APPENDIX D: WETLANDS AND WATERWAYS RESOURCE REPORT

DOOMS-BREMO 230 KV TRANSMISSION LINE EA

Appalachian National Scenic Trail, Virginia
Shenandoah National Park, Virginia

The National Park Service
U.S. Department of the Interior

Wetlands and Waterways Report

FINAL

September 2012

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EXECUTIVE SUMMARY

The National Park Service (NPS) received a proposal from Dominion Virginia Power (DVP) to upgrade a high voltage electric transmission line on an existing right-of-way within Appalachian National Scenic Trail and Shenandoah National Park in Virginia. The existing line crosses approximately 3,000 feet of NPS property. The proposed project would remove the existing 115-kilovolt (kV) transmission line and rebuild a 230kV transmission line between the Dooms substation in Augusta County and the Bremo Substation in Fluvanna County.

An Environmental Assessment is being prepared to decide whether and under what conditions to issue DVP construction and special use permits to complete construction. In order to determine the baseline for wetlands and waterways, a survey was conducted in the location where the right-of-way crosses NPS property.

On July 6, 2012, the Louis Berger Group, Inc. (LBG) performed a wetland delineation survey on behalf of the NPS. The survey took place in the Shenandoah National Park and the Appalachian National Scenic Trail in Augusta and Albemarle Counties, Virginia. The survey occurred on two separate parcels of NPS land, dominated by steeply sloping hills and upland scrub-shrub and herbaceous vegetation. The results of the survey identified one palustrine emergent wetland and one intermittent stream. The total acreage of wetlands and other waters of the United States is approximately 0.02 acre (0.01 hectare), and the total length of stream delineated was approximately 75 feet (23 meters).

Additionally, LBG assessed a small reach of Sawmill Run located approximately 2.1 miles west-northwest of the transmission line crossing of NPS lands. The purpose of the assessment was to identify nominal baseline conditions prior to construction of the proposed project. This report contains a complete discussion of our findings along with maps of the survey area and data sheets.

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I. PROJECT BACKGROUND

i. Introduction to the Project

The National Park Service (NPS) received a proposal from Dominion Virginia Power (DVP) to upgrade a high voltage electric transmission line on an existing right-of-way within Appalachian National Scenic Trail and Shenandoah National Park in Virginia (the parks) (figure 1). The existing line crosses approximately 3,000 feet of NPS property. The proposed project would remove the existing 115-kilovolt (kV) transmission line and rebuild a 230kV transmission line between the Dooms substation in Augusta County and the Bremo Substation in Fluvanna County (the Dooms – Bremo line).

An Environmental Assessment (EA) is being prepared to decide whether and under what conditions to issue DVP construction and special use permits to complete construction. The EA will focus on the area where the existing transmission line directly crosses NPS lands, also known as the project area.

ii. Scope of Survey

The Louis Berger Group, Inc. (LBG) was contracted to complete both the EA and to conduct necessary environmental surveys across NPS lands. The Dooms – Bremo line crosses NPS lands in two locations, on three NPS parcels. The transmission line crosses approximately 525 feet of Shenandoah National Park land (including Skyline Drive), immediately adjacent to approximately 740 feet of Appalachian National Scenic Trail property (including the Appalachian Trail footpath). At this crossing, the existing 115kV line is collocated with two other DVP transmission lines (one single-circuit 500kV and one double-circuit 230kV) in a 330-foot right-of-way. About 1 mile east of Skyline Drive, the Dooms – Bremo line crosses approximately 1600 feet of an additional Appalachian National Scenic Trail parcel. At this crossing, the existing 115kV line is collocated with one other DVP transmission line (one single-circuit 500kV) in a 250-foot right-of-way. Figure 1 depicts the general project location; figure 2 shows the areas of the two crossings.

A survey for wetlands and other waters of the United States (WOUS) was necessary to determine if the proposed project will have impacts on these ecological features within the Study Area. The wetland surveys were conducted on two parcels of NPS lands: Survey Area A and Survey Area B, where DVP has a right-of-way easement on these properties. Both survey areas are shown on figure 2 and described in more detail below. LBG also assessed a portion of Sawmill Run that is located approximately 2.1 miles west-northwest of Survey Area A (figure 3). NPS has concerns that the proposed activity may impact Sawmill Run; thus, a brief assessment of current conditions was performed.

Dooms - Bremo 230kV Transmission Line Project
Appalachian National Scenic Trail and
Shenandoah National Park

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Figure 1: Appalachian Trail and Shenandoah National Park Crossings Overview

Legend

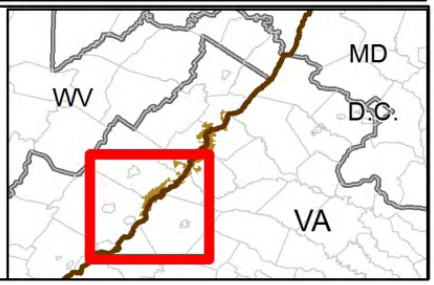
- NPS Lands
- Appalachian National Scenic Trail

Existing Transmission Lines

- 69 kV
- 115 - 138 kV
- 230 - 500 kV

0 5 10 15 Miles

N



Dooms - Bremo 230kV Transmission Line Project
Appalachian National Scenic Trail and
Shenandoah National Park

National Park Service
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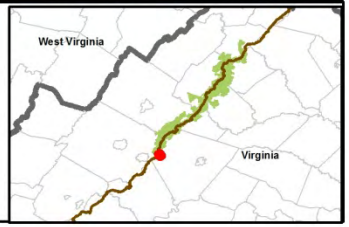
Existing ROW
Proposed Access Roads
County Boundary
Existing Towers on NPS Land
Survey Areas
Shenandoah National Park
Appalachain National Scenic Trail Land
Appalachian National Scenic Trail

Figure 2: Skyline Drive and Appalachian Trail Crossing

0 500 1,000 2,000 Feet

N E S W



Dooms - Bremo 230kV Transmission Line Project
Appalachian National Scenic Trail and
Shenandoah National Park

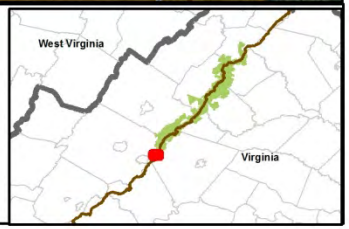
National Park Service
U.S. Department of the Interior

Existing ROW
County Boundary
Proposed Access Roads
Existing Towers on NPS Land
Shenandoah National Park
Appalachain National Scenic Trail Land
NHD Flowline
NHD Waterbody
Appalachian National Scenic Trail

Figure 3: Location of Sawmill Run

0 0.25 0.5 1 Miles

N W E S



iii. **Description of Survey Areas**

The project is located approximately 8 miles northeast of Waynesboro, VA, north of Calf Mountain and at the southern extent of Shenandoah National Park. The survey area for wetlands delineation was limited to the cleared right-of-way as it crosses NPS lands, proposed access roads, and 15-feet on either side of the right-of-way. Additionally, a baseline evaluation of Sawmill Run was completed as part of the report. The right-of-way has been previously cleared of all woody and tall vegetation and is predominately composed of grasses and shrubs. The survey areas are located on a ridge in rough terrain with steep slopes.

