile.

[h] Includes soils that have bedrock within 60 inches of the soil surface. Paralithic refers to "soft" bedrock that will not likely require blasting during construction. Lithic refers to "hard" bedrock that may require blasting or other special construction techniques during installation of the proposed pipeline segments.

Notes: Y = Yes; N = No