The project was broken into two survey areas, Survey Area A (figures 2 and 4) and Survey Area B (figures 2 and 5). Survey Area A includes both parks, Skyline Drive and the Appalachian Trail. The parcel is accessible via Skyline Drive or Calf Mountain Road. Skyline Drive is located along the side of ridge, with a harsh 25% down slope to the west and east. While the terrain is very steep on either side of Skyline Drive, it levels off slightly east of the Appalachian Trail. Vegetation is low growing grasses and shrubs, approximately 3 to 5 feet tall. There is a cleared right-of-way access road from Calf Mountain Road to the west that cuts through the majority of the survey area, east of the Appalachian Trail.

Figure 4: Survey Area A - Looking west and east (respectively) from Skyline Drive

Survey Area B includes a small Appalachian National Scenic Trail parcel west of Survey Area A. Survey Area B consists of very rough terrain with thick vegetation. The right-of-way is located in an area of the ridge that slopes down both north and east one a 30% slope. Terrain and vegetation density become progressively steeper and denser on the east side of the survey area closer to the base of the ridge.

Figure 5: Survey Area B – Looking northwest and southeast from survey area

II. SCOPE OF THE ANALYSIS AND BACKGROUND INFORMATION

i. Wetlands and Other Waters of the United States

Field surveys presented in this report with respect to wetlands and other WOUS have been limited to Study Areas A and B on Shenandoah and Appalachian Trail properties. Based on the scope of this survey, the wetland delineations conducted only provide additional information for the portion of both parks that are within the DVP right-of-way easement.

ii. Definition and Methodology

Wetland Definition

The United States Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) define jurisdictional wetlands as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR, Part 328.3). USACE regulates development in jurisdictional wetlands pursuant to Section 404 of the Clean Water Act (CWA) (33 CFR, Parts 320-330). Identification and delineation of jurisdictional wetlands is based on the following three parameters:

Hydrophytic vegetation—the dominant vegetation consists of species capable of growing in water or on substrate that is at least periodically deficient in oxygen as a result of the presence of water.

Hydric soils—soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth of hydrophytic vegetation.

Wetland hydrology—the area is inundated permanently or periodically, or the soil is saturated to the surface for sufficient duration during the growing season to support hydrophytic vegetation.

However, satisfaction of the three parameters does not necessarily qualify the wetland as a jurisdictional feature under USACE regulations. The 2001 U.S. Supreme Court case "Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers," reduced the regulatory power of the USACE; prior to this decision the USACE afforded federal protection to virtually all wetlands. The general result of the SWANCC decision was that the USACE could only take jurisdiction over navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and

their tributaries. Isolated wetlands are wetlands that satisfy the three criteria but have no direct surface connection to navigable waters or their tributaries. These wetlands are no longer afforded federal protection.

The USACE's regulatory ability to claim federal jurisdiction over wetlands was further reduced after the 2006 U.S. Supreme Court cases "Rapanos v. United States," and "Carabell v. United States," commonly referred to as Rapanos. While the SWANCC decision gave the USACE federal jurisdiction over perennial streams, intermittent streams, and their adjacent wetlands, Rapanos introduced the concept of a significant nexus analysis when determining federal jurisdiction over intermittent streams and their adjacent wetlands that are indirect tributaries to navigable waters. A significant nexus analysis assesses the flow characteristics of the tributary and the functions of both the tributary and any adjacent wetlands. The assessment seeks to determine if the stream and its adjacent wetlands have significant chemical, physical, and biological effects on downstream, traditional navigable waters; thus a consideration of hydrologic and ecologic factors is considered. The introduction of the significant nexus analysis requires more documentation of wetlands than has traditionally been necessary; additionally, the further the distance from the tributary to the navigable water, the more important it is to gather increasingly more data.

Based on the discussion above, wetlands and other WOUS are considered jurisdictional by the USACE if they are relatively permanent waters (RPW); an ephemeral, intermittent, or perennial stream; are adjacent to an RPW; or have a significant nexus to an RPW. Additionally, if wetland hydrology is derived from groundwater discharge (spring or seep), or if the wetland was created to mitigate for former impacts, the USACE can decide to take jurisdiction over them. However, these decisions are considered on a case by case basis. Final decision over jurisdiction is ultimately determined by the USACE.

Under Director's Order (DO) 77-1: Wetland Protection, the NPS classifies wetlands according to the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States, hereafter referred to as the Cowardin Classification System (Cowardin et al. 1979). Under the Cowardin Classification System wetlands have at least one of the following attributes:

1. at least periodically, the habitat supports predominately hydrophytic vegetation (wetland vegetation)
2. the substrate is predominately undrained hydric soil
3. the substrate is non-soil and is saturated with water, or is covered by shallow water at some time during the growing season.

Based on the Cowardin Classification System, DO 77-1 recognizes five wetland categories:

1. Areas with hydrophytes and hydric soils, such as those commonly known as marshes, swamps, and bogs;
2. Areas without hydrophytes but with hydric soils - for example, flats where drastic fluctuations in water level, wave action, turbidity, or high concentration of salts may prevent the growth of hydrophytes;
3. Areas with hydrophytes but non-hydric soils, such as margins of impoundments or excavations where hydrophytes have become established but hydric soils have not yet developed;
4. Areas without soils but with hydrophytes such as the seaweed-covered portion of rocky shores; and
5. Wetlands without soil and without hydrophytes, such as gravel beaches or rocky shores without vegetation.

Category 1 wetlands would meet the USACE definition of a wetland and would be afforded jurisdiction provided the wetlands are not isolated, as discussed above. In an area that naturally has both plants and soils present, DO 77-1 directs wetland delineators to follow the USACE guidelines and only classify areas meeting all three criteria as wetlands. Categories 2 through 5 are generally not considered "wetlands" by the USACE; however, they are generally regulated by the USACE under the definition of WOUS (33CFR 328.3).

Wetland Delineation Methodology

Before conducting field investigations, federal documentation was researched and analyzed for the potential presence of wetlands and other WOUS. Agency resources aerial photography, USGS topographic quadrangle maps (USGS 1983), U.S. Fish and Wildlife Service National Wetland Inventory maps (NWI 2011), and Natural Resources Conservation Service soil data for Albemarle (NRCS 2010) and Augusta Counties (NRCS 2008). NRCS soil data indicated that hydric soils are not present within the project area and National Wetland Inventory maps indicated that no wetlands or other WOUS are present in the project area. A map of NRCS soil data and NWI wetland data is located in Appendix A.

Field investigations were conducted on July 6, 2012, to determine the federal jurisdictional boundaries of all wetlands and other WOUS in the designated project area. Determination of the presence of jurisdictional wetlands was based on procedures prescribed in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory

1987) and the Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0) (USACE 2010). Three criteria are used to determine the occurrence of jurisdictional wetlands: 1) hydric soils, 2) wetland hydrology, and 3) hydrophytic vegetation. Presence of wetlands meeting NPS guidelines under DO 77-1 were also determined based on the Cowardin Classification System (Cowardin et al. 1979) as discussed above.

Data points were prepared in accordance with the data form requirements of the USACE (USACE 1987). All three parameters were also considered in determining the location of the wetland/upland boundary. Flora nomenclature was used in accordance with the 2012 Northwest-Northeast Region National Wetland Plant List (USACE 2012). A complete set of wetland/upland data point sheets is located in Appendix B.

Streams were assessed for their status as ephemeral, intermittent, or perennial using two protocols; the first is the North Carolina Department of Water Quality (NCDWQ 2005) protocol, and the second is the Fairfax County Department of Public Works and Environmental Services (DPWES) (CH2MHill 2005) protocol. A positive score of 30 or greater for the NCDWQ protocol and/or a positive score of 25 or greater for the DPWES protocol indicates that a reach of stream is perennial; a positive score between 19 and 29 for the NCDWQ protocol and/or a positive score between 14 and 24 for the DPWES protocol indicates the stream is intermittent; below these scores, the stream is likely ephemeral. Stream data sheets are included in Appendix C. Photographs were taken at data collection locations and wetland/upland boundaries (Appendix E).

A map was prepared showing the extent of wetlands and/or other WOUS. Completed routine data forms are included in Appendix B. Photographs were taken of all pertinent features and data points (Appendix B). The location of any wetland/upland boundaries was flagged based on data form analysis and landform characteristics. Flags placed along the wetland/upland and/or other WOUS boundaries were surveyed with a global positioning system (GPS), at sub-meter accuracy, and corrected using GPS Pathfinder Office software, version 4.20.

After observing and reviewing the characteristics of each wetland and/or other WOUS, the functions and values of these areas were determined using *The Highway Methodology Handbook Supplement: Wetland Functions and Values—A Descriptive Approach* (USACE 1999). Wetland functions are processes that tend to improve the environmental quality of an ecosystem. Examples of this include groundwater recharge/discharge, stormwater and flood control, improvement of water quality, sediment stabilization and retention, and aquatic and wildlife diversity and habitat. Values, which are functions that are highly valued by society, include water quality maintenance, flood control, shoreline

erosion control, groundwater supply recharge, hunting and recreation, and commercial fishing. Assessing wetland functions and values is a vital step in characterizing the importance of these areas. Function and value forms are included in Appendix D.

III. SUMMARY OF FINDINGS

Field survey efforts identified one wetland and one stream in Survey Area B and no wetlands and/or other WOUS in Survey Area A. Additionally, Sawmill Run was assessed but was not delineated because it is not within Survey Areas A or B. The wetland and stream delineated comprise less than 0.03 acre of wetland habitat. Table 1 shows characteristics of these wetlands such as wetland area, type, and location. Individual descriptions of the wetland and streams follow. A map of the delineated wetland and stream is located in Appendix A.

Table 1: Wetland Characteristics

Wetland Shoreline/Stream Identification	Type	Location	Area (acres/hectares)	Length (ft/meters)
Wetland	Palustrine, emergent, persistent (PEM1)	Survey Area B	0.001/< 0.001	NA
Stream	Riverine intermittent streambed with in rubble (R4SB2)	Survey Area B	0.02/0.01	75
Total			**0.021/0.01**	**75**

Wetland Description

The vegetated palustrine emergent, persistent wetland identified in the northern portion of Survey Area B satisfied the three wetland criteria; thus, it is recognized as a wetland feature by both the USACE and the NPS. However, the feature is isolated such that it has no significant nexus to an RPW. Because the feature is isolated, it is not afforded USCAE jurisdiction. The PEM wetland is less than 0.001 acre and formed in a small depression along in an access road. A hillside seep was observed discharging water into the wetland; however, no wetlands were observed upslope of the seep.

A wetland data point (Data Point 2; Photo 1) was recorded inside the wetland. Dominant vegetation observed at this data point included needle spike rush (*Eleocharis acicularis*) and woolgrass (*Scirpus atrovirens*). One hundred percent of the dominant vegetation is rated obligate, thus wetland hydrology is present at this data point. Multiple primary and secondary indicators of wetland hydrology were observed including saturation in the

upper 12 inches, standing water, elevated water table, and drainage patterns. Soils at this data point are hydric; low chroma matrix colors accompanied by high chroma redox features are present throughout the soil profile. The corresponding upland data point (Data Point 3; Photo 2) did not satisfy any of the three wetland criteria. Dominant vegetation at the upland data point included eastern daisy fleabane (*Erigeron annuus*); other plants included common yarrow (*Achillea millefolium*), Canada thistle (*Cirsium arvense*), and Canadian goldenrod (*Solidago canadensis*). All of the identified vegetation was rated facultative upland or upland, thus hydrophytic vegetation was not present at the data point. Additionally, no indicators of wetland hydrology or hydric soils were observed at this data point.

Functions in this wetland include providing a receiving area for groundwater discharge, as it is immediately downslope of an upland seep. Because of the extremely small area of this wetland, no other functions and values were noted.

No other wetlands were identified in the remaining portion of Survey Areas B or A. Representative upland data points (Data Points 1 and 4; Photos 3 and 4, respectively) were recorded in both survey areas and may be viewed in Appendix B; Photographs may be viewed in Appendix C.

Stream Descriptions

One intermittent streambed with a rubbly bottom was identified in the southern portion of Survey Area B (Photo 5); this reach of stream is an unnamed tributary to Lickinghole Creek. This reach of stream scored 13 using the Fairfax County DPWES protocol and 21 using the NCDWQ protocol. The stream exceeds the NCDWQ intermittent/ephemeral threshold; however, it is below the DPWES intermittent/ephemeral threshold. Because the stream bottom is rocky, it was not possible to identify redox features in the stream bed, which eliminates an entire set of possible scores. Based on the scores from the North Carolina methodology, and the lack of stream bed soil to sample, this reach of stream is intermittent.

A reach of Sawmill Run was also assessed during this survey (Photo 6). Sawmill Run does not flow within the boundary of Survey Areas A and B; however, it is downslope from the proposed activity of the project. No delineation of Sawmill Run was performed, thus it is not included in the total acres and length of stream within the survey areas. Sawmill Run is a known perennial stream, visible on aerial photography and expressed as a blue line on the USGS Waynesboro-East topographic map (and as an NHD line in figure 3). LBG's assessment of a reach of Sawmill Run showed a clear stream with little to no embeddedness and little to no silt and other suspended solids in the water column.

Bank erosion was minimal, and pool width was mostly equal to riffle width. Equal pool to riffle ratios suggests good stream development. A biological assessment according to NCDWQ and DPWES protocol was strong for fish and benthic macroinvertebrates, especially members of the Ephemeroptera, Plecoptera, and Trichoptera insect orders (EPT). A strong EPT presence indicates a clean stream with little pollutants.

IV. RECOMMENDATIONS FOR SPECIFIC MITIGATION MEASURES FOR CONTROLLING POTENTIAL IMPACTS TO WETLANDS

LBG recommends using best management practices (BMPs) during the construction phase of this project. Typical BMPs include avoiding impacts to all wetlands to the extent possible; if impacts are unavoidable it is advised to use wetland matting over any wetlands that will be traversed by heavy machinery. Furthermore, it is recommended that the construction plan include a comprehensive erosion and sediment control plan that will minimize the amount of sediment entering wetlands and waterways.

V. LIST OF SURVEY PERSONNEL

The Louis Berger Group, Inc.

Christopher Flannagan: A Certified Professional Soil Scientist in the Commonwealth of Virginia (DPOR # 3401000205) with 14 years of experience in environmental sciences and regulatory compliance for both private and federal clients, primarily relating to utilities and infrastructure planning. Mr. Flannagan has delineated wetlands throughout the country and has received several Jurisdictional Determinations from USACE districts in the mid-Atlantic and Northeast.

Emily Larson: An environmental scientist with 5 years of experience in environmental sciences and regulatory compliance for both private and federal clients, primarily relating to utilities and infrastructure planning.

VI. REFERENCES

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VII. APPENDIXES

APPENDIX A: REPORT MAPS

Dooms - Bremo 230kV Transmission Line Project
Appalachian National Scenic Trail and
Shenandoah National Park

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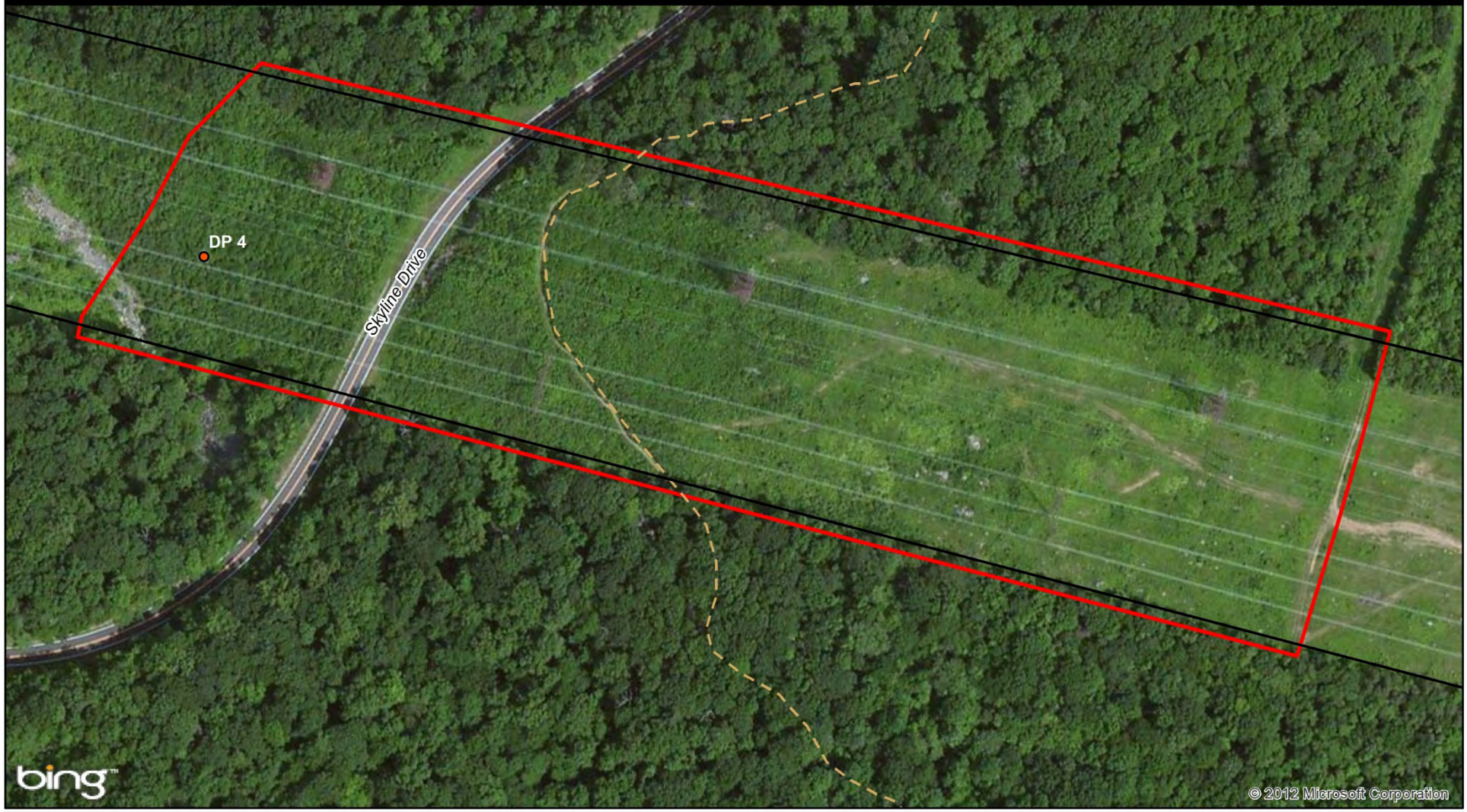


Legend

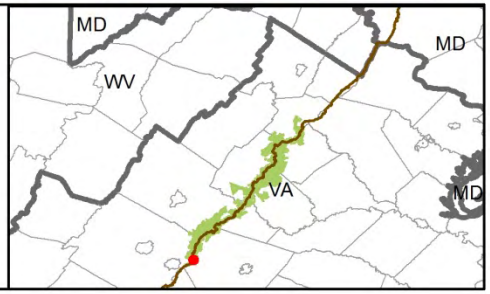
- Existing ROW
- Data Point
- Appalachian National Scenic Trail
- Survey Area A

Survey Area A

0 50 100 200 300 400 Feet

N W E S

Geographic Coordinate System: Universal Transverse Mercator (UTM).
Datum: North American Datum of 1983 (NAD83). Zone: 17N.
Projection: Transverse Mercator. Linear Unit: Meter.
Ellipsoid: Geodetic Reference System 80.



Dooms - Bremo 230kV Transmission Line Project
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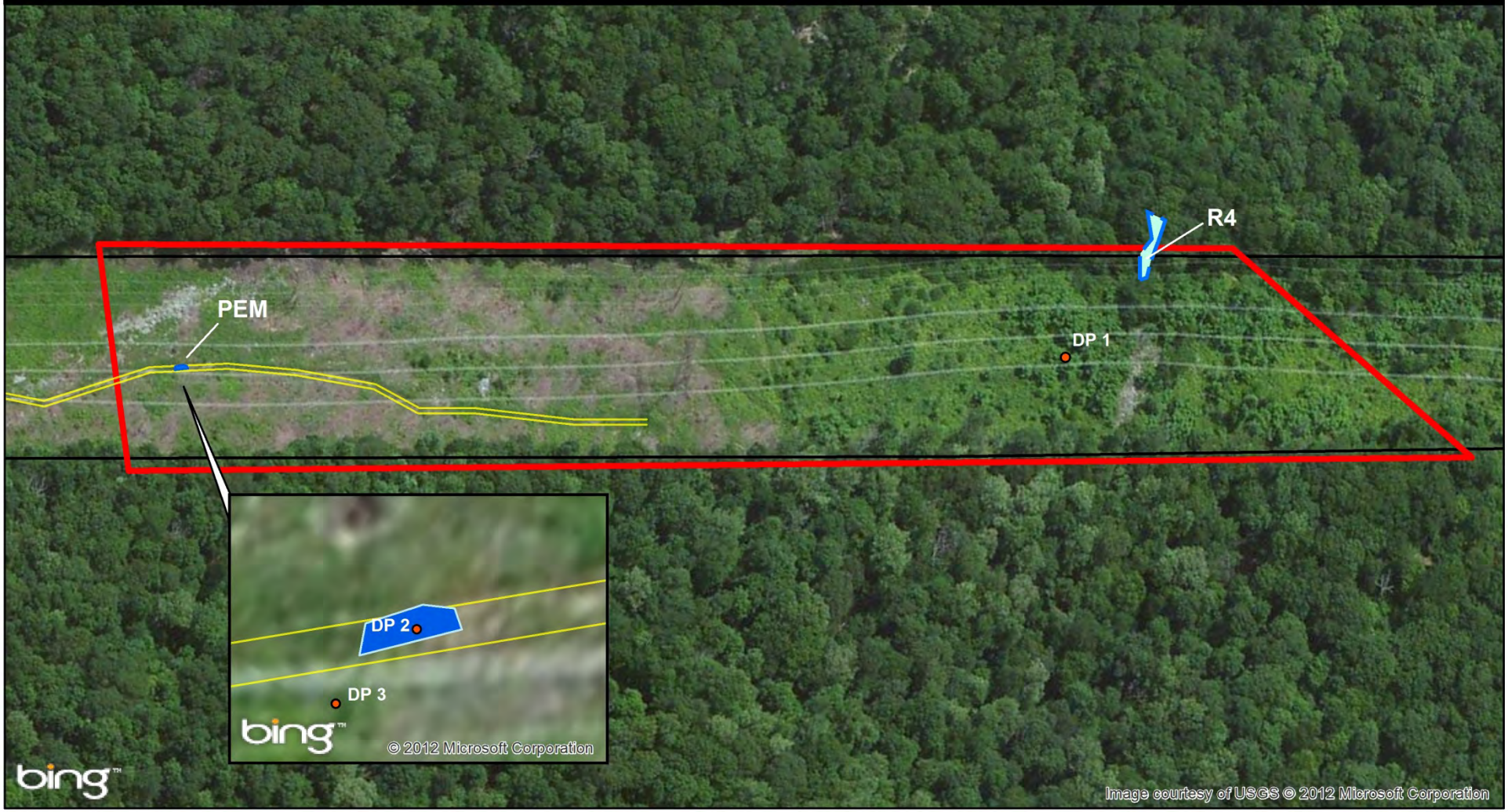
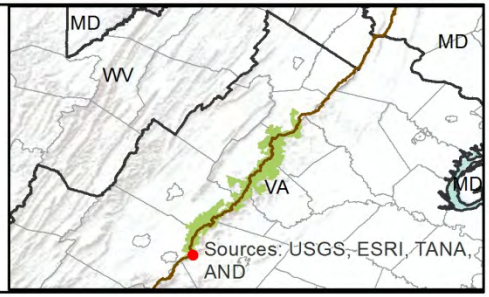


Stream
Wetland
Data Point
Proposed Access Roads
Survey Area B
Existing ROW

Wetland and Waterways
Survey Area B

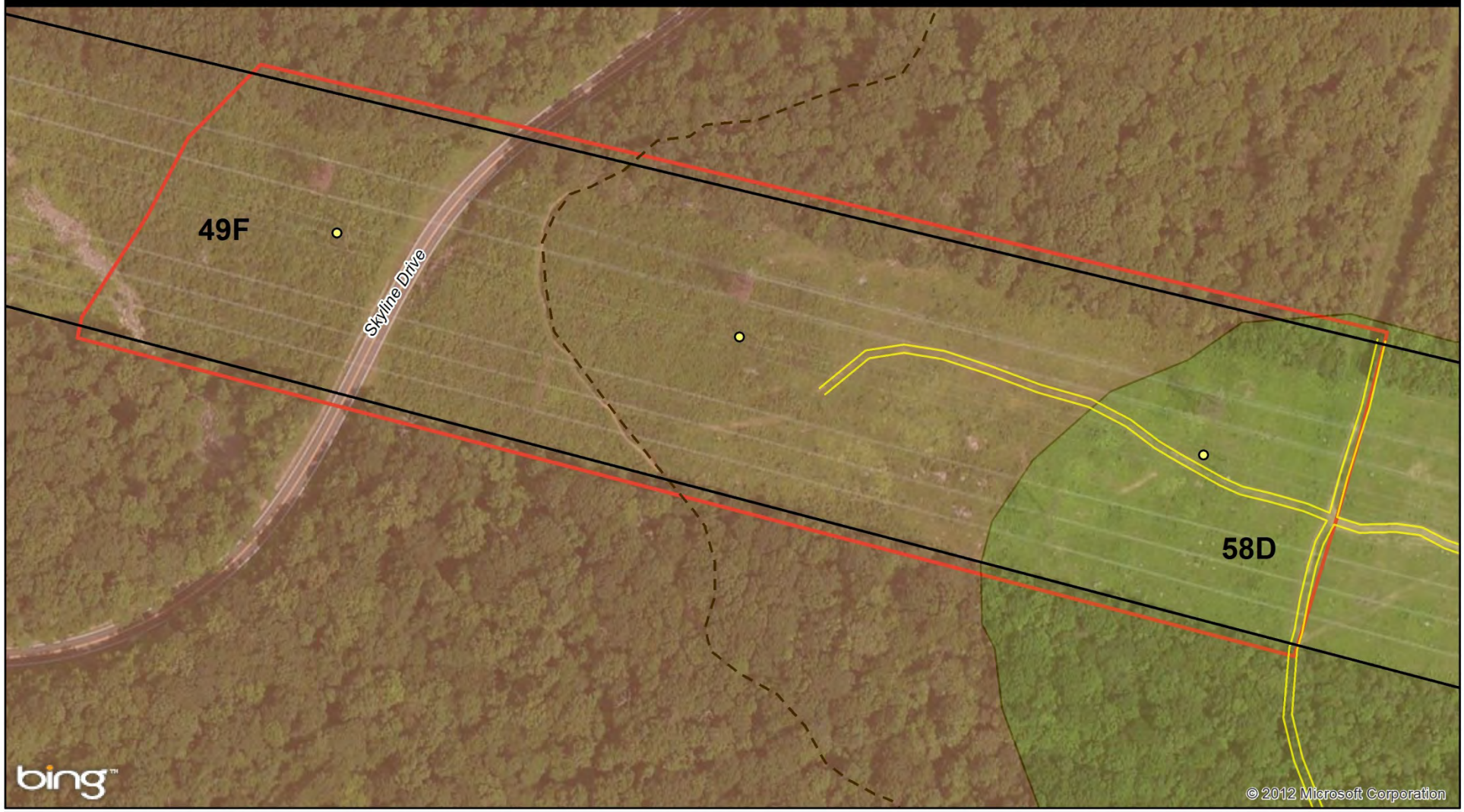
0 50 100 200 300 400 500 Feet

Geographic Coordinate System: Universal Transverse Mercator (UTM).
Datum: North American Datum of 1983 (NAD83). Zone: 17N.
Projection: Transverse Mercator. Linear Unit: Meter.
Ellipsoid: Geodetic Reference System 80.



Dooms - Bremo 230kV Transmission Line Project
Appalachian National Scenic Trail and
Shenandoah National Park

National Park Service
U.S. Department of the Interior



Existing ROW
Proposed Access Road
Existing Towers on NPS Land
Appalachian National Scenic Trail

Soils

49F
58D
Survey Area A

Survey Area A

0 50 100 200 300 400 Feet

Geographic Coordinate System: Universal Transverse Mercator (UTM).
Datum: North American Datum of 1983 (NAD83). Zone: 17N.
Projection: Transverse Mercator. Linear Unit: Meter.
Ellipsoid: Geodetic Reference System 80.

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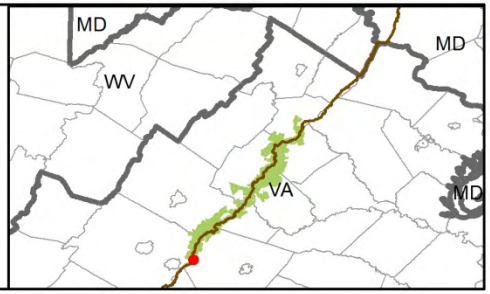

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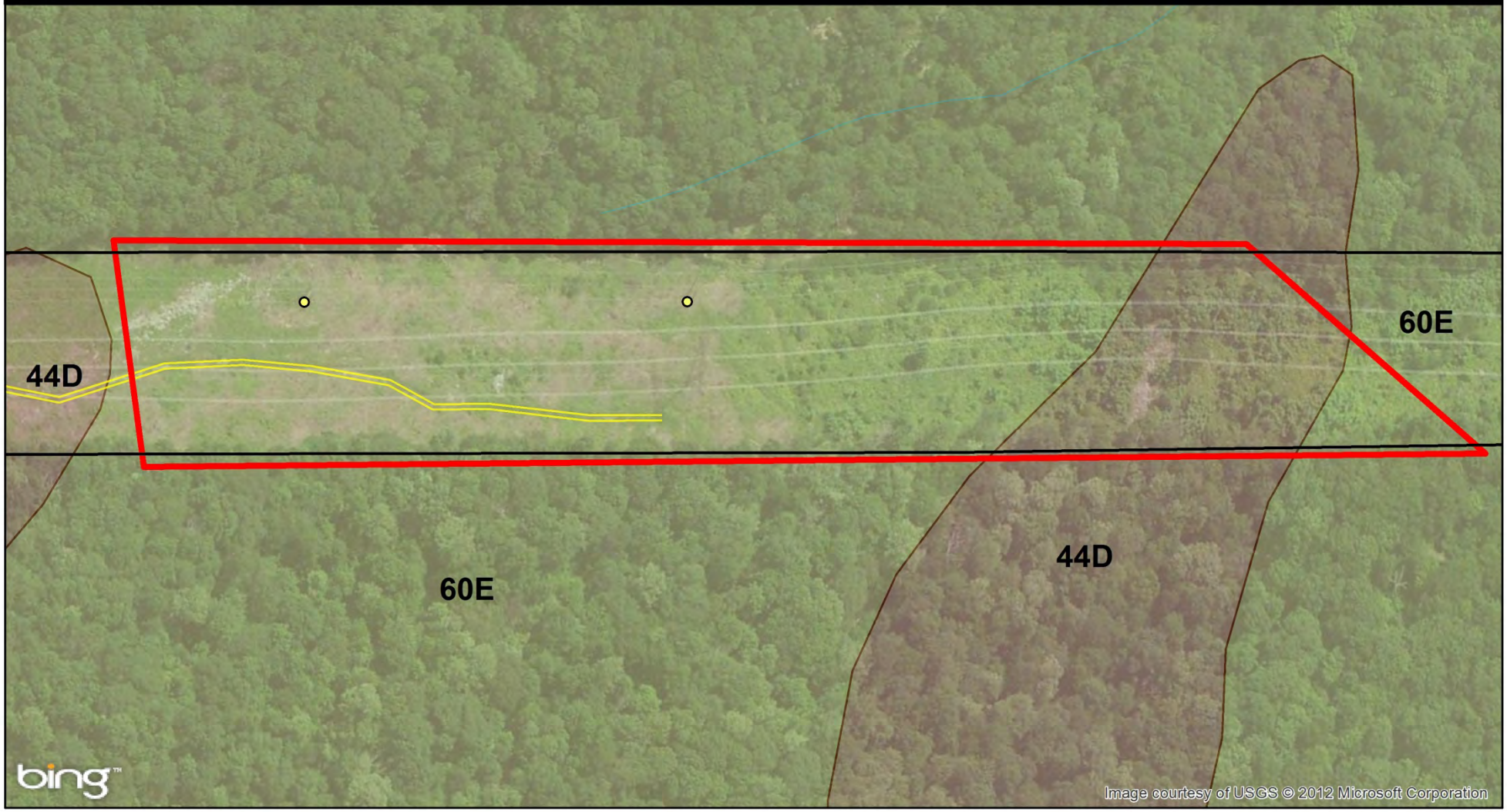
National Park Service
U.S. Department of the Interior



Legend

- Existing ROW
- NHDFlowline
- Survey Area B
- Proposed Access Roads
- Existing Towers on NPS Land

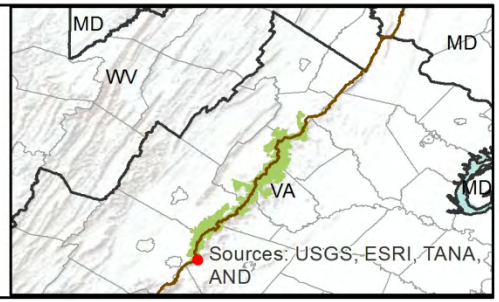
Soil

- 60E
- 44D

Survey Area B

0 50 100 200 300 400 500 Feet

Geographic Coordinate System: Universal Transverse Mercator (UTM).
Datum: North American Datum of 1983 (NAD83). Zone: 17N.
Projection: Transverse Mercator. Linear Unit: Meter.
Ellipsoid: Geodetic Reference System 80.



APPENDIX B: WETLAND/UPLAND DATA SHEETS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Dooms-Bremo Study Area B City/County: Albemarle Sampling Date: 7-6-12

Applicant/Owner: NPS State: VA Sampling Point: DP 1

Investigator(s): Flannagan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 25

Subregion (LRR or MLRA): _____ Lat: 38.0771646247 Long: -78.7692013002 Datum: WGS 84

Soil Map Unit Name: 60E: Myersville-Catoctin very stony silt loams 25-60% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

None of the three wetland indicators were observed at this data point

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☐	Depth (inches): _____
Water Table Present?	Yes ☐	No ☐	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☐	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary indicators of wetland hydrology were observed at this data point.

US Army Corps of Engineers Eastern Mountains and Piedmont – Interim Version

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP 1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Rubus argutus	15	YES	FACU
2. Rubus phoenicolasius	15	YES	UPL
3. Rubus occidentalis	25	YES	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Cirsium arvense	20	NO	FACU
2. Nepeta cataria	25	NO	FACU
3. Erigeron annuus	85	YES	FACU
4. Solidago canadensis	15	NO	FACU
5. Bromus japonicus	15	NO	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	170 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

Zero percent of the dominant species are rated FACU or UPL, thus hydrophytic vegetation is not present at this data point.

SOIL

Sampling Point: DP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 4/3	100					L	
2-10	7.5YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ROCK

Depth (inches): 10

Hydric Soil Present? Yes ☐ No ☒

Remarks:

The observed soil did not satisfy the criteria of any of the listed hydric soil indicators.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Dooms-Bremo Study Area B City/County: Albemarle Sampling Date: 7-6-12

Applicant/Owner: NPS State: VA Sampling Point: DP 2

Investigator(s): Flannagan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 25

Subregion (LRR or MLRA): _____ Lat: 38.0794267788 Long: -78.7711674706 Datum: WGS 84

Soil Map Unit Name: 60E: Myersville-Catoctin very stony silt loams 25-60% slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

All three wetland criteria were satisfied at this data point. Small wetland that receives water from a hillside seep. no wetland upslope of the seep.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [X] Surface Water (A1)
- [X] High Water Table (A2)
- [X] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [X] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [X] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [X] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [X]	No [ ]	Depth (inches): 0.5
Water Table Present?	Yes [X]	No [ ]	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes [X]	No [ ]	Depth (inches): 0

Wetland Hydrology Present? Yes [X] No [ ]

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple primary and secondary indicators of wetland hydrology were observed at this data point. Water from a hillside seep was entering directly into the wetland feature from upslope.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP 2

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Eleocharis acicularis	60	YES	OBL
2. Scirpus atrovirens	15	YES	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

100 percent of the dominant vegetation is rated as OBL, thus hydrophytic vegetation is present at this data point.

SOIL

Sampling Point: DP 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3/3	100					L	
2-4	7.5YR 4/2	100					L	
4-7	7.5YR 4/1	95	7.5YR 5/6	5	C	M	L	
7-9	7.5YR 4/2	95	7.5YR 5/6	5	C	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rock

Depth (inches): 9

Hydric Soil Present? Yes ☒ No ☐

Remarks:

The observed soil satisfied the criteria of the F3 hydric soil indicator thus hydric soil is present at the data point

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Dooms-Bremo Study Area B City/County: Albemarle Sampling Date: 7-6-12

Applicant/Owner: NPS State: VA Sampling Point: DP 3

Investigator(s): Flannagan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 25

Subregion (LRR or MLRA): _____ Lat: 38.0794383504 Long: -78.7712151587 Datum: WGS 84

Soil Map Unit Name: 60E: Myersville-Catoctin very stony silt loams 25-60% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒
Wetland Hydrology Present?	Yes ☐	No ☒

Is the Sampled Area within a Wetland? Yes ☐ No ☒

Remarks:
None of the three wetland criteria were satisfied at this data point

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed at this data point.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP 3

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Cirsium arvense	10	NO	FACU
2. Erigeron annuus	90	YES	FACU
3. Solidago canadensis	15	NO	FACU
4. Achillea millefolium	10	NO	FACU
5. Elymus hystrix	15	NO	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	140 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

100 percent of the dominant vegetation is rated FACU, thus hydrophytic vegetation is not present at this data point

SOIL

Sampling Point: DP 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 4/3	100					L	
2-10	7.5YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

The observed soil did not satisfy the criteria of any of the listed hydric soil indicators.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Dooms-Bremo Study Area A City/County: Augusta Sampling Date: 7-6-12

Applicant/Owner: NPS State: VA Sampling Point: DP 4

Investigator(s): Flannagan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 25

Subregion (LRR or MLRA): _____ Lat: 38.0903551944 Long: -78.7850169066 Datum: WGS 84

Soil Map Unit Name: 49F: Hartleton soils, 25-75 % slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:
None of the three wetland criteria were satisfied at this data point

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of wetland hydrology were observed at this data point.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP 4

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Rhus typhina	70	YES	UPL
2. Rubus argutus	25	YES	FACU
3. Rubus occidentalis	25	YES	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

100 percent of the dominant vegetation are rated FACU or UPL, thus hydrophytic vegetation is not p[resent at this data point.

US Army Corps of Engineers — Eastern Mountains and Piedmont – Interim Version

SOIL

Sampling Point: DP 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5 YR 4/3	100					L	
3-8	7.5 YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rock

Depth (inches): 8

Hydric Soil Present? Yes ☐ No ☒

Remarks:

The observed soil did not satisfy the criteria of any of the listed hydric soil indicators.

APPENDIX C: STREAM DATA SHEETS

STREAM CLASSIFICATION FORM

Project Name:	Dooms-Bremo	Date:	7/6/2012		County:	Albemarle
Evaluator:	Flannagan	Location:	Study Area B		State:	Virginia

I. Geomorphology	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Riffle-Pool Sequence	0	1	2	3	1	1
2. Substrate Sorting	0	1	2	3	2	2
3. Natural Levees	0	1	2	3	0	0
4. Sinuosity	0	1	2	3	1	1
5. Active (or Relic) Floodplain	0	1	2	3	1	1
6. Braided Channel	0	1	2	3	0	0
7. Recent Alluvial Deposits	0	1	2	3	1	1
8. Bankful/Depositional Bench	0	1	2	3	0	0
9. Continuous Bed & Bank	0	1	2	3	3	3
10. ≥ 2nd Order Channel	0	1	2	3	0	0
11. Head Cut	0	0.5	1	1.5		0
12. Grade Controls	0	0.5	1	1.5		0.5
13. Natural Valley/Drainageway	0	0.5	1	1.5		1.5
Geomorphology Indicator Points					9	11

II. Hydrology & Streamflow	Absent	Weak	Moderate	Strong	Fairfax	NC
1. High Groundwater or seeps and springs	0	1	2	3	0	0
2. Leaflitter in Stream Bed	1.5	1	0.5	0	1.5	1.5
3. Sediment on Debris or Plants	0	0.5	1	1.5	0.5	0.5
4. Drift Lines or Wrack Lines	0	0.5	1	1.5	0.5	0.5
5. Flowing Water, >48hrs. Since last rain	0	0.5	1	1.5	0.5	0.5
6. Hydric Soils in Channel Sides	*Yes=1.5*		*No=0*			0
Hydrology/Streamflow Indicator Points					3	3

III. Streambed Soils	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Redox Features in Streambed	0	1	2	3	0	
2. Chroma of Streambed Soil	0	1	2	3	0	
>2=0; 2=1; 1=2; Gleyed=3						
Streambed Soil Indicator Points					0	

IV. Biology	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Bivalves	0	1	2	3	0	0
2. Fish	0	0.5	1	1.5	0	0
3. Amphibians	0	0.5	1	1.5	0	0
4. Benthic Macroinvertebrates	0	0.5	1	1.5	0.5	0.5
Describe insects in comments section on back						
5. Iron Oxidizing Bacteria/Fungus	0	0.5	1	1.5	0.5	0.5
6. Fibrous Roots	3	2	1	0		3
7. Rooted Plants in Streambed	3	2	1	0		3
8. Crayfish	0	0.5	1	1.5		0
9. Periphyton/Green Algae	0	1	2	3	0	0
10. Rooted aquatic plants in Streambed	0	0.5	1	1.5	0	0
11. Wetland Plants in Streambed	*SAV*	*OBL*	*FACW*	*FAC*	*FACU*	*UPL*
	2	1	0.75	0.5	1	0
Describe plants in comments section on back						
12. EPT Taxa	0	0.5	1	1.5		
Biology Indicator Points					1	7
Total Points					13	21

STREAM CLASSIFICATION FORM

Project Nai Dooms-Bre	Date: 7/6/2012	County:	Albemarle
Evaluator: Flannagan	Location: Study Area B	State:	Virginia

Animals: None observed

Wetland Plants: No plants rooted within the stream bed and no wetland fringe

Determination: The stream exceeds the North Carolina DWQ intermittent/ephemeral threshold; however, it is below the DPWES intermittent/ephemeral threshold. Because the stream bottom is rocky, we were not able to identify redox features in the stream bed, which eliminates an entire set of possible scores. Based on the scores from the North Carolina methodology, the lack of stream bed soil to sample, it is our opinion that this reach of stream is intermittent.

STREAM CLASSIFICATION FORM

Project Name:	Dooms-Bremo	Date:	7/6/2012	County:	Augusta
Evaluator:	Flannagan	Location	Sawmill Run	State:	Virginia

I. Geomorphology	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Riffle-Pool Sequence	0	1	2	3	3	3
2. Substrate Sorting	0	1	2	3	3	3
3. Natural Levees	0	1	2	3	0	0
4. Sinuosity	0	1	2	3	1	1
5. Active (or Relic) Floodplain	0	1	2	3	1	1
6. Braided Channel	0	1	2	3	0	0
7. Recent Alluvial Deposits	0	1	2	3	1	1
8. Bankful/Depositional Bench	0	1	2	3	1	1
9. Continuous Bed & Bank	0	1	2	3	3	3
10. ≥ 2nd Order Channel	0	1	2	3	0	0
11. Head Cut	0	0.5	1	1.5		0
12. Grade Controls	0	0.5	1	1.5		0.5
13. Natural Valley/Drainageway	0	0.5	1	1.5		1.5
Geomorphology Indicator Points					13	15

II. Hydrology & Streamflow	Absent	Weak	Moderate	Strong	Fairfax	NC
1. High Groundwater or seeps and springs	0	1	2	3	0	0
2. Leaflitter in Stream Bed	1.5	1	0.5	0	1.5	1.5
3. Sediment on Debris or Plants	0	0.5	1	1.5	0.5	0.5
4. Drift Lines or Wrack Lines	0	0.5	1	1.5	1	1
5. Flowing Water, >48hrs. Since last rain	0	0.5	1	1.5	1.5	1.5
6. Hydric Soils in Channel Sides	*Yes=1.5*		*No=0*			0
Hydrology/Streamflow Indicator Points					4.5	4.5

III. Streambed Soils	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Redox Features in Streambed	0	1	2	3	0	
2. Chroma of Streambed Soil	0	1	2	3	0	
>2=0; 2=1; 1=2; Gleyed=3						
Streambed Soil Indicator Points					0	

IV. Biology	Absent	Weak	Moderate	Strong	Fairfax	NC
1. Bivalves	0	1	2	3	0	0
2. Fish	0	0.5	1	1.5	1.5	1.5
3. Amphibians	0	0.5	1	1.5	0	0
4. Benthic Macroinvertebrates	0	0.5	1	1.5	1.5	1.5
Describe insects in comments section on back						
5. Iron Oxidizing Bacteria/Fungus	0	0.5	1	1.5	1	1
6. Fibrous Roots	3	2	1	0		3
7. Rooted Plants in Streambed	3	2	1	0		3
8. Crayfish	0	0.5	1	1.5		0
9. Periphyton/Green Algae	0	1	2	3	2	2
10. Rooted aquatic plants in Streambed	0	0.5	1	1.5	0	0
11. Wetland Plants in Streambed	*SAV*	*OBL*	*FACW*	*FAC*	*FACU*	*UPL*
	2	1	0.75	0.5	1	0
Describe plants in comments section on back						
12. EPT Taxa	0	0.5	1	1.5		
Biology Indicator Points					6	12
Total Points					23.5	31.5

STREAM CLASSIFICATION FORM

Project Nai Dooms-Bre	Date: 7/6/2012	County:	Augusta
Evaluator: Flannagan	Location: Sawmill Run	State:	Virginia

Animals: Many EPT taxa observed; many fish observed

Wetland Plants: No plants rooted within the stream bed and no wetland fringe

Determination: This stream scores more than 25 points under the Fairfax methodology and more than 30 points on the North Carolina methodology, indicating a perennial stream.

APPENDIX D: WETLAND FUNCTIONS AND VALUES DATA SHEETS

Wetland Function-Value Evaluation Form

Total area of wetland <0.01ac Human made? N Is wetland part of a wildlife corridor? N or a "habitat island"? N

Adjacent land use Transmission ROW Distance to nearest roadway or other development

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present N

Is the wetland a separate hydraulic system? Y (Isolated sec) If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? Ø Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. A

Latitude 38.07943 Longitude -78.77117

Prepared by: CTF Date 7/6/12

Wetland Impact:
Type None Area <0.01ac

Evaluation based on:
Office ____ Field X

Corps manual wetland delineation completed? Y X N ____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	X		13	X	Receiving water from upland seep
Floodflow Alteration		X			
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention		X			Wetland can not hold water to allow settling
Nutrient Removal		X			
Production Export		X			
Sediment/Shoreline Stabilization		X			
Wildlife Habitat		X			
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat		X			
Other					

Notes:

* Refer to backup list of numbered considerations.

APPENDIX C: SITE PHOTOS

Photo 1. Looking southeast at Data Point 2. This palustrine emergent (PEM) area, located in the northwestern portion of Study Area B, satisfied all three wetland criteria. Hydrology for the PEM is primarily from groundwater discharge from an adjacent upland seep. The PEM wetland is very small, less than 0.01 acres.

Photo 2. Looking southwest at Data Point 3. This herbaceous upland area is west of Data Point 2 and did not meet any of the three wetland criteria. Because all three criteria are required to classify an area as a wetland, it is our opinion that this data point is in uplands.

Photo 3. Looking southwest at Data Point 1. This data point is representative of the upland herbaceous community in the maintained ROW in Study Area B . Because all three criteria are required to classify an area as a wetland, it is our opinion that this data point is in uplands.

Photo 4. Looking northeast at Data Point 4. This data point is representative of the upland shrub community in the maintained ROW in Study Area A . Because all three criteria are required to classify an area as a wetland, it is our opinion that this data point is in uplands.

Photo 5. Looking east, downstream, at the intermittent stream identified in the southeastern portion of Study Area B. Based on the scores from the North Carolina methodology, the lack of stream bed soil to sample, it is our opinion that this reach of stream is intermittent.

Photo 6. Looking west-northwest at Sawmill Run, approximately 2.1 miles west-northwest of Study Area A. Sawmill Run is a known perennial stream with strong geomorphology and biology. This reach of Sawmill Run exhibited little siltation or embeddedness